

Technology Adoption for Tractor Trailer Fuel Efficiency

Northwestern University -
Center for the Commercialization of Innovative
Transportation Technology

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www.nacfe.org



NACFE Overview

- NACFE is a non-profit organization dedicated to doubling the efficiency of the freight transportation industry
- We pursue this goal by
 - improving the quality and credibility of information flow
 - and highlighting the success of high efficiency technologies.

2011 Fleet Study

“Real Fleets. Real Experience.”



Fleet Study

- OTR Tractors and 53' Trailers
- 8 Fleets; 30k tractors & 88k trailers.
- 2010 - 3.1b miles & 496m gals of fuel.
- 60 available technologies and practices bought.

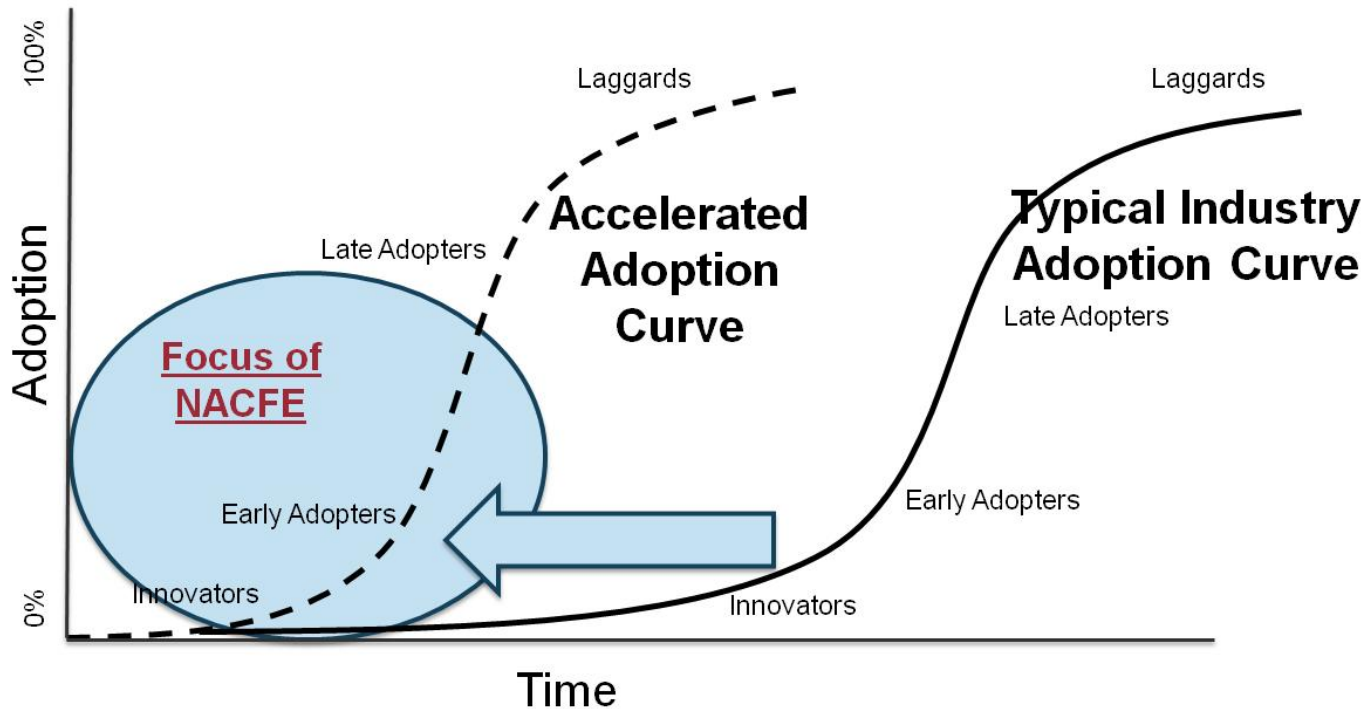
- **Findings**

- **Adoption by fleet, by technology & fuel performance.**
- **Interesting adoption experiences.**
- **Best Practices in fuel management.**
- **Conclusions and Recommendations**



