

## TRANSPORT CANADA – Planned environmental and safety investigations of advanced heavy-duty vehicle technologies

Council of Ministers Responsible for Transportation - Task Force on Vehicle Weights and Dimensions Policy Government/Industry Meeting

November 30, 2011



### OVERVIEW

**OBJECTIVE:** Provide an overview of Transport Canada's plan to conduct environmental and safety investigations of advanced heavy-duty vehicle technologies

1. Program overview
2. Program results and efficiencies
3. Program activities and outcomes
4. Technology priorities
5. Current status
6. Next steps



## 1. PROGRAM OVERVIEW

- Transport Canada has a 5-year plan to test, evaluate and provide expert technical information on the environmental and safety performance of commercially-ready advanced light-duty vehicle (LDV) and heavy-duty vehicle (HDV) technologies.
- The plan supports a proactive and integrated approach to address environmental benefits and potential safety risks of advanced transportation technologies.
- This initiative will build upon the program delivery experience and technical capacity established under predecessor programs, e.g. ecoFREIGHT, ecoTECHNOLOGY for Vehicles Program.
- Technical findings will:
  - guide the proactive development of new or revised safety regulations, standards, codes and guidelines;
  - support the development of non-regulatory industry codes and standards that anchor the market and industry efforts to integrate new vehicle technologies;
  - help inform the development of future vehicle emissions regulations; and,
  - support consumer-oriented information programs.

Program Results ...

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## 2. PROGRAM RESULTS AND EFFICIENCIES

Current on-road vehicle regulatory landscape is complex and responsibility is shared across multiple jurisdictions and authorities. There are opportunities to achieve system efficiencies in technology testing and evaluation.

- **Environment Canada:** will receive technology emissions performance data in Canadian conditions to help support the development of greenhouse gas emissions (GHG) regulations.
- **Transport Canada:** will receive safety performance data to develop new safety standards or other measures for advanced technology vehicles and motor vehicle equipment -- this will be done in alignment with NHTSA/EPA approaches as much as possible.
- **Natural Resources Canada:** will receive advice on new energy consumption and range testing procedures for advanced vehicles and technologies to support Canadian consumer energy information programs, as well as safety confirmation for HDV SMARTWAY Canada technologies.
- **Provincial /Territories:** will receive environmental and safety assessments to support the modernization and harmonization of weights & dimensions regulations that apply to in use vehicles.
- **Global Institutions** - United Nations' Economic Commission for Europe (UNECE) / Asia Pacific Economic Cooperation (APEC) and Automotive Regulatory Harmonization: will provide technical data to support the development of international test procedures and regulations for automotive technologies to promote harmonization and international cooperation and trade.

Program Activities ...

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### 3. PROGRAM ACTIVITIES AND OUTCOMES

#### Key activities include:

- in-depth integrated safety, performance and environmental testing of light-duty and heavy-duty vehicle technologies – will be conducted in laboratories, on test tracks, and in real world conditions as required;
- sharing or publishing technical reports, recommendations and guidance documents to inform development of safety and GHG emissions regulations;
- input of technical information to the development of non-regulatory (industry-based) codes and standards; and,
- participating in efforts to align codes, standards and regulations to support North American and global harmonization.



#### Key program outcomes include:

- enhanced capacity for regulators to assess the safety and environmental performance of advanced vehicle technologies;
- faster, safer and more cost-effective introduction of advanced technologies;
- increased alignment of codes and standards that better reflect Canadian realities;
- a more transparent and predictable market for Canadian technology development and equipment suppliers; and,
- economic benefits to Canadians through increased fuel savings and increased commercialization of technologies.

Technology Priorities ...

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### 4. TECHNOLOGY PRIORITIES

A five-year technology testing and evaluation plan is being developed -- based on several considerations:

- technical/knowledge requirements of federal, provincial, territorial regulators;
- candidate technologies identified in regulatory programs for LDV and HDV vehicles;
- expertise developed through previous federal programs, such as ecoFREIGHT and ecoTECHNOLOGY for Vehicles;
- extensive technology literature reviews and environmental scans;
- stakeholders input, and
- feedback from users of technology assessments through program governance structure.

Technology Priorities ...

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## 4. TECHNOLOGY PRIORITIES (CONT.)

Currently, advanced heavy-duty technology priorities identified through the program's governance structure include (but not limited) to:

- **Advanced tire & hub technologies:** low rolling resistance tires, next generation single-wide based tires;
- **Natural gas vehicles:** compressed gas vehicles, liquefied natural gas, liquid petroleum gas;
- **Hybrid drive-train technologies:** electric, hydraulic, mechanical;
- **Aerodynamic modifications:** aerodynamic modifications to truck and trailer;
- **Electric vehicle technologies:** battery electric vehicles, plug-in hybrids;
- **Hydrogen & fuel cell technologies;**
- **Anti-idle technologies:** APUs, fuel operated heaters, battery A/C systems, thermal storage systems;
- **Engine & transmission design:** low friction lubricants, cylinder deactivation, accessory electrification, HVAC units, aggressive shift logic;
- **Exhaust treatment systems:** DPFs, selective catalytic reduction.

Current Status ...

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## 5. CURRENT STATUS

TC is currently undertaking investigations to respond to several high-priority technical issues driven by various HDV/LDV regulations, including:

- **Low rolling resistance tires & next generation single-wide based tires – investigation of traction performance in winter conditions**
  - Laboratory tests
  - Dynamic testing
- **Electric vehicles**
  - Minimum noise-emissions testing
  - Emissions / Range / Dynamic testing
  - Continue to support Canadian codes and standards development
  - Investigating battery safety campaigns
- **HDV aerodynamic modifications**
  - Literature review of knowledge gaps (safety & environment)

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## 6. NEXT STEPS

Over the coming months, Transport Canada will:

- Complete initial consultations with program stakeholders, (federal, provincial, territorial regulators) to identify key technology priorities and engagement opportunities, e.g. technical committees;
- Finalize the five-year technology prioritization plan;
- Complete Phase I testing on priority technologies – advanced tires, electric vehicles, aerodynamic devices; and
- Convene technical steering committees for Phase II testing activities.

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