



NATURAL RESOURCES CANADA - INVENTIVE BY NATURE

Transitioning to a Low Carbon Fleet Using Telematics

Presentation to:
CIPMM - FLEET MANAGEMENT WORKSHOP
Blue Mountain, Ontario
2019



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Overview

- Background – FSDS & NRCan Mandate
- Services for Fleets
- Telematics Integration
- Program Details & Information
 - Reporting
 - Considerations
 - Integration
- ROI & EVEA
- GGO Progress to Date
- Greening Government Services – Notes from TBS



Background

Federal Sustainable Development Strategy

- Led by the **Centre for Greening Government**, the 2016-19 FSDS, proposes a mandate to significantly **reduce Greenhouse gas emissions by 2050**.
- With this the Treasury Board of Canada Secretariat will transition the Government of Canada to **ensure global leadership** in green, low-carbon, climate-resilient operations, while reducing environmental impacts.

NRCan Mandate:

- Through the expansion of a **suite of services** offered to federal departments and agencies, including the coordination to deploy **electric vehicles** and infrastructure in federal facilities, NRCan seeks to assist federal organizations in **reducing Fleet related GHGs**.

Services & Expert Advice for Fleets

With our Funding: Budget 2017 provided 2.2M over 5 yrs.

NRCan provides:

- **Real time data collection** for distance traveled & fuel consumed
 - Data driven suitability report to right-tech and size the fleet
 - Infrastructure (charger) location & use recommendations
 - Accurate data for reporting purposes
- **Advice** and **technical consultation** for the installation of employee, public and fleet EV supply equipment deployment.
- Assistance for the procurement of non-traditional **green vehicles**.
- Online **Eco-Driving** training.
- Provided individualized **suitability assessments** for executives.



