

2025 Buyers for Climate Action
Medium- and Heavy-Duty
Zero-Emission Vehicle Catalogue

Buyers for Climate Action



Canada 



Québec 

Montréal 



Introduction to the Buyers for Climate Action (BCA)

[The BCA](#)¹ is a coalition of leading green buyers with the goal of helping drive the transition to a green, net-zero carbon economy by fostering collaboration in green procurement.

The BCA was established in 2021 and is funded through the [Greening Government Fund](#)², enabling intergovernmental working groups and projects in areas of real property, information and communications technology, vehicles and low-carbon fuels, and goods and services that improve climate resilience.

The BCA **Greening Fleet Working Group** was launched in September 2022 to support fleet greening by collecting and sharing up-to-date industry information, leading practices and collaborating on common greening initiatives.

To further these goals, the BCA has developed this catalogue on Medium- and Heavy-Duty Zero-Emission Vehicles (**MHDZEV**).

With first-hand accounts and lessons learned from BCA's early adopters, and a list of the latest MHDZEVs available on the market, [this catalogue is a useful resource for anyone interested in transitioning to sustainable MHDV fleet operations.](#)

BCA Members

- Government of Canada
- Government of British Columbia
- Government of Quebec
- City of Montréal
- City of Toronto
- City of Vancouver

Context and Catalogue Objectives

Over the past several years, the light-duty zero-emission vehicle (LDZEV) market has experienced substantial growth, characterized by an expanded range of vehicle offerings and widespread adoption. In contrast, the MHDZEV market remains comparatively underdeveloped, with fewer vehicle options and markedly slower adoption.

This slower development and adoption in the MHDZEV industry can be attributed to a limited availability of zero-emission vehicle (ZEV) that are suitable for specialized use cases, as well as the scarcity of key information that potential adopters need to inform their transitions to MHDZEV.

Key questions by potential adopters of MHDZEVs:

- What MHDZEVs are currently on the market and what use cases can they be applied to?
- What is the required charging infrastructure?
- What are the operational impacts to be aware of?
- What factors need to be considered during procurement, including costs, lead times, and contracting inclusions?
- What training, awareness, and occupational health and safety measures are needed?

Despite these challenges, there is a growing interest and need to transition to MHDZEVs. Through dedicated green procurement practices and a firm commitment to ambitious emissions reduction and ZEV adoption targets, BCA members have made significant strides in the assessment, procurement, and deployment of sustainable ZEVs in their public fleets. Throughout their transitions to ZEVs, they have accumulated a wealth of knowledge and practical experience in ZEV adoption.

Collaboration across early adopters will be a key factor for industry growth. It is important that Canadian MHDV fleet managers share knowledge and collaborate to identify opportunities to coordinate procurement activities. This effort provides a collective signal of demand that incentivizes original equipment manufacturers (OEMs) to expand their offerings. In addition, leveraging combined purchasing power can secure favourable procurement contracts and help manage high upfront costs of adopting a new technology.

The objective of this Catalogue is to facilitate collaboration among the BCA and with other public buyers, by sharing fleet compositions data, ZEV adoption targets, real world experiences and lessons learned during procurement and adoption process. The catalogue will provide information on MHDZEVs currently available on the market, along with their characteristics, infrastructure requirements, and any direct BCA member experience.

Scope and Methodology

The Catalogue focuses on MHDV in classes 3-8, excluding pickup trucks, and provides insights with a specific emphasis on public fleets. The vehicle classifications used in this report are presented in the **Introduction to Vehicle Classes** section.

The Catalogue was put together by Deloitte with contributions from the BCA. All BCA members (Government of Canada, Government of British Columbia, Government of Quebec, City of Montréal, City of Toronto, and the City of Vancouver) have participated in this project.

The vehicle data included in the **Overview of BCA Members' Fleets and MHDZEV Needs** section provides insight into the MHDVs currently operating within the BCA member network. This information aims to enhance industry visibility and foster collaboration among stakeholders, including fleet managers and OEMs, who are working to improve the sustainability of Canadian MHDV fleets.

The data displayed have been collected directly from BCA members using a series of surveys and in-person interviews. To fill in survey data gaps, joint-stakeholder interviews were hosted with each of the BCA member organizations including interviews with several Government of Canada departments and agencies.

The classification of each vehicle into vocations is subject to the personal experience and subjective interpretation of member representatives, and similar vehicles may not be classified identically by each BCA member. **The data presented should be interpreted in recognition of the above considerations.**

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Overview of BCA Members' Fleets and MHDZEV Needs

Introduction to Vehicle Classes

This section focuses on MHDV classifications, including classes 3 through 8. These classes encompass a wide range of vehicles, each designed for specific purposes and load capacities. The table below presents distinctions between these classes based on their Gross Vehicle Weight Rating (GVWR) and typical applications. Understanding these classifications is crucial for various industries, including transportation, logistics, and regulatory compliance which can vary by province or jurisdiction.

MHDV class cut offs can vary across organizations. This Catalogue uses the GVWR classification as outlined below in the **Vehicle Class Summary table**. Some pickup trucks will classify as medium-duty vehicles by their GVWR, but they have been scoped out of this project. ZEVs may fall into the heavier weight classes than their ICEV counterparts due to the weight of the battery. For example, a ZEV pickup truck might be classified as a medium-duty vehicle because of the additional weight of the battery, while a similar ICEV pickup truck remains classified as an LDV.

The **MHDZEV Catalogue Spec Sheets** section features technical specification sheets showcasing MHDZEVs adopted or piloted by BCA members, along with insights into their experiences. Additionally, the catalogue includes technical sheets of other MHDZEVs on the market that have not been adopted by BCA members. These MHDZEVs are in common vehicle segments and applications relevant to BCA members and may interest other public fleet owners. Vehicles shown in the specification sheets are not actual photos of vehicles in the member's fleets.

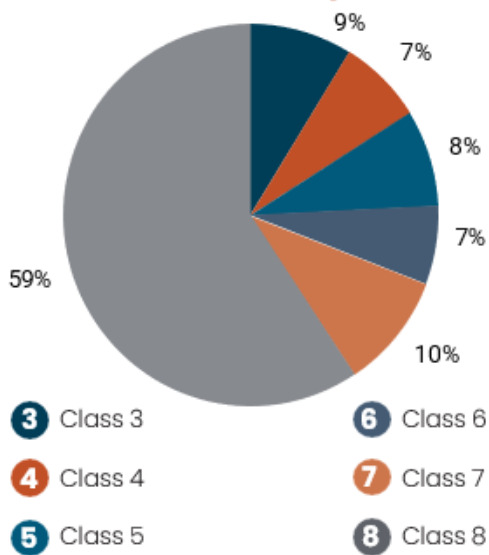
Vehicle Class Summary

Vehicle Class Summary				
GVWR Category	Vehicle Class	GVWR	Common Vehicle Types	Typical Applications
Medium Duty 4,536 - 11,793 (kg) 10,001 - 26,000 (lbs)	Class 3	4,536 - 6,350 (kg) 10,001 - 14,000 (lbs)	Cutaway Vans, Box Trucks, Street Sweepers	<ul style="list-style-type: none"> City Deliveries Small-Scale Commercial Purpose Utility Services
	Class 4	6,350 - 7,257 (kg) 14,001 - 16,000 (lbs)	Medium-Duty Trucks, Shuttle Buses, Large Walk-In Vans	<ul style="list-style-type: none"> Community Shuttle Local Urban Deliveries Specialty Vehicle
	Class 5	7,257 - 8,845 (kg) 16,001 - 19,500 (lbs)	Cargo Trucks, Larger Walk-In Vans	<ul style="list-style-type: none"> Utility Maintenance Heavier Cargo Transport
	Class 6	8,845 - 11,793 (kg) 19,501 - 26,000 (lbs)	Heavy-Duty Trucks, Single-Axle Vans, School Buses	<ul style="list-style-type: none"> Urban Delivery Specialty Vehicle
Heavy Duty >11,794 (kg) > 26,001 lbs	Class 7	11,793 - 14,969 (kg) 26,001 - 33,000 (lbs)	Tow Trucks, Shuttle Buses	<ul style="list-style-type: none"> Regional Haul Drayage Urban Delivery
	Class 8	14,969+ (kg) 33,001+ (lbs)	Tractor-Trailers, Refuse Trucks, City Transit Buses Dump Trucks, Fire Engines	<ul style="list-style-type: none"> Transit Fire Response Drayage

