



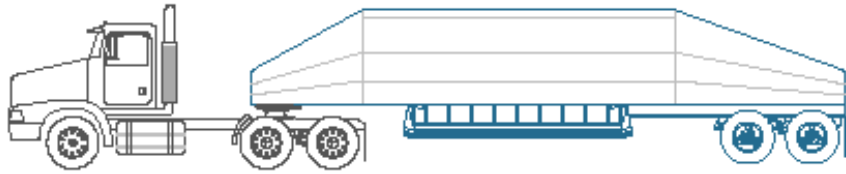
# Primer on Harmonization of High Productivity Vehicles

Pacific North West Economic Region Summit July 23<sup>rd</sup>, 2014

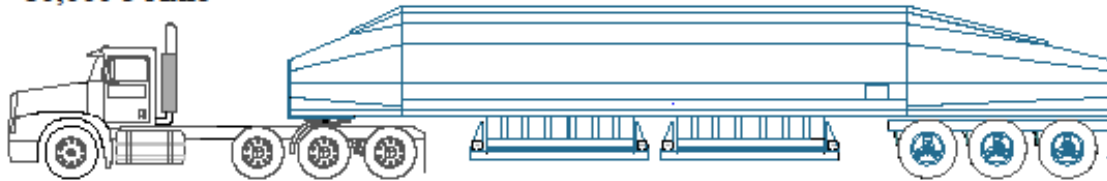
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# Typical Truck Configurations

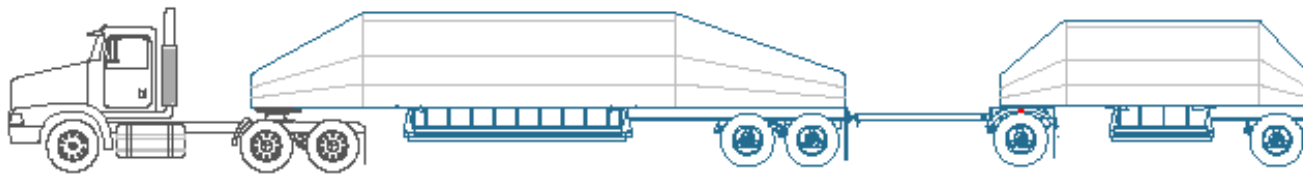
- The configurations shown are operated in the western states and provinces.
- Not all jurisdictions allow all the configurations.
- The most restrictive jurisdictions are functionally trade barriers in terms of transportation costs.



