Environment Canada Environnement Canada

Canada

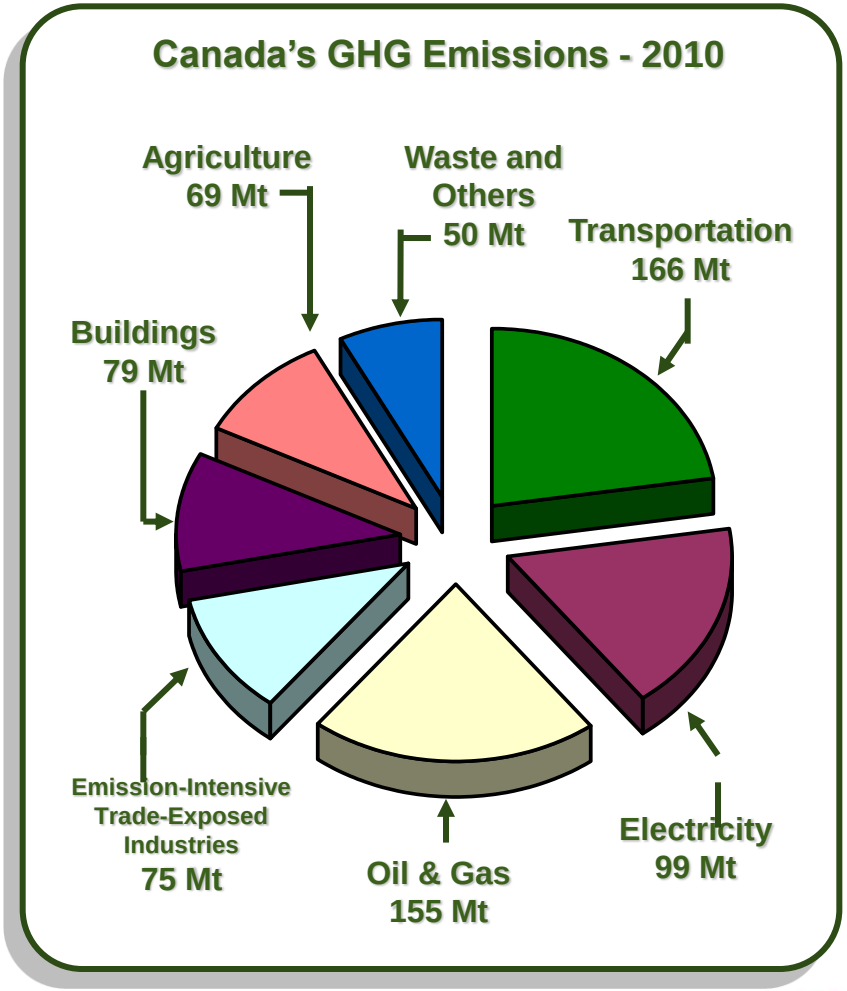
HEAVY-DUTY VEHICLE AND ENGINE GREENHOUSE GAS EMISSION REGULATIONS

October, 2014

CTEA's 51st Manufacturers' Technical Conference

Contribution of On-Road Heavy-Duty Vehicles to Climate Change

- Transportation is one of the largest sources of GHGs in Canada – 24% of total emissions in 2010
- On-road heavy-duty vehicles represented approximately 7% of total emissions in 2010
- The Government committed to reducing total GHG emissions by 17% from 2005 levels by 2020