Prior NACFE Views

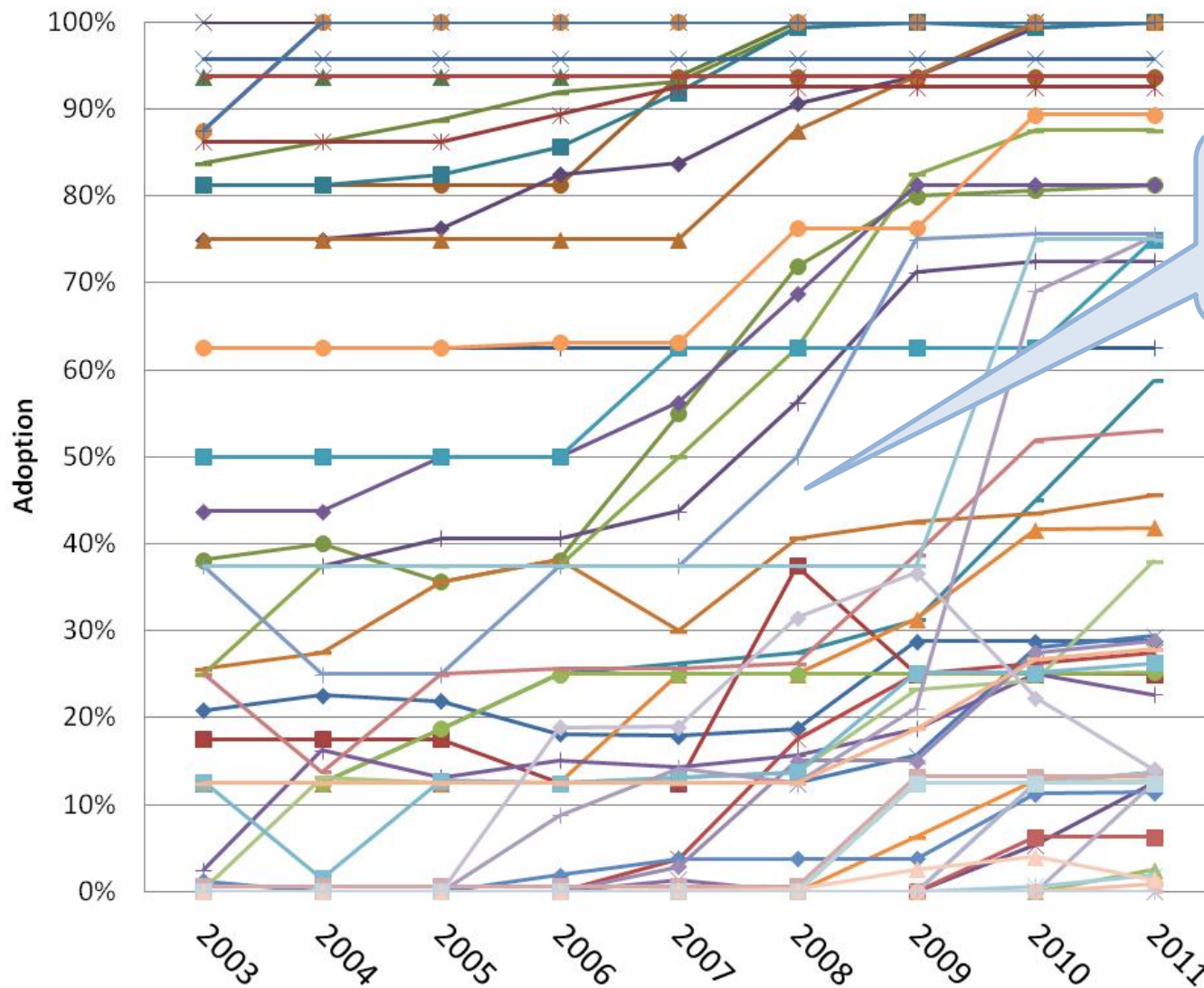
NACFE will Accelerate *Innovation and Early Adoption*