GGO - Telematics Integration

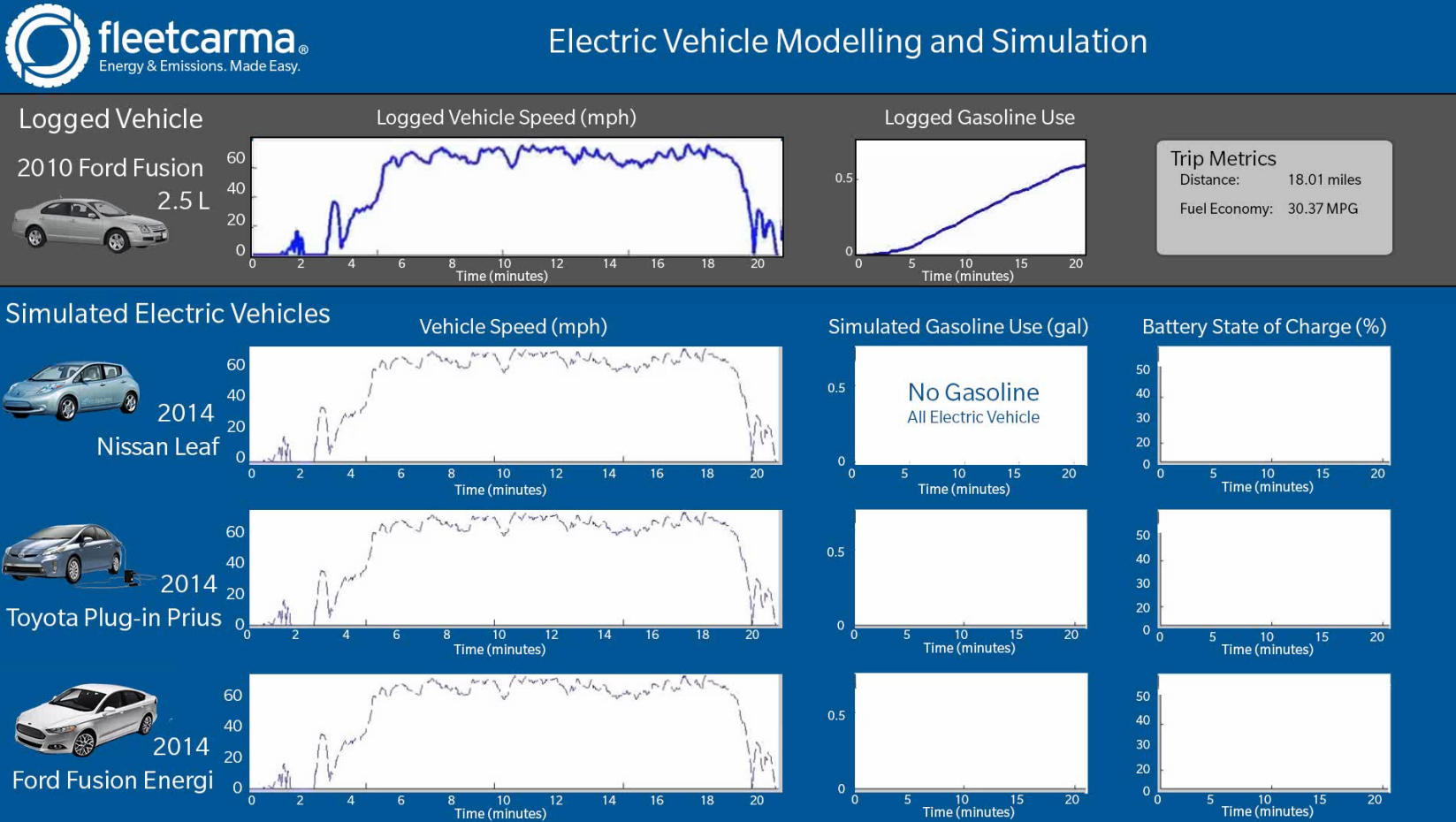


+2160

*Devices have been deployed across
TEN department Fleets*



Modelling Video Demonstration



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EVSA

2015 Ford Transit

MSRP: \$32449

Size: VAN

Annual Fuel (L): 6101

Annual CO2 (tonnes): 14.03

Average Overnight Dwell Time: 14.9 Hours

SIMULATED VEHICLES:

Powertrain Type	MY	Vehicle	Range Capable	Electric Range (km)	kwh/100 km	L/100 km	L/100 km reduction	Annual Fuel (L)	Annual Electricity (kWh)	Annual Fuel Cost	Annual CO2 emissions reductions (tonnes)	MSRP
EXISTING VEHICLE	2015	Ford Transit	N/A	N/A	N/A	21.93	N/A	6101	N/A	\$ 7,931.00	N/A	\$ 32,449.00
BEV	2018	Chevrolet Bolt BEV	100%	383	12.75669	1.84	20.09	0	3549	\$ 461.40	14.03	\$ 43,395.00
	2018	Nissan Leaf BEV	100%	172	13.16821	1.90	20.03	0	3664	\$ 476.29	14.03	\$ 37,153.00
	2018	Volkswagen eGolf BEV	100%	201	13.1898	1.90	20.03	0	3670	\$ 477.07	14.03	\$ 35,742.00
PHEV	2018	Chevrolet Volt PHEV	100%	85	15.79935	2.50	19.43	128	4034	\$ 691.13	13.74	\$ 38,386.00