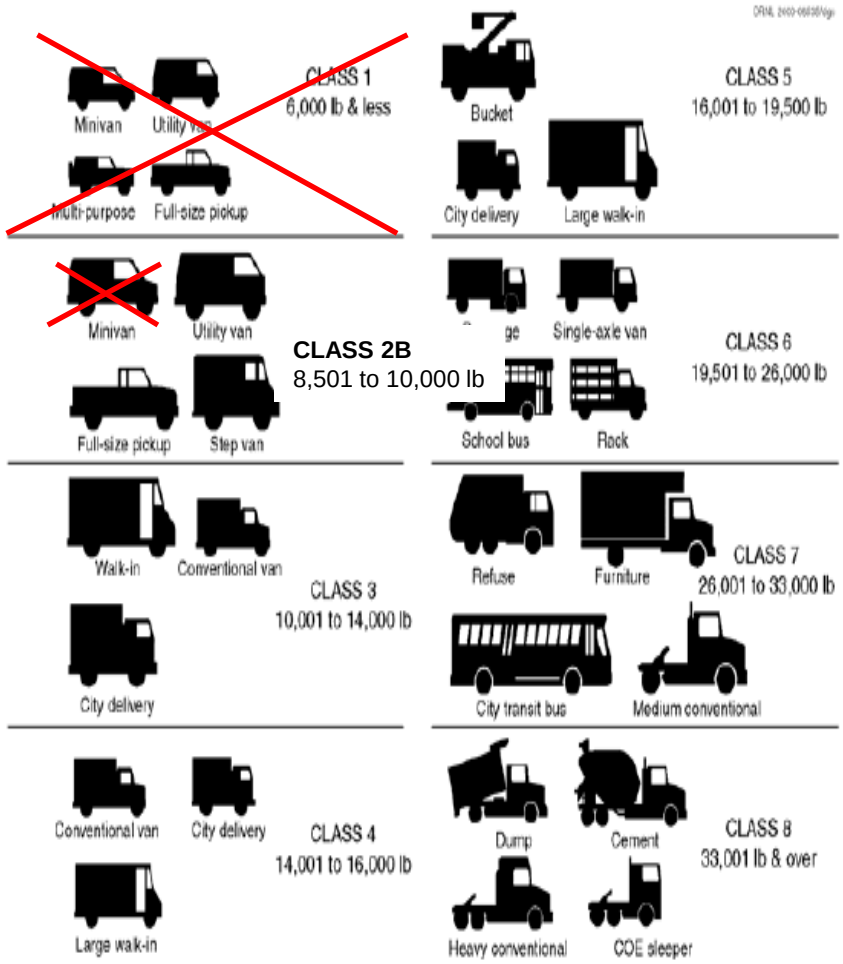


Highlights of the Regulations

- The *Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations* published in *Canada Gazette*, Part II on March 13, 2013.
  - Aligned with U.S. EPA standards
  - Estimated to result in a reduction of approximately 19.1 Mt of CO_2 in GHG emissions over the lifetime of vehicles produced in the MY 2014-2018
  - Regulations would contribute toward Canada's commitment to reducing total GHG emissions by 17% from 2005 levels by 2020
  - The Regulations apply to new on-road heavy-duty vehicles and engines of the 2014 and later model years

What is Regulated?

- Vehicles from full-size pick-up trucks to combination tractors, and including a wide variety of vocational vehicles such as: freight, delivery, service, cement, garbage and dump trucks, as well as buses
- Only regulate on-road vehicles – <u>not off-road vehicles, such as mining or farm machinery</u>
- Trailers are not subject to the regulations



Who do the Regulations apply to?

- The Regulations apply to:
  - A company* defined under CEPA (CEPA company):
    - imports new vehicles or engines for the purpose of sale;
    - manufactures vehicles or engines in Canada;
    - distributes vehicles or engines that were manufactured in Canada.

- The term “manufacture” includes any process of assembling or altering a vehicle or engine before its sale to the first retail purchaser. This includes:
  - Modifying equipment on the engine (e.g. by installing or modifying the emission control system)
  - Modifying the vehicle such that it affects its GHG certification (e.g. changing tires or aerodynamic profile)
  - Modifying an engine (e.g. adapting a diesel engine to run on natural gas)

Compliance Flexibilities (Credit System)

- CO_2 emission credit system provide the option for companies to manufacture or import vehicles and engines with emission levels worse or better than standard, provided that their average fleet emission level does not exceed the standard ("fleet averaging")
  - Companies can generate, bank and transfer emission credits
  - Credits valid for 5 years; deficits must be eliminated within 3 years
  - Credits and deficits monitored through annual reporting
  - Optional early action credits

Overview of the Regulations for Vocational Vehicles

Vocational Vehicles

Includes all remaining trucks and buses of all sizes and functions that are not pick-ups, vans or Tractors

- Vehicle emission standards is measured in grams of CO_2 per ton-mile (g/ton-mile)
  - Emission standards categorised by vehicle class weight

- Engine emission standards measured in g/BHP-hr
  - Vary based on engine size and fuel type
  - CH4 and N2O emission standards

CO_2 Emission Standards – Vocational Vehicles

- CO_2 Vocational **Vehicle** Emissions Standards (g/ton-mile)

Vocational Vehicle Class	CO_2 emission standard for model years 2014 to 2016	CO_2 emission standard for 2017 and after
Classes 2B, 3, 4 and 5	388	373
Classes 6 and 7	234	225
Classe 8	226	222

- CO_2 Vocational **Engine** Emissions Standards (g/BHP-hr)

Compression-ignition engine (diesel)

Model year	Light heavy-duty engines	Medium heavy-duty engines	Heavy heavy-duty engines
2014 to 2016	600	600	567
2017 and after	576	576	555