Some of the 60 Technologies & Practices

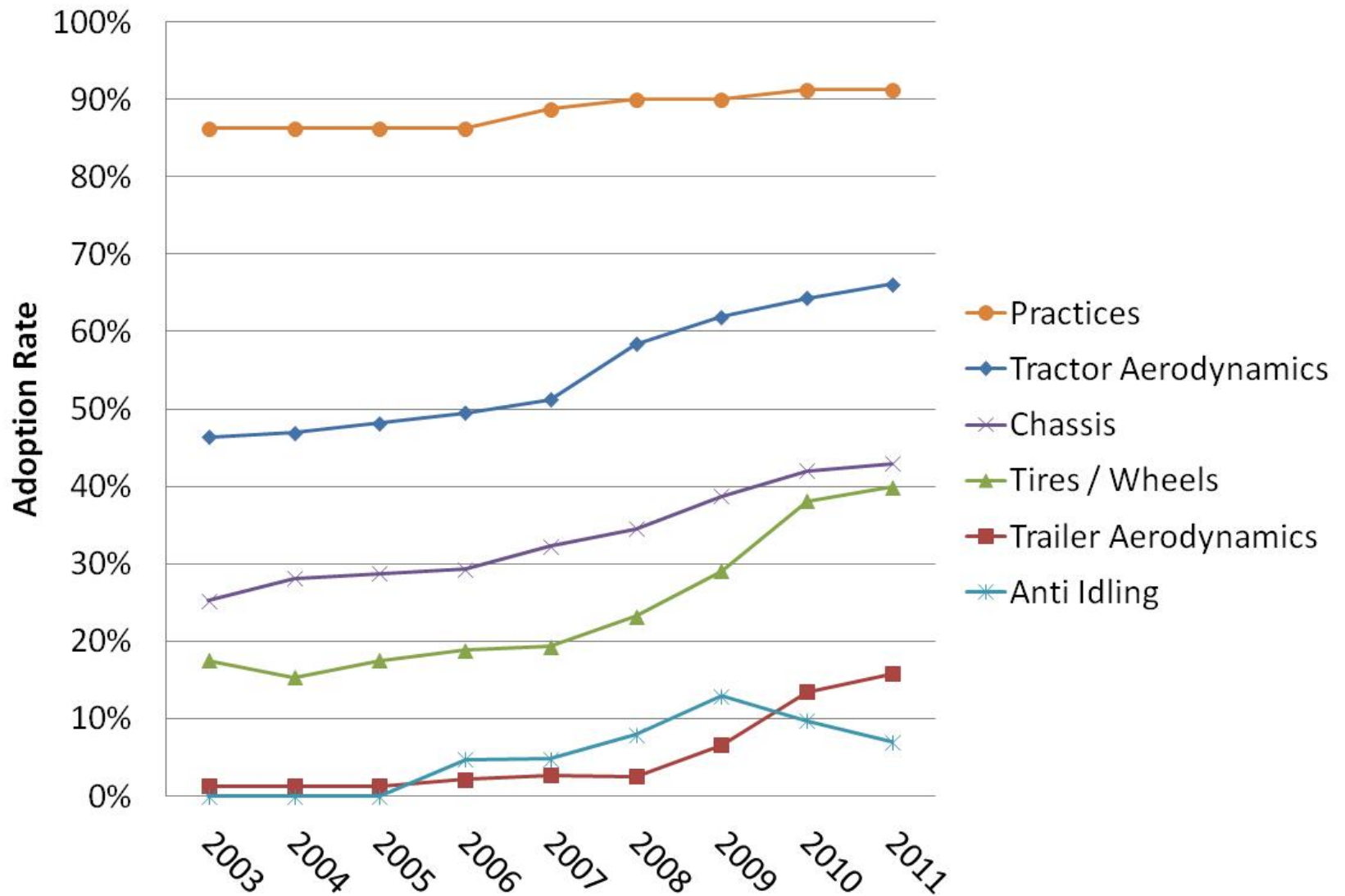