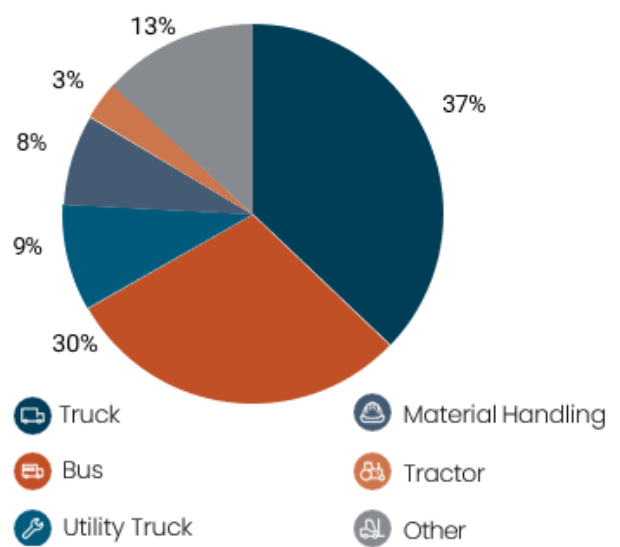
MHDV Fleet Composition of BCA Members

The data below provides a consolidated summary of the medium- and heavy-duty fleet compositions of BCA members as informed by surveys and interviews. Municipal Governments have the largest reported MHDV fleets which shapes this summary. Pickup trucks (3/4 and 1 ton), which can fall under both light- and medium-duty classifications were excluded. Classification of vehicle types and vocations are based on the subjective interpretation of survey respondents and should be interpreted accordingly.

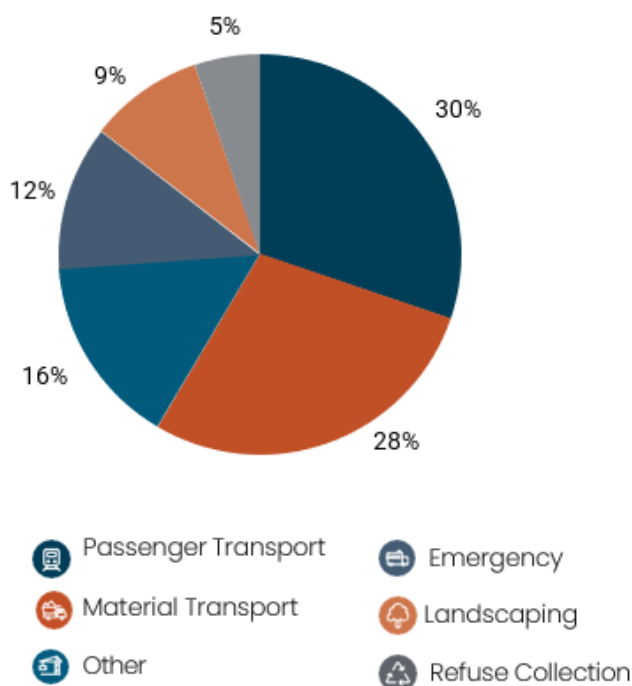
Vehicle Class Summary



Vehicle Type Summary



Vehicle Vocation Summary



Key Insights

- **Class 8 vehicles** account for 59% of all reported MHDVs. Heavier weight classes (class 6, 7, 8) make up more than 75% of the total.
- **Trucks and Buses** are the most common vehicle types accounting for 67% of reported MHDVs.
- **Passenger and Material Transport** are the most common vocations accounting for 58% of reported MHDV use cases. Emergency Response, Landscaping, and Refuse Collection are also quite common and make up 26% of reported MHDV use cases.
- Municipal governments have set ambitious targets to transition their public buses to EVs, putting **Class 8 ZEV buses in high demand**.

Most Common Class, Type, and Vocation Combinations Among BCA Member Fleets

Class	Type	Vocation
Class 8	Bus	Passenger Transport
Class 8	Truck	Material Transport
Class 8	Truck	Emergency Response
Class 4	Truck	Material Transport
Class 8	Material Handling Equipment	Landscaping

- Class 8 vehicles are in particularly high use among participating BCA member MHDV fleets, **presenting a valuable opportunity for OEMs looking to expand their Class 8 offerings, or fleet managers looking to collaborate in procurement** to expedite their fleet greening initiatives.
- Buses represent a particularly high percentage of participating BCA member MHDV fleets, highlighting the importance and prevalence of passenger transport in the MHDV industry.
- Passenger transport, material transport, and emergency response vehicles make up a large percentage of participating BCA member fleets, who are focusing heavily on electrification in these areas.

These charts are intended to provide a reference and call to action for both OEMs looking to expand their MHDZEV offerings and fleet managers looking to implement their fleet greening strategies. Collaboration across OEMs, fleet managers, and governing bodies is key for the efficient development of the MHDZEV industry. By sharing fleet composition metrics like the above, we can work together to align OEM catalogues with fleet manager requirements and enable cost-effective procurement collaboration to remove financial barriers, expedite MHDZEV adoption, and achieve our sustainability targets.

BCA Members Spotlight on Greening Initiatives

Government of Canada

The **Greening Government Strategy (GGS)**⁴ is the Government of Canada's (GoC) approach to transitioning to net-zero operations by 2050 and climate-resilient operations by 2035, while also reducing environmental impacts beyond carbon, including on waste, water and biodiversity. To achieve net-zero operations in its conventional fleets, the GoC has made the following commitments:

- Starting in 2025, 100% of new LDV purchases will be ZEV, with the objective that the government's LDV fleet comprises of 100% ZEV by 2030.
- By 2030, at least 40% of new MHDV purchases will be ZEV.
- The government will prioritize ZEV options for all new vehicle and mobile equipment purchases where suitable options are available while considering operational feasibility.
- Fleet management will be optimized to achieve the targets, including by maintaining a long-term strategic fleet greening plan, establishing internal policies and controls to prioritize ZEVs, right-sizing fleets and vehicles, promoting energy-efficient operating practices, and applying telematics to analyze vehicle usage data and inform EV charging needs.
- By 2050 the GoC will have net zero operations.



The GGS targets apply to all GoC departments and agencies with conventional fleets. Conventional fleets are fleets that are not part of the National Safety and Security Fleet, such as certain RCMP, DND, and DFO tactical vehicles, which have separate targets. In 2024, the GGS was updated to include Crown Corporations, who are expected to align with the Strategy or adopt equivalent commitments. The MHDZEV purchase target was also introduced in this update along with the foot note specifying that low-carbon fuel options should be explored for MHDVs where ZEV options are not available or operationally suitable.

Multiple technical expert and fleet-owning departments and agencies have participated in the production of this Catalogue. The roles of expert departments which support GoC fleet-owning organizations are described below.

Treasury Board Secretariat, Centre for Greening Government (TBS CGG)

- TBS CGG supports the implementation of the GGS fleet targets in different ways, including by chairing internal and external committees and developing tools and guidance for strategic fleet green planning to enable federal organizations to achieve the targets.
- TBS CGG administers the [Greening Government Fund](#), which provides project funding to federal departments and agencies to reduce their GHG emissions and share innovative approaches that can be reproduced across the government. Fleet greening is a priority area for project funding.
- Federal organizations are responsible for annually reporting an inventory of their GHGs and other environmental performance to TBS CGG. This includes vehicle inventories, new LDV purchases and GHGs from fuel. This tracking exercise is important groundwork for fleet managers to make decisions regarding fleet right sizing and purchasing ZEVs.

Public Services and Procurement Canada (PSPC)

- PSPC supports federal organizations through LDV, MHDV and associated electric vehicle charging stations procurement. MHDV procurement, including MHDZEVs is facilitated through Request for Information (RFI) and the creation of Supply Arrangements which federal organizations can use. PSPC also provides industry expertise and assists departments in developing technical vehicle specifications for their own Request for Proposals (RFP).
- PSPC maintains engagement with industry and organizes presentations and demonstrations of MHDZEVs for federal organizations. Other departments like DND have also organized in-person showings of MHDZEVs.

Natural Resources Canada, Greening Government Operations Fleets program (NRCan)

- NRCan's Greening Government Operations Fleets program assists federal organizations in meeting the targets set forth in the GGS by providing technical support for the planning and deployment of ZEV and charging infrastructure in GoC facilities. The team works with fleet managers to find strategic and sustainable mobility solutions tailored to their operational needs. To learn more about their telematics, infrastructure, and ecoDriving services, visit [NRCan's Federal Vehicles and Fleets](#)⁵ website.