	2018	Chrysler Pacifica PHEV	100%	53	20.826	3.80	18.13	372	4746	\$ 1,101.11	13.18	\$ 51,180.00
	2018	Ford Fusion Energi PHEV	100%	30	18.3073	4.55	17.38	1041	1689	\$ 1,573.31	11.64	\$ 31,918.00
	2018	Mitsubishi Outlander PHEV	100%	35	15.28	2.70	19.23	252	3550	\$ 789.52	13.45	\$ 39,748.00
	2018	Toyota Prius Prime PHEV	100%	40	11.8014	2.25	19.68	247	2620	\$ 662.14	13.46	\$ 32,354.00
	2018	Conversion PHEV	100%	41	16.45254	3.36	18.57	351	4052	\$ 983.48	13.22	\$ 54,990.00
	2018	Workhorse W15 PHEV	100%	120	26.38	3.80	18.13	0	7340	\$ 954.14	14.03	\$ 69,836.00
HEV	2018	Chevrolet Malibu HEV	100%	0	0	5.47	16.46	1522	0.00	\$ 1,978.47	10.53	\$ 28,217.00
	2018	Toyota Camry HEV	100%	0	0	5.34	16.59	1486	0.00	\$ 1,931.45	10.61	\$ 30,059.00
	2018	Toyota Highlander HEV	100%	0	0	7.80	14.13	2170	0.00	\$ 2,821.22	9.04	\$ 48,091.00
	2018	Toyota Prius C HEV	100%	0	0	5.47	16.46	1522	0.00	\$ 1,978.47	10.53	\$ 21,493.00
Gasoline Only	2018	Chevrolet Silverado 1500	100%	0	0	14.70	7.23	4090	0.00	\$ 5,316.92	4.62	\$ 31,245.00
	2018	Ford F-150 Deisel	100%	0	0	11.60	10.33	3227	0.00	\$ 4,195.66	6.61	\$ 51,049.00