All Technologies & Practices

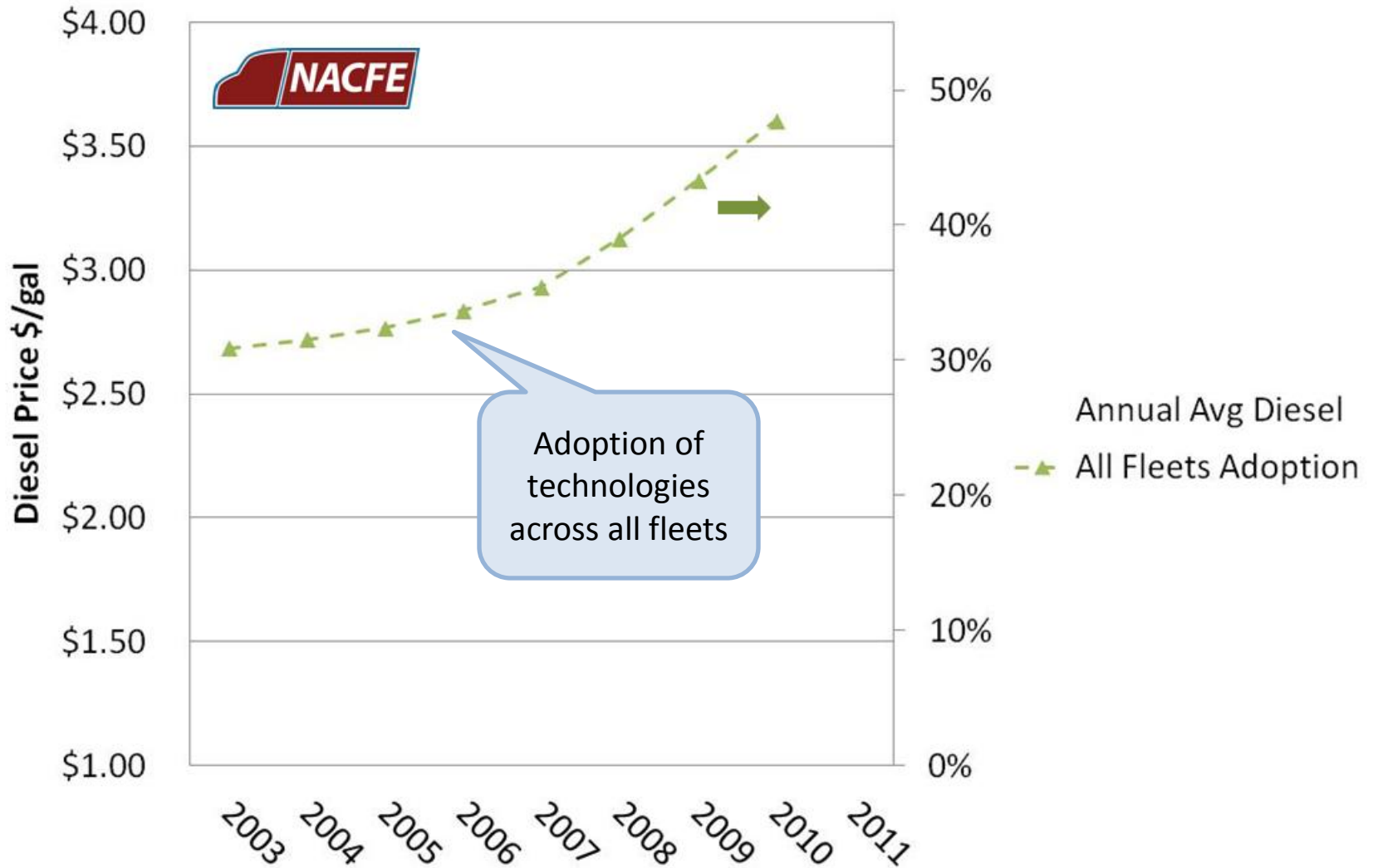


55 technologies and 5 Practices