Transport Canada, Innovation Centre (TC)

- TC's Innovation Centre is a transportation innovation research, development and deployment (RD&D) organization that supports emerging transportation technologies to help ensure Canadians can benefit from a safe, secure, clean, and integrated transportation system. The Centre has a small fleet of MHDVs, including MHDZEVs, which are used for testing, research and evaluating safety and environmental performance to help inform codes standards and regulations. The Centre shares its findings in [reports](#)⁶ available online.

Below is the complete list of technical expert and fleet-owning departments and agencies who have participated in the production of this Catalogue.

- Agriculture and Agri-Food Canada (AAFC)
- Canada Border Services Agency (CBSA)
- Fisheries and Oceans Canada (DFO)
- National Defence (DND)
- Innovation, Science and Economic Development Canada (ISED)
- Natural Resources Canada (NRCan)
- Royal Canadian Mounted Police (RCMP)
- Transport Canada (TC)
- Treasury Board Secretariat (TBS)
- Parks Canada (PC)
- Public Services and Procurement Canada (PSPC)

Due to unique operational requirements and technical complexities of MHDZEVs, each department must conduct extensive research and testing before any large-scale deployments. Key concerns that must be assessed and addressed prior to adoption of MHDZEVs include access to infrastructure and service centers in remote areas, technical vehicle requirements like cargo, towing capacities, equipment upfit or modifications, long-distance travel and environmental conditions.

To inform MHDZEV adoption, several departments and agencies have employed **telematics devices** to gather detailed fleet operations data and derive data-driven requirements to confirm readiness to transition to MHDZEVs. Some departments and agencies have applied these devices to MHDZEV test vehicles to validate the extent of the vehicles' capabilities and the feasibility of deploying them in the field. In addition to MHDZEV assessments, departments and agencies are implementing several proactive approaches to decarbonize their fleets:

- **Fleet rightsizing**, better aligning the size of their fleet with the scope of their operations.
- **Replacing MHDVs with LDVs**, enabling replacement of these vehicles with sustainable alternatives from the more mature LDZEV market.
- **Expanding charging infrastructure** to support ZEV fleets.

Unique Medium–Heavy Duty Vehicle Fleet Characteristics

GoC departments have unique fleet characteristics and vocations served by their MHDVs, with 16 departments and agencies owning and operating a MHDV fleet. MHDVs are characterized by their versatility and ability to handle a wide range of tasks. These vehicles often require customizations such as power-take offs, specialized equipment like aircraft mules and cranes, and mobile laboratories for telecommunications and research. They are designed to operate in diverse and sometimes remote terrains, often requiring thorough research and planning before deployment. Vocations range from common tasks like passenger transport to very specific departmental tasks, some of which are identified below:

- Transporting agricultural equipment, crops, livestock, and passengers.
- Managing and protecting fisheries and aquatic resources, including the transport of materials and marine animals.
- Supporting technological innovation through material transport, research, and mobile labs.
- Overseeing sustainable resource development, primarily through fieldwork and emergency response, often in remote areas.
- Performing landscaping, refuse collection, and material and passenger transport.
- Ensuring border security with a focus on passenger and material transport.
- Conducting emergency response and specialized tasks such as forest fire response.
- Testing and research to enhance the safety, efficiency, sustainability, and innovation of transportation systems.

These vocational roles highlight the essential and diverse functions that MHDVs serve in supporting various operational needs.

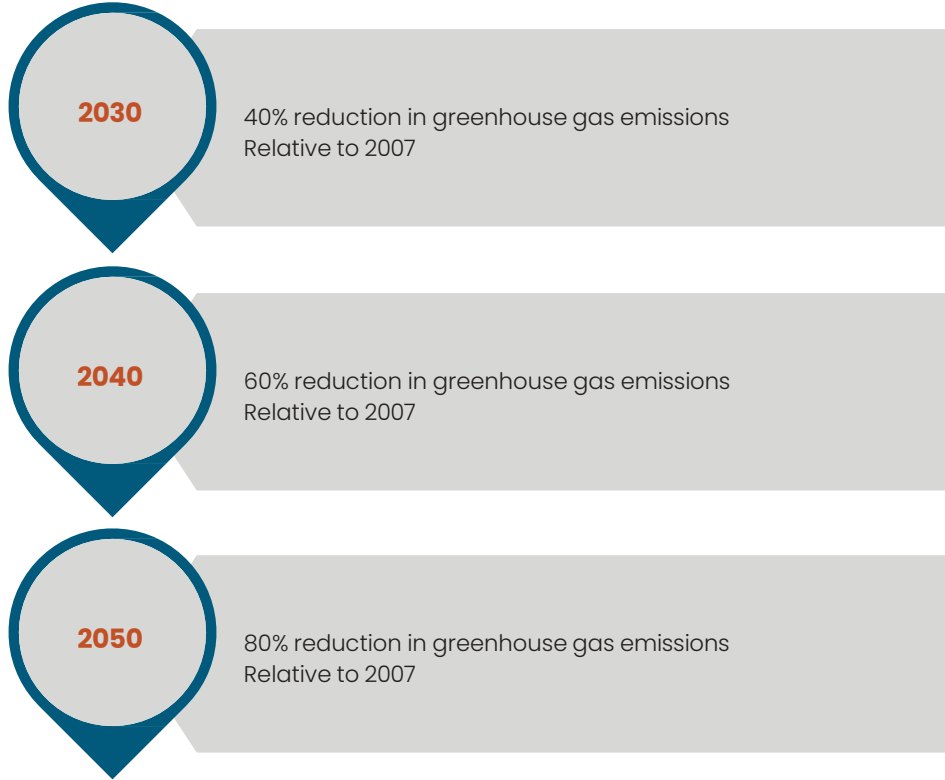
Provinces

Provincial governments across Canada are responsible for setting their own emissions reduction targets for their respective provincial operations. Two provincial governments were involved in the creation of this catalogue: the Government of British Columbia and the Government of Quebec.

Similar to their federal counterparts, these members have also made significant progress in the adoption of LDZEVs, converting large percentages of their active light duty fleets to ZEVs. Both provincial governments are also making strong progress in the adoption of MHDZEVs, with several MHDZEVs already deployed in the field and many more being assessed through live testing.

GOVERNMENT OF BRITISH COLUMBIA

Overall Emissions Reduction Targets



The Government of British Columbia has established ambitious sustainability targets aimed at reducing greenhouse gas (GHG) emissions and promoting a cleaner economy. The Government of British Columbia has been recognized globally for its **CleanBC** programs, which encourage innovation in clean technologies and take a holistic approach to collaboration across the broader community to reduce harmful GHG emissions.

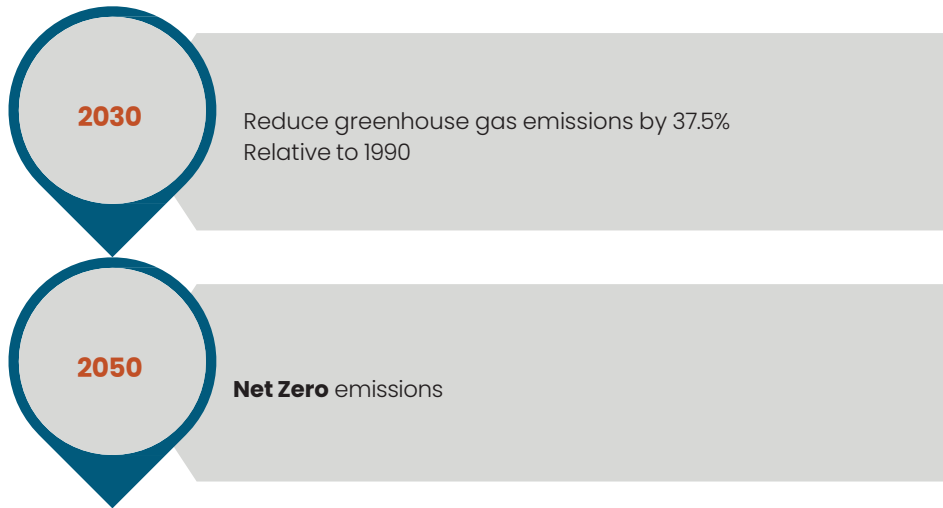
The Government of BC has a focus on LDZEV adoption with province-wide targets of 26%, 90%, and 100% of LDV purchases required to be ZEV by 2026, 2030, and 2035 respectively.

