



CIPMM FLEET MANAGEMENT WORKSHOP

ZEV Pathway to 2030 – Part 1

November 15, 2022

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TBS - Centre for Greening Government

www.canada.ca/greening-government

www.canada.ca/gouvernement-vert

Overview

Part 1: Setting the stage 3:00 – 3:45pm, November 15

1. **Canada's Greening Government Strategy**
 - Policy context, structure and emissions
2. **Greening the fleet**
 - Commitments and progress to date
 - Reporting website update
 - 2022-23 green purchasing requirements
3. **Closing thoughts**

Part 2: Exploring solutions 8:45 – 9:30am, November 16

1. **Discussion: Fleet greening barriers and solutions**
2. **ZEV 2030 Pathway initiative:**
 - Overview
 - Consultant market analysis
 - Achieving the target
3. **Discussion: What is needed to reach 100% ZEV by 2030?**
4. **Next steps and keys to success**

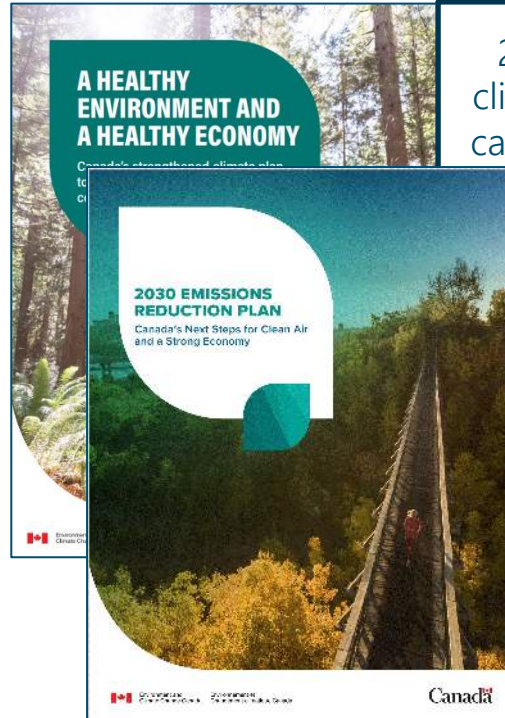


Canada's Greening Government Strategy

Greening government is part of Canada's climate change and sustainability plans

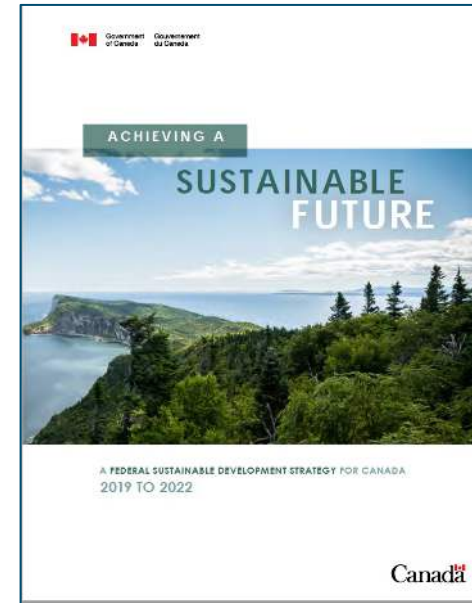


Keep the global temperature increase to well below 2 degrees Celsius

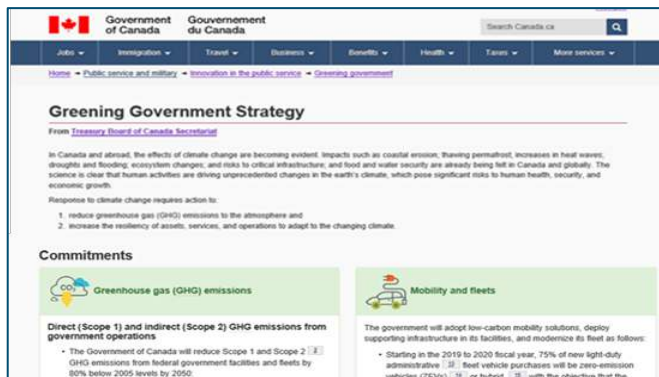


2020: Canada's enhanced climate plan targets net zero carbon by 2050 and includes greening government

2022: This first emissions reduction plan lays out a pathway to 40-45% below 2005 levels by 2030



Federal Sustainable Development Strategy (FSDS):
Goal 2
Greening Government



2020: Updated Greening Government Strategy (GGS):
Net zero emissions by 2050 for government operations



2018: Updated Policy on Green Procurement

Policy context for greening fleet

▪ Key fleet greening policy context:

- Greening Government Strategy (GGS) – updated in 2020 (fleet commitment updated in 2022)
- Policy on Green Procurement (PGP) - updated in 2018
- TBS Directive on the Management of Materiel
- Federal sustainable development strategy (Reflects commitments in GGS)
- Departmental sustainable development strategies

Note: The GGS will be reviewed and updated in FY 2023-24

- Light-duty fleet procurement via Government Motor Vehicle Ordering Guide & Executive listing
- TBS, NRCan and PSPC meet regularly to collaborate on fleet greening activities

TBS

- **Centre for Greening Government**
 - Lead and coordinate federal activities
 - Lead for GGS and PGP and related guidance and purchase requirements
 - Annual reporting
 - Greening government fund (GGF)
- **Office of the Comptroller General**
 - Directive on the management of materiel (Mandatory procedures for land vehicles). Balancing program and service delivery with best value.
 - Requirements for governance, planning, acquisition, operation and divestiture

