



# Autonomous Trucking

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



# Today



- Trucking Efficiency
- Fleet Fuel Situation
- Technologies
- Autonomous Trucking
- Questions



# Trucking Efficiency



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

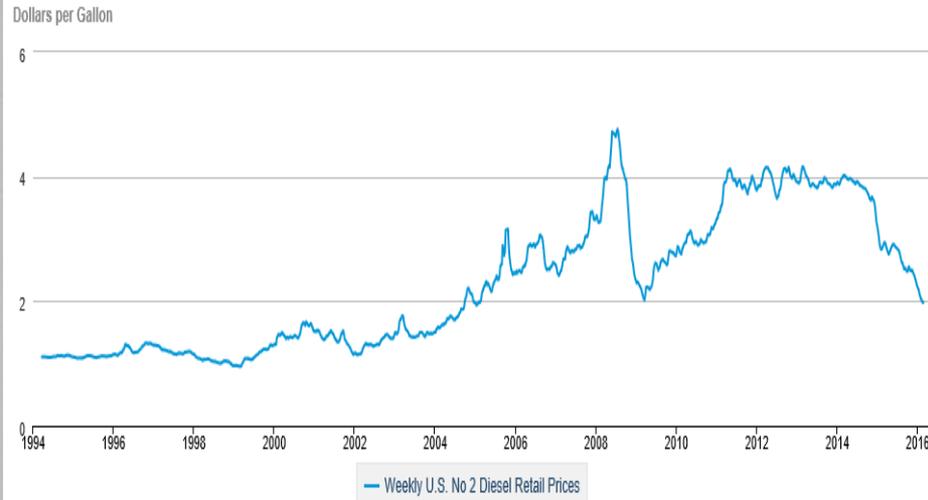


# US Trucking Fuel Costs



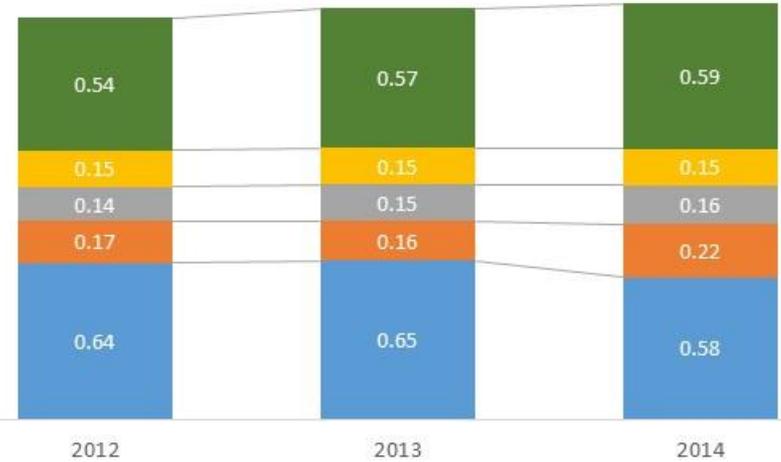
Weekly U.S. No 2 Diesel Retail Prices

DOWNLOAD



Source: U.S. Energy Information Administration

Fuel Truck/Trailer Repair & Maint Other Operational Driver Wages & Benefits



Source: ATRI Sept 2015

2014 = ~\$70,000/year/truck, 2016 = ~\$36,000/year/truck  
 2020 = ?, 2026 = ?



# 4<sup>th</sup> Annual Fleet Fuel Study



Real Fleets.  
Real Experience.



