Shaping Tomorrow's Low Embodied Carbon Public Procurement of Light-Duty Vehicles

2023 CIPMM Fleet Management Workshop November 2, 2023

Public Services and Procurement Canada Acquisitions Program







Objectives

- 1 Introduce Public Services and Procurement Canada
- 2 Provide an overview of the Low Carbon Procurement Project
- 3 Present the methodology and tool for the light-duty vehicle category
- 4 Identify challenges, opportunities and potential next steps

Public Services and Procurement Canada

- Public Services and Procurement Canada (PSPC) is the central federal purchasing agent and real property manager for the Government of Canada
- Mission: Deliver high-quality, central programs and services that ensure sound stewardship on behalf of Canadians and meet the program needs of federal institutions



Source: PSPC Business Analytics Services Directorate 2023

Public Services and Procurement Canada - Canada.ca

Greening Government Strategy and Procurement



Government of Canada's Fleet



- Federal commitment: 100% of the fleet to be Zero-Emissions Vehicles (ZEVs) by 2030
- PSPC's actions: PSPC is modernizing its shared procurement instruments to increase access to ZEVs and charging stations
- Gap: ZEVs have zero DIRECT emissions but have INDIRECT emissions.

Federal Vehicles and Fleets (canada.ca)



Government of Canada GHG Emissions

Scope 1, 2, 3 GHG emissions of the Government of Canada for fiscal year (FY) 21-22



Government of Canada's Greenhouse Gas Emissions Inventory - Canada.ca

Overview of the Low Carbon Procurement Project (LCPP)

 Led by the Green and Clean Technology procurement team in PSPC's Acquisitions Program.

- Objectives:
 - enable the inclusion of greenhouse gas (GHG) emission calculations and targets into the procurement decisionmaking process, and
 - allow the Government of Canada to leverage its buying power to quantify and reduce GHG emissions throughout the procurement supply chain.



Methodological approach: Life Cycle Assessment – a technical procedure carried out for quantifying the life cycle environmental impacts of a product or a service – and Scope 1, 2 & 3 emissions from the GHG Protocol.

Publications and resources for green procurement - Canada.ca

Key steps of the LCPP

1. Based on studies of GHG quantification standards and
 Canadian data availability, identify three final procurement categories for methodology development.



2. For each selected category, **develop comprehensive** science-based methods and tools for calculating emissions.



3. Test, review and analyze the methods and tools with stakeholders and industry.



4. Develop effective criteria and tools on how to quantify and reduce GHG emissions in the federal procurement process.

Original rationale for each category



Office Furniture



Standardized carbon footprint methodologies



Mandatory Supply Arrangement



PSPC's mandate to advance sustainability in federal real property



Prominent net-zero green building initiatives (whole building LCA, LEED buildings, etc.) being advanced by PSPC and the marketplace more broadly





ZEV target



- Embodied carbon of batteries is significant
- Mandatory Standing Offer
- No standardized carbon footprint methodology

Many automotive manufacturers already conduct LCAs



Professional Services



Large volume of spend





No standardized carbon footprint methodology

Aligns with the recent US and UK announcements to require high value suppliers to measure, reduce and disclose GHGs

Development of a carbon footprint methodology for light-duty vehicles

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Light Duty Vehicle Carbon Footprint Model

Task led by the National Research Council Canada (NRC)

> Sub-Objectives:

- Develop a scientific model to quantify life cycle GHG emissions of light-duty vehicle; and
- Estimate baseline life cycle GHG emissions of the federal fleet of light-duty vehicles.



Request for Information to vehicle manufacturers

Sub-objective: Assess data availability and accessibility for vehicle manufacturers to develop life cycle GHG emissions estimates.



Stakeholder Engagements

Sub-objective: Engage with internal GoC stakeholders and external experts to discuss the framework, the request for information and to assess impact of methodology incorporation in procurement process.