NRCan

- **Greening Government Fleets program**
 - Technical analysis and support
 - Fleet telematics and analysis services
 - Charging infrastructure readiness assessments
 - Greening Government Fleets best practices
 - National Safety and Security fleet ZEV deployment and evaluation
 - Forward-looking market analysis and projections

PSPC

- **Industrial products and vehicles procurement directorate**
 - Light-duty and commercial vehicles procurement
 - Electric vehicle charging station (EVCS) procurement
- **Real property services – Greening Government**
 - EVCS for PSPC custodial properties
- **Green and Clean Technology Procurement**

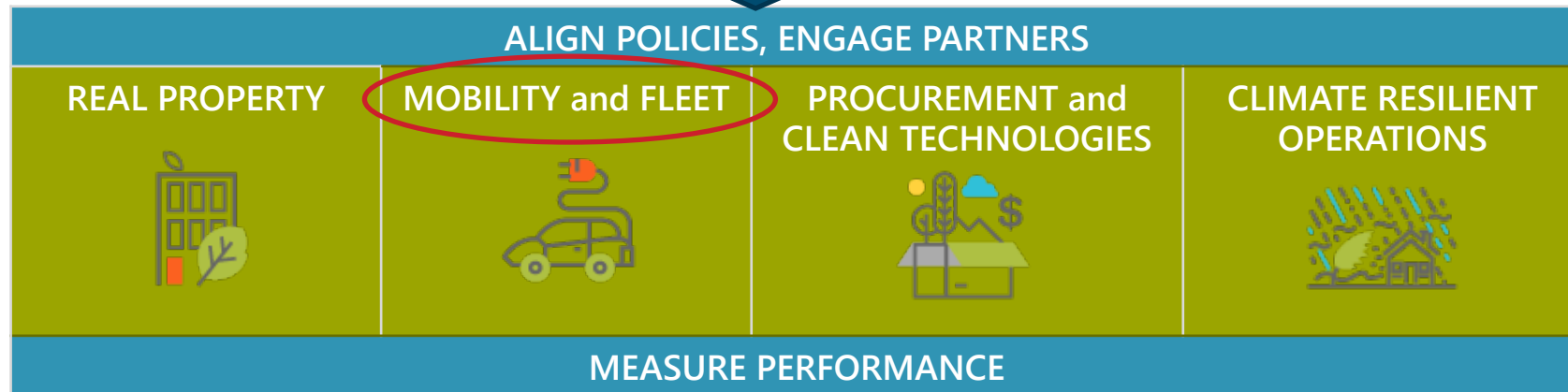
Greening Government Strategy (GGS) overview

Objective:



- ❖ 40% reduction of real property and conventional fleet emissions by 2025
- ❖ Net-zero emissions overall by 2050
- ❖ Overall green & climate resilient government operations

Strategy (GGS)
developed to get there:



Implementation:

- TBS providing direction, guidance, Greening Government & Low-Carbon Fuels Funds
- Expert depts. providing support (TBS/NRCan/PSPC/NRC/ECCC)
- **DEPARTMENTS TAKING ACTION**

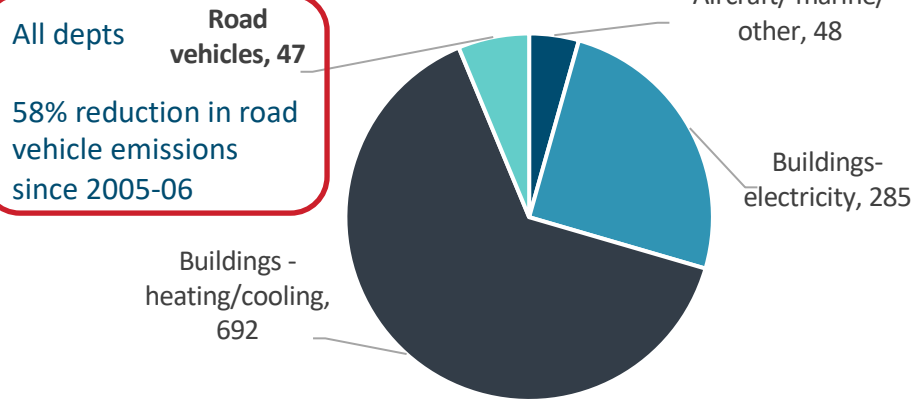
Performance:

40.6% reduction in GHG emissions to date (real property and conventional fleet)
0.6% decrease in emissions from National Safety and Security operations

Land fleet operations contribute ~7% of direct federal emissions (2020-21)

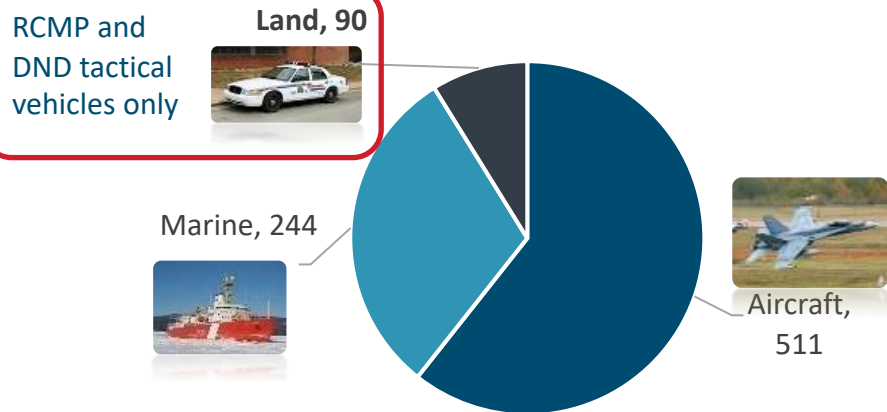
Buildings, Conventional Fleet

1 071 kt (Scope 1-2)