Model year	Spark-ignition engine (gasoline)
2016 and after	627

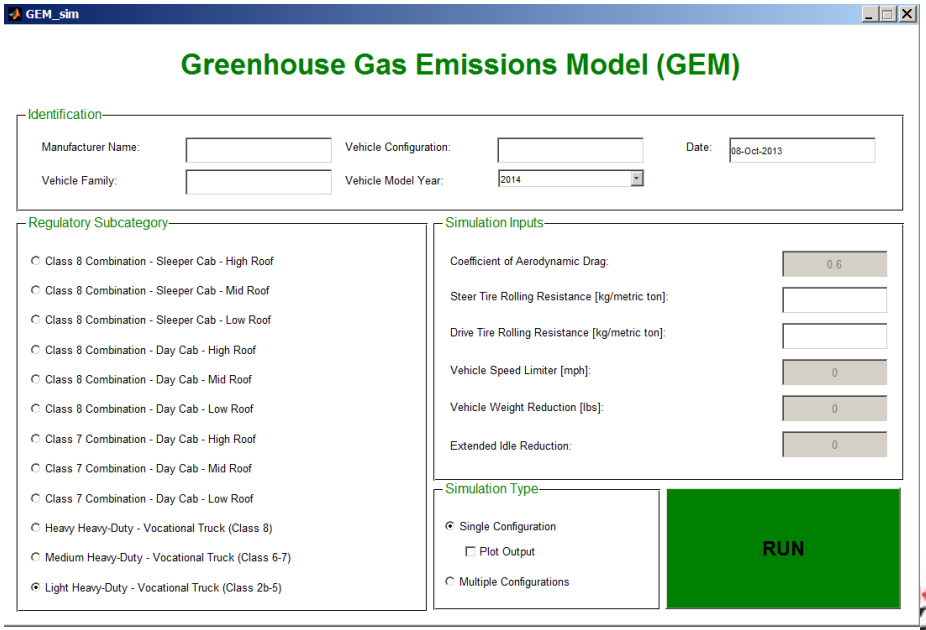
Computer Simulation Modeling

- Companies to use a simulation model to assess the performance of its vocational vehicles and combination tractors

Model can be freely downloaded from EPA website:

http://www.epa.gov/oms/climate/gem.htm

- Model assesses the technologies installed on the vehicles



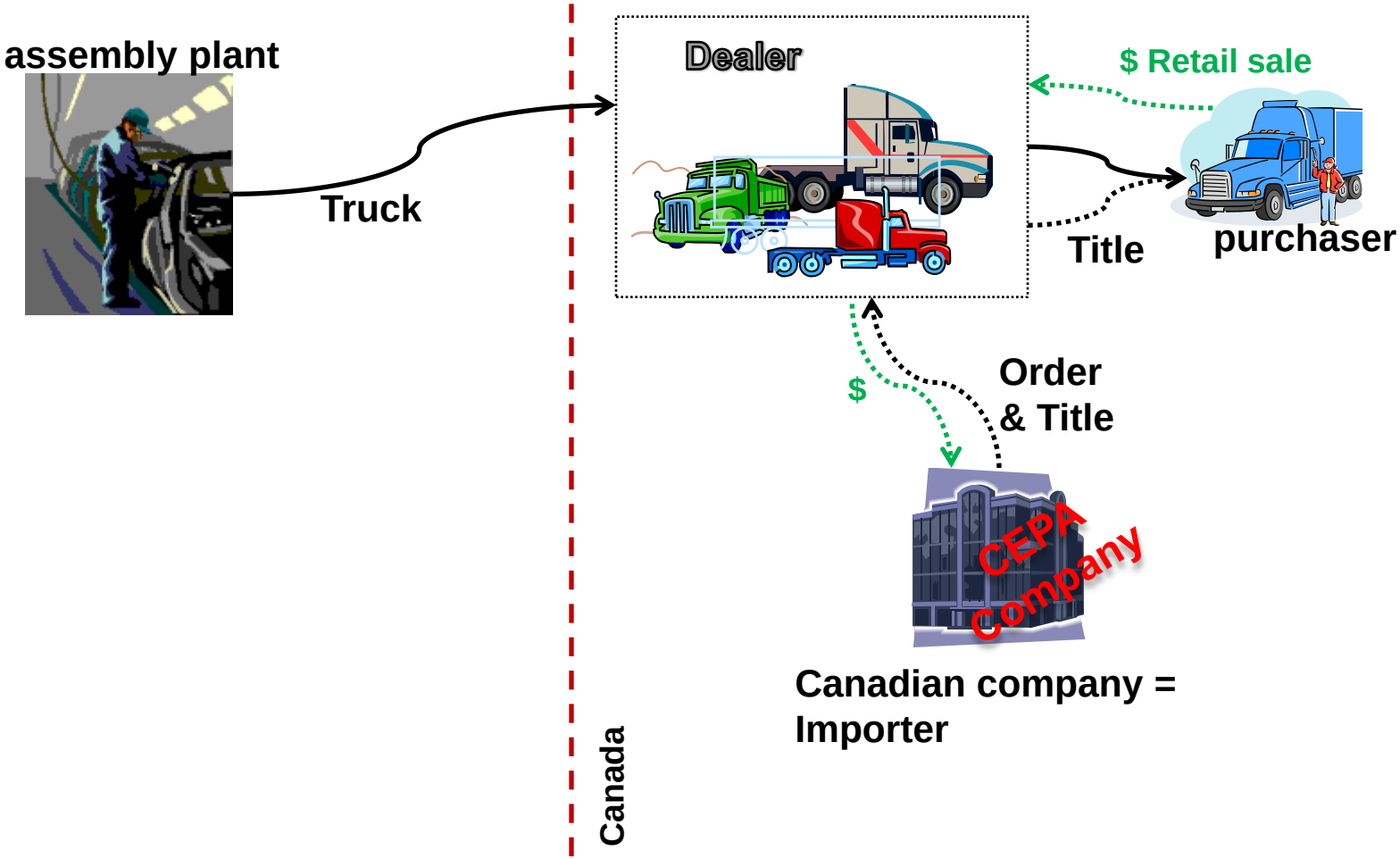
Chassis Builder/Fitter = Manufacturer

If a company alters a vehicle that was in conformity, before first retail sale, in such a manner that the Class of vehicle is no longer accurate, the emission control system, engine configuration or GEM computer simulation is altered, the company must:

- **Ensure that the original emission control information label remains applied to the altered vehicle**
- **Ensure that the vehicle conforms to all applicable standards in respect of the work carried out**
- **Apply an additional compliance label**
- **Obtain and produce the evidence of conformity to the Minister before the vehicle leaves its possession or control.**
- **Be authorized to apply and apply the national emissions mark**

Who do the Regulations apply to ?
Possible scenarios

Scenario 1:



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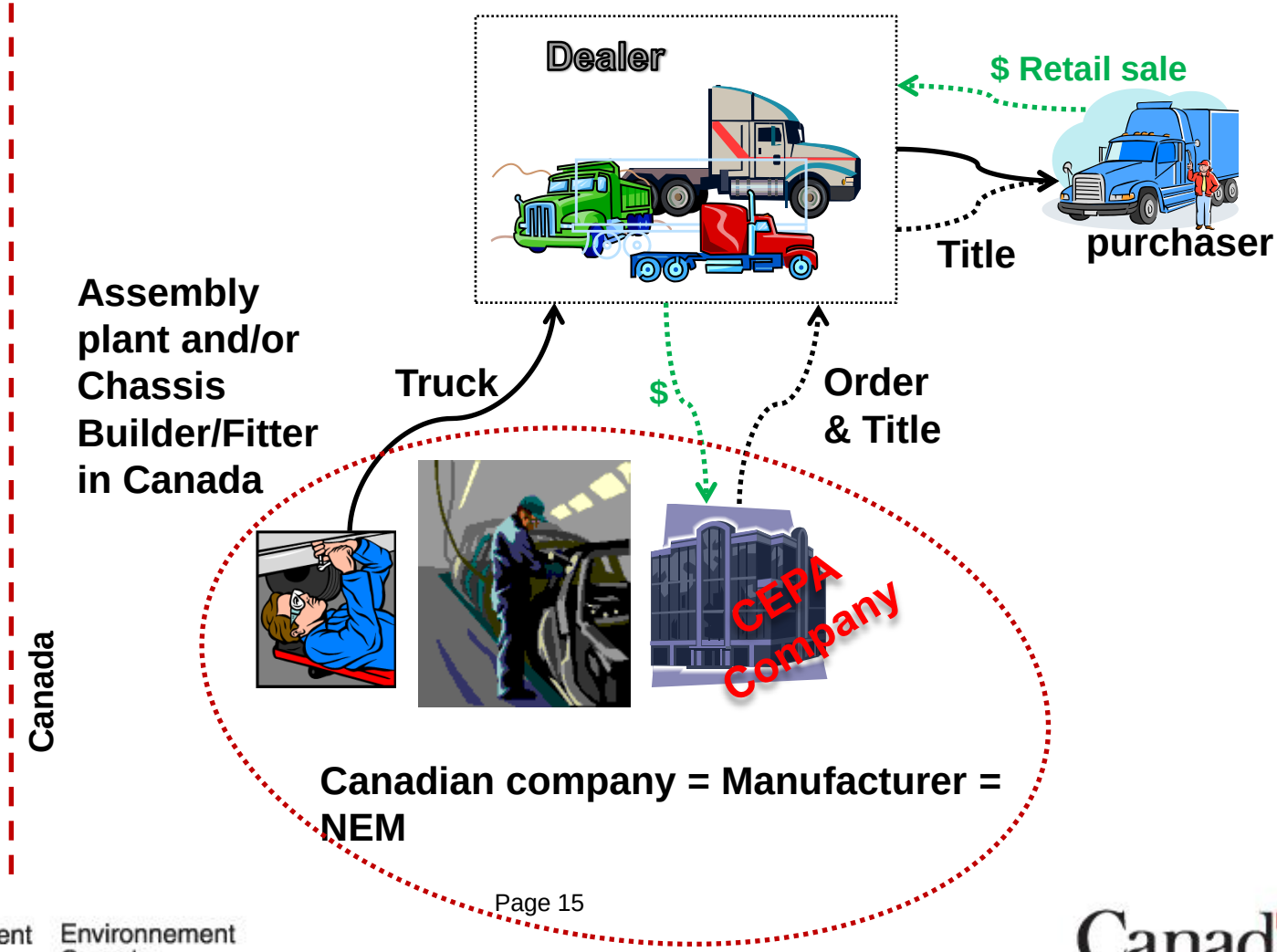
Scenario 1:

- Canadian customer purchases truck through a dealer in Canada
- Dealer acts as agent on behalf of Canadian company to receive customer order and arrange final delivery of the vehicle to the customer.
- Canadian company confirms order (possibly financing) and authorizes truck assembly
- Truck assembled outside of Canada and shipped directly to dealer
- Vehicle title transferred through Canadian company via dealer to purchaser
- Canadian company is responsible for compliance and regulatory filings (Reporting + evidence of conformity + records), CEPA Company

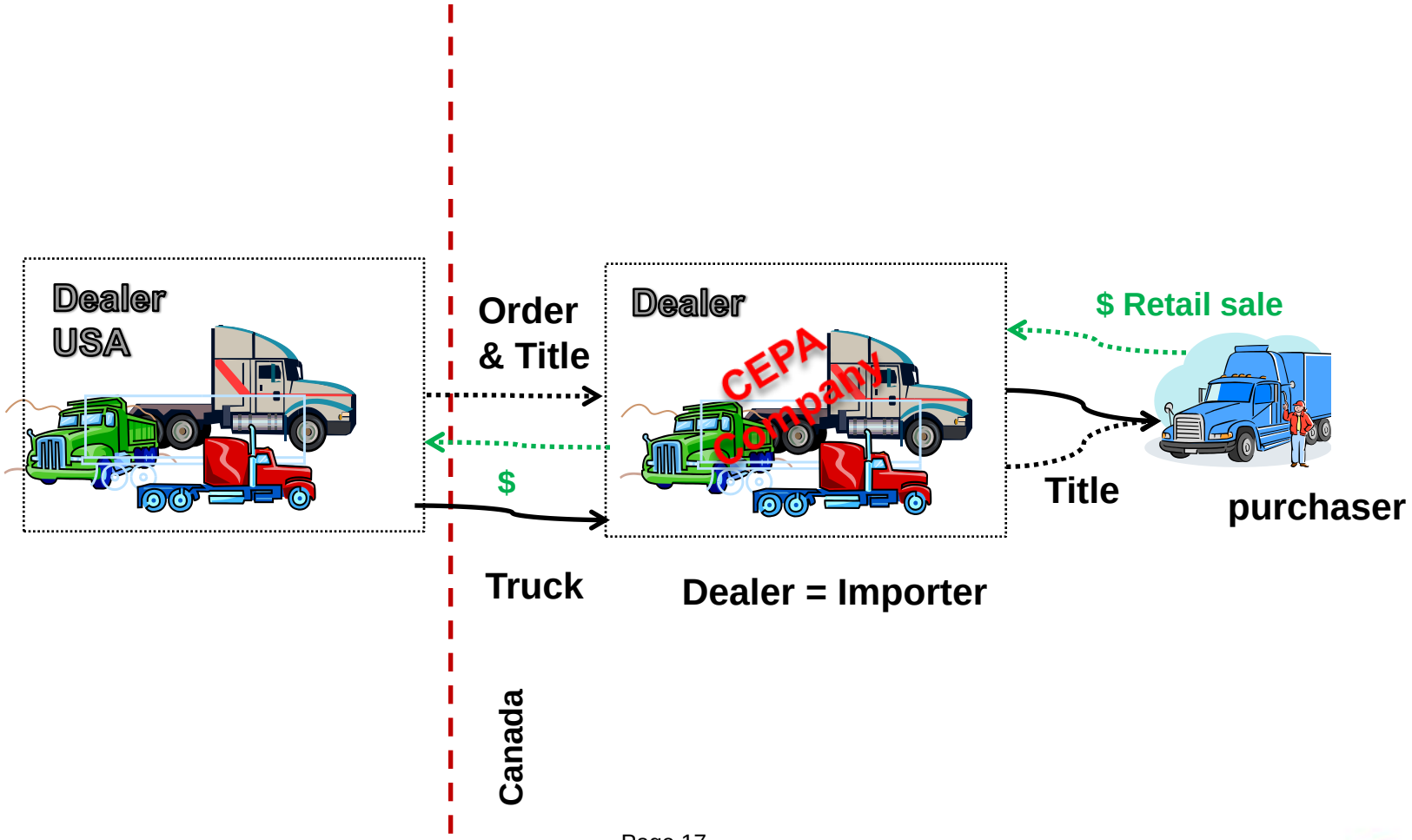
Scenario 2:


Dealer
$ Retail sale
Title
purchaser
Assembly plant and/or Chassis Builder/Fitter in Canada
Truck
$
Order & Title
CEPA Company
Canada
Canadian company = Manufacturer = NEM

Scenario 2:

- Canadian customer purchases truck through a dealer in Canada
- Canadian company takes on responsibility for all aspects of vehicle Vehicle is assembled in Canada and modified by affiliated chassis-builder/fitter. The “assembly” operation is under the control of the Canadian company.
- Canadian company is responsible for compliance and regulatory filings (Reporting + evidence of conformity + records), CEPA Company
- Canadian company is a manufacturer and must be authorized to affix the National Emission Mark

Scenario 3:



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Scenario 3:

- Canadian dealer purchases truck from a dealer in USA
- Canadian customer purchases truck through a dealer in Canada
- Dealer in Canada is responsible for compliance and regulatory filings (Reporting + evidence of conformity + records), CEPA Company
- Dealer may enter into umbrella agreement with Manufacturer to handle regulatory filings

Scenario 4:

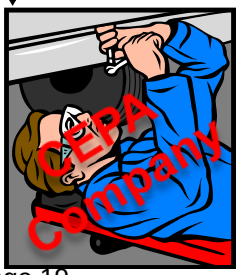
$ Retail sale

Title

purchaser

Dealer = Importer = reporting + evidence of conformity + records

Truck



Unaffiliated Chassis Builder/Fitter
= Manufacturer = NEM + evidence of conformity for work done + Records

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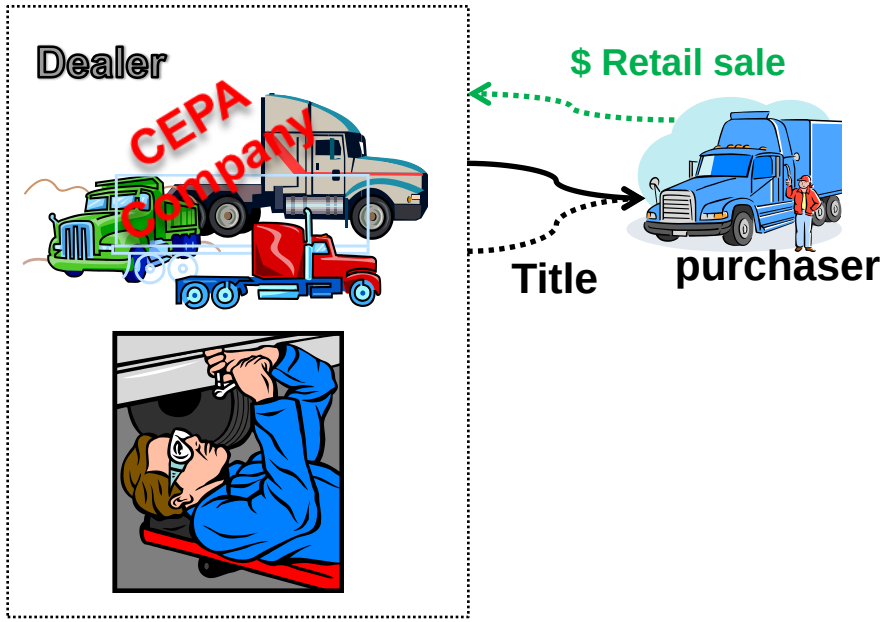
Scenario 4A:



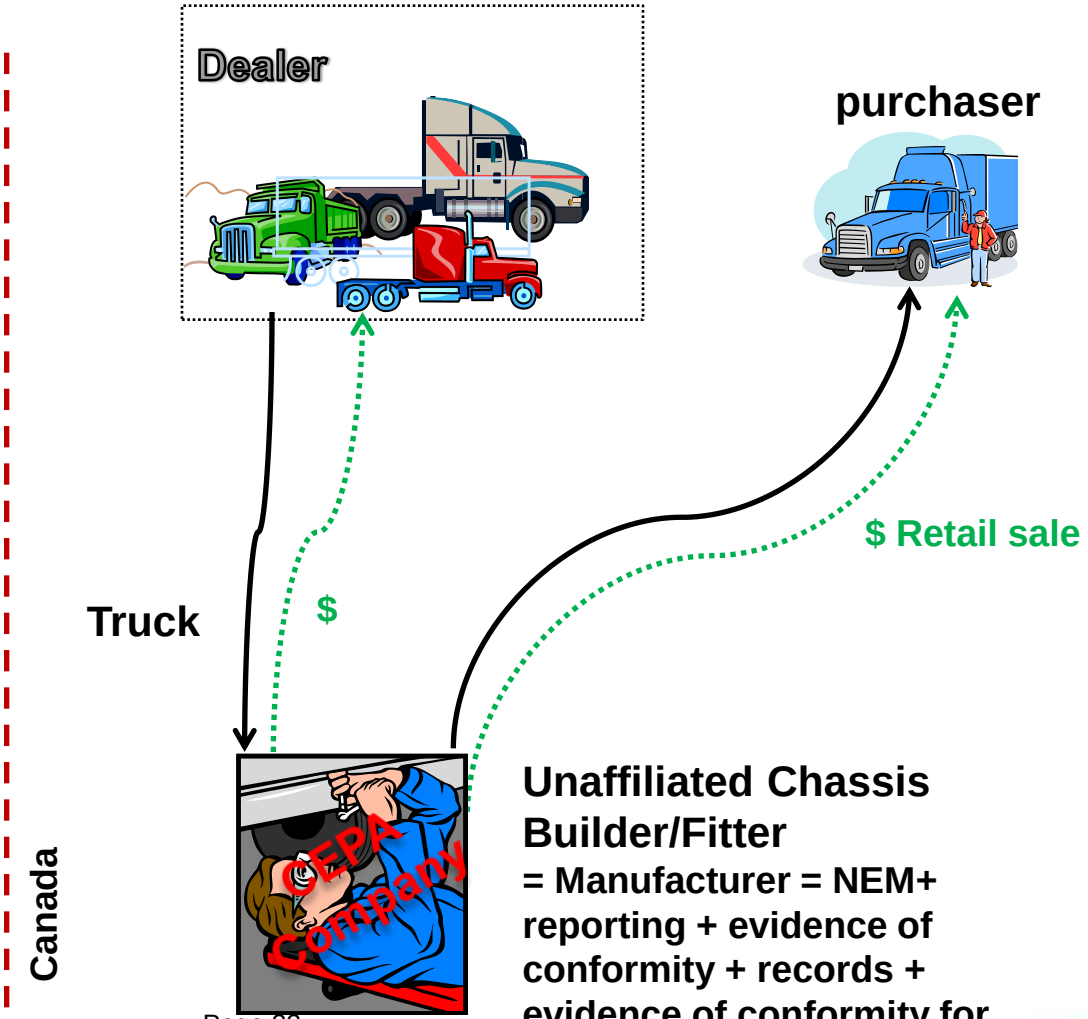
Canada

Dealer = Importer = Manufacturer = reporting + evidence of conformity + NEM + evidence of conformity for work done

Scenario 4 and 4a:

- Canadian customer purchases truck through a dealer in Canada
- Canadian unaffiliated chassis-builder/fitter selected by Canadian dealer who arranges for final up-fit to customer specifications (4) or Dealer modify the vehicle himself (4a)
- Dealer in Canada is responsible for compliance and regulatory filings (Reporting + evidence of conformity + records), CEPA Company
- For 4, unaffiliated Body Builder/Fitter is manufacturer (CEPA Company) must be authorized to affix the NEM and must produce evidence of conformity to the Minister for work done
- For 4a, Dealer is a manufacturer (CEPA Company), must be authorized to affix the NEM and must produce evidence of conformity to the Minister for work done
- Dealer may enter into umbrella agreement with Manufacturer to handle regulatory filings

Scenario 5:



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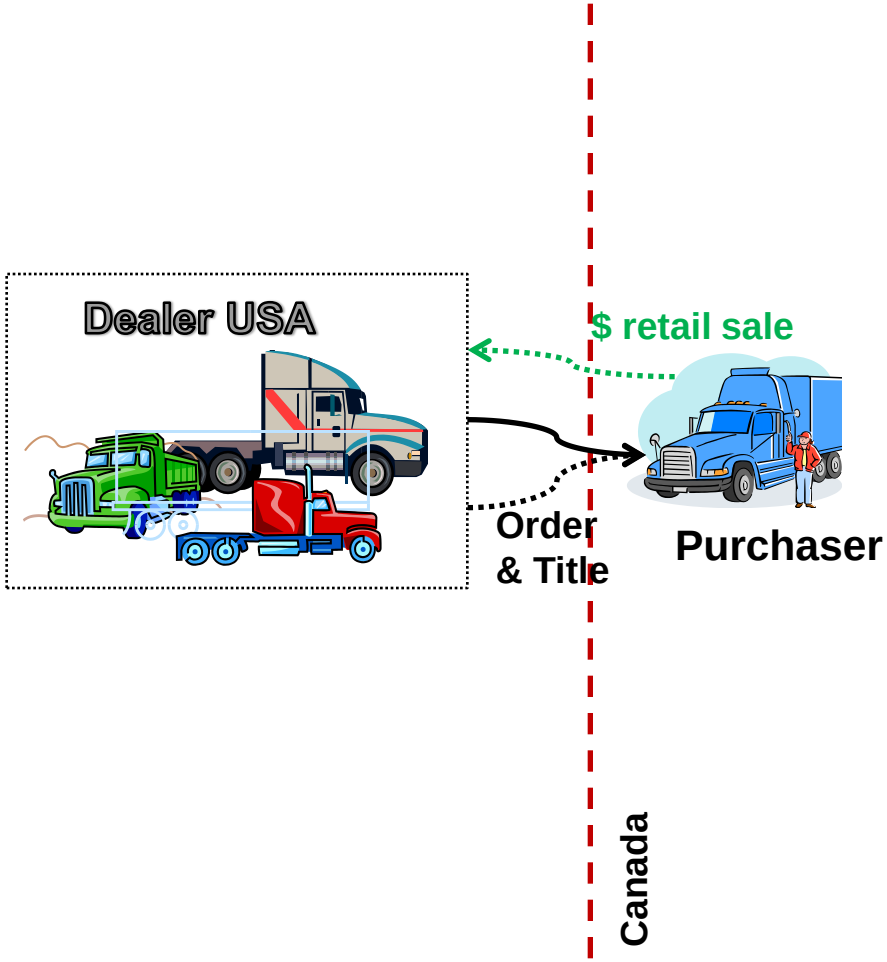
Scenario 5 :