Medium- and Heavy-Duty Vehicle Fleet Characteristics

The Government of British Columbia MHDV fleet supports a variety of use cases related to provincial government operations like passenger and material transport, landscaping, infrastructure maintenance, and emergency response. These vehicles are often required to operate on rugged terrain high in the mountains or deep in the province's dense forests. British Columbia experiences severe weather variability across regions and seasons, and MHDVs are required to support in use cases related to extreme snowfalls and even wildfires.

GOVERNMENT OF QUEBEC

Overall Emission Reduction Targets



The Government of Quebec has demonstrated a longstanding commitment to environmental sustainability through various targets and programs aimed at reducing GHG emissions and promoting clean energy. The **Green Economy Plan** was enacted in 2006 to support the province's greenhouse gas reduction commitments with programs that target several major emissions-producing industries. Regarding fleet greening, the Green Economy Plan has enabled the introduction of rebates on EV purchases, facilitated government investment in EV technologies and the expansion of public charging infrastructure, and funded important research into sustainable alternative fuels.

The province aims for 100% of non-van LDV, 55% of urban bus, and 65% of school bus fleets to be ZEV by 2030.

Medium-Heavy Duty Vehicle Fleet Composition

The Government of Quebec MHDV fleet supports a variety of use cases related to provincial government operations like passenger and material transport, landscaping, infrastructure maintenance, and emergency response. Quebec endures harsh winters with temperatures often far below zero degrees Celsius and severe snowfalls. MHDVs used year-round must be capable of withstanding these difficult conditions as they are a part of everyday operation in Quebec's winter climate. Many MHDVs must also be deployed in highly remote areas and may require off-road and extended range capabilities.

Municipalities

Many municipal governments across Canada have also set ambitious targets to reduce emissions and improve sustainability in their operations in the coming decades. Three major Canadian cities who are BCA members, have participated in the development of this catalogue: the City of Montréal, the City of Toronto, and the City of Vancouver.

Municipal operations in cities with large populations provide relatively favourable conditions for EV deployment. Municipal operations are typically limited to smaller geographic areas than federal or provincial operations. Terrain is relatively consistent and consists of mostly paved or well-maintained gravel or dirt roads. Public infrastructure is more developed and typically more accessible than in certain rural or remote areas in which federal and provincial vehicles might operate. These factors have enabled the municipalities to make the most significant progress in fleet greening among BCA members.

Like other BCA members, participating municipalities have made extensive progress in converting their light-duty fleet to LDZEV and are actively exploring the implementation of MHDZEVs. Some MHDZEVs that are already deployed in operations today include cargo vans, street sweepers, various sizes of transport trucks, utility maintenance vehicles, buses, fire trucks, and refuse collection trucks.

CITY OF MONTRÉAL

Overall Emissions Reduction Targets:



Montréal enacted the **Montréal Climate Plan 2020–2030**, in December 2020 with the goal of achieving carbon neutrality by 2050. The comprehensive plan outlines 46 specific actions which include:

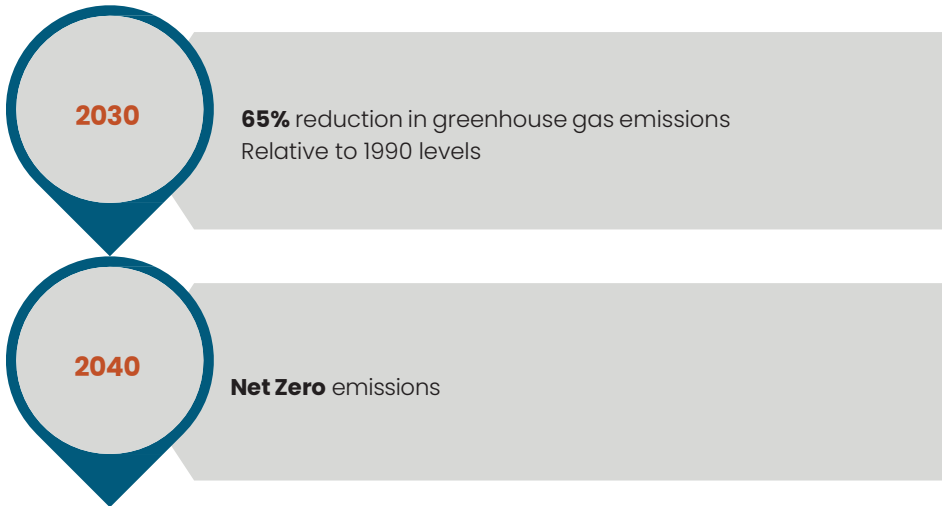
- The electrification of public transit with the goal of a fully electrified bus fleet by 2040.
- Defining zero-emission zones in the city core where internal combustion engine (ICE) vehicle use will be restricted first, and ultimately forbidden.
- Expanding charging infrastructure to support EV adoption.
- Optimize the use of the municipal vehicle fleet and equipment by assessing real operational needs when replacing obsolete vehicles and equipment. This approach aims to optimize the use of existing and future resources, reduce the number of vehicles purchased, and prioritize the acquisition of the smallest vehicles or equipment possible.

Medium- and Heavy-Duty Vehicle Fleet Composition

The City of Montréal's MHDV fleet supports a variety of use cases related to municipal operations. These include but are not limited to passenger and material transport, refuse collection, urban cleanup, recreational, and emergency response. Some municipal-specific vehicles include street sweepers, sewer cleaners, refuse collection trucks, and ice resurfacers. The City's MHDVs must be prepared to deal with harsh winter conditions. Beyond the weather, Montréal is one of Canada's oldest cities and some historic areas have narrow streets that require compact and maneuverable MHDV designs.

CITY OF TORONTO

Overall Emissions Reduction Targets



The **Transform TO Net Zero Strategy** is the City of Toronto's community-wide climate strategy aimed at achieving net-zero GHG emissions by 2040. Initially adopted in July 2017, the Strategy was accelerated from the original 2050 target following the City's declaration of a climate emergency in 2019.

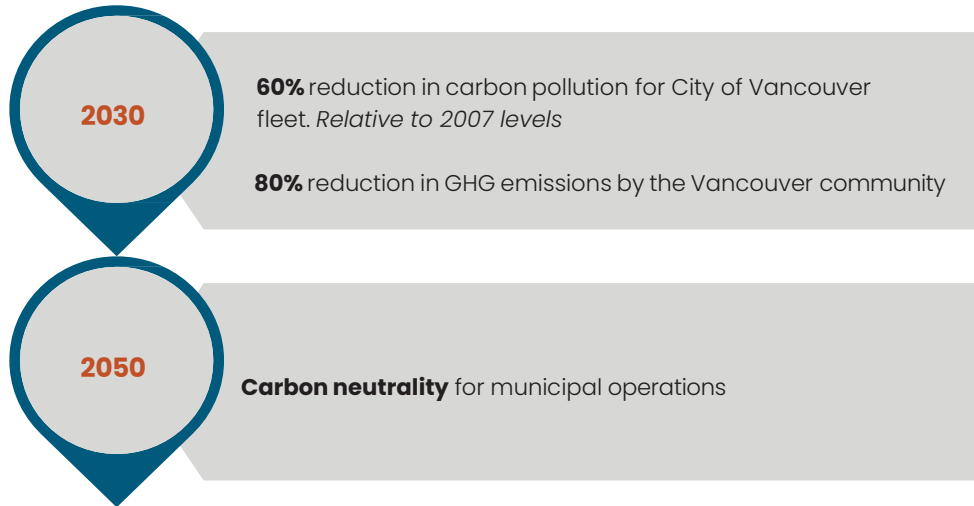
Toronto has also enacted the **Sustainable City of Toronto Fleets Plan** to promote the adoption of ZEVs across various City-operated fleets. The city has committed to 20% of the overall fleet to be ZEV by 2025, 50% of the overall fleet to be ZEV by 2030, and net zero by 2040. The City of Toronto is continuing to expand its corporate charging infrastructure to enable and support accelerated transition to ZEV.