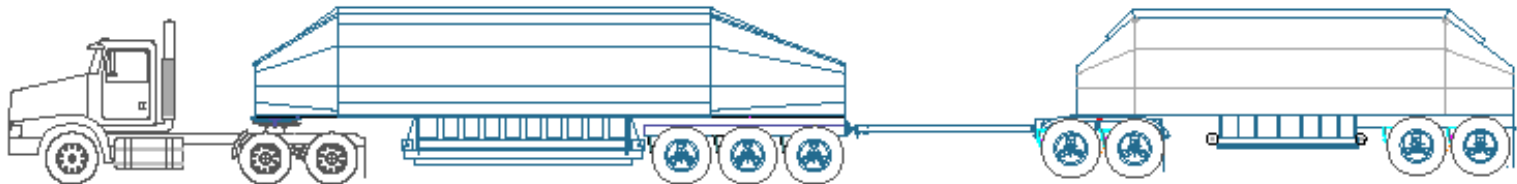
**80,000 5 Axle**



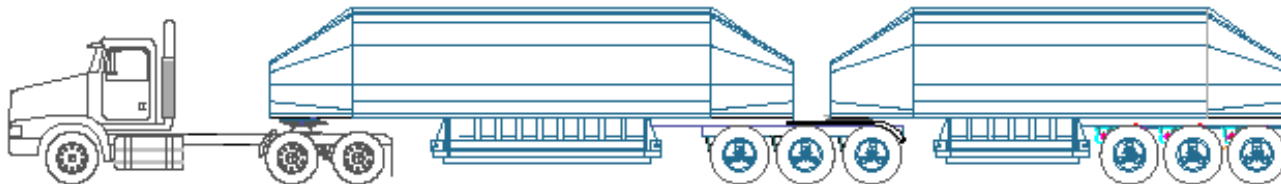
**97,000 - 7 Axle**



**105,000 - 7 Axle**

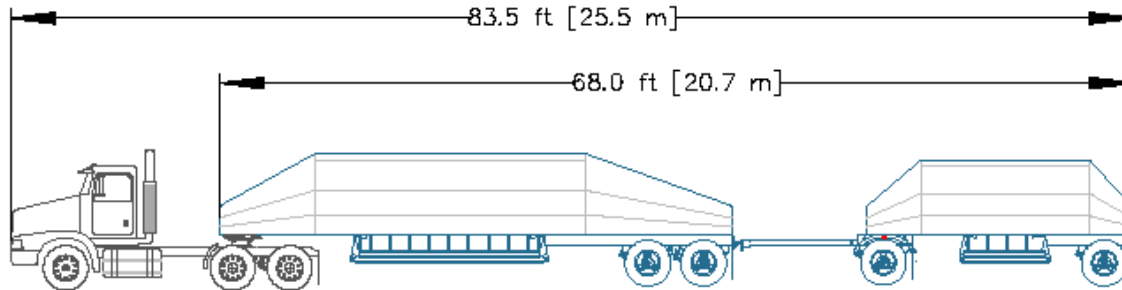


**129,000 - 10 Axle**

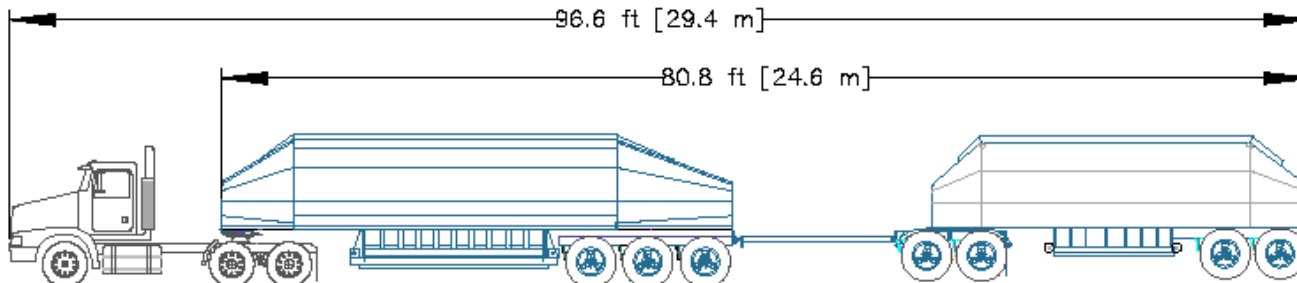


**139,700 - 9 Axle**

# Length is Measured in Different Ways

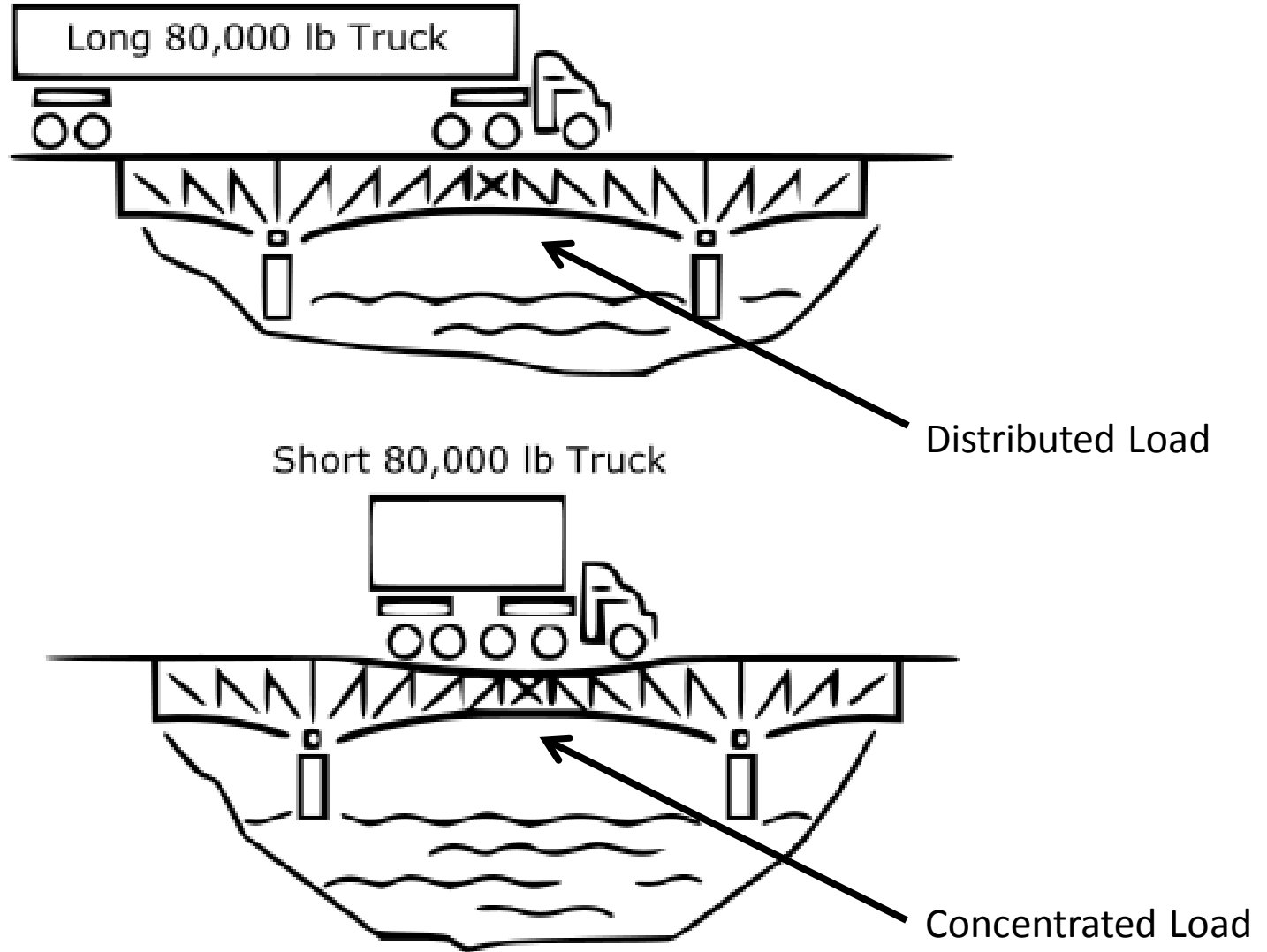


105,000 - 7 Axle



129,000 - 10 Axle

# Why length matters



# How do we evaluate Configurations

- Safety
- Infrastructure Life
- Air pollution
- Congestion
- Producer economics

# Reduced Exposure

- Accident frequency is a function of exposure.
- If we reduce the amount of time spent on the road by definition we narrow the period of time when accidents can occur.
- A simple example is;
  - Two trucks each hauling 20 tons for 12 hours vs 1 truck hauling 40 tons for 12 hours. The one truck scenario has half of the exposure to accidents.

# Higher Qualifications for Drivers

- In the US drivers of multi-trailer trucks have to qualify and test in order to obtain the license endorsement for double trailers.



# Route and Weather Restrictions

- High efficiency trucks are not suitable for all routes.
- Many jurisdictions have specific road or road systems for these vehicles.