National Safety and Security Fleet

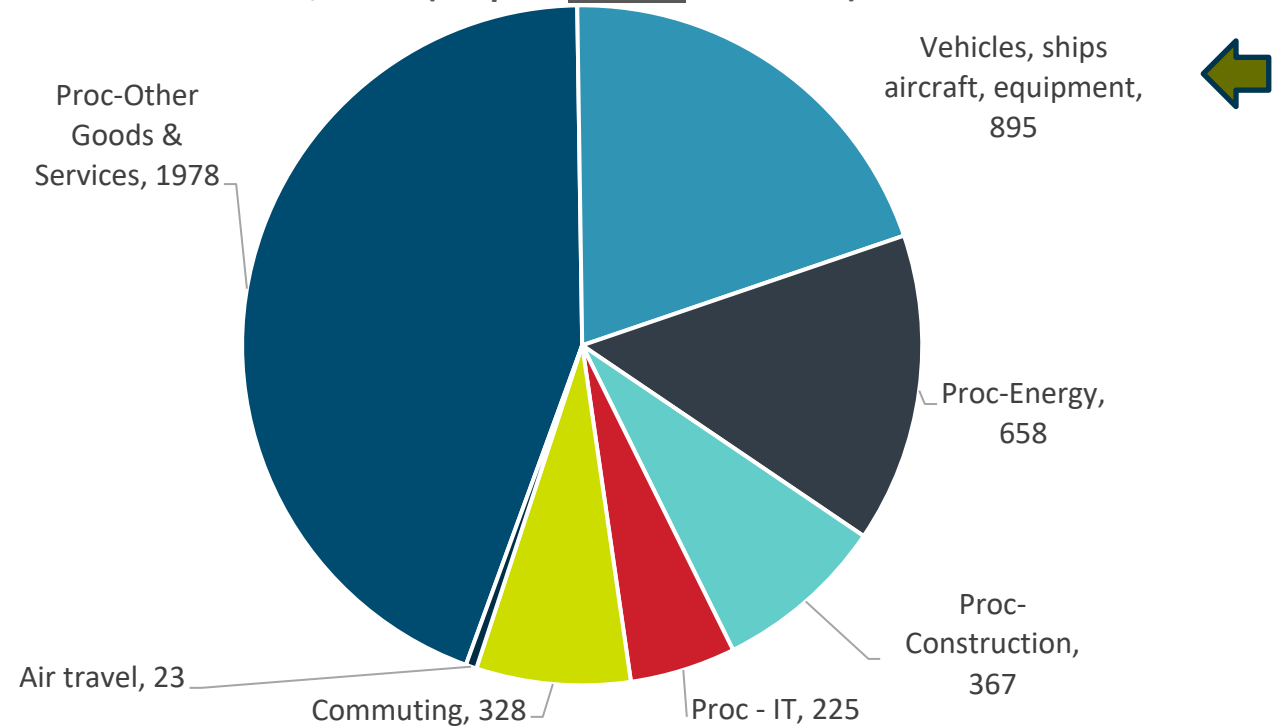
844 kt (Scope 1)



Note: All numbers in kilotonnes (kt) of carbon dioxide equivalent

Estimated Procurement/Air Travel/Commuting

4,474 kt (Scope 3-Indirect emissions)



Other sources of emissions:

- **Crown corps:** Canada Post- 138 kt (Scope 1&2), 1195 kt (Scope 3); Via-137kt; CBC/SRC- 35kt
- **Missions abroad** (TBD)
- **Domestic Office Leases** (approx. 130 kt)
- **Fugitive gases** (approx. 2% of building emissions – based on Canada’s national data, GC specific estimate TBD)
- **Emissions from decentralized procurement** (TBD)

The GoC owns 32,000 buildings, 20,000 engineering assets, more than 40,000 fleet and buys over \$18B/year – largest asset owner and public procurer in Canada.

Greening Government Fund

PURPOSE

To provide funding for departments to explore and share innovative approaches to reducing greenhouse gas (GHG) emissions (Scope 1,2 and 3) in federal operations. Project funding comes from departments and agencies that generate more than 1 kilotonne of GHGs per year from air travel.

OBJECTIVE

To support and share the results of projects which:

- are projected to result in GHG emission reductions;
- have a high potential for replicability; and
- pursue emissions solutions in difficult-to-reduce areas

<https://www.canada.ca/en/treasury-board-secretariat/services/innovation/greening-government/greening-gov-fund.html>

https://www.gcpeia.gc.ca/wiki/Greening_Government_Fund

	On-Road Fleet Projects Funded
Cycle 1 (beginning FY 2019- 2020)	Title: AAFC Purchase of Two Electric Tractors (\$204,400 over 1 year)
	Title: GAC Carpooling App (\$62,000 over 2 years)
Cycle 2 (beginning FY 2020- 2021)	Title: ECCC Electric Shuttle Buses (\$453,215 over 1 year)
	Title: NRCan Enabling Portfolio-wide Deep Retrofits of Buildings and Facilitating Low-Carbon Fleets through Additions to the RETScreen Software (\$800,000 over 3 years)
Cycle 3 (beginning FY 2022- 2023)	Title: GAC Hybrid 20 Feet Cube-Truck and Electric Commercial Cargo Vans (\$420,000 over 2 years)
	Title: ISED Greening Government – Measurement Canada Heavy-Duty Truck Fleet Replacement Proposal (\$1,323,000 over 3 years)
	Title: NRCan/ RCMP Deploying Zero-Emission and Clean Fuel Powered National Safety & Security Vehicles - From Assessment to Replication (\$600,000 over 3 years)