Medium- and Heavy-Duty Vehicle Fleet Composition

Vehicles are an essential component of the delivery of City of Toronto programs and the provision of public services. The City of Toronto's MHDV fleet supports a variety of use cases related to municipal operations. These include but are not limited to passenger and material transport, refuse collection, urban cleanup & maintenance, and emergency response.

CITY OF VANCOUVER

Overall Emission Reduction Targets



Vancouver introduced the **Climate Emergency Action Plan** in 2020 as a strategy containing specific actions aimed at reducing emissions and enhancing climate resilience with the ultimate goal of achieving carbon neutrality across all City operations by 2050. The City's plan includes several actions to support the adoption of ZEVs including, shifting to 100% renewable diesel fuel, investments into the expansion of charging infrastructure, and adopting ZEVs into their public transit fleet. The City of Vancouver is also promoting the transition to ZEVs in the city with incentives for individuals and businesses to transition their fleet to EVs, and construction policies to promote EV-ready infrastructure.

Medium-Heavy Duty Vehicle Fleet Composition

The City of Vancouver MHDV fleet supports a variety of use cases related to municipal operations. These include but are not limited to passenger and material transport, refuse collection, urban cleanup, recreational, and emergency response. Some municipal-specific vehicles include street sweepers, sewer cleaners, and ice resurfacers. Beyond the congestion common among population-dense cities, Vancouver also has a mild, coastal climate that experiences heavy rainfall throughout the year. These rainy conditions emphasize the importance of stormwater management infrastructure and the MHDVs required for their maintenance such as vacuum and utility trucks.

MHDZEV Catalogue Spec Sheets

- **BCA Experiences**

The section below contains an overview of vehicles which BCA members have tested, evaluated, or adopted in their fleets. The MHDZEVs range from classes and vocations and include lessons learned during the adoption phase where information was available. For more information on user experience or to contact BCA members, please send an email to bca.aac@tbs-sct.gc.ca



Class 3

City Deliveries | Small-Scale Commercial Purposes | Utility Services



Zevro 600

Brightdrop

Model	Zevro 600	
Vehicle class	Class 2b Class 3	
Weight	9,989 lbs (4,531 kg) 11,000 lbs (4,990 kg)	
Payload	2,288 lbs (1,038 kg) 3,230 lbs (1,465 kg)	
Manufactured	GM CAMI Assembly plant in (Ingersoll, ON, CA)	
Range	City: 488km Highway: 377km	
Powertrain	All-Wheel Drive (AWD) electric	
Charger Details (20 - 80%)	AC – 8.6 hrs @ 11.5 kW DCFC – 2 hrs. @ 120 kW	
Battery	173 kWh	
Estimated Price (CAD)	\$137,000 to \$138,000 depending on class	
Connector type	 AC Type 2 Level 2 (IEC 32196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[12]

User experience

Vehicle Vocation: Testing and research purposes.

Otherwise, this vehicle is generally used for Urban Delivery.

BCA Member

Transport Canada (testing and research purposes)



Class 3

City Deliveries | Small-Scale Commercial Purposes | Utility Services



R5e

Ravo

Model	R5e
Vehicle class	Class 3
Weight	25,133 lbs (11,400 kg)
Payload	10,251 - 11,596 lbs (4,650 - 5,260 kg)
Manufactured	Alkmaar, NL
Range	100 km 2-3 h of work (brushes and water) can be accomplished, for a total run of up to 5 - 6 h
Powertrain	Fully electric
Charger Details (20 - 80%)	AC - 4.5 hrs. at 7 kW DCFC - 2 hrs. at 70 kW
Battery	100 kWh
Estimated Price (CAD)	Price unavailable; upon request
Connector type	 AC Type 2 Level 2 (IEC 62196-2)  DC CCS Combo 2 Level 3 (IEC 62196-2)

[13]

User experience

Currently used for urban street sweeping, highlights the need for compatibility with local charging standards and optimized battery capacity for operational efficiency. Ongoing adjustments aim to enhance these aspects to meet daily demands, especially during peak seasons. The vehicle's primary role is regular street sweeping, contributing to cleaner urban environments. During high-demand periods, loaders may assist by removing most leaves before the sweeper operates. The electric sweeper cannot be used for consecutive shifts unless a fast charger is installed, which is still being tested.

BCA Member

City of Montréal (adopted)



Class 5

Community Shuttle | Local Urban Deliveries | Specialty Vehicle



EV Star Cargo Plus

Green Power Motor Company

Model	EV Star Cargo Plus Box Truck	
Vehicle class	Class 5	
Weight	14,330 lbs	(6,500 kg)
Payload	5,000 lbs	(2,268 kg)
Manufactured	Porterville, CA, USA	Riverside, CA, USA
Range	241 km	
Powertrain	Direct Drive Electric Motor	
Charger Details (20 - 80%)	AC – 8 hrs. at 19.2 kW	
	DCFC – 2 hrs. at 60 kW	
Battery	118 kWh	
Estimated Price (CAD)	\$212,900	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[14]

User experience

The EV Star Cargo Plus experience has highlighted the value of collaborating with Tier 1 OEMs for enhanced reliability and support. This vehicle has provided valuable insights into the successful integration of refuse and aerial trucks, customization for dump trucks, and managing snow conditions and continuous power take-off usage. Addressing infrastructure and charging capacity constraints remains a priority, and the flexibility in procurement is seen as a key advantage.

BCA Member

City of Vancouver (decommissioned)

Class 6

Utility Maintenance | Heavier Cargo Transport



eMV

International



[15]

User experience

Vehicle Vocation: Urban Delivery, Specialty Vehicle

BCA Member

City of Toronto (adopted)

Model	eMV	
Vehicle class	Class 6 Class 7	
Weight	26,000 lbs	(11,793 kg)
Payload	11,000 lbs	(4,990 kg)
Manufactured	San Antonio, TX, USA	Springfield, OH, USA
Range	217 km	
Powertrain	Direct Drive Electric Motor	
Charger Details (20 - 80%)	AC - 7.2 hours at 30 kW DCFC - 2 hrs. at 120 kW	
Battery	210 kWh	
Estimated Price (CAD)	\$351,000	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)


Class 6

Utility Maintenance | Heavier Cargo Transport



6F

BYD

Model	6F	
Vehicle class	Class 6	
Weight	26,000 lbs	(11,793 kg)
Payload	12,500 lbs	(5,670 kg)
Manufactured	Xi'an, SH, CN Shenzhen, GD, CN Changsha, HN, CN Hefei, AH, CN	
Range	241 km 321 km 402 km	
Powertrain	Three-phase AC Permanent Magnet Electric Motor	
Charger Details (20 - 80%)	AC - 7.6 hrs at 22kW DCFC - 1.4 hrs at 120kW	
Battery	211 kWh 281 kWh	343 kWh
Estimated Price (CAD)	\$262,000 \$300,000 \$337,000	
Connector type		AC Type 2 Level 2 (IEC 62196-2)

[16]

User experience

The 6F has provided significant learning opportunities, emphasizing the benefits of working with established OEMs for reliability and support. This experience has underscored the importance of advanced vehicle bodybuilder integration for refuse and aerial trucks and addressing infrastructure and charging capacity constraints. The flexibility in procurement and a balanced approach to decarbonization mandates are recognized as crucial for successful implementation

BCA Member

City of Vancouver (adopted)



Class 7

Regional Haul | Drayage | Urban Delivery



K370E

Kenworth

Model	K370E	
Vehicle class	Class 7	
Weight	33,000 lbs	(14,969 kg)
Payload	17,500 lbs	(7,938 kg)
Manufactured	Renton, WA, USA	
Range	160 km	320 km
Powertrain	Direct Drive Electric Motor	
Charger Details (20 - 80%)	AC - 2-3 hrs. at 22.5 kW DCFC - 1-1.5 hrs. at 180 kW	
Battery	141 kWh	282 kWh
	209 kWh	
Estimated Price (CAD)	\$316,000	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[17]

User experience

Kenworth vehicles have shown great promise, with significant customization and engineering efforts leading to positive outcomes. The strong manufacturer support has been crucial, and the experience has highlighted the importance of working with established OEMs. Ensuring integration for refuse and aerial trucks and addressing infrastructure and charging capacity constraints are key takeaways. Flexibility in procurement and a balanced approach to electric mandates are also important considerations.

