



Cargo - Class 8 Vehicles - Impact of Lower Emission
& ZEV

AMTA Alberta Motor
Transport Association

Commercial Transportation Emissions

TRANSPORTATION EMISSIONS

52% of AB GDP is transported by commercial carriers

- ON-ROAD Freight – 33% of Canadian Transportation Sectors' emissions

FEDERAL POLICY OBJECTIVE:

REDUCTION OF GREENHOUSE GAS (GHG) EMISSIONS

- 30% of new vehicles Zero Emission Vehicle (ZEV) in 2030
- 100% of new vehicles ZEV in 2050

What are the pathways available to achieve this?

- Government
 - Regulations & Infrastructure
- Commercial Transportation Industry
 - Lower and ZEVs
 - Technologies currently available

FUEL CELL ELECTRIC VEHICLES (FCEV)



BATTERY ELECTRIC VEHICLES (BEV)

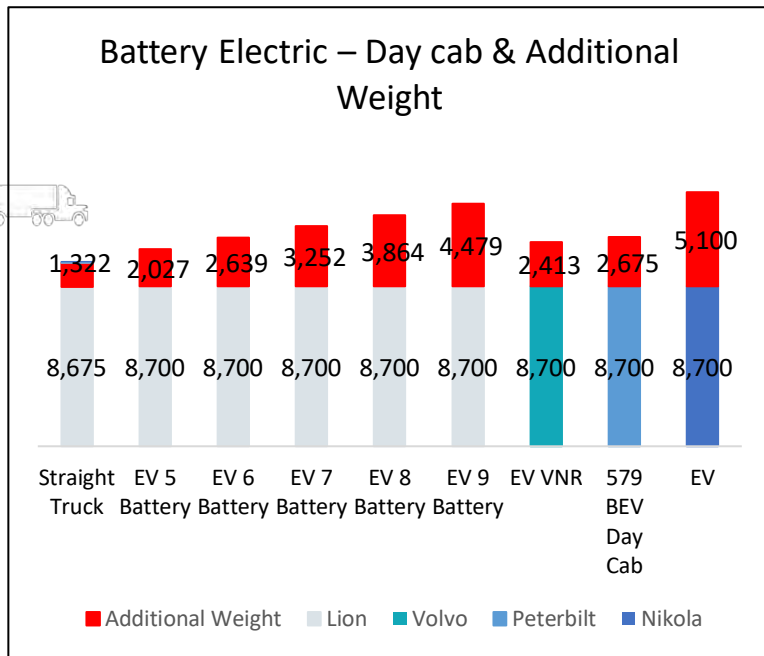


