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Regulating Greenhouse Gas Emissions from New On- Road Heavy-duty Vehicles in Canada

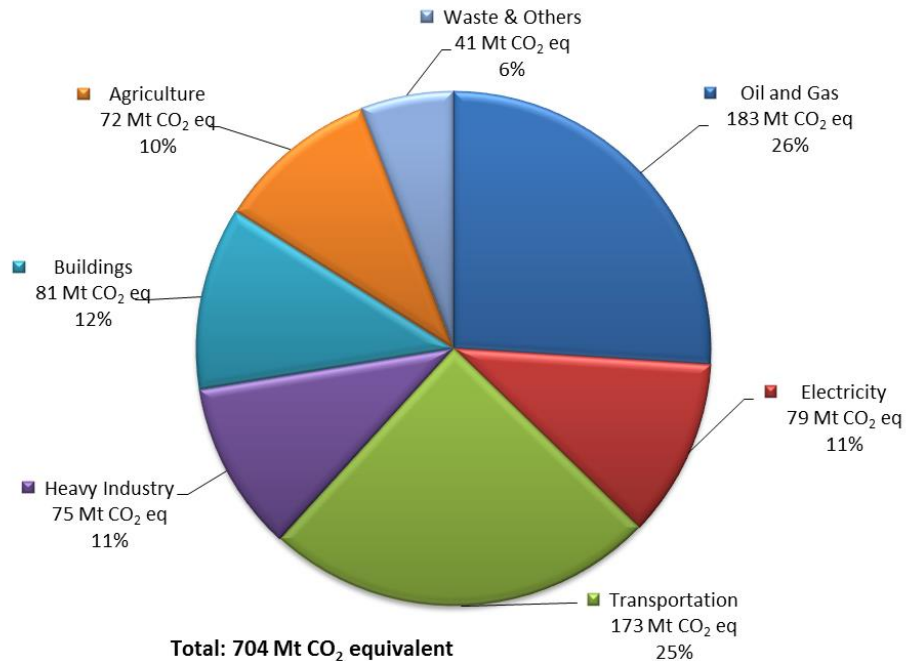
G20 TTG Deep Dive: Country experiences
June 4, 2018

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- Background
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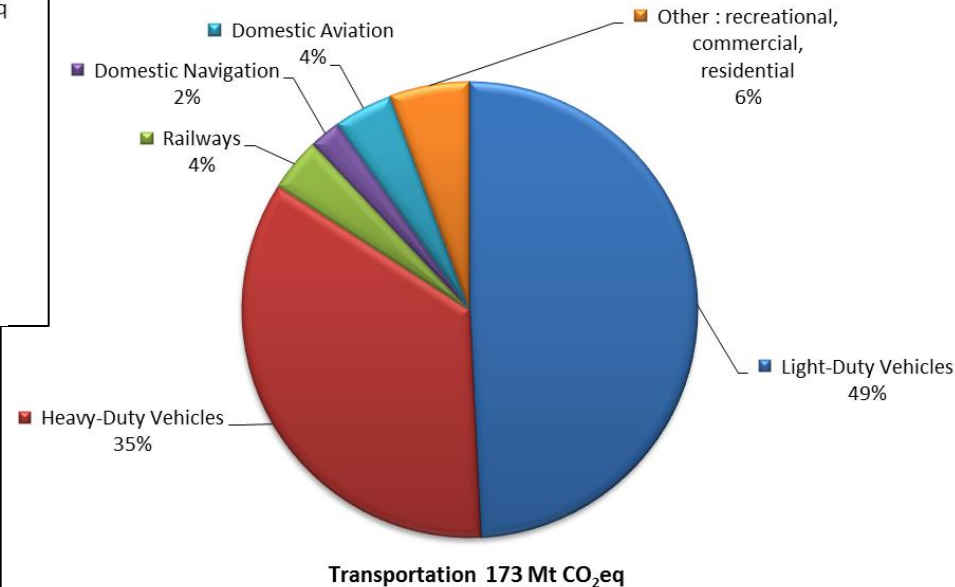