- Weather conditions are also a source of higher control on high efficiency trucks. Under some conditions the movement of these vehicles is prohibited.

# The Alberta Study

- The Alberta Infrastructure's Transportation Policy and Economic Analysis Branch commissioned the most comprehensive study of high efficiency trucks in 2001.
- “The findings show that LCV's (high efficiency trucks) have the lowest collision rate when compared with other commercial vehicles in Alberta. When comparing the collision rate amongst truck configuration, it is noted the smallest trucks and hence those with the shortest length and the least vehicle weight have the highest collision rates.”

# Infrastructure Life

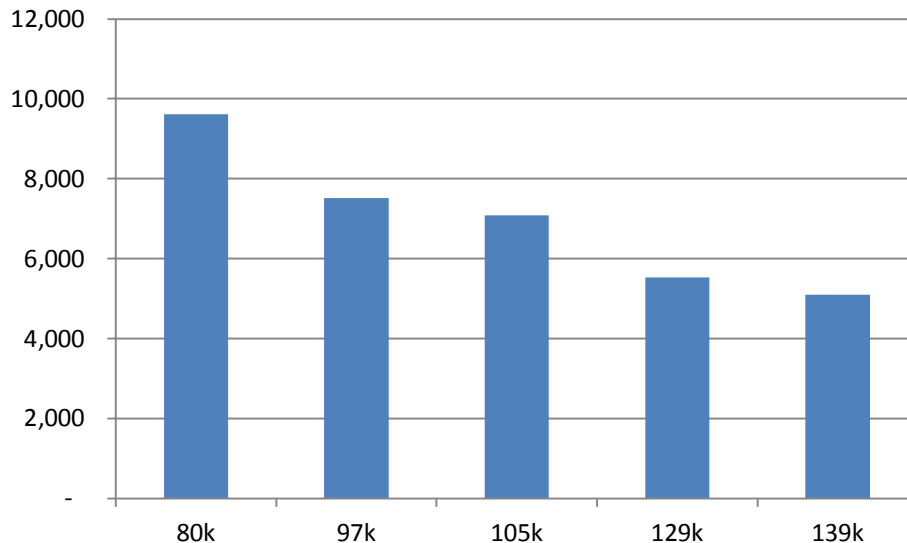
- Preservation of infrastructure is a benefit to all shareholders.
- Science is the logical driver of infrastructure wear decisions.
- High efficiency trucks extend pavement life when compared to traditional 80,000 pound trucks.
- To move 100,000 tons
  - 80k pound 5-axle truck requires 9,148 esals
  - 129k pound 10-axle truck requires 4,102 esals
  - An esal is a pavement wear measurement established by AASHTO in order to compare different configurations.