Green Fleet Commitments updated to align with December 2021 mandate letters

PREVIOUS ON-ROAD FLEET COMMITMENTS	UPDATED ON-ROAD FLEET COMMITMENTS (EFFECTIVE MARCH 31, 2022)
<p>Seventy-five per cent of new light-duty unmodified fleet¹⁷ vehicle purchases will be zero-emission vehicles (ZEVs)¹⁸ or hybrids, with the objective that the government's light-duty fleet comprises at least 80% ZEVs by 2030. Priority is to be given to purchasing ZEVs.</p> <p><u>Footnotes:</u></p> <p>17 - Categories 3 and 4, as defined in Treasury Board guidance, where more than one option per vehicle group is available and considers operational feasibility.</p> <p>18 - ZEVs include battery electric, plug-in hybrid and hydrogen fuel cell vehicles</p>	<p>At least seventy-five per cent of new light-duty fleet¹⁷ vehicle purchases will be zero-emission vehicles (ZEVs)¹⁸ or hybrids, with the objective that the government's light-duty fleet comprises 100% ZEVs by 2030.¹⁹ Priority is to be given to purchasing ZEVs.</p> <p><u>Footnotes:</u></p> <p>17 - As defined in Treasury Board Secretariat guidance, where one or more suitable option per vehicle group is available and considers operational feasibility.</p> <p>18 - ZEVs include battery electric, plug-in hybrid and hydrogen fuel cell vehicles</p> <p>19 Where necessary, Treasury Board Secretariat may exempt particular vehicles or locations where suitable ZEV options are not available to meet operational requirements. The purchase and fleet composition targets do not apply to the National Safety and Security fleet.</p>
<p>All new executive vehicle purchases will be ZEVs or hybrids.</p>	<p>All new executive vehicle purchases will be ZEVs or hybrids. Priority is to be given to purchasing ZEVs.</p>
<p>Fleet management will be optimized to achieve the targets, including by exploring options for commercial vehicles, assessing ZEV charging infrastructure needs and applying telematics to analyze vehicle usage data on vehicles scheduled to be replaced.</p>	

Applied to FY 2020-21 and FY 2021-22

Applies to FY 2022-23 onwards

Green Vehicle 101 Refresh

	ZERO EMISSION VEHICLES			
	ICEV CONVENTIONAL	HEV HYBRID	PHEV PLUG-IN HYBRID	BEV ALL-ELECTRIC
SOURCES OF ENERGY				
CONSUMPTION				
EMISSIONS				 NO EMISSION

Note:

HEVs reduce emissions and contribute to 75% purchase target but do not contribute to 2030 target

PHEVs can be operated without onsite charging (and BEVs in some circumstances)

Charging Stations:

- Level 1 – 120v: 8 km of driving range per hour.
- Level 2 – 240v: 30 to 50 km of driving range per hour
- Level 3 (DC Fast) – ≥ 480v: more than 100 km of driving range per hour

ENERGUIDE ESTIMATED EV RANGE FOR VEHICLES IN THE 2022-23 GMVOG

- PHEVs – 42 to 60 km
- BEVs – 373 to 499 km

Greening the Fleet: Progress to Date

Land Fleet Composition as of March 31, 2022

CONVENTIONAL FLEET

The ~26,700 land vehicles owned or leased by federal departments and other government organizations that are not part of the NSS Fleet:

- ~17,200 light-duty vehicles
- ~2,300 commercial vehicles
- ~7,100 other vehicles (off-road, industrial etc.)

Light duty fleet composition

Type	Multi-purpose	Passenger Cars	Pickup Truck	Van
# vehicles	4,132	2,267	6,466	4,396
% of total	24%	13%	37%	25%
Category*	1	2	3	4
# vehicles	1,273	2,296	6,524	7,167
% of total	7.4%	13.3%	37.8%	41.5%

NATIONAL SAFETY AND SECURITY FLEET

The ~23,000 tactical land vehicles owned or leased by DND and RCMP that have an explicit national safety or security function:

- ~12,300 light duty vehicles (mostly RCMP)
- ~8,300 standard military pattern vehicles
- ~300 commercial vehicles
- ~2,100 other vehicles (off-road, industrial etc.)

Light duty fleet composition

Type	Multi-purpose	Passenger Cars	Pickup Truck	Van
# vehicles	6,608	2,207	1,093	2,434
% of total	54%	18%	9%	20%
Category*	1	2	3	4
# vehicles	11,645	277	285	0
% of total	95.4%	2.2%	2.3%	0%

* Cat 1 = Law enforcement / security, Cat 2 = Specialty vehicles, modified, Cat 3 = Specialty vehicles, unmodified, Cat 4 = General admin, unmodified



National Safety and Security light duty fleet commitments and progress

Commitments

- National Safety and Security (NSS) fleet operations¹ will be net-zero emissions by 2050²
- By 2023, NSS fleet departments will develop Operational Fleet Decarbonization Plans that outline how they will reduce their emissions from operations in line with the overall 2050 target
- Adopt best practices to improve efficiency and reduce emissions and environmental impacts in areas of fuel procurement², fleet procurement² and operational efficiency and innovation

¹ Canada's national safety and security (NSS) fleet is comprised of aircraft, marine vessels and tactical land vehicles from National Defence, the Royal Canadian Mounted Police and the Canadian Coast Guard

² Decarbonization measures for the NSS fleet will consider availability, affordability, compatibility and operational feasibility.