- Chassis Builder/Fitter by truck from dealer
- Canadian customer purchases truck through a Unaffiliated Chassis Builder/Fitter in Canada
- Chassis Builder/Fitter arranges for final up-fit to customer specifications and modify the vehicle
- Chassis Builder/Fitter is responsible for compliance and regulatory filings (Reporting + evidence of conformity)
- Chassis Builder/Fitter is a manufacturer (CEPA Company), must be authorised to affix the NEM and must produce evidence of conformity to the Minister for work done
- Chassis Builder/Fitter may enter into umbrella agreement with Manufacture to handle regulatory filings

Scenario 6:



Scenario 6:

- Canadian customer independently purchases truck directly from U.S. dealer for its own use (vehicle must meet emission standards as a condition of importation)
- U.S. dealer delivers vehicle to purchaser
- Purchaser is the Regulatee as it purchases and imports the vehicle from U.S.
- Regulatory filings do not apply (private importation) under the *Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations*
- Required to follow importation requirements under *the On-Road Vehicle and Engine Emission Regulations if more than 10 vehicles or engines are imported in a year*

Reports and Records

- Reports
  - End of Model Year Report
    - June 30 following model year
      - First report is due June 15, 2015 for 2014 model year
    - Environmental performance of vehicles and credit/ deficit calculations
    - When requested Environment Canada will work with manufacturers and associations to coordinate reporting requirements
  - Content of reports to be streamlined and limited for
    - compliance verification
    - assessing the environmental performance of the regulations
- Records
  - Companies maintain and submit evidence of conformity
  - To be provided upon request only

Reports Required information

Information to be submitted for a Vehicle

- 1. Vehicle Serial Number
- 2. Build Date (optional)
- 3. Cd (Bin)
- 4. Steer Tire Crr
- 5. Drive Tire Crr
- 6. Extended Idle Reduction (AES)
- 7. Weight Reduction
- 8. Vehicle Speed Limiter (VSL)
- 9. Emission Regulatory Subcategory
- 10. Vehicle Fleet Name
- 11. Vehicle Subfleet Name
- 12. Emission Control Identifier
- 13. Engine Serial Number (ESN) + Manufacturers
- 14. Engine Family Name
- 15. Vehicle Model
- 16. Model Year
- 17. GEM Result [g CO2/ton-mile]
- 18. FEL [g CO2/ton-mile]
- 19. GHG Standard [g CO2/ton-mile]
- 20. Useful Life [miles]
- 21. Payload [tons]
- 22. Averaging Set
- 23. AT/IT Fleet (Family) Name
- 24. AT SubFleet (SubFamily) Name
- 25. IT SubFleet (SubFamily) Name
- 26. Advanced Technology Indicator
- 27. Advanced Technology Factor
- 28. Innovative Technology Indicator and factor

Information to be submitted for an Enginee

1. Engine Fleet (Family) Name
2. Engine Serial Number (ESN)
3. Engine SubFleet (SubFamily) Name
4. Engine Model Year
5. CO2 FCL (g/hp-hr)
6. CO2 FEL (g/hp-hr)
7. EC (EPA) Engine CO2 Standard (g/hp-hr)
8. N2O FEL and Standard (0.10 g/hp-hr)
9. CH4 FEL and Standard (0.10 g/hp-hr)
10. Transient Cycle Conversion
11. Canadian Volume for Each Engine
12. Duty Cycles
13. Useful Life (engine)
14. Averaging Set
15. Advanced Technology (AT)
16. Advanced Technology Factor
17. Innovative Tech (IT)
18. Innovative Tech Factor or Separate Credit
19. AT/IT Fleet (Family) Name
20. AT SubFleet (SubFamily) Name
21. IT SubFleet (SubFamily) Name

*** Compliance template will be available**

Compliance Flexibilities: Small volume exemption

- Manufactured or imported in Canada less than 200 vocational vehicles and tractors in 2011
- Average number of vocational vehicles and tractors manufactured or imported for sale in Canada for the three most recent consecutive model years preceding the model year it is exempted is also less than 200.
- 2014 Report to include:
  - Identification of the company
  - Statement that vehicles are exempted under the small volume provisions
  - the # of vehicles that the company manufactured or imported in 2011 for sale in Canada
  - the average # vehicles that the company manufactured or imported for sale in Canada for the three most recent consecutive model years preceding that model year (2011, 2012, 2013)
- Engines in these vehicles are required to comply with the standards

How will Compliance be Assessed?

- Companies would be required to demonstrate compliance with emissions standards using prescribed emissions testing procedures or simulation modelling procedures, aligned with the U.S.:
  - Vocational vehicles: computer simulation model (GEM)
  - Engines: prescribed test cycles on a engine dynamometer (engine only testing)

- EPA Certificates accepted to demonstrate compliance with the emissions standards

Other Administrative Requirements

Vehicles or engines must also comply with the *On-Road Vehicle and Engine Emission Regulations*:

- Importation declaration
- National emissions mark
- Maintenance and submission of records
- Application for exemptions
- Notices of defect

Contact Information

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