# Infrastructure Life cont.

- Bridge life is just as critical as pavement life.
- All the typical configurations that operate in the US comply with the Federal Bridge Formula-B. The formula establishes maximum weights and axle spacing in order to preserve bridges.
- The Canadian 139,000 pound configuration does not meet Formula-B because of its shorter length and somewhat heavier axle weights

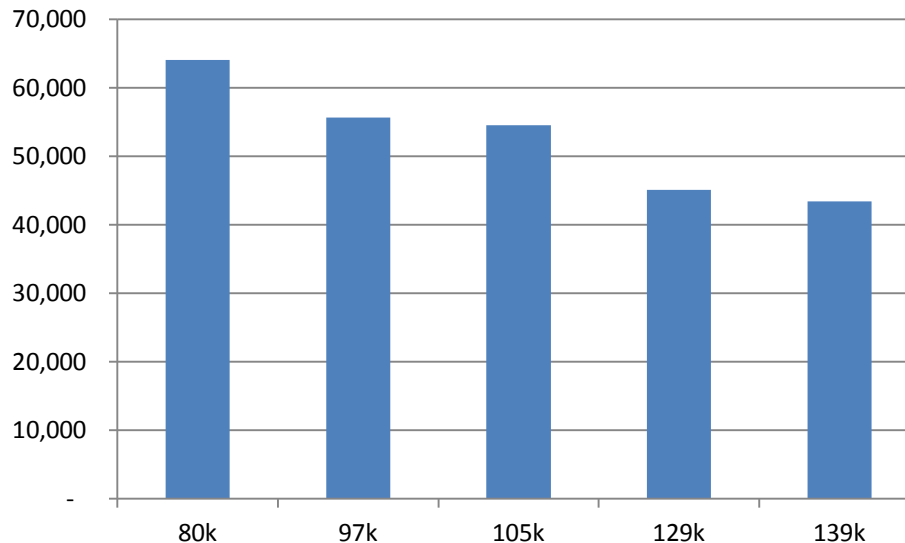
# Congestion

- Congestion is a significant issue that causes reduced productivity and increased travel delays.
- The high efficiency trucks greatly reduce congestion by keeping truck traffic off the highways.
- Hours required to deliver 100k tons 50 miles.



# Air Pollution

- Emission standards for trucks have greatly reduced emissions of green house gases but at considerable expense.
- Using high efficiency trucks can have a large impact on emissions with little expense.
- By using the right truck fuel consumption for a given amount of freight can be reduced by 32% (64,000 vs. 43,000 gals)
- Gallons of fuel to move 100k tons 50 miles



# Producer Economics

- Many commodities from the PNWER are both fungible and priced on a national or world market.
- Wheat for example is priced at a particular port or location.
- Those prices do not change based on the original producer's transportation cost.
- The effect is the producer pays the freight cost either directly or it is deducted from the proceeds.
- The producer cannot adjust its price due to location.
- In efficient transportation is a significant drag on the potential profits of commodity producers.

# The tale of five producers.

- All five producers want to ship their products 50 miles.
- They each have produced 100,000 short tons.
- Each has access to a single configuration of truck.