Light Duty Fleet Progress to date

- Composition:
 - ~12,000 Royal Canadian Mounted Police (RCMP) vehicles
 - ~350 National Defence (DND) vehicles
- Results to date:
 - **38% increase in light duty fleet emissions from 2005-06 to 2020-21.** Attributed to a 36% increase in the number of RCMP on-road NSS vehicles. This includes additional emissions due to the need to convert to larger vehicles.
 - **~150 HEVs and ZEVs in fleet as of March 31, 2022 (~1.2%).** Limited or no green options for many NSS operational needs (e.g. police pursuit vehicles)
 - Departments have initiated work on **Operational Fleet Decarbonization Plans**
 - Greening government fund project on **ZEV police vehicles**

Progress to date with greening conventional light-duty fleet

10.7% of the conventional light-duty fleet was green as of March 31, 2022: 586 ZEVs (3.4%) and 1,257 HEVs (7.3%)

- Target is 100% ZEV by 2030: requires rapidly scaling to 100% ZEV new purchases where available.

72% of 2021-22 vehicle purchases reported under the target were HEVs (44%) or ZEVs (28%)

- For 2021-22, the target is only reported for unmodified (Category 3 & 4) conventional fleet purchases in vehicle specifications where suitable HEV and/or ZEV options were available and considers operational feasibility
- Greening rapidly where options are available: Limited options to date for vans, pick-up trucks and four-wheel drive vehicles

ZEV purchases should increase rapidly as more suitable options become available in the market over the next 1-3 years

- Application of target will expand to more vehicle specifications as options become available

Conventional light duty fleet composition			
Vehicle type	Percent of fleet	Availability of HEV and ZEV options in the 2022 federal standing offer	Percent of fleet that were HEVs or ZEVs (as of Mar. 31 2022)
Passenger cars	13%	High for HEVs Medium for ZEVs	16%
Multi-purpose vehicles (SUVs, crossovers)	24%	Medium for HEVs and ZEVs	23%
Vans	25%	Very low	4%
Pick-up Trucks	37%	Very low	2%
OVERALL			10.7% (7.3% HEVs, 3.4% ZEVs)

Observations on FY 2021-22 performance

- **Most common operational issues for not achieving target:**
 - Not feasible: HEV or ZEV option(s) exist in the standing offer but were not available at the time of purchase
 - Not feasible: Vehicle is not suitable for operational road conditions (e.g. off-road, gravel roads)
 - Other - Insufficient towing capacity
- **Departments placed orders through PSPC for >1,000 HEVs and ZEVs in FY 2021-22; however, departments only reported receiving 327 green vehicles by FYE**
 - Most orders placed for were for i) F-150 HEV and BEVs, ii) Ford Escape HEVs and PHEVs, iii) Mitsubishi Outlander PHEVs

Recognizing GoC leadership

- ✓ PSPC enhancements to the 2022-2023 vehicle procurement process to bring in more green options (and allocations) for light-duty and commercial vehicles
- ✓ NRCan Greening Government Operations leadership on Pathway to 2030 initiative and ongoing support for telematics and EVSE installation
- ✓ Green Fleet Purchases and Inventory (as of March 31, 2022)
 - ✓ DND has the most ZEVs (225) which is >3% of their fleet followed by TC with 85 ZEVs (22% of their fleet)
 - ✓ PCA purchased the most ZEVs (27) more than doubling their total ZEV fleet to 45 (2.7% of their fleet)
 - ✓ Five departments' fleets are more than 20% ZEV: TC, PSPC, PHAC, CRA and CSA
 - ✓ 14 departments reported >80% HEV or ZEV unmodified purchases in 2021-22

Total Cost of Ownership for light-duty vehicles

In 2021, assessed two years of federal purchases, fuel efficiency data, market trends and analysis to compare total cost of ownership (TCO) of green vehicles compared to conventional

- TCO = Initial capital cost plus seven years of operations (fuel costs, carbon levy, maintenance costs) minus residual value.
- Average estimated TCO was lower for all green powertrains despite significantly higher purchase cost
- Analysis suggests that fleet capital budgets need to increase in the short term – offset by savings in operations and maintenance

Powertrain Type	Initial Capital Cost	Annual Fuel Costs	Annual Emissions & Carbon Levy	Annual Maintenance Costs	Depreciation rate	TCO after 7 years
Hybrid	+ 24%	- 31%	- 31%	Same	Same as conventional	-2%
Plug-in Hybrid	+ 59%	- 59%	- 73%	- 50%		-13%
Battery electric	+ 99% (41-107%)	- 82%	- 100%	- 50%		-14%

Assumptions: Seven (7) years of operation at 20,000km/yr. with gas \$1.25/L, electricity \$0.13/kwh, an average carbon levy of \$95/ton (2022 to 2028), average Cdn. maintenance costs, and 70% depreciation after 7 years. Does not include police vehicles or costs for installing charging stations.