Accurate Fleet Reporting

Your Fleet-Wide Report [Help ?](#)

Dashboard Details **Vehicle Metrics** Driver Feedback Alerts Export

Filter: Copy to Clipboard

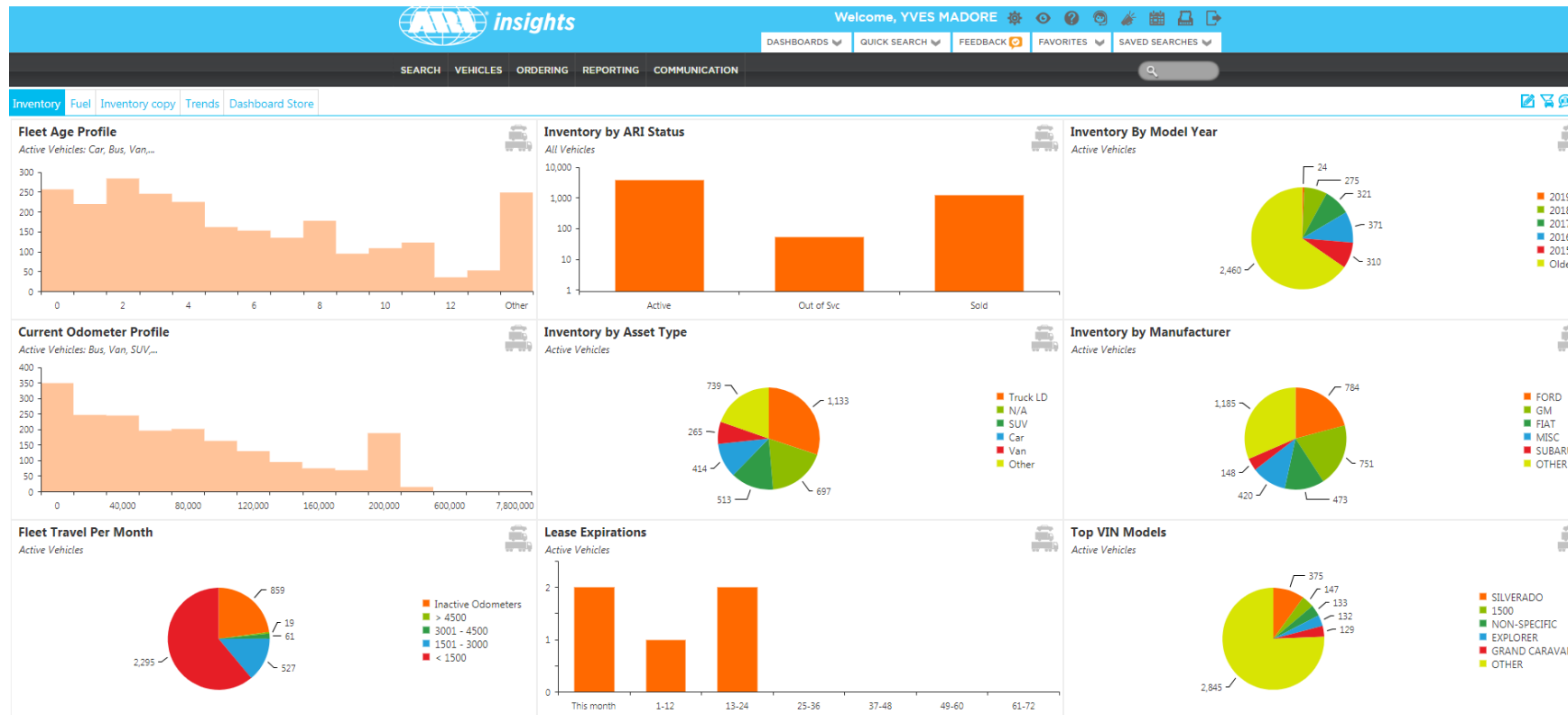
Vehicle	Odometer (mi)	Total Distance (mi)	Average Daily Distance (mi)	MPGeq	Fuel Usage (gal)	Idle (%)	Idle Fuel Usage (gal)	Idle Event Fuel Usage (gal)	Electricity Usage (kWh)	Electric Distance (%)	Level 1 (kWh)	Level 2 (kWh)	Quick Charge (kWh)	GHG Emissions Total (lb)	Eco Driving Score
1501, (2011 Chevrolet Volt)	58,482	6,754	79	46	327	26	2	1	1,355	34	51	1,664	0	6,391	85
1509, (2013 Toyota Prius-Plugin)	2,590	1,153	26	53											67
1511, (2013 Toyota Prius-Plugin)	9,464	2,183	41	53											87
1599, (2011 Nissan Leaf)	27,811	6,359	25	123	0	55	0	0	1,746	100	82	1,994	38	0	79

