

# Mitigating Truck-Produced GHG Emissions

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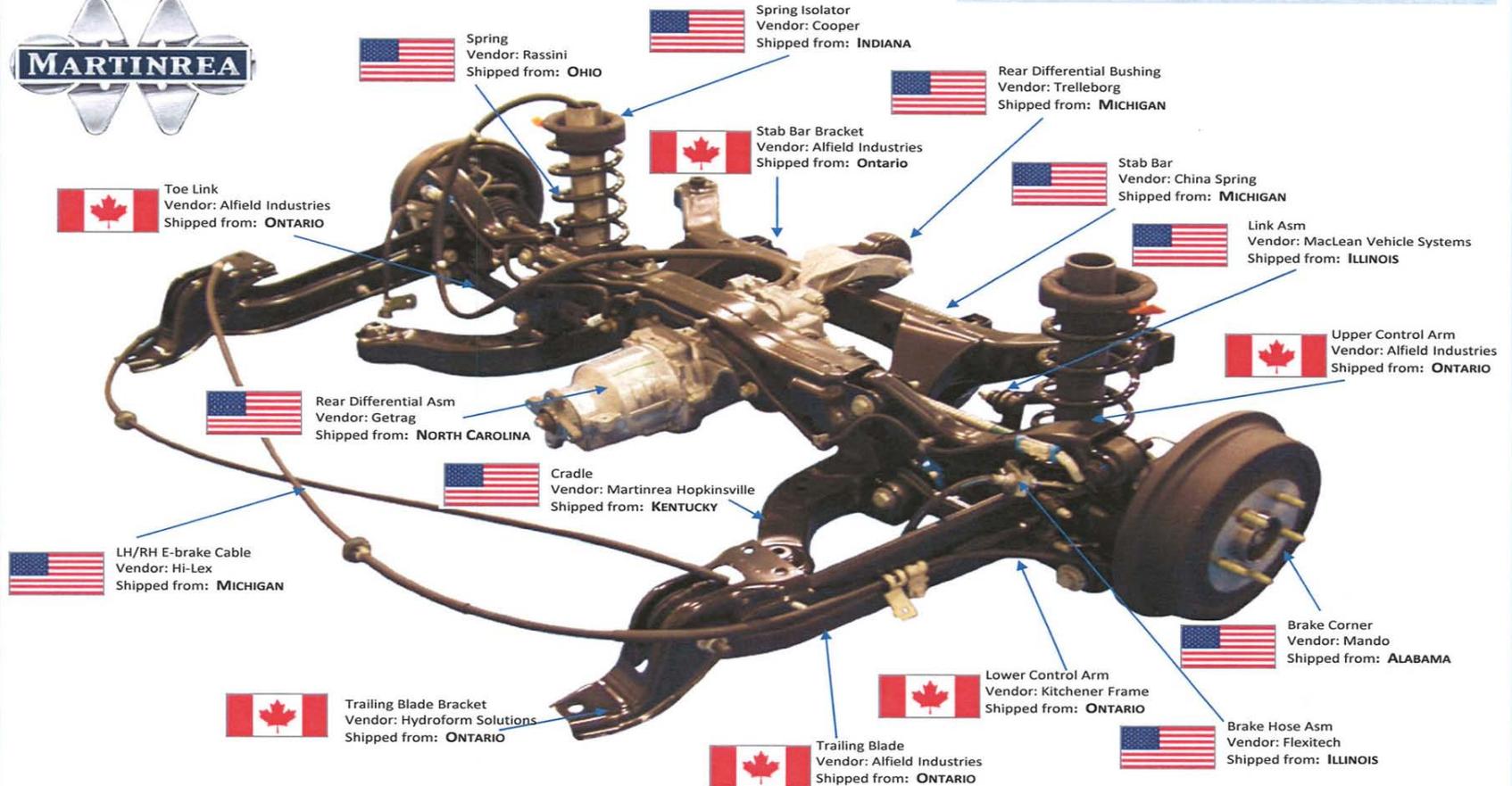
# Quick background on freight transport in North America