Currently updating this assessment as part of the ZEV Pathway to 2030

- TCO of ZEVs in 2022-23 GMVOG continue to outperform ICEVs (using gas at \$1.50/L, avg carbon levy \$110)
- By 2025, anticipate there will be little or no initial capital cost premium for ZEVs compared to conventional vehicles

2022-23 Light-Duty Green Vehicle Procurement Requirements

- Each year the TBS CGG determines which federal vehicle purchases will be publicly reported under the 75% target for that fiscal year:
 - This assessment is done with input from NRCan’s GGO for fleets program, TBS’s OCG and PSPC and considers i) current and historical HEV and ZEV bids, ii) initial capital cost and estimated total cost of ownership of the vehicles, iii) vehicle performance and reliability; and iv) the availability of vehicles in the market.
- For FY 2022-23, light duty vehicle purchases (Cat 1, 2, 3 and 4) in 21 vehicle specification codes will be publicly reported for the target. These 21 codes would have captured ~68% of the orders placed in 2021-22
 - **Group A (17 codes):** Departments are expected to meet or exceed the 75% target for their total purchases in these codes.
 - **Group B (4 codes):** Recommended but not required (new models with very limited availability). Only green purchases count towards performance.
- **The price premiums for the HEVs and ZEVs in the GMVOG are modest over the lifetime of the vehicle:** most have TCOs that are lower than the equivalent low-bid conventional vehicle for that specification.
- **Supply is limited:** We need to purchase every green vehicle that PSPC is able to secure in order to stay on track. Priority is to be given to purchasing ZEVs.
- **For more information:** https://www.gcpeia.gc.ca/wiki/Mobility_and_Fleet

Specification codes reported for the 75% purchase target in FY 2022-23*
D00 – Int. Sedans: 2WD
D30 – Comp. Sedans: 2WD
D31 – Comp. Sedans: 4X4/AWD
H50 – Sm. Station Wagons: 2WD
1H51R – Sm. station wagon AWD (RCMP)**
G40 – Sm. Crossovers: 2WD
G41 – Sm. Crossovers: 4X4/AWD
L40 – Sm. Utility Trucks: 2WD
L41 – Sm. Utility Trucks – 4X4/AWD
L60 - Utility Trucks: 2WD
L61 - Utility Trucks: 4X4/AWD
1G41R– Crossovers: 4X4/AWD (RCMP)
1L41R– SUV: 4X4/AWD (RCMP)
1L51P– Compact utility truck: 4X4/AWD (RCMP)
1L61R– Med. utility truck: 4X4/AWD (RCMP)
M60 - Mini-vans: 2WD
M61 - Mini-vans: AWD
T80 – Cargo van: 2WD**
T81 - Cargo van: 4X4/AWD**
P41 – Crossover truck: 4X4/AWD**
Q11 - Pick-up Trucks – Crew Cab – 4X4
* Codes marked with ** are in Group B; rest are Group A

2022-23 GMVOG green vehicle options

	Spec. Code and Description <i>(Estimated TCO for the lowest bid conventional internal combustion engine vehicle (ICEV))</i>	HEV and ZEV options in the 2022-2023 GMVOG		Green Reporting Group
		Green bids received options in this code <i>(Estimated TCO for each green option)²</i>	Suitable alternatives	
PASSENGER CARS	D00 – Int. Sedans: 2WD (TCO for low bid ICEV: \$46,000)	- Toyota Camry HEV LE (\$42,000)	G40 options	A
	D30 – Comp. Sedans: 2WD (TCO for low bid ICEV: \$40,000)	- Toyota Mirai XLE FCEV (TCO N/A) - Toyota Corolla Hybrid (\$38,000) - Toyota Prius Prime (\$42,000)	D31 options	A
	D31 – Comp. Sedans: 4X4/AWD (No ICEV bid; TCO for low bid ICEV in D01: \$48,000)	- Toyota Prius AWD HEV (\$49,000)	G41 options	A
	H50 – Sm. Station Wagons: 2WD (TCO for low bid ICEV: \$44,000)	- GM Bolt BEV (\$36,000)	G40 and L40 options	A
	1H51R (RCMP Spec.) – Sm. station wagon AWD (No ICEV bid; TCO for low bid ICEV in 1D01R: \$44,000)	- GM Bolt EV SSV (\$36,000)	None	B

2022-23 GMVOG green vehicle options

	Spec. Code and Description <i>(Estimated TCO for the lowest bid conventional internal combustion engine vehicle (ICEV))</i>	HEV and ZEV options in the 2022-2023 GMVOG		Green Reporting Group
		Green bids received options in this code <i>(Estimated TCO for each green option)</i>	Suitable alternatives	
MULTI-PURPOSE VEHICLES	G40 – Sm. Crossovers: 2WD (TCO for low bid ICEV: \$43,000)	<ul style="list-style-type: none"> - Kia EV6 RWD LR BEV (\$46,000) - Kia EV6 RWD SR BEV (\$40,000) - Kia Niro EV EX BEV (\$40,000) - Kia Niro HEV L (\$39,000) - Kia Niro PHEV EX (\$38,000) 	G41 and L40 options	A
	G41 – Sm. Crossovers: 4X4/AWD (TCO for low bid ICEV: \$45,000)	<ul style="list-style-type: none"> - Kia EV6 AWD LR BEV (\$47,000) - VW ID.4 PRO AWD BEV (\$47,000) - Toyota Corolla Cross Hybrid HEV (\$46,000) 	L41 options	A
	L40 – Sm. Utility Trucks: 2WD (TCO for low bid ICEV: \$44,000)	<ul style="list-style-type: none"> - GM Bolt EUV (\$37,000) - Ford Escape HEV (\$44,000) - Ford Escape PHEV (\$44,000) 	G41 and L41 options	A
	L41 – Sm. Utility Trucks – 4X4/AWD (TCO for low bid ICEV: \$49,000)	<ul style="list-style-type: none"> - Ford Escape HEV (\$49,000) - Kia Sportage HEV EX AWD (\$47,000) - Toyota RAV4 Hybrid LE AWD HEV (\$46,000) - Kia Sportage PHEV EX Premium AWD (\$46,000) - Mitsubishi Outlander ES PHEV, S-AWC (\$52,000) 	G41 and L61 options	A
	L60 – Utility Trucks, 5 passengers (TCO for low bid ICEV: \$53,000)	<ul style="list-style-type: none"> - GM Blazer EV BEV (\$49,000) 	L61 options	A