Transportation – GHG emissions profile



Canada's Emissions Breakdown by Economic Sector - 2016

- 25% of Canada's GHG emissions in 2016 come from transportation sources
- 9% of total GHG emissions came from on-road heavy-duty vehicles

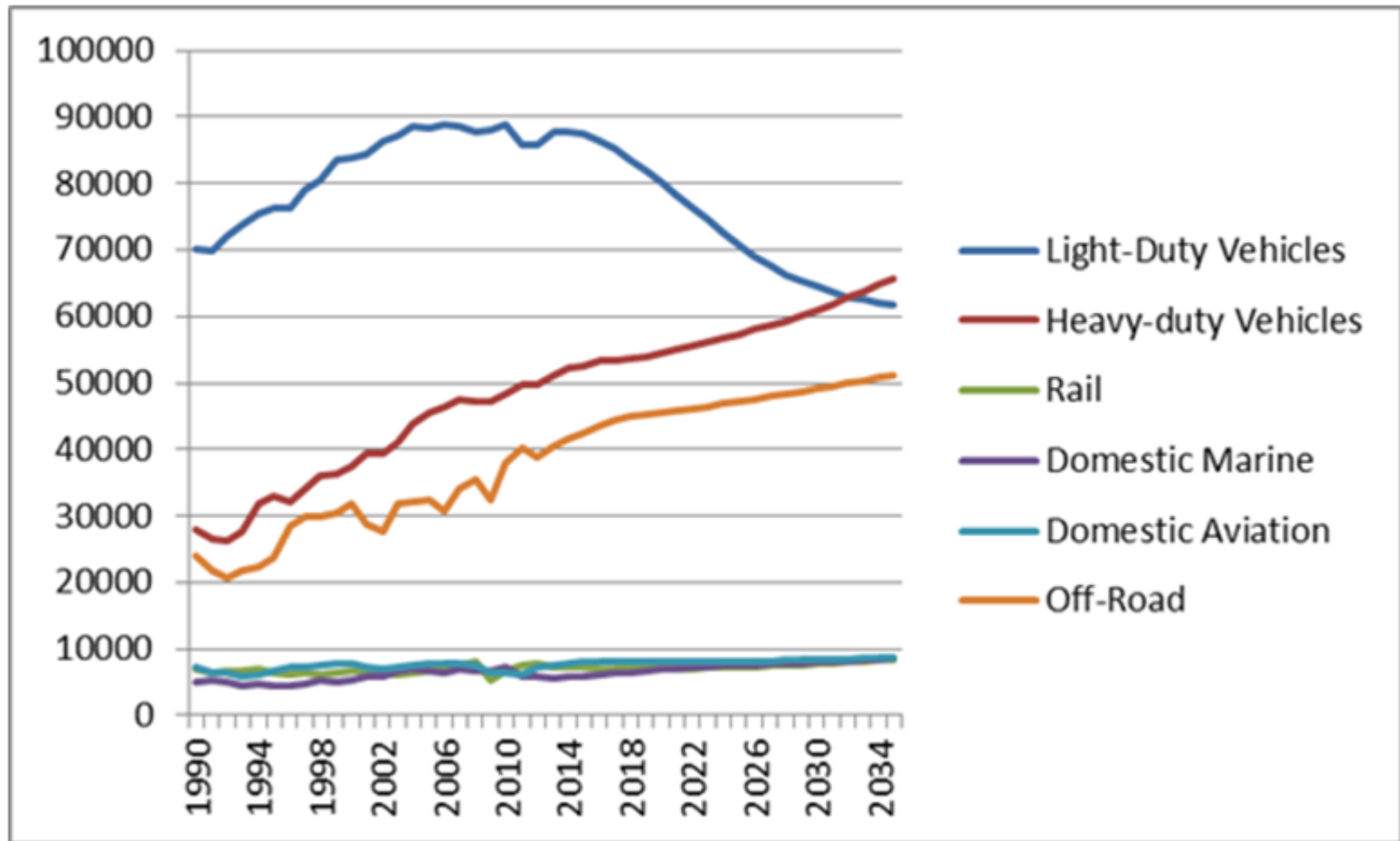


Source: ECCC, National Inventory Report 1990 – 2016, 2018



Transportation – GHG Emissions Profile

Reported and Projected GHG Emissions (in kilotonnes) from Transportation 1990-2034