BCA Member

City of Vancouver (adopted)



Class 7

Regional Haul | Drayage | Urban Delivery



eMV Ta60

Altec

Model	4X2 eMV TA60	
Vehicle class	Class 7	
Weight	33,000 lbs	(14,969 kg)
Payload	350 - 600 lbs	(159 - 272 kg) Platform
Manufactured	San Antonio, TX, USA	
Range	217 km	
Powertrain	Direct Drive Electric Motor	
Charger Details (20 - 80%)	AC - 7-8 hrs. at 19.2 kW DCFC - 2-3 hrs. at 125 kW	
Battery	210 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[18]

User experience

Vehicle Vocation: Bucket truck

BCA Member

City of Toronto (Planned / Proposed)


Class 8

Transit | Fire Response | Drayage



Electrip

Letenda

Model	Electrip (30-foot/9-meter bus)	
Vehicle class	Class 8	
Weight	33,069 lbs	(15,000 kg)
Payload	44 passengers	
Manufactured	Longueuil, QC, CA	
Range	300 km	
Powertrain	Direct Drive Electric Motor	
Charger Details (20 - 80%)	DCFC – 2 hrs. at 150 kW	
Battery	328 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type		DC CCS Combo 2 Level 3 (IEC 62196-2)

[19]

User experience

Vehicle Vocation: Transit Bus/Shuttle Bus

BCA Member

City of Toronto (planned / proposed)

Government of Canada (proposed / evaluating)


Class 8

Transit | Fire Response | Drayage



eCascadia

Freightliner

Model	eCascadia	
Vehicle class	Class 8	
Weight	82,000 lbs	(37,195 kg)
Payload	60,000 lbs	(27,216 kg)
Manufactured	Portland, OR, USA	
Range	249 km	370 km
Powertrain	Detroit eAxle (integrated electric motor, transmission, and electronics)	
Charger Details (20 - 80%)	DCFC – 1.5-2 hrs. at 270 kW	
Battery	475 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type		DC CCS Combo 2 Level 3 (IEC 62196-2)

[20]

User experience

Demonstrated the importance of patience and flexibility, with initial delays due to limited manufacturer availability improving over time. The experience highlighted the need for alignment between infrastructure and vehicle delivery. Currently, these trucks are used for data gathering and are gradually replacing diesel trucks for medium- and heavy-duty tasks, emphasizing the need for better infrastructure planning and technology accommodation for future benefits.

BCA Member

ISED (adopted)



Class 8

Transit | Fire Response | Drayage



T680E

Kenworth

Model	T680E	
Vehicle class	Class 8	
Weight	82,000 lbs	(37,195 kg)
Payload	57,500 lbs	(26,082 kg)
Manufactured	Chillicothe, OH, USA	
Range	241 km	
Powertrain	Meritor 14Xe electric powertrain	
Charger Details (20 - 80%)	AC – 10-12 hrs. at 22.5 kW	
	DCFC – 1.5-2 hrs. at 120 kW	
Battery	396 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[21]

User experience

Vehicle Vocation: Testing and research purposes.

Otherwise, this vehicle is generally used for regional hauling, drayage, and urban delivery.

BCA Member

Transport Canada (testing and research purposes)

Class 8

Transit | Fire Response | Drayage



Electric LR

Mack

[22]

User experience

Toronto: Early manufacturer partnerships have been critical for effective deployment.

These electric trucks are being tested and gradually integrated into the fleet, operating in an urban environment with frequent use for regular garbage collection.


BC: Used for recycling operations with an automated arm for loading, the Electric LR has benefited from warranty coverage for initial repair challenges. The experience has highlighted the importance of choosing established manufacturers for reliable support and maintenance, along with the need for robust procurement strategies and comprehensive change management for electric vehicle adoption.

BCA Member

City of Toronto
(Undergoing testing)

City of Vancouver
(Adopted)

Government of British Columbia
(Adopted)

Model	Electric LR
Vehicle class	Class 8
Weight	66,000 lbs (29,937 kg)
Payload	25,500 lbs (11,567 kg)
Manufactured	Macungie, PA, USA
Range	161 km
Powertrain	Twin AC motors
Charger Details (20 - 80%)	1-2 hrs. at 150 kW (DCFC)
Battery	264 kWh
Estimated Price (CAD)	\$935,000 ⁷
Connector type	 DC CCS Combo 2 Level 3 (IEC 62196-2)

Class 8

Transit | Fire Response | Drayage



Xcelsior CHARGE (40ft)

New Flyer Industries

[23]



User experience

Vehicle Vocation: Transit Bus

BCA Member

City of Toronto (adopted)

City of Montréal (adopted)

Model	Xcelsior CHARGE (40ft)	
Vehicle class	Class 8	
Weight	31,000 lbs	(14,061 kg)
Payload	40 passengers	
Manufactured	Winnipeg, MB, CA Crookston, MN, USA St. Cloud, MN, USA	
Range	286 km 356 km 415 km	
Powertrain	Siemens ELFA 3 traction system	
Charger Details (20 - 80%)	On Route charging – 6min charging to 1.5hrs operation DCFC – 4hrs at 150kW	
Battery	345 kWh 435 kWh	520 kWh
Estimated Price (CAD)	Price unavailable; upon request	
Connector type	 On-Route Charging	 DC CCS Combo 2 Level 3 (IEC 62196-2)

Class 8

Transit | Fire Response | Drayage



LFSe+

Nova Bus



[24]

User experience

Vehicle Vocation: Urban transit

BCA Member

City of Montréal (adopted)

Model	LFSe+
Vehicle class	Class 8
Weight	39,558 lbs (17,943 kg)
Payload	68 passengers
Manufactured	Saint-Eustache, QC, CA Plattsburgh, NY, USA
Range	360 km
Powertrain	BAE Systems HDS200 Series-EV
Charger Details (20 - 80%)	On-route – 6min provides 35 kWh of charge DCFC – 3hrs at 150 kW
Battery	594 kWh
Estimated Price (CAD)	\$1,050,000
Connector type	 On-Route Charging  DC CCS Combo 2 Level 3 (IEC 62196-2)


Class 8

Transit | Fire Response | Drayage



Vector

REV

Model	Vector	
Vehicle class	Class 8	
Weight	42,000 lbs	(19,051 kg)
Payload	8,000 - 12,000 lbs	(3,629 - 5,443 kg)
Manufactured	Ocala, FL, USA Holden, LA, USA	
Range	City - 241 km Highway - 161 km	
Powertrain	Tandem Electric Drive Motor	
Charger Details (20 - 80%)	DCFC - 3hrs at 150 kW	
Battery	327 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type		DC CCS Combo 2 Level 3 (IEC 62196-2)

[25]

User experience

The procurement process for electric fire trucks has underscored the importance of thorough planning and ensuring that the charging infrastructure is in place before vehicle deployment. These vehicles are currently being tested and gradually integrated into the fleet, operating in an urban environment with frequent use for emergency response.

BCA Member

City of Toronto
(Undergoing testing)


Class 8

Transit | Fire Response | Drayage



RTX

Rosenbauer

Model	RTX (Revolutionary Technology)	
Vehicle class	Class 8	
Weight	38,350 lbs	(17,395 kg)
Payload	8,000–10,000 lbs	(3,629–4,536 kg) (carry 1,000 gallons)
Manufactured	Leonding, Austria Wyoming, MN, USA Lyons, SD, USA	
Range	Electric – 100 km Hybrid – 500 km	
Powertrain	Dual electric motors	
Charger Details (20 - 80%)	DCFC – 150 kW at 45 min	
Battery	132 kWh	
Estimated Price (CAD)	\$1,080,000	
Connector type		DC CCS Combo 2 Level 3 (IEC 62196-2)

[26]

User experience

Vehicle Vocation: Fire Truck

BCA Member

City of Vancouver (adopted)

Class 8

Transit | Fire Response | Drayage



VNR Electric

Volvo

Model	VNR Electric	
Vehicle class	Class 8	
Weight	54,000 – 82,000 lbs	(24,494 – 37,195 kg)
Payload	6x2 tractor: 57,500–58,000 lbs	(25,855 – 26,308 kg)
Manufactured	Dublin, VA, USA	
Range	282 – 443 km	
Powertrain	Dual electric motors	
Charger Details (20 – 80%)	DCFC – 60 – 90 min at 250 kW	
Battery	565 kWh	
Estimated Price (CAD)	\$ 605,000 – \$ 680,000	
Connector type		DC CCS Combo 2 Level 3 (IEC 62196-2)

[27]

User experience

Vehicle Vocation: TC owns this vehicle for testing and research purposes (the 200km range option with 66*4 kWh battery)

Otherwise, this type of vehicle is generally adopted for Regional haul, Drayage, and Urban Delivery.