Automatically collect odometer readings from vehicles.

Avoid manual errors and stay on top of preventive maintenance schedules.



Update to ARI



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Implementation Considerations

Action Plan for Deployment

- Compile a list of the vehicles for data logging
- Establish a device distribution or shipping schedule
- Plan an installation procedure (Ex. – installs can be included with regular/seasonal maintenance)
- Need to have a plan in place before devices are sent – this will ensure that they are installed and recording data in a timely manner.

Informing Fleet Managers

- Disseminating FAQ documents to all the stakeholders
- Telematics are being implemented for GHG reduction and not for employee performance tracking.
- The Privacy group at NRCan determined that no private information is being collected - the information collected by the devices falls under section 3(j) of the Privacy Act.



Specialized Third-Party Installation

Canada wide mobile fleet service, specializing in large deployment rollouts. *(Technicians are able to travel as required.)*



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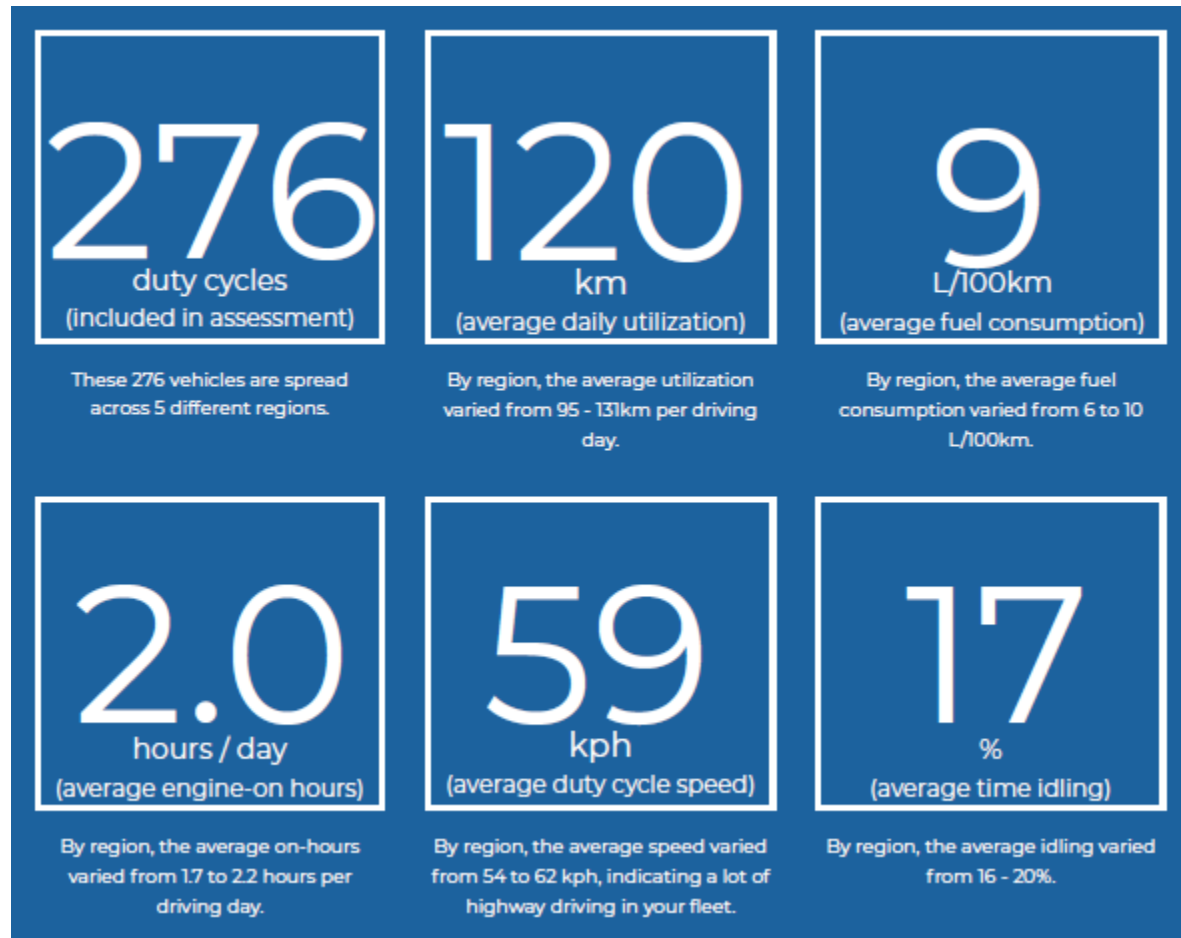


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Electric Vehicle Suitability Assessment



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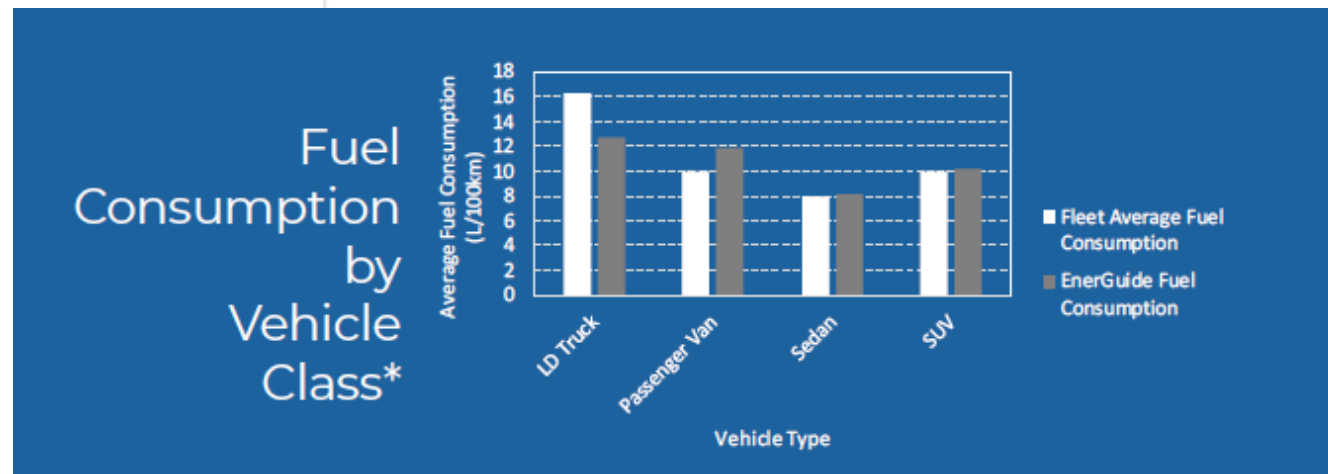
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EVSA Report – Vehicles Comparisons

When comparing your baseline vehicles to the optimal EV deployment scenario, it is clear that there is the potential for significant cost savings across the fleet.