Source: *Canada's Second Biennial Report on Climate Change, 2016*



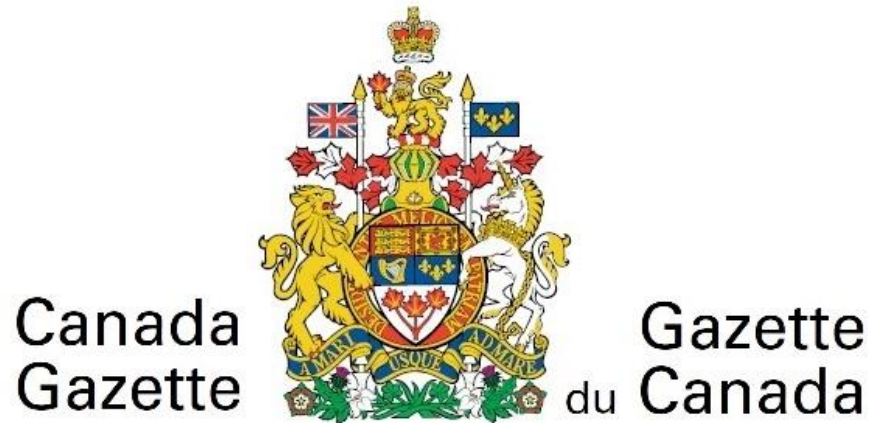
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Canadian Regulatory Process

- **Proposed regulations and notices** are published in the *Canada Gazette, Part I*
 - Proposed regulations are followed by a statutory public comment period
- **Final regulations** are published in the *Canada Gazette, Part II*



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Regulatory Program - Legal authority

- Canada's vehicle and engine regulatory program is established under **Part 7, Division 5** of the *Canadian Environmental Protection Act, 1999 (CEPA)*
 - Gives authority to regulate air pollutants and GES emissions from many on- and off-road vehicles and engines
 - Regulates manufacturers and importers of new vehicles and engines sold in Canada, rather than end-users
 - Canada's regulations are mainly performance-based
- Provinces have jurisdiction to regulate the use and operation of vehicles and engines once sold, e.g.
 - Weights, dimensions and speed limits on roadways
 - Anti-tampering requirements
 - Registrations



Alignment and Canadian Market Structure



- Since 2003, through initiatives such as the **Canada - U.S. Air Quality Agreement**, Canada has developed a range of standards, within its suite of on- and off-road vehicle and engine emission regulations, that are aligned with emission standards and test procedures of the U.S. EPA
 - The joint work plan elaborated under the Air Quality Committee has promoted strong regulatory collaboration on vehicle and engine emissions, including:
 - development of domestic and international emission standard;
 - administering compliance programs (e.g., testing, data sharing)
 - research and development in support of regulatory programs
- Most vehicles and engines offered for sale in Canada are imported and most vehicles manufactured in Canada are exported to the U.S.
 - Significant focus of compliance and enforcement activities is on Canadian importers



Collaborative Efforts with U.S. EPA

- ECCC worked closely with the U.S. EPA to maintain a common Canada-U.S. approach to regulating GHG emissions from on-road heavy-duty vehicles
 - For instance, the Department of Transport, the National Research Council and ECCC have worked collaboratively with the U.S. EPA during the development of the Phase 2 standards by conducting aerodynamic testing and chassis dynamometer emissions testing



- ECCC and the U.S. EPA continue to share knowledge and collaborate closely in an effort to implement aligned regulatory standards and joint compliance verification programs, which help maximize efficiencies in the administration of the respective programs in the two countries



Working Together – Collaboration with Regulators



- Collaboration with other Canadian federal departments, provinces and territories, other international regulators, manufacturers and other stakeholders is key to a successful regulatory development process
 - Allows Canada to support the development of standards which will affect vehicles in Canada
 - Allows Canada to publish regulations on a timely basis
 - Allows Canada to identify and address any Canada specific considerations as early as possible