BCA Member


Transport Canada (Testing and research purposes)

Other



580EV

Case

Model	580EV
Vehicle class	-
Weight	19,947 lbs (9,048 kg)
Payload	1 yd ³ (Bucket capacity)
Manufactured	Burlington, IA, USA
Range	4 to 8 hrs. of operation per charge
Powertrain	Two independent electric motors
Charger Details (20 - 80%)	AC - 4.5 hrs at 19.2 kW
Battery	71 kWh
Estimated Price (CAD)	Price unavailable; upon request
Connector type	 AC Type 2 Level 2 (IEC 62196-2)

[28]

User experience

Tested the backhoe loader under extremely demanding conditions, including winter weather with the heating on and windows open. Despite these challenging circumstances, the vehicle demonstrated an impressive range of up to 3 hours of intensive work. This highlights the importance of strategic planning for transportation to and from worksites, as well as the optimal placement of charging infrastructure. Additionally, incorporating a fast charge option would be highly beneficial, allowing the vehicle to recharge during lunch breaks and ensuring continuous productivity throughout the workday.

Vehicle vocation: Construction

BCA Member

City of Montréal
(Tested)

MHDZEV Catalogue Spec Sheets

– Other MHDZEVs Available on the Market

The section below contains an overview of vehicles which BCA members have not tested or adopted. These MHDZEVs were identified as potential candidates for municipal, provincial, and federal fleets to adopt.

Class 4

Community Shuttle | Local Urban Deliveries | Specialty Vehicle





W4 CC

Workhorse

[29]

Application

Urban Delivery, Specialty Vehicle

Model	W4 CC	
Vehicle class	Class 4	
Weight	14,300 lbs	(6,486 kg)
Payload	7,000 lbs	(3,175 kg)
Manufactured	Workhorse Ranch (Union City, IN, USA)	
Range	241 km	
Powertrain	Electric motor	
Charger Details (20 - 80%)	AC – 11 hrs. at 11 kW DCFC – 3–4 hrs. at 61 kW	
Battery	118 kWh	
Estimated Price (CAD)	\$296,000 (2022 model)	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)



Class 4

Community Shuttle | Local Urban Deliveries | Specialty Vehicle



e16L & e16M

Rizon

Model	e16L & e16M	
Vehicle class	Class 4 Class 5	
Weight	15,995 lbs	(7,255 kg)
Payload	8,000 – 9,000 lbs	(3,629 – 4,082 kg)
Manufactured	Japan (Brand of Daimler Truck)	
Range	e16L: 177 – 257 km e16M: 120 – 177 km	
Powertrain	Electric motor	
Charger Details (20 – 80%)	AC – 11 hrs. at 11 kW DCFC – 3–4 hrs. at 61 kW	
Battery	124 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[30]

Application

Flat Bed

Class 6

Utility Maintenance | Heavier Cargo Transport



Elgin

Electric Broom Bear

[31]

Application

Street sweeping

Model	Electric Broom Bear	
Vehicle class	Class 6 33,000 lbs	
Weight	(14,969 kg) comparable to the diesel Broom Bear model	
Payload	11,000 lbs	(4,990 kg) comparable to the diesel Broom Bear model
Manufactured	Elgin, IL, USA	
Range	200 – 300 km	
Powertrain	BorgWarner Cascadia Motion iM-425 electric motor	
Charger Details (20 - 80%)	4.4 hrs. at 58 amps, 23.1 kW (Level 3 DC-DC)	
Battery	400 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type	DC CCS Combo 2 Level 3 (IEC 62196-2)	DC CCS Combo 2.png

Class 6

Utility Maintenance | Heavier Cargo Transport




Argo

Motiv

[32]

Application

Specialty Vehicle

Model	Argo	
Vehicle class	Class 6	
Weight	26,000 lbs	(11,793 kg)
Payload	15,500 lbs	(7,031 kg)
Manufactured	Hayward, CA, USA	
Range	241 km	
Powertrain	Patented six-phase electric motor co-developed with Nidec	
Charger Details (20 - 80%)	AC – 5.3 hrs. at 19.2 kW DCFC – 1.5 hrs. at CCS1	
Battery	210 kWh	
Estimated Price (CAD)	\$360,000	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)



Class 6

Utility Maintenance | Heavier Cargo Transport



220EV

Peterbilt

Model	220EV	
Vehicle class	Class 6 Class 7	
Weight	26,000 lbs	(11,793 kg)
Payload	11,200 – 20,700 lbs	(5,080 – 9,389 kg)
Manufactured	Anchorage, AL, USA	
Range	161 km 241 km 322 km	
Powertrain	Electric motor	
Charger Details (20 – 80%)	AC – 6.5-13 hrs at 19.2 kW DCFC – 2 hrs. at 150 kW	
Battery	141 kWh 209 kWh	282 kWh
Estimated Price (CAD)	\$427,000	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[33]

Application

Urban Delivery, Specialty Vehicle



Class 6

Utility Maintenance | Heavier Cargo Transport



SV05 Step Van

XOS

Model	SV05 Step Van	
Vehicle class	Class 6	
Weight	23,000 lbs	(10,433 kg)
Payload	10,500 lbs	(4,763 kg)
Manufactured	Monterrey, MX, USA	
Range	241 km	
Powertrain	TM4 Sumo electric motor	
Charger Details (20 - 80%)	AC – 5.5 hrs. at 22kW DCFC – 1.5-2.0 hrs. at 350 kW	
Battery	150 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

[34]

Application

Urban Delivery

Class 7

Regional Haul | Drayage | Urban Delivery





Equest CHARGE (30ft)

ARBOC Speciality Vehicles

[35]

Application

Shuttle bus, Paratransit

Model	Equest CHARGE (30ft)	
Vehicle class	Class 7	
Weight	33,000 lbs	(14,969 kg)
Payload	25 passengers	
Manufactured	Monterrey, MX, USA	
Range	338 km	
Powertrain	Siemens ELFA3 electric drive system	
Charger Details (20 - 80%)	AC – 2.5-4.25 hrs. at 50 kW DCFC – 6.5 hrs. at 19.2 kW	
Battery	437 kWh	
Estimated Price (CAD)	Price unavailable; upon request	
Connector type	 AC Type 2 Level 2 (IEC 62196-2)	 DC CCS Combo 2 Level 3 (IEC 62196-2)

Class 8

Transit | Fire Response | Drayage





EV350

Green Power Motor Company

[36]

Application

Transit Bus

Model	EV350 40' Low-Floor Transit Bus
Vehicle class	Class 8 47,400 lbs
Weight	(21,500 kg)
Payload	40 passengers
Manufactured	Porterville, CA, USA
Range	321 km
Powertrain	Prestolite PEM Motor
Charger Details (20 - 80%)	1.5 hrs. at 148 kW (DC) *Wireless DC Charging available
Battery	400 kWh
Estimated Price (CAD)	Price unavailable; upon request
Connector type	 DC CCS Combo 2 Level 3 (IEC 62196-2)  Wireless DC Charging

Class 8

Transit | Fire Response | Drayage




Enviro500

Alexander Dennis

[37]

Application

Bus

Model	Enviro500EV CHARGE
Vehicle class	Class 8 56,659 lbs
Weight	(25,700 kg)
Payload	130 passengers
Manufactured	Las Vegas, NV, USA
Range	402 km
Powertrain	Voith Electrical Drive System HD
Charger Details (20 - 80%)	DCFC – 1.5-2.0 hrs. at 250 kW
Battery	648 kWh
Estimated Price (CAD)	Price unavailable; upon request
Connector type	 DC CCS Combo 2 Level 3 (IEC 62196-2)

Class 8

Transit | Fire Response | Drayage



520EV

Peterbilt

[38]

Application

Refuse Truck

Model	520EV	
Vehicle class	Class 8 66,000 lbs	
Weight	(29,937 kg)	
Payload	10,000 lbs	(4,536 kg)
Manufactured	Denton, TX, USA	
Range	129 km	
Powertrain	Electric motors in Meritor 14Xe e-axes	
Charger Details (20 - 80%)	DCFC – 3.2 hrs. at 150 kW	
Battery	396 kWh	
Estimated Price (CAD)	\$845,000 ⁸	
Connector type	DC CCS Combo 2 Level 3 (IEC 62196-2)	DC CCS Combo 2.png