EVSA Report – Potential Savings

If 165 of the baseline vehicles are replaced with the FleetCarma Recommended plug-in vehicles, the fleet will see the following total savings over the year service lives of the baseline vehicles.

Fleet Savings (15%)

\$1,427,709

If 165 vehicles are replaced with the best fit vehicle, the fleet could save \$1,427,709 in total savings over the service life. This represents 15% of the fleet budget.

Emission Reductions (40%)

↓282 tons

If 165 vehicles are replaced with the best fit vehicle, the fleet could realize a total emission reduction of 282 tons over the service life, representing a 40% reduction in CO₂ emissions.

Fuel Reduction (40%)

↓123,419 L

If 165 vehicles are replaced with the best fit vehicle, the fleet could reduce gasoline and diesel consumption by a total of 123,419L over the service life, representing a 40% reduction in fuel.



EVSA Report - Infrastructure

Current Dwell Time ¹	Number of Vehicles
Short	0
Medium	0
Long	149



Infrastructure Scenario	Total Cost ²	Charging Power Level	Number of Stations
1 - Dedicated	\$0	1	149
		2	0
2 - Plug Sharing	\$0	1	149
		2	0
3 - Power Sharing	\$0	1	149
		2	0 Single Port 0 Dual Port
4 - Complete	\$447,000	1	0
		2	149

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GGO – Progress to Date EVSA

Overall Departmental Progress

- Approximately **996** vehicles across **5 departments** assessed
- **534** vehicles identified for **lower-carbon alternatives** (included **319 ZEV** alternatives)
- **124 underutilized**
- **924 tons** of potential **CO₂** reductions
- Over **\$4.6M in potential savings.**

Greening Government Strategy at a glance

Mobility and Fleets Target Commitments

- Starting FY 2019 to 2020, **75% of new light-duty** administrative fleet vehicle purchases will be **zero-emission** vehicles (ZEVs) or hybrid, with the objective that the administrative fleet comprises at least **80% ZEVs by 2030**.
- Starting FY 2018 to 2019, all new **executive vehicle** purchases will be **ZEVs** or hybrids.

Canada's fleet moves to lower GHG's



Greening Government Strategy at a glance

Early Results

- Early analysis based on the orders made between April and July 2019 suggest that the Government is not on track to meet the Greening Government Strategy target for administrative fleets.
- As for executive vehicles, departments are in line with the Strategy, showing significant progress.
- The Centre for Greening Government is happy to provide support in over coming challenges of adoption of hybrid and ZEVs, as well as other issues that may arise from the transition.



Vehicle Availability & Anticipated Products

Vehicle type	Battery Electric Vehicles (BEV)	Plug-in Hybrid Electric Vehicles (PHEV)	Hybrid Electric Vehicles (HEV)	Fuel Cell Hydrogen Vehicles (FCEV)
Small car	<ul style="list-style-type: none"> - Nissan Leaf - Hyundai Ioniq 	<ul style="list-style-type: none"> - Hyundai Ioniq - Toyota Prius Prime 	<ul style="list-style-type: none"> - Hyundai Ioniq - Toyota Corolla Hybrid - Toyota Prius C 	<ul style="list-style-type: none"> - Toyota Mirai
Intermediate Sedans		<ul style="list-style-type: none"> - Ford Fusion 	<ul style="list-style-type: none"> - Ford Fusion - Toyota Camry LE 	
SUV/ Crossover	<ul style="list-style-type: none"> - Kia Niro - Hyundai Kona 	<ul style="list-style-type: none"> - Subaru Crosstrek - Mitsubishi Outlander PHEV 	<ul style="list-style-type: none"> - Ford Escape Hybrid - Toyota RAV4 Hybrid - Toyota Highlander Hybrid - Ford Explorer 	
Small Station Wagons	<ul style="list-style-type: none"> - Chevrolet Bolt - Volkswagen Golf CL 			
Minivans	- Chrysler Portal (2020)	- Chrysler Pacifica		
Pickups	Products coming from Ford, Tesla, Rivian, and Bollinger in 2020-2021			



Thank you.

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Discussion.



What Are Your Roadblocks?

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