# CARB/ Advanced Clean Trucks

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Sheri Call, President & CEO
Washington Trucking Associations

# What is Advanced Clean Trucks (ACT)?

- Governor joined 14 states with Memorandum of Understanding in 2019
- Adopted by 2020 legislature
- Requires WA Ecology to adopt CARB policy to reduce emissions from transportation sector
- ACT - a mandate on truck/engine OEMs to sell an increasing percentage of ZEVs starting with model year 2025

# Problems

## Funding

Truck costs are 2-3 times as much as ICE

## Infrastructure

Power

- 480v 3-phase
- As much as $150,000 Charging
- Depending on use case $50k-$250k

## Weight

5,000-8,000lbs more

# Irony

- 70%
- 82,000 vs 80,000
- BEV vs APU and FET
- 1:60
- Intake vs exhaust

# Misunderstandings/Misconceptions

## Truck availability

OEM to Dealer to end user

## Credits

Availability

- Fines to OEMs if non compliant

## Truck uses

Applications that work

- Local P&D
- Refuse
- Buses

Applications that don't work

- Long Haul; Regional
- Vocational
- Snow Plows

# Solutions/Alternatives

| | |
|---|---|
| Exemptions | • Continue to exempt certain applications and cases per CARB |
| Federal Standards | • EPA standards will be coming shortly that exceed CARB's |
| Other states | • Some states looking to form their own exemptions |

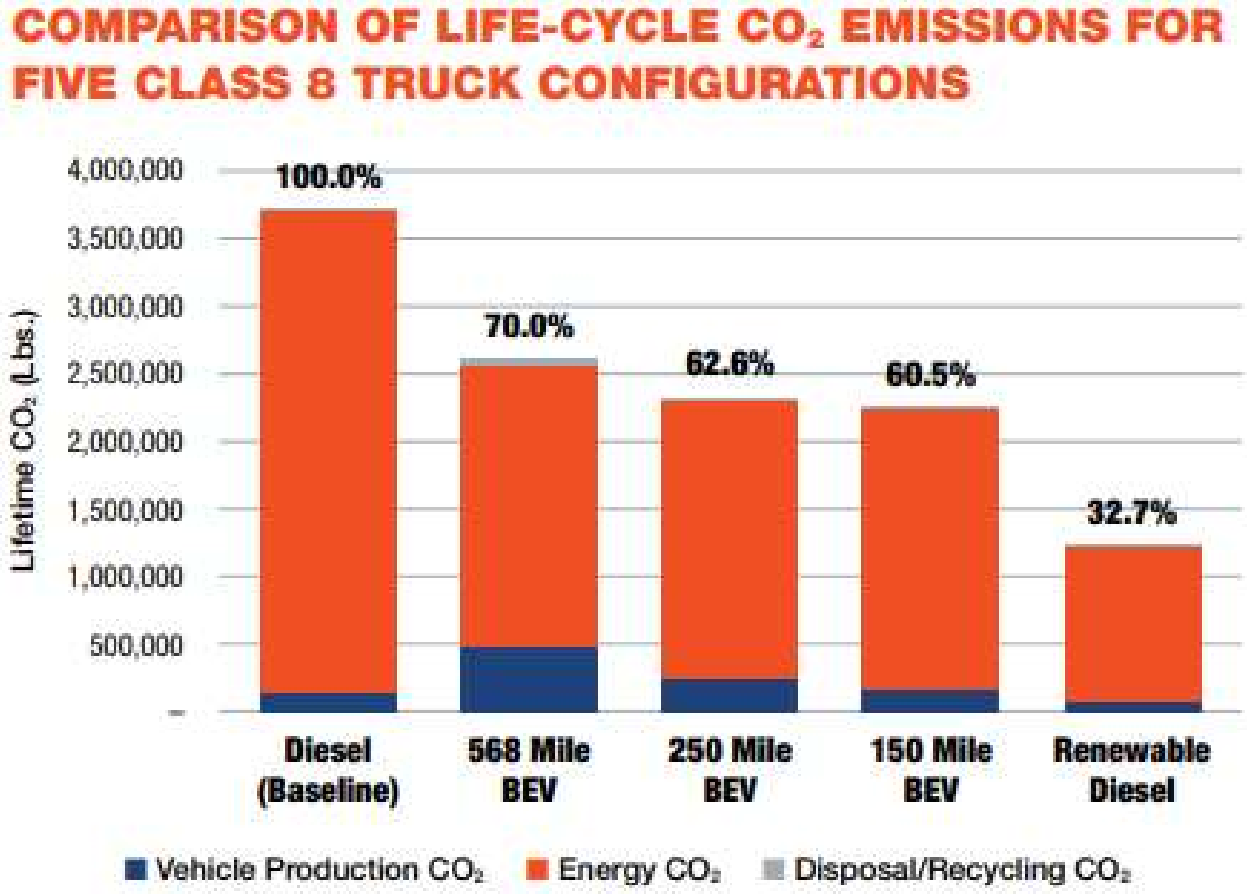
# Interim Steps
# Renewable Diesel

## WHAT IS RENEWABLE DIESEL?

RD is a fuel that is produced to be "chemically identical" to petroleum diesel; thus, RD can be mixed with petroleum diesel in any amount or used as a standalone, drop-in fuel in a traditional diesel truck without consequences.

There currently is research that aims to develop RD from new waste streams, as well as algae.

# Renewable Diesel



# Summary of costs and benefits of ICE RD vs BEV

| | ICE Truck Using Renewable Diesel | Battery Electric Truck |
|---|---|---|
| **Environmental Benefits** | 67.3 percent decrease in per truck life-cycle $CO_2$ from ICE diesel | 30.0 to 39.5 percent decrease in per truck life-cycle $CO_2$ from ICE diesel |
| **Operational Changes** | No operational changes from ICE diesel | Limited range and cargo capacity; substantial operational challenges using today's BEV equipment |
| **Costs to Reach 22.6% $CO_2$ Decrease** | $203 billion across 15 years | $1.19 trillion across 15 years |
| **Cost per Percentage Point Decrease in $CO_2$** | $8.98 billion | $52.65 billion |

# Findings so far

- **Credits not being swapped or traded**
  - Why?
- **Charging is MASSIVE hurdle**
  - Geographic
  - Infrastructure
- **2 year project!!**
- **90%+ reduction in new diesel Class 8 sales in CA**
  - Older trucks are staying in the fleet longer
    - **Exact Opposite effect intended**