- Rapid increase in cross border movement of goods post 1994
- Increasingly parts and components, not finished products
- Illustrates increasingly complex cross border production, supply systems
- F.T. system worked well: excess capacity, technological developments (such as double stacking), deregulation
- We don't trade with each other, we make stuff together



# Example of complex supply chains

## REAR SUSPENSION ASSEMBLY



GENERAL MOTORS THETA PROGRAM – CHEVY EQUINOX / PONTIAC TORRENT

(Assembled by Martinrea in London Ontario and Shipped to Cami Automotive in Ingersoll Ontario)

# By 2000, see emerging perfect storm

- Congestion
- Impact of lack of maintenance
- Impact of failure to harmonize regulations
- After 9-11, thickening borders
- And, a new issue, increasing concern with environmental impact of freight transportation
  - Evolution from 1990s, with major concern focused on “pollution havens” to impact of tailpipe emissions to, in last few years, impact of CO<sub>2</sub> and global warming



# FT GHG emissions: big & increasing

*Since 1990, GHG emissions from medium and heavy-duty trucks have increased 77%, growing at three times the rate of emissions from light-duty vehicles... GHG emissions from freight trucks have increased at a greater rate than all other freight sources...*

*... changes driven by expansion of freight trucking after economic deregulation of the trucking industry in the 1980s; widespread adoption of just-in-time manufacturing and retailing practices by business shippers and receivers, increasing highway congestion; and structural changes in the economy that produce higher-value, lower-weight, and more time-sensitive shipments better served by trucking.*

*(US DoT, Transportation's Role in Reducing U.S. Greenhouse Gas Emissions, 2010)*

# Many ways to mitigate freight truck produced GHG emissions

- What is being moved – greening supply chains
- How it is being moved – tech change (hardware), operational change (software)
- Where it is being moved – local production, etc
  
- Find that there are many ways to make trucks cleaner – some complex and expensive, some simpler and cheaper; some quick, some long-term



But, implementation & implications

Found that neither the implementation of these various mitigation proposals nor their implications were well thought out



# Implementation

- What might be done is widely discussed: methods, not strategies
- How to do it – how to build political constituencies and push policy thru complex legislative and bureaucratic structures – much less discussed
  - Must assess/compare impact of different methods of carbon mitigation: evaluate cost, externalities, impact down the line, start-up time to get systems online
  - Most advocates push on a single mitigation method
  - Remember that the perfect can be the enemy of the good
  - Need to think in terms of multi-dimensioned packages of proposals



# Implications: Cleaner Trucks

Cleaner trucks = more trucks = congestion & new roads

- Truck only, limited access highway system?
- In short, decision to opt for (cleaner) trucks will lead to new truck highway system
- Bottom line: Be wary of incremental change even if it seems to be moving in the “right” direction. Is a new system of truck highways the best solution for the NA freight transport system in the 21st century?



# Implications: Electricity

Electricity poses similar questions

- For foreseeable future, more electricity = more coal
- Less coal = undermine NA rail business model
- More electricity (even assuming source can be resolved) = need new grid (not just new but based on very large new technological requirements)
- What do we do with electric vehicle batteries?



# Implications: Infrastructure

- How do we pay for new infrastructure? Who pays? Are these public goods or private ventures?
  - And regulation of new infrastructure?
- What happens to old infrastructure – oil/gas pipelines, refineries, storage tanks, gas stations? And to people whose livelihood depends on all of this?



# Implications: Local Production

## Local production?

- Less transportation, but greener? Maybe not if it uses more fertilizers and more irrigation. More distant production may be environmentally sounder
- Also, even if greener now, what about wider scheme of things? If we do not buy goods from poorer countries now, they will not grow wealthy enough to be greener themselves (think of firewood).
- Optimal greening has to include a historical dimension, too



# Conclusions

- Mitigating truck produced GHG emissions a metaphor for much of greening process
  - What – lots of interesting useful ideas
  - How – is harder
  - Implications of “what” must be examined carefully
- Need systemic thinking – not just focus on one dimension of issue, even if it is the most romantic or “scientific”
- Must think of implementation
- Must think in longer time frames
- A North American issue, not 3 national issues