2022-23 GMVOG green vehicle options - MPVs continued

	Spec. Code and Description <i>(Estimated TCO for the lowest bid conventional internal combustion engine vehicle (ICEV))</i>	HEV and ZEV options in the 2022-2023 GMVOG		Green Reporting Group
		Green bids received options in this code <i>(Estimated TCO for each green option)</i>	Suitable alternatives	
MULTI-PURPOSE VEHICLES	L61 - Utility Trucks: 4X4/AWD (TCO for low bid ICEV: \$55,000)	<ul style="list-style-type: none"> - GEM Blazer EV BEV (\$51,000) - Ford Explorer limited HEV (\$67,000) - Kia Sorento HEV LX AWD (\$50,000) - Toyota Highlander Hybrid LE AWD (\$57,000) - FCA GRAND CHEROKEE 4XE (\$73,000) - FCA Wrangler Sahara 4XE (\$71,000) - Kia Sorento PHEV AWD EX (\$48,000) 	None	A
	1G41R – 6 cyl crossover AWD (RCMP Only) (TCO for low bid ICEV: \$46,000)	GM Blazer EV BEV (\$51,000)	1L41R options	A
	1L41R – 6 cyl. SUV AWD (RCMP Only) (TCO for low bid ICEV: \$57,000)	<ul style="list-style-type: none"> - GM Blazer EV BEV (\$51,000) - Kia Sportage HEV EX AWD (\$51,000) - Kia Sportage PHEV EX Premium AWD (\$46,000) - Mitsubishi Outlander ES, S-AWC PHEV (\$52,000) 	L61R options	A
	L51P – Compact utility: 4X4 AWD (TCO for low bid ICEV: \$76,000)	<ul style="list-style-type: none"> - Ford Police Interceptor PIU HEV (\$77,000) 	None	A
	L61R Midsize Utility Trucks: 4x4/AWD RCMP (TCO for low bid ICEV: \$55,000)	<ul style="list-style-type: none"> - Kia Sorento HEV LX AWD (\$50,000) - FCA GRAND CHEROKEE 4XE PHEV (\$73,000) - Kia Sorento PHEV EX AWD (\$48,000) 	None	A

2022-23 GMVOG green vehicle options

	Spec. Code and Description <i>(Estimated TCO for the lowest bid conventional internal combustion engine vehicle (ICEV))</i>	HEV and ZEV options in the 2022 2023 GMVOG		Green Reporting Group
		Green bids received options in this code <i>(Estimated TCO for each green option)</i>	Suitable alternatives	
VANS	M60 - Mini-vans: 2WD (TCO for low bid ICEV: \$60,000)	- Toyota Sienna Hybrid XSE (\$58,000) - FCA Pacifica Touring L PHEV (\$62,000)	All M61	A
	M61 - Mini-vans: AWD (TCO for low bid ICEV: \$76,000)	- Toyota Sienna XSE HEV (\$60,000)	None	A
	T80 – Cargo Vans: 2WD (TCO for low bid ICEV: \$64,000)	- Ford E-Transit BEV (\$57,000)	None	B
	T81 Cargo Vans – 4x4/AWD (TCO for low bid ICEV : \$68,000)	- GM ZEVO600 BEV (\$87,000)	None	B
PICK-UPS	P41 Crossover Trucks – Crew Cab – 4X4 (No ICEV bids)	- GM Hummer EV (Price N/A)	None	B
	Q11 - Pick-up Trucks – Crew Cab – 4X4 (Min. payload: 680kg) (TCO for low bid ICEV: \$70,000)	- Ford F-150 HEV (\$69,000) - Toyota Tundra Hybrid (\$84,000)	None	A

New fleet green reporting on Greening Government website

TBS will be adding a webpage with reporting on the fleet numbers by fiscal year end following a similar layout as GHG inventory.

- Data will also be accessible from the GoC's Open Data site.

Reporting – At the GoC level

- Overall performance against both fleet targets e.g. annual purchases and total composition.
- Proportion of fleet composition by vehicle type (passenger car, multi-purpose vehicles, pickup trucks, vans).

Reporting – At the Dept level

- Total new purchases by powertrain (ICEV, HEV, ZEV)
- Total light-duty fleet size by powertrain type

Key Results

- Narrative highlights from the data

Greening Government Inventory website - [LINK](#)

Progress	Facilities Scope: 1,2	Fleets Scope: 1,2	Security Scope: 1,2	Air Travel Scope 3	Procurement Scope 3	Methodology
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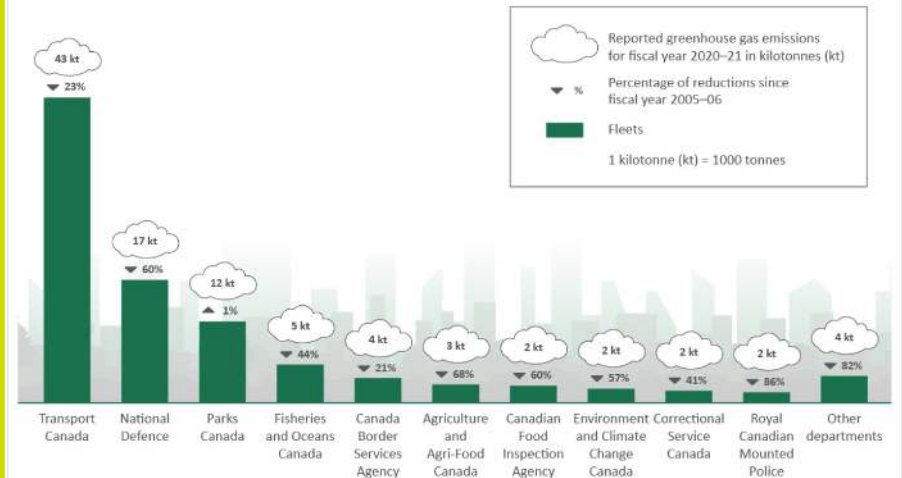
Greenhouse gas emissions generated by federal conventional fleets