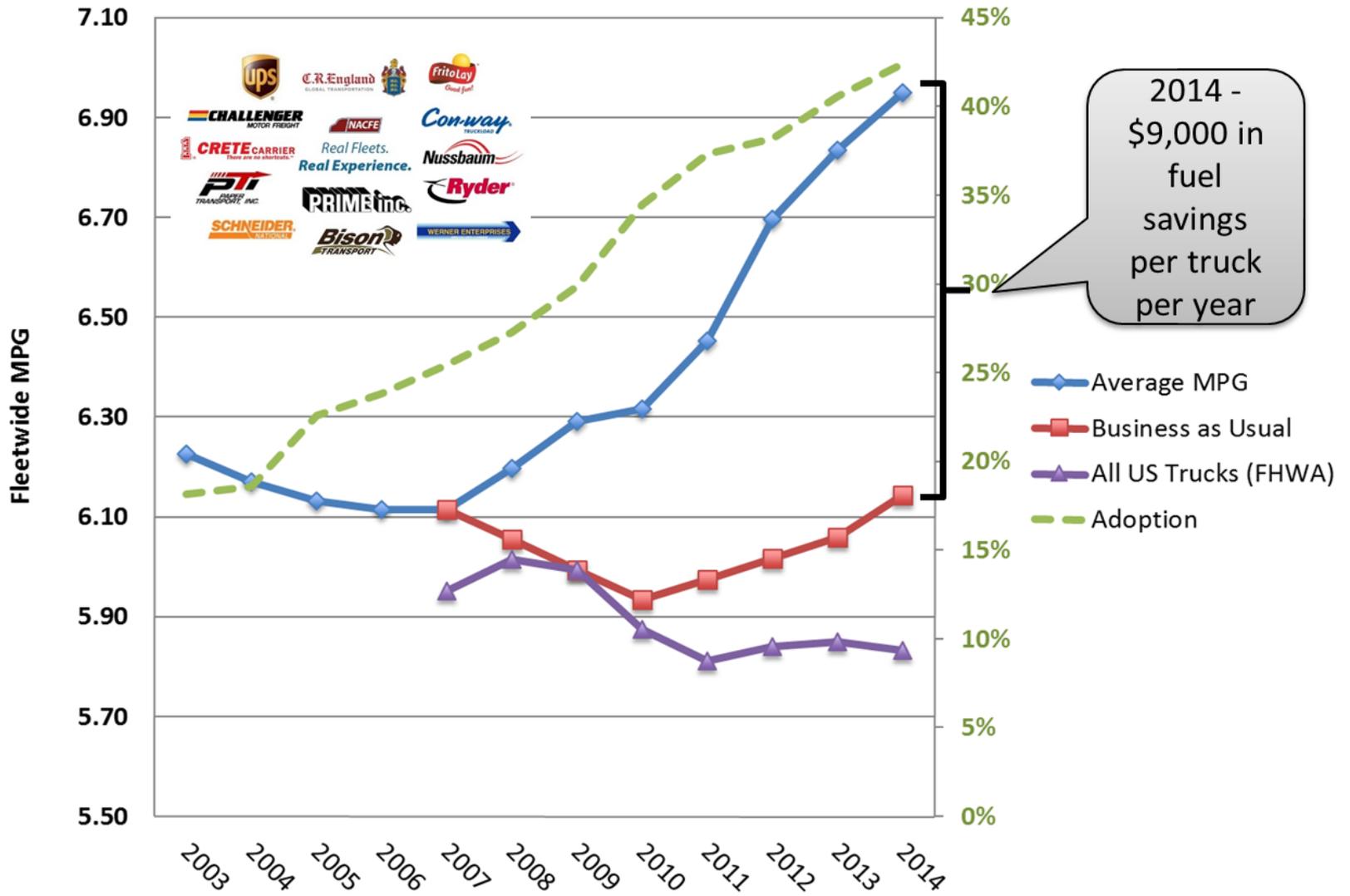
# Fuel Economy Technologies



- 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



# 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



Platooning



Driver Coaching



# Paradigm Shift in Trucking?



## Trends

- Urbanization, Smaller stuff, Internet buying, Computing power, Labor shortage
- “Uber for Trucking”
- “Smarter” Powertrains
- Location Based Techs
- Safety Techs -> Automated -> Autonomous Driving
- Reliability Improves
- Mode Transfer More Efficient
- Alternative Fuels
- Incremental Tech Adoption  
E.g. Cameras replace mirrors