HYDROGEN-DIESEL DUAL FUEL VEHICLES



ZEV-VEHICLES – SIGNIFICANTLY HEAVIER

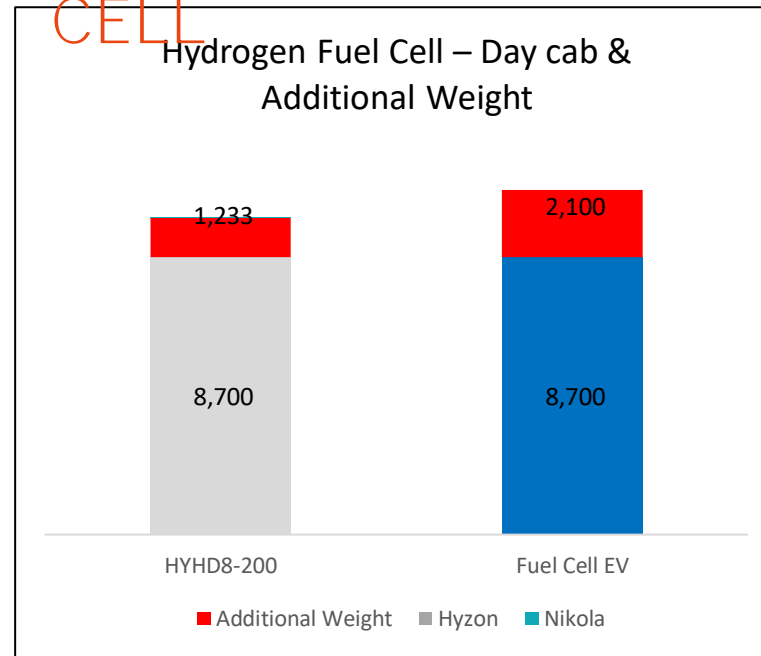
BATTERY ELECTRIC



Average Additional Weight: 3,086 kg

+35%

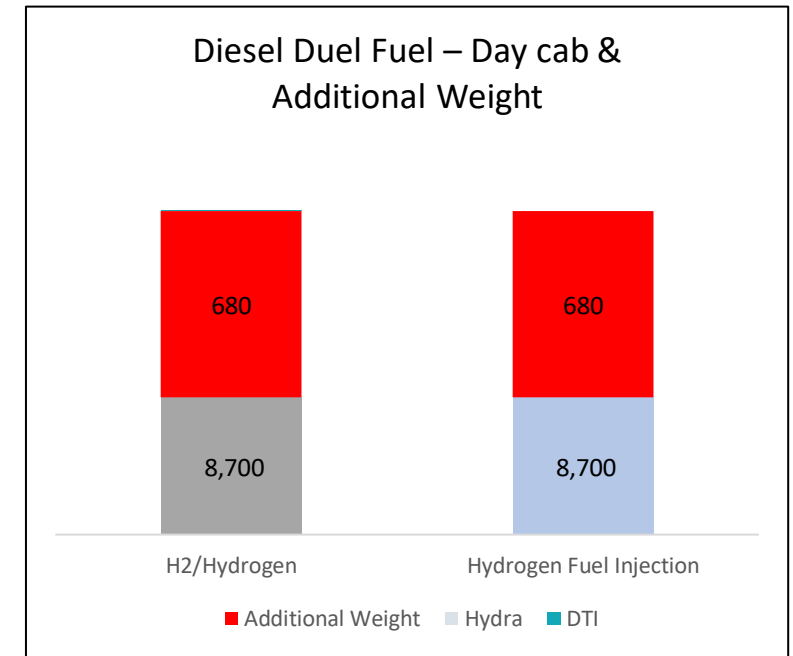
HYDROGEN FUEL CELL



Average Additional Weight: 2,111 kg

+24%

HYDROGEN-DIESEL



Average Additional Weight: 680 kg

+8%

FEDERAL AND PROVINCIAL WEIGHTS AND DIMENSIONS

Carrier Impact

REDUCTION

Cargo Weight per vehicle

INCREASE

Number of vehicles needed to support business operations

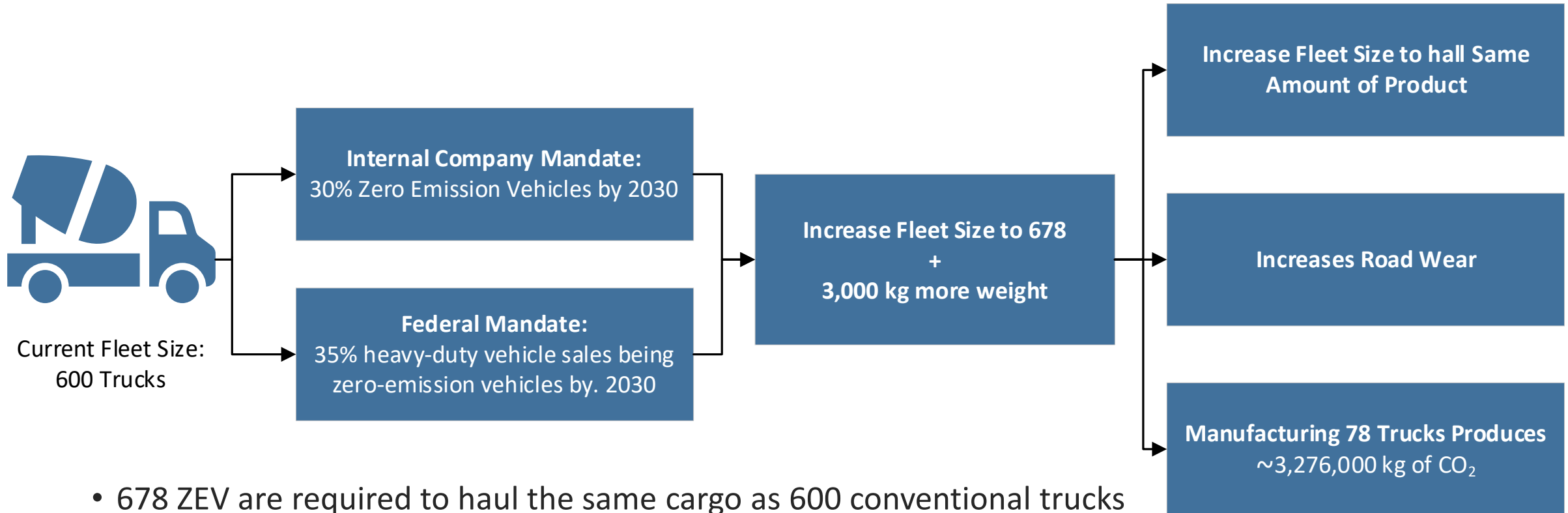
INCREASE

Cost per vehicle

NEW

Operational considerations

REAL WORLD CASE STUDY - CONCRETE

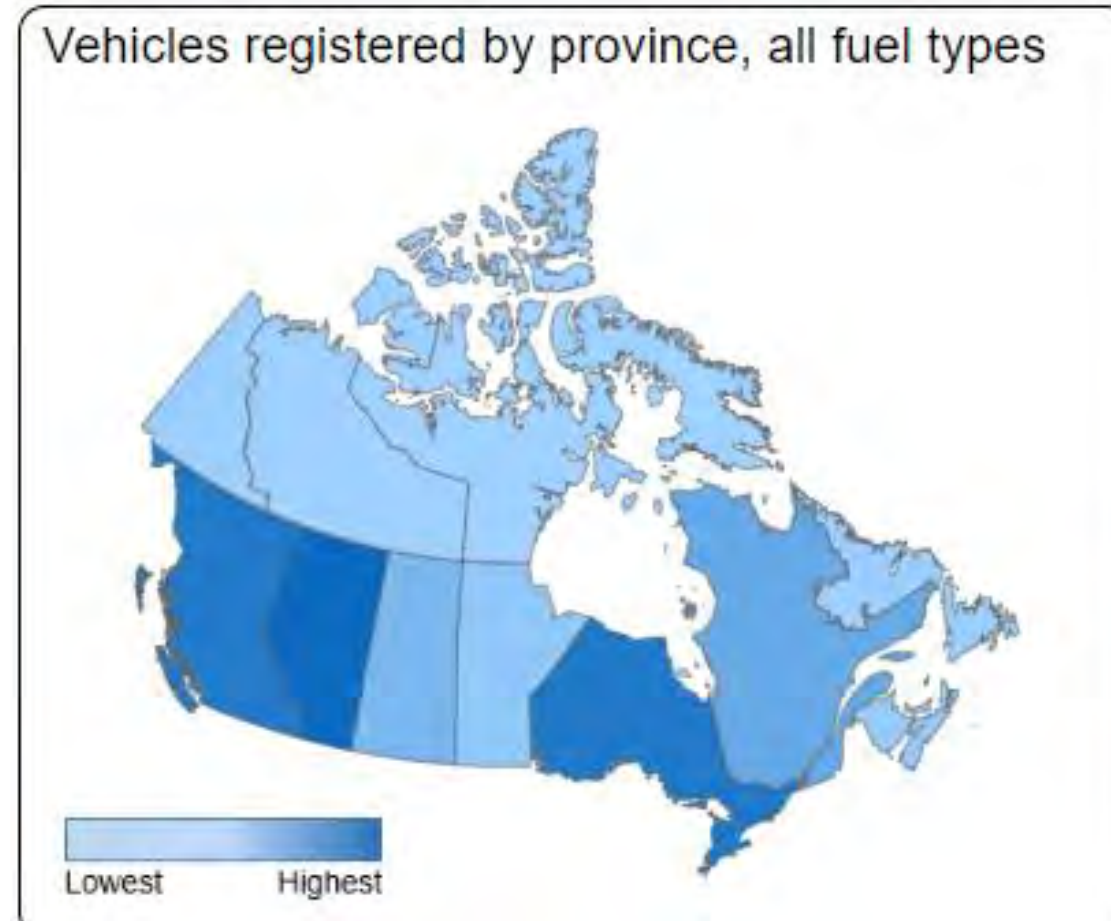


- 678 ZEV are required to haul the same cargo as 600 conventional trucks