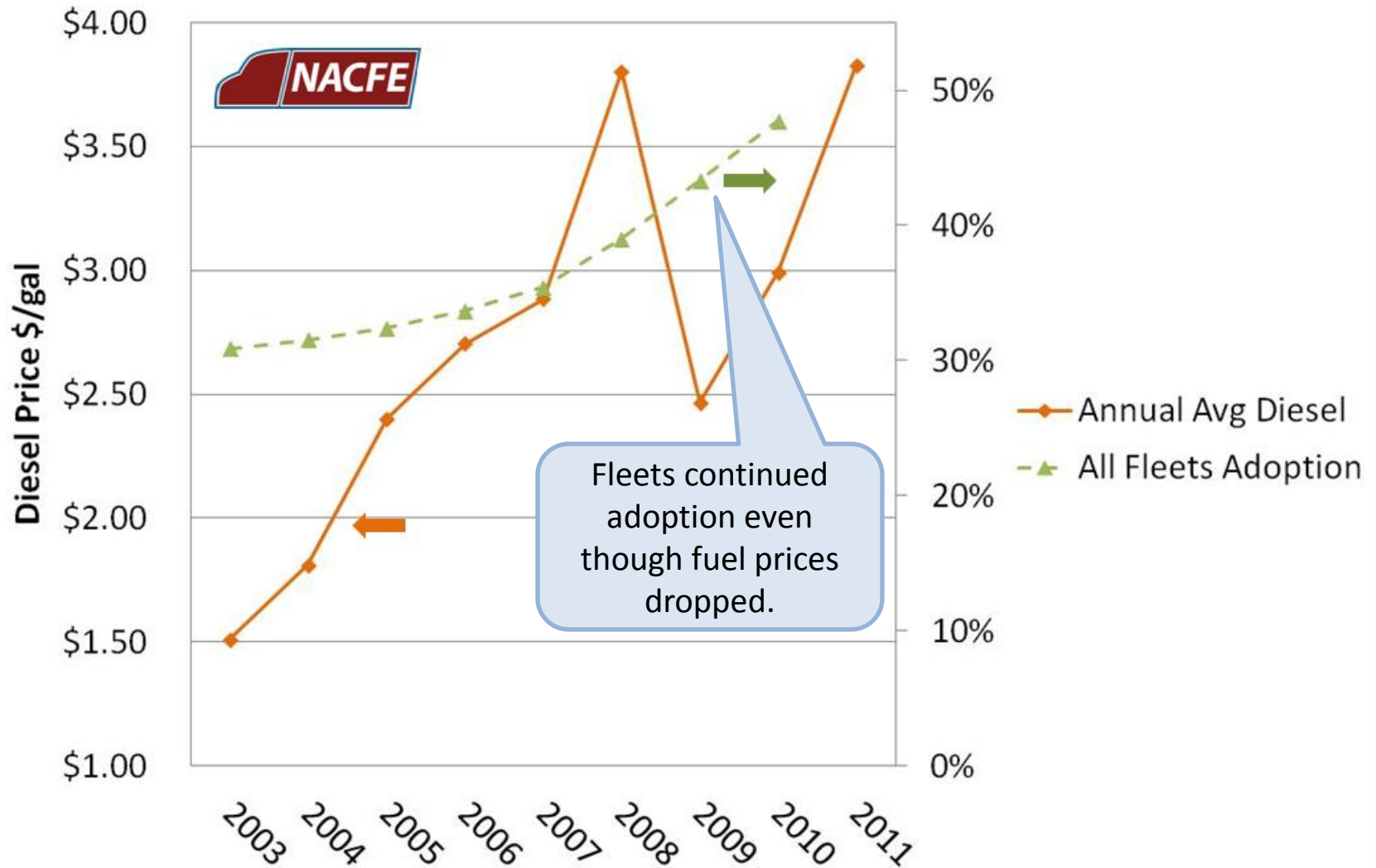
Adoption Rate by Category