Operating a fleet results in the combustion of fossil fuels and the emission of GHGs. The Government of Canada has a large and diverse conventional fleet that includes:

- on-road vehicles and equipment, such as:
 - cars
 - vans
 - trucks
 - other vehicles
- off-road vehicles and equipment, such as:
 - marine vessels (boats and ships)
 - aircraft
 - other mobile equipment (for example all-terrain vehicles, lawn mowers and generators)

Federal conventional fleets consist of vehicles and equipment primarily used to transport people and cargo in the conduct of government business, and excludes fleet used for National Safety and Security operations.

Figure 7: Greenhouse gas emissions by federal organization for conventional fleet in fiscal year 2020 to 2021 and the percentage change in emissions compared with fiscal year 2005 to 2006



Fleet Greening Challenges and Solutions

Common challenges:

- Lack of HEV/ZEV market options for many of the vehicle types used by the federal government (e.g. vans, pick-up trucks, police vehicles)
- Where options exist, there can be issues with manufacturer availability and/or ability to deliver vehicles for when they are needed (e.g. fiscal year end)
- Initial cost premium of up to 100% for ZEVs compared to capital budget and program needs; however, this is offset by operational and maintenance savings
- Costs and logistics for installation and/or access to charging infrastructure
- Employee awareness & education of green options and suitability

Advancing solutions:

- Enhancing procurement process to include more HEV & ZEV options
- Enhanced guidance (e.g. annual green purchase requirements; green bid list)
- Enhanced technical support (e.g. NRCan telematics and EV readiness)
- **Launch of ZEV Pathway to 2030 Initiative**
 - Analysis of markets, technologies and total cost of ownership
 - Exploring financial solutions, e.g. earlier budget decisions, multi-year capital budgets, capital cost carry-over mechanisms, increased capital budgets
 - Exploring policy solutions, e.g. fleet optimization and right-sizing, “ZEV first” purchase policies and incentives

Main Gaps in 2022-23 GMVOG

- Large trucks, passenger vans and utility vehicles
- BEVs with winter ranges >400km
- Towing capacity and range for BEVs
- Speciality vehicles (e.g. police pursuit vehicles)
- Availability (numbers and delivery timelines)

Questions and Discussion

Summary of Key Messages

- Updated fleet green targets apply starting in FY 2022-23 (all light duty purchases, 100% by 2030)
- Green options increasing, but challenges with availability remain (quantity, timeline, purchase cost)
- Green vehicle total cost of ownership (TCO) continues to be lower than ICEVs
- 2022-23 green purchase requirements apply to 21 spec codes that would cover ~68% of purchases made last year
- To achieve targets, departments must prioritize ZEVs and HEVs for all purchases and align internal policies and budgets

Questions or comments?

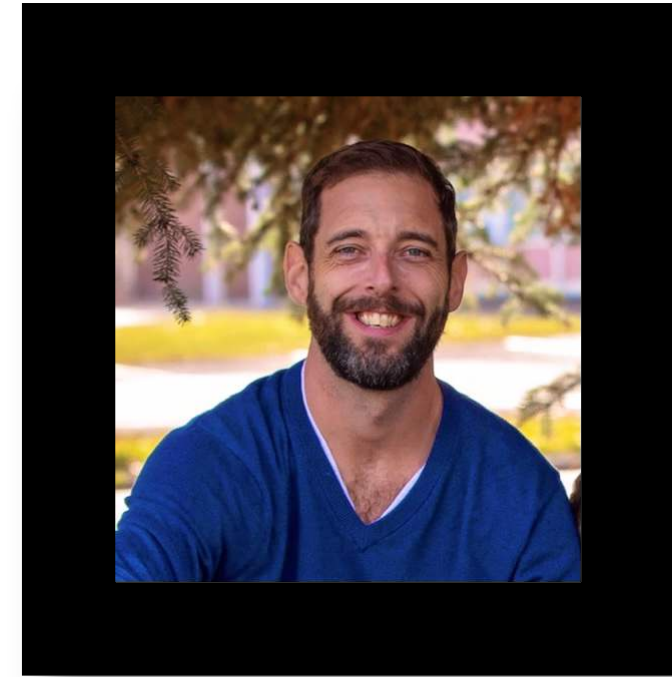
The conversation continues with Part 2: 8:45 – 9:30am, November 16

1. Discussion: Fleet greening barriers and solutions
2. ZEV 2030 Pathway initiative:
 - Overview
 - Consultant market analysis
 - Achieving the target
3. Discussion: What is needed to reach 100% ZEV by 2030?
4. Next steps and keys to success

Thank You!

Helpful Links

- Federal [Greening Government site](#) and Greening Government Strategy
- NRCan [Electric Charging and Alternative Fuelling Stations Locator](#)
- Awareness and information guides
 - [NRCan](#)
 - [Plug'n Drive](#)
 - [CAA](#)
- Fuel use and GHG emissions data
 - [NRCan](#)
- Driver training
 - [Stantec/ NRCan ecoDriving online](#)



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