Class 8

Transit | Fire Response | Drayage



579EV

Peterbilt

[39]

Application

Regional haul, Drayage, Urban Delivery

Model	579EV	
Vehicle class	Class 8 82,000 lbs	
Weight	(37,195 kg)	
Payload	57,000 – 60,000 lbs	(25,855 – 27,216 kg)
Manufactured	Denton, TX, USA	
Range	241 km	
Powertrain	Accelera (formerly Meritor) 14Xe Powertrain	
Charger Details (20 – 80%)	DCFC – 3 hrs. at 150 kW	
Battery	400 kWh	
Estimated Price (CAD)	\$835,000 ⁹	
Connector type	DC CCS Combo 2 Level 3 (IEC 62196-2)	DC CCS Combo 2.png

Class 8

Transit | Fire Response | Drayage





Xcelsior CHARGE (60ft)

New Flyer Industries

[40]

Application

Transit

Model	Xcelsior CHARGE (60ft)		
Vehicle class	Class 8		
Weight	72,500 lbs	(32,885 kg)	
Payload	61 passengers		
Manufactured	Winnipeg, MN, CA	Crookston, MN, USA	St. Cloud, MN, USA
Range	245 km 282 km 319 km		
Powertrain	Siemens ELFA3 Traction System		
Charger Details (20 - 80%)	On Route charging – 6min charging to 1.5hrs operation DCFC – 4hrs at 150kW		
Battery	520 kWh 606 kWh	693 kWh	
Estimated Price (CAD)	\$1,080,000		
Connector type	 On-route charging		DC CCS Combo 2 (IEC 62196-2)

Lessons Learned during Adoption and Procurement of MHDZEV's

Adding MHDZEVs to BCA Fleets

The implementation of **sustainable procurement policies** that prioritize the replacement of end-of-life fleet vehicles with ZEVs where operationally feasible has elevated accountability and accelerated the incorporation of ZEVs into the fleets. **Telematics-enabled MHDZEV pilot projects** have provided detailed vehicle lifecycle data and have played a key role in determining which use cases are feasible for electrification. In addition, proactive **expansion of charging infrastructure** with an approach that accounts for long lead times and complex stakeholder coordination have enabled the deployment of EV fleets.

Governments continue to rigorously assess their fleets for opportunities to incorporate MHDZEVs and are keeping a close eye on the expanding MHDZEV market as OEMs introduce new vehicles that might accommodate use cases that are unexplored. Due to MHDVs' unique vocations and specific use-cases, the procurement of MHDZEVs often requires greater engagement with the market to ensure vehicles can meet operational requirements. Vehicles in these classes often require upfitting and customization of vehicle components, making the **Request-for-Proposal (RFP)** a common procurement mechanism due to its flexibility.

RFP-based procurement approaches proved beneficial as they provided flexibility in incorporating detailed information related to the complexity and customization that is often required in MHDZEV procurement. Additionally, MHDVs are higher-cost assets compared to LDVs and tend to have long and varied life cycles—often extending well beyond 20 years. As a result, procurement requires careful, long-term planning. Standing Offers, which are commonly used for LDVs, are generally less suitable for MHDVs due to the smaller number of vehicles required and the more variable procurement and replacement timeline.

Some key factors to consider when selecting which MHDVs to transition to MHDZEVs include:

- Technical ability of the ZEV to perform a specific duty cycle;
- Procurement timelines of vehicles and associated infrastructure to ensure both can be operational at the same time;
- Incentives and partnerships available to reduce costs of vehicles and infrastructure; and
- Interest from internal operating groups to ensure vehicles are utilized and relevant for fleet operations.

Lessons Learned During Procurement:

- **Paying close attention to the MHDZEV market.** Many BCA members closely follow and engage with the market to better understand vehicle availability and technological developments. This information is used to develop relevant specifications for OEMs to bid on during RFPs and prevent situations where RFPs go to market with no bidders. This includes engaging vehicle bodybuilders if the MHDZEV requires upfitting to perform a specific function ensuring they are able to complete the integration.
- **Tiered procurement strategy.** This strategy has proven to be successful for some BCA members to add zero-emission buses to their fleets. This involved trialing several zero-emission bus models for operational suitability, investing in infrastructure pro-actively, and aligning procurement at scale to factors like funding and availability of infrastructure.
- **Standardizing specifications when possible.** When defining MHDZEV specifications for OEMs, it is beneficial to standardize across use cases wherever possible. Standardizing specifications can enable use case versatility, improving asset utilization and providing leverage during procurement due to higher order volumes.
- **Market readiness.** Established, tier one OEMs offer established dealer networks which can maintain vehicles, higher reliability of vehicles, and ability to collaborate during procurement and operations of MHDZEVs. However, it is essential to ensure that procurement processes remain transparent and inclusive, providing opportunities for all qualified suppliers to compete fairly.
- **Procuring MHDZEVs at scale.** OEMs can be reluctant to bid on opportunities where fleets are procuring small quantities of MHDZEVs. Organizations with use cases that require a high volume of vehicles, or those that can increase order volumes by consolidating orders across procurement partners may find OEMs more receptive to bid on their tenders. Collaboration between multiple buyers provide opportunities to consolidate purchasing power and obtain favourable rates. Tools such as the [Canadian Collaborative Procurement Initiative](#)¹⁰ should be explored for joint procurements.
- **Diversifying your supply base.** Procurement strategies need to consider the implications of having multiple sources of supply for critical ZEV operational equipment. Trucks, trailers, and chargers must often be sourced from separate vendors each with their own specification requirements, customization options, and lead times. Communication is key to ensure asset compatibility, complementary customization, and coordinated asset delivery.
- **Leveraging incentives to reduce vehicle costs.** Support from federal and provincial incentives have been key enablers for certain BCA members to procure MHDZEVs and develop supporting infrastructure. Due to the high cost of MHDZEVs, continuation of subsidies will be a key enabler for fleets to continue adopting ZEVs.

Lessons Learned During Adoption:

- **Targeting the right MHDVs for transition.** Gathering real-world fleet data through telematics can help fleet managers make more informed decisions on which vehicle(s) may be suitable for zero-emission technologies and where they may receive a better return-on-investment. This can allow fleet managers to focus on areas where the business case is strong and where they can achieve significant emissions reductions.
- **Piloting MHDZEVs to determine operational suitability.** Starting with MHDZEV pilot projects to test different models and technologies before making large-scale investments can help identify the best suited models for operations and allows for adjustments based on real-world performance. Data around full cycle life expectancies and costs, maintenance requirements, and actual charging times can vary significantly during operations. These trials are effective tools to manage expectations and facilitate broader transformations.
- **Creating a charging infrastructure strategy.** A comprehensive charging infrastructure strategy well in advance of procurement is critical for the effective deployment of MHDZEVs. Important considerations to develop a charging strategy include availability of public charging infrastructure, site-specific development costs, facility ownership structures, and compatibility with vehicles being procured. Strategic planning for charging infrastructure can reduce investment, prevent fleet operational challenges, and increase fleet utilization.
- **Developing a proactive maintenance approach.** Operating MHDZEVs requires a proactive maintenance approach. Limited ZEV safety stock parts and certified technicians can result in long maintenance lead times. Refining and adhering to predictive maintenance schedules can prevent last-minute parts orders and technician appointments and reduce unforeseen downtime.
- **Implementing change management to support adoption.** Early adopters have emphasized that proper training of operators is a key success factor in their transition to MHDZEVs. It is important to emphasize the benefits of ZEVs to operators while also setting expectations for operational changes such as longer charge times, environmental sensitivities, energy consumption metrics and range limitations, and charging station processes. It is important that users understand the impact that the transition to ZEVs will have on their day-to-day tasks. All users will need to familiarize themselves with ZEV-applicable use cases, plan around proactive charging schedules, and educate themselves on how to efficiently operate ZEVs. Adopters have noted that most operators who were properly informed and given time to adjust to ZEVs have expressed positive feedback surrounding the transition.
- **Scheduling routes to enable smooth operations.** Ensure MHDZEVs are operating on routes suitable to their technical capabilities to prevent operational challenges and maximize vehicle utilization.

Endnotes

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