Technology Adoption

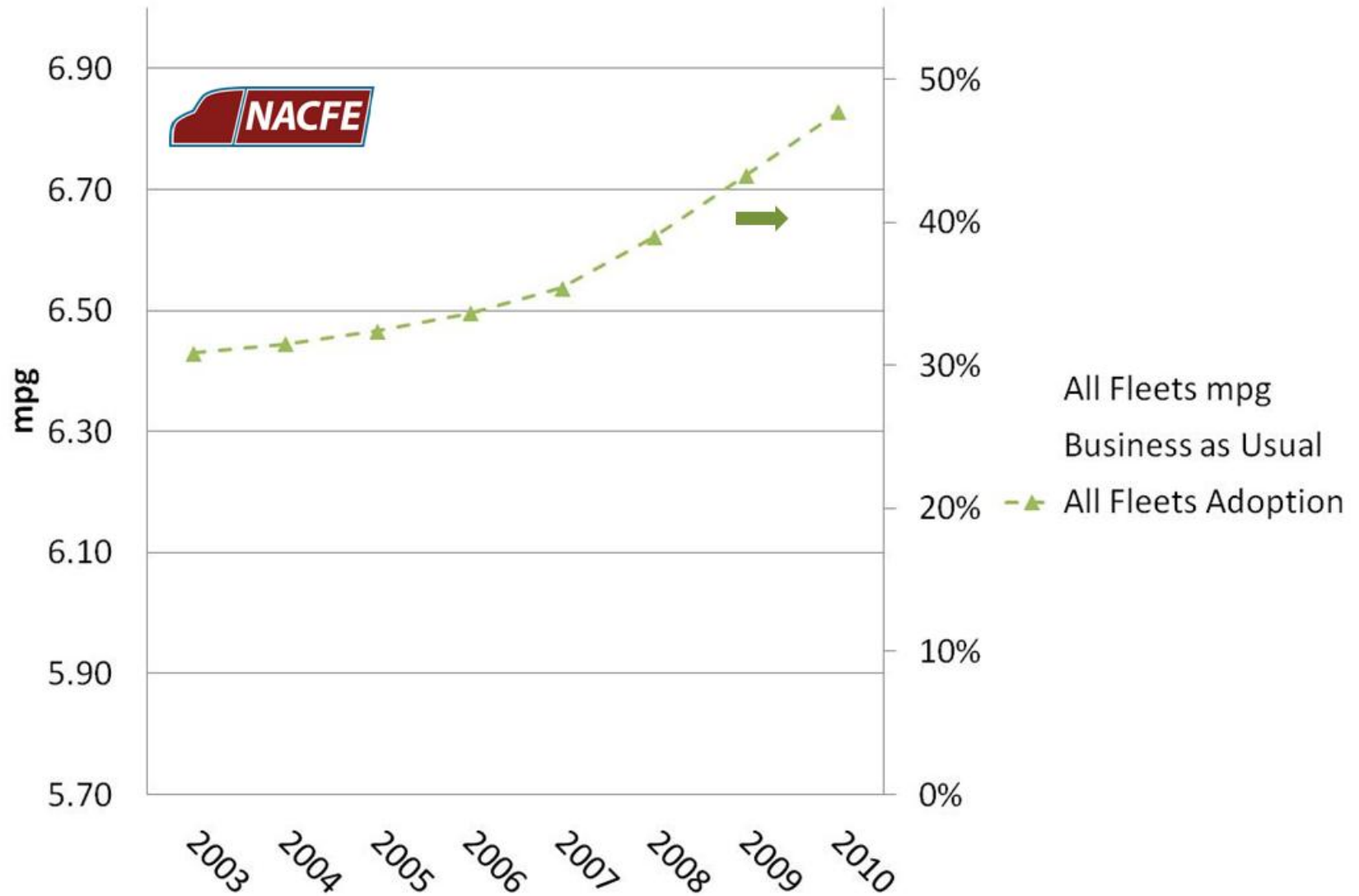


Technology Adoption vs Fuel Price