Objective and Overall Approach for Canada's HDV GHG Phase 2 Regulations

- These Amendments will further reduce GHG emissions from on-road heavy-duty vehicles, trailers and engines by:
 - building on existing Phase 1 regulations standards and structure
 - continuing to cover emission standards addressing GHGs from transportation, including carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and hydrofluorocarbons (HFCs)
 - aligning with U.S. EPA final regulations while addressing unique Canadian considerations, as appropriate
- The HDV GHG Regulations apply to any person who is engaged in the business of manufacturing or importing new on-road heavy-duty vehicles or engines in Canada for the purpose of sale



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Milestones of HDV GHG Phase 2

Regulatory Development

- The *Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations* were published in the *Canada Gazette*, Part II, on **March 13, 2013** (now referred to “Phase 1”)
- Notice of Intent was published in the *Canada Gazette*, Part I, on **October 4, 2014**, initiating a first formal comment period
 - Outlined Canada’s intent to further reduce GHG from heavy-duty vehicles and engines
- On **March 3, 2016**, a general consultation session was held in Toronto
- Proposed amendments were published in the *Canada Gazette*, Part I, on **March 4, 2017**, initiating a 75-day formal comment period
- General consultation session on **April 11, 2017**, in Toronto
- Information session Webinar session on **January 18, 2018** to provide final program level recommendations, response to comments and questions
- The final Amendments were published in the [Canada Gazette, Part II](#) on **May 30, 2018**



Estimated GHG Reductions, Costs and Benefits

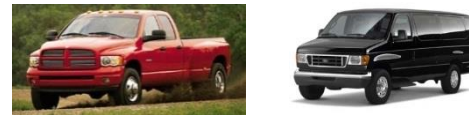
- The Phase 2 HDV GHG Regulations are an important regulatory policy developed under the Government of Canada's **Pan-Canadian Framework on Clean Growth and Climate Change** that will contribute to Canada's international commitments made under the Paris Agreement
 - As part of its commitments made under the Paris Agreement, Canada pledged to reduce national GHG emissions by 30% below 2005 levels by 2030
- As such, the Amendments are projected to result in 6 Mt less CO₂e emissions being emitted in 2030
- Further, it is estimated that the Phase 2 HDV GHG Regulations will result in environmental gains:
 - Over the 2020 – 2050 period, a total of 73 Mt of CO₂e emission reduction are projected to be achieved from 2020-2029 model years vehicles
 - Overall, the net benefits for 2020-2029 model years vehicles are estimated at \$17.7 billion, mainly attributable to fuel savings



Regulatory Categories

- Phase 2 regulations will establish more stringent emission standards that cover the broad regulatory categories of heavy-duty vehicle applications and introduce standards for trailers

- Class 2B and 3 Pick-up Trucks and Vans



- Class 7 and 8 Combination Tractors (i.e. semi-trucks) and their engines



- Class 2B through 8 Vocational Vehicles and their engines



- Trailers pulled by tractors



Alignment with the U.S. Final Rule

- These Regulations are aligned with the U.S.
 - Aligned prescribed classes of vehicles, engines and trailers
 - Aligned emissions standards
 - Aligned test procedures
 - EPA Certificates accepted to demonstrate compliance with the emissions standards
 - Compliance flexibilities aligned with the U.S.
 - e.g. CO₂ emission credit system, providing additional credits for advanced and innovative technologies



Canada Specific Considerations

- Some Canadian specific considerations require Canada to provide specific details in regulations when aligning with the U.S., such as
 - Authority granted by Canadian legislations
 - Regulatory development and implementation timelines to provide sufficient lead time to Canadian regulatees
 - Canadian operating conditions (e.g. weights, dimensions)



Main Differences Between Canadian HDV GHG Regulations and U.S. EPA Rule

- Administrative requirements under CEPA
 - e.g. requirements for reporting, National Emission Mark, notices of defect, evidence of conformity, etc.
- Timelines
 - Phase-in flexibilities for vocational vehicles and tractors with U.S. EPA Certificates (Phase 1)
 - Implementation date for trailer standards of January 1, 2020 (Phase 2)
- Sale thresholds specific to Canada
- Small volume company and vehicles manufactured in stages requirements
- Higher credit multipliers for plug-in hybrid vehicles and electric vehicles of the 2021 to 2027 model years (Phase 2)
- Standards for tractors with higher payload capacities (Phase 2) (see next slides)



