Autonomous Trucks – Freight Opportunities

I95 Corridor Coalition
Mike Roeth
June 21, 2016

An effort of the Carbon War Room and the North American Council for Freight Efficiency
Today

Trucking Efficiency
Fleet Fuel Situation
Technologies
Autonomous Trucking
- Platooning
Questions
Dedicated to doubling the efficiency of North American goods movement

We pursue this goal in two ways:
1. By improving the quality of information flow and
2. By highlighting successful adoption of technologies

www.nacfe.org

www.truckingefficiency.org
Fuel Economy Technologies

- Which ones are most popular on new trucks?
- Did they keep buying them?
- Are they delivering fuel savings?

IFTA MPG and Adoption Percent Over Time

- 2014 - $9,000 in fuel savings per truck per year

- Fleetwide MPG

- Average MPG
- Business as Usual
- All US Trucks (FHWA)
- Adoption
Confidence Reports

Complete, unbiased review of available technologies for fleet confidence to adopt.

- Tire Pressure Systems
- 6x2 Axles
- Idle Reduction
- Transmissions
- Engine Parameters
- LRR Tires
- Lightweighting
- Downspeeding
- Maintenance for FE
- Determining Efficiency
- Trailer Aerodynamics
- Tractor Aerodynamics
- Lubricants
- Engine Accessories
- Platooning

www.truckingefficiency.org
Mfrs + DOE = SuperTruck

- 50% More Efficient
- Four Teams
  - Cummins Peterbilt (10.7 mpg)
  - Daimler (12.3 mpg)
  - Volvo
  - Navistar
- Many Technologies
  - Waste Heat Recovery
  - Aerodynamics
  - Hybridization
  - Idle Reduction
  - Tires, wheels, LW8ing, etc.
- SuperTruck II awards in Fall ‘16

http://energy.gov/articles/infographic-how-supertruck-making-heavy-duty-vehicles-more-efficient
Path to Autonomous Trucking

- Early Adopters
  - Ag, Mining, Defense, Ports
- Evolution rather than Revolution
- Peloton, Daimler “2025”, Freightliner Inspiration, European Platoon Challenge, etc.

- Implications
  - Safety, Efficiency, Driver fatigue/attraction, Congestion
  - Technical, Legal, Social
  - Where is the value?
Path to Autonomous Trucking

• Levels
  – L0 No automation
  – L1 Assisted
  – L2 Partially Automated
  – L3 Conditional Automation
  – L4 Very High Automation
  – L5 Full Automation “Driver-less”

• Demonstrations

L1: Peloton 2 Truck Platooning (2014)
L3: Daimler Highway Pilot Connect (2016)
About 9% trailing truck and 4% on lead yielding 6.5% combined average.


NACFE Study - Findings To Date

- Valid/proven fuel-saving strategy for fleets
- Bulk of required technology currently available
- Intervals not as close as widely believed
- Minimal stress on drivers
- Will likely begin as inner-fleet option
- Will likely become extra-fleet option quickly
- Will expedite autonomous driving tech
Current Platooning Concerns

- Stress/impact on drivers
- Safety
- Accessibility (How often will it be an option?)
- Will drivers do it?
- Cost
- Calculating fuel savings
- Privacy/security
MPG Timeline

- **2016**
  - Scaling Current Techs (~9 mpg)

- **2021**
  - Bringing SuperTruck(s) to Market (~11 mpg)
  - Platooning (~12 mpg)

- **2026**
  - Highly Automated Driving (~12+ mpg)
Thank You – Questions?

www.truckingefficiency.org  
www.nacfe.org

For questions, comments and suggestions, contact Mike at 260.750.0106, mike.roeth@nacfe.org mroeth@carbonwarroom.com

We ARE the people we have been looking FOR!
Trucking Efficiency

Save Fuel, Less Emissions

- Confidence Reports
- Decision-Making Tools
- Workshops / Industry Events
- Tech Guide at www.truckingefficiency.org
- Helping you profit within GHG
- Thought Leadership
- Collaboration
- 2016 Run on Less Roadshow