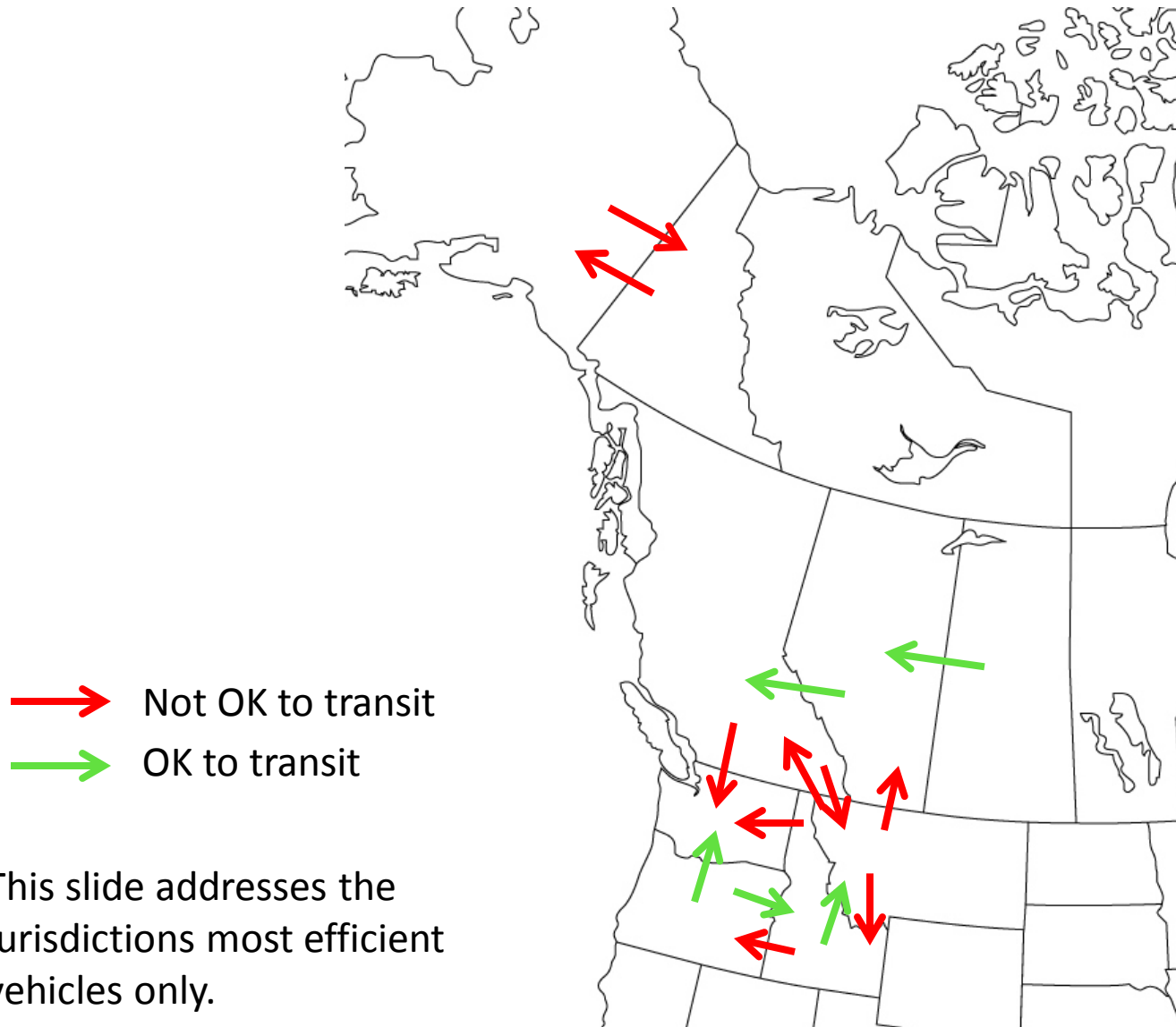
	Freight Cost
• Producer “A” uses 80k lb. 5-axle trucks	\$775,605
• Producer “B” uses 97k lb. 7-axle trucks	\$630,423
• Producer “C” uses 105k lb. 7-axle trucks	\$613,551
• Producer “D” uses 129k lb. 10-axle trucks	\$498,474
• Producer “E” uses 139k lb. 9-axle trucks	\$468,724
• Disparate truck size and weight laws have unintentionally picked winner and losers	



# Harmonization

- Harmonization should not mean uniformity because all roads are not equal.
- Harmonization should provide for the use of like configurations in multiple jurisdictions.
- Harmonization should improve safety, congestion, air pollution and extend infrastructure life.
- Harmonization should stabilize and improve local economies.

# Barriers to Each Jurisdictions most Efficient Trucks



This slide addresses the jurisdictions most efficient vehicles only.