Canada's Phase 2 standards for Tractors Designed for Heavier Payloads

- Greater weights are permitted on Canadian roads by provincial and territorial jurisdictions compared to the weights allowed on U.S. Interstate Highway System
 - There was a need to develop standards specific to Canada and account for the allowance of heavier vehicles on Canadian roads relative to the U.S.
- In 2016, officials from ECCC and their U.S. EPA counterparts worked to develop GHG emission standards for Canada for tractors with heavier payload capabilities
- As a result of this collaborative work, EPA introduced optional GHG emission standards for heavier tractors of the 2021 model year and subsequent model years in its final Phase 2 rule
- The U.S. optional standards served as a basis for the development of the standards in the Amendments that reflect Canadian conditions for tractors with heavier payload capabilities that will begin with the 2021 model year and increase in stringency with model years 2024 and 2027



Canada's Phase 2 standards for Tractors Designed for Heavier Payloads

- Amendments introduce standards that take into consideration powertrain characteristics required for tractors with higher payload capacities, while reflecting technology improvements to reduce GHGs appropriate for highway hauling applications in Canada
 - The standard stringencies set based on the technology adoption rates and specifications that were more representative of these weight categories
 - Will help ensure that the level of productivity of freight movement in Canada is maintained, while making achievable improvements in the GHG emission performance of on-road heavy-duty vehicles
- Starting with the 2021 model year, introduction of new CO₂ emission standards for tractors designed for heavier payloads:
 - Standards for tractors with a GCWR of at least 43,998 kg (97,000 lb) and less than 54,431 kg (120,000 lb)
 - Standards for tractors with a GCWR of 54,431 kg (120,000 lb) or more
 - Alternative standards for heavy-haul tractors, which are defined as tractors with a GCWR of 63,503 kg (140,000 lb) or more



Canada's Phase 2 standards for Tractors Designed for Heavier Payloads

- Use current test procedure (GEM simulation model) finalized by the U.S. to assess compliance:
 - Tractors with a GCWR of at least 43,998 kg (97,000 lb) and less than 54,431 kg (120,000 lb) :
 - assessed using the set of regulatory subcategories in GEM for standards for tractors with a GCWR of less than 54,431 kg (120,000 lb) in the United States
 - Tractors with a GCWR of at least 54,431 kg (120,000 lb)
 - assessed using the set of regulatory subcategories in GEM for the corresponding optional tractor standards set out in the U.S. final rule published in October 2016
 - Heavy-haul tractors with a GCWR of 60,503 kg (140,000 lb) or more
 - assessed using the set of regulatory subcategories in GEM for the corresponding Heavy-Haul standards set out in the U.S. final rule published in October 2016



Conclusion

- Given our shared market, alignment has delivered significant health and environmental benefits to Canadians and supported industry competitiveness in highly integrated North American market, provided long term regulatory certainty, and lessened administrative and compliance burdens for both industry and the governments

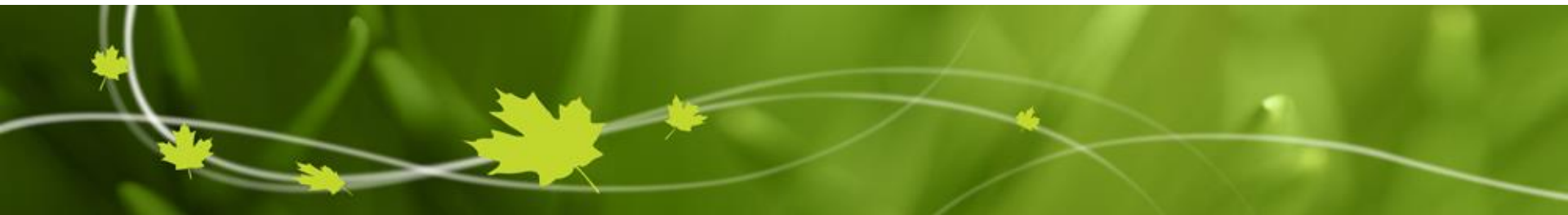




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Questions?