Scope of the model



Procurement data

 Goods and Services Identification Number (GSIN) codes provide generic product descriptions for PSPC's procurement activities
 Relevant GSINs identified: GSIN 2310 (passenger vehicles)

	Vehicle categories represented in the model				
	Vehicle size	Vehicle powertrains			
B	 Passenger car Pickup truck (PUT) Sport utility vehicle (SUV) 	 BEV: Battery electric vehicle FCEV: Fuel cell electric vehicle HEV: Hybrid electric vehicle ICEV: Internal combustion engine vehicle PHEV: Plug-in hybrid electric vehicle 			

System boundaries



Overall structure of NRC's vehicle LCA model Vehicle production



Overall structure of NRC's vehicle LCA model Vehicle end-of-life



Platform and parameters



2. Request for Information (RFI) to Vehicle Manufacturers

Objectives

- Assess the availability of life-cycle GHG emissions estimates, and whether the data required to produce these estimates have been collected by vehicle manufacturers;
- Assess the degree of difficulty that vehicle manufacturers would experience in providing information on the life-cycle GHG emissions from light-duty vehicles, and the means of estimating these emissions; and
- Use the data collected to inform potential future modifications of the Government of Canada's procurement process for the lightduty vehicle category, in support of the Greening Government Strategy net-zero emissions procurement commitment.

Timeline

Responses collected between 14 September 2022 and End of March 2023

2. Request for Information (RFI) to Vehicle Manufacturers

Responses

5 responses (two North American OEMs, two European OEMs, and one Japanese OEM) -> About 32% of 2021 Canada auto sales

Corporate knowledge and difficulty to collect data

Data	Corporate Knowledge*	Easy to collect**
Vehicle material composition	5	3.8
Material production location	1.5	2
Production method for steel, aluminum and copper	3.5	2.25
Recycled content of steel, aluminum and copper	4	3
Energy use of part production	1.5	1.8
Energy use of battery cell production	2.5	3.25
Location of battery cell production	4.5	2.6
Battery pack mass	5	4.6
Energy use of vehicle assembly	5	5
Location of vehicle assembly	5	5

*Scores represent numbers of OEMs who replied YES to the question "does corporate knowledge exist?" for the data. A score of 0.5 means that the OEM has partial data.

**Scores represent averages of the expected ease rating to collect this information (1 = extreme difficulty, 5 =little to no difficulty) across the OEMs.

2. Request for Information (RFI) to Vehicle Manufacturers

Conclusions

- **OEMs conduct LCAs**, but this is **not** a standard practice across all vehicle models in production.
- There is no agreed-upon methodology/standard adopted by all OEMs to conduct LCA.
- Corporate knowledge exists for data required in LCA (e.g., vehicle material composition, energy use of battery production and vehicle assembly) but some data are not easy to collect, highly confidential or not available in comparable formats.

Potential next steps of the Low Carbon Procurement Project

Phase-in approach

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Step 1

 Data collection pilot from all contract suppliers

Step 2

 Use of collected data to produce GHG baselines and low-carbon benchmarks

Step 3

 Clients use the lowcarbon benchmarks to distinguish between products

Establishment of a continuous improvement feedback loop to reduce emissions

Producing GHG baselines and benchmarks

GHG Baseline:

- **Definition:** GHG emissions from a procurement category in a selected base year.
- Purpose: Track annual changes in PSPC's Scope 3 emissions from the products that PSPC and its clients procure

Low-Carbon Benchmark:

- Definition: Average carbon footprint of a product of a particular type (e.g., a pick-up truck)
- Purpose: Differentiate between low-carbon products and the rest. These benchmarks could be used to incentivize the procurement of low-carbon products, and reduce emissions



Challenges of incorporating carbon footprint tools in procurement processes

- Model challenges
 - Comparability and uncertainty of results



- Data availability challenges
 - Data from vendors and databases



Cost challenges

Impacts on suppliers (particularly SMEs)



Implementation challenges

- Verification of results
- Ease of use
- Conflicts with other goals (e.g., Zero Emission Vehicle goals)

Opportunities of incorporating carbon footprint tools in procurement processes

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Deployment

 Integration of carbon footprint calculators into GoC procurement processes to reduce GHG emissions



Measurement

 Improvement of methods to quantify scope 3 GHG emissions from procurement



Expansion

 Development of environmental impact assessment methodologies and calculators for more commodity groups and environmental impact categories



Distribution

Open access to methodologies and calculators

Questions and Comments

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