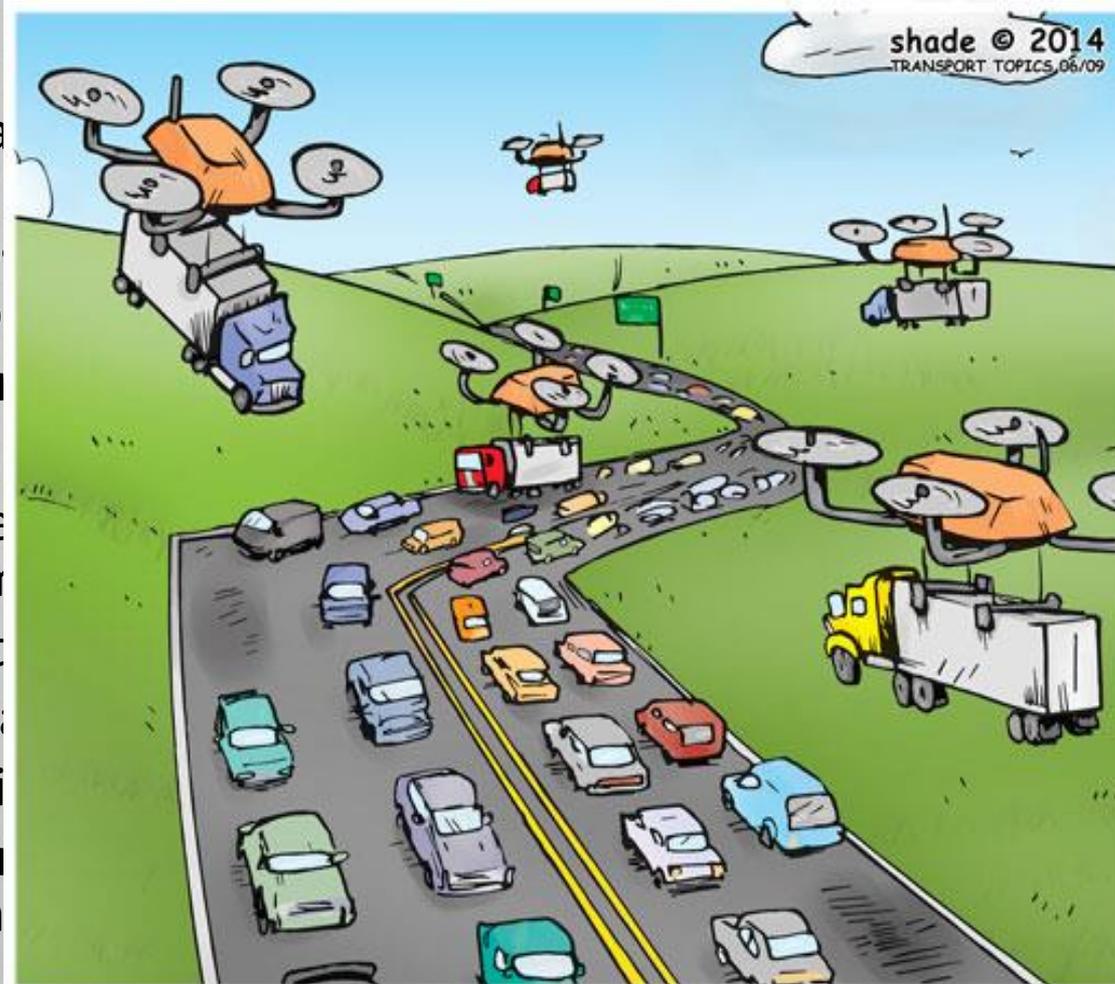


# Paradigm Shift in Trucking?



## Trends

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- power, L
- “Uber for
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- Location
- Safety Te
- Autonom
- Reliability
- Mode Tr
- Alternati
- Incremen
- E.g. Cam



IMPROVED DELIVERY TIMES AND AERODYNAMICS



# Path to Autonomous Trucking



- Early Adopters
  - Ag, Mining, Defense, Ports
- Evolution rather than Revolution
- Frost & Sullivan, TMC, + Studies
- Peloton, Daimler “2025”, Freightliner Inspiration, European Platoon Challenge, etc.
- Passenger Cars; Google, etc.
- Implications
  - Safety, Efficiency, Driver fatigue/attraction, Congestion
  - Technical, Legal, Social
  - Where is the value?



# Path to Autonomous Trucking



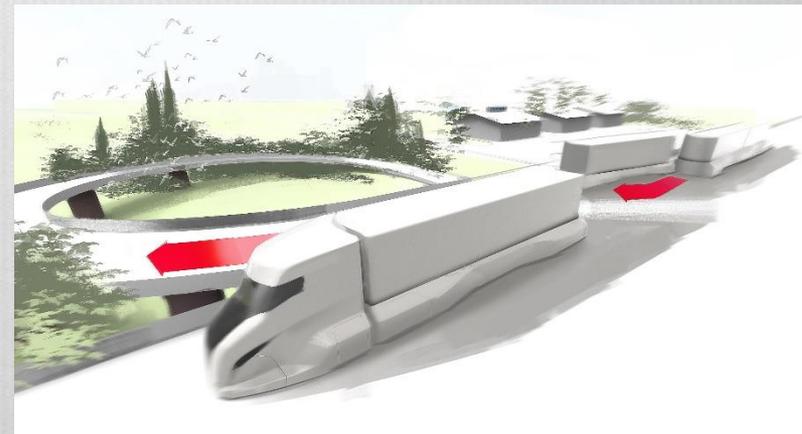
- DOT Levels
  - L1 Assisted
  - L2 Semi-Automated
  - L3 Highly Automated
  - L4 Fully Automated
- Demonstrations



L2: Peloton 2 Truck Platooning (2014)



L3: Daimler Highway Pilot Connect (2016)



L4: Volvo SlipStream Concept (2015)



# Roeth Timeline



Scaling Current Techs  
(~ 9 mpg)



Bringing SuperTruck(s) to  
Market (~11 mpg)



Platooning (~12 mpg)



Highly Automated  
Driving (~12+ mpg)

2016

2021

2026



# Summary



Fleets are Taking Action

Manufacturers are Delivering

Autonomous Levels of Operation are Here

Doubling Freight Efficiency is Possible

Confidence Remains a Barrier





# Trucking Efficiency



## Save Fuel, Less Emissions

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