- ZEV ranges between \$500,000 - \$800,000
- Conventional truck ranges between \$180,000 – \$210,000
- Additional 78 trucks investment = \$39-62 million

2022 STATISTICS CANADA

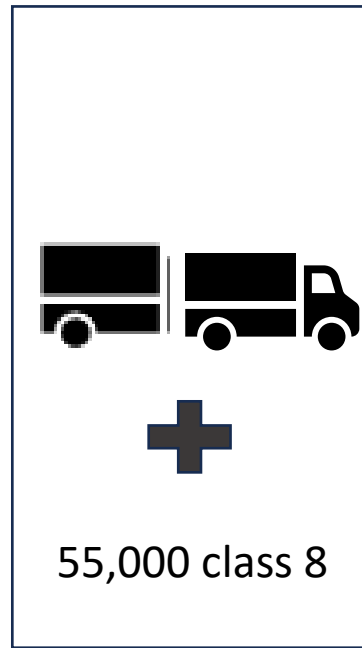
Class 8 Vehicles
registered in
Canada: 647,329

Class 8 Vehicles
registered in
Alberta: 184,457



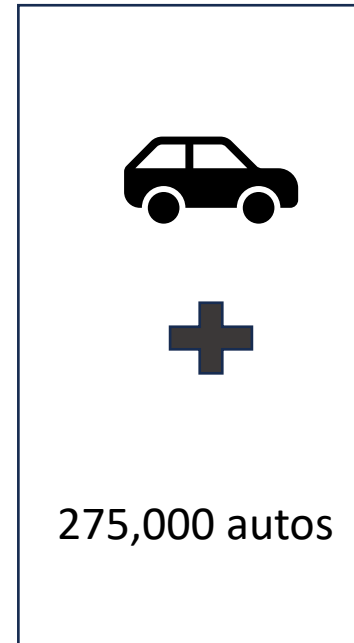
Increase in
Transportation Fleet
or Infrastructure

CURRENT ZEV TECHNOLOGY AND WEIGHTS OF ALBERTA CARRIERS



Heavy Duty Truck

=



Passenger Vehicle

- Move same amount of cargo road infrastructure accommodate 55,000 trucks and trailers
- Equivalent of 275,000 cars
- Calgary/Edmonton approx. 80,000 extra vehicle each

Zero Emission Vehicles

ZERO EMISSION VEHICLES

Additional factors to consider:

- Government mandates – incentives
 - Estimated cost without incentives to replace current Class 8 vehicle in AB + \$100 billion
- Infrastructure
 - Energy/fuel supply
 - Regulations for heavy ZEV ➡ Roads and bridges upgrades
- Technology readiness
- Education (drivers, mechanics, first responders)
- Operational changes
 - Time to fuel
 - Route planning /vehicle range
- Supply chain impacts:
 - Warehouse design (size/# of docks)?
 - Warehouse location – range limitations of ZEV
 - Incremental supply chain impacts with more equipment moving same volume?
 - Retail receiving?



AMTA

TRANSFORMING TRANSPORTATION

Driving Lower Emissions in Alberta

AMTA

Alberta Motor
Transport Association