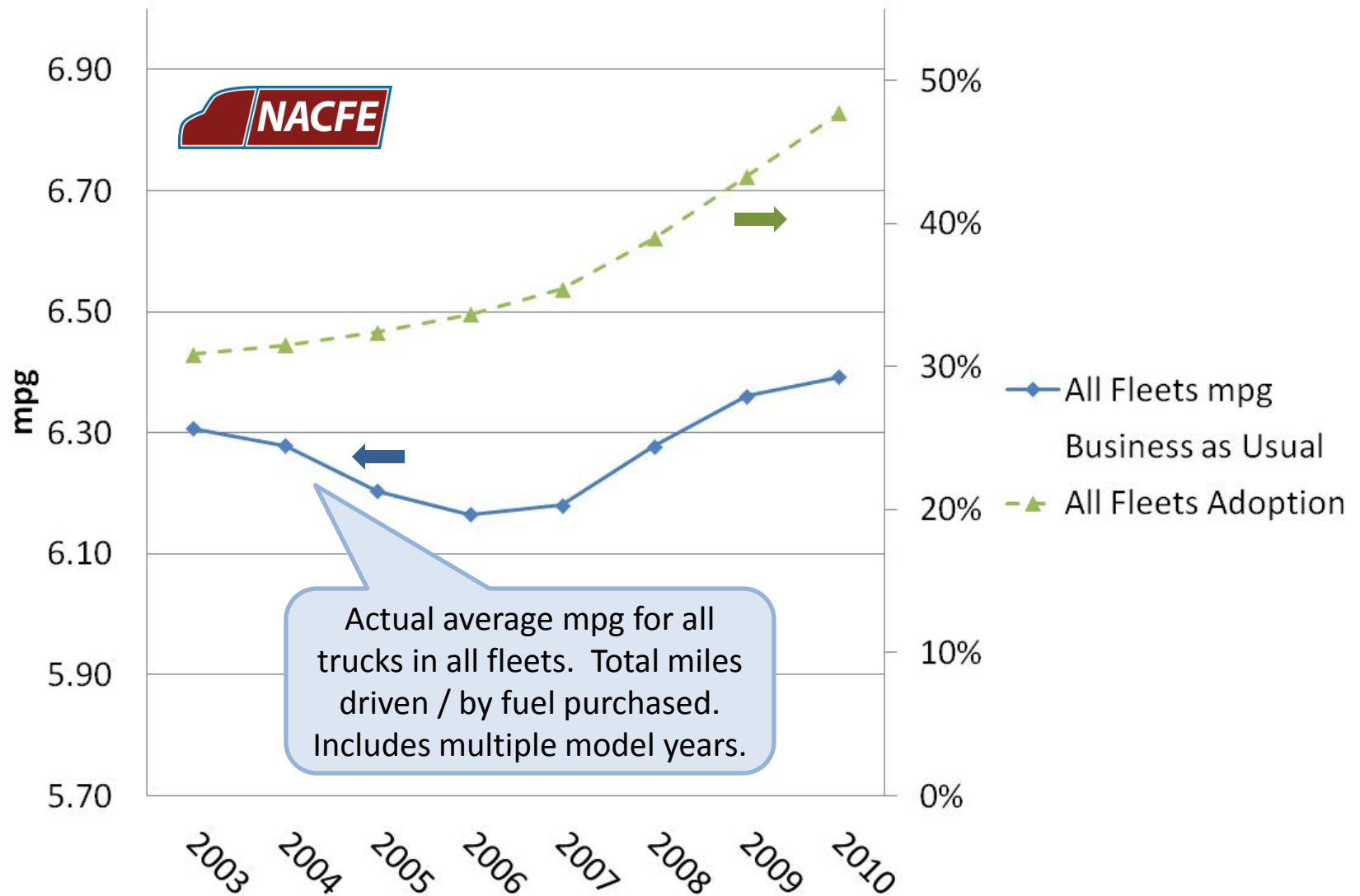


Source: US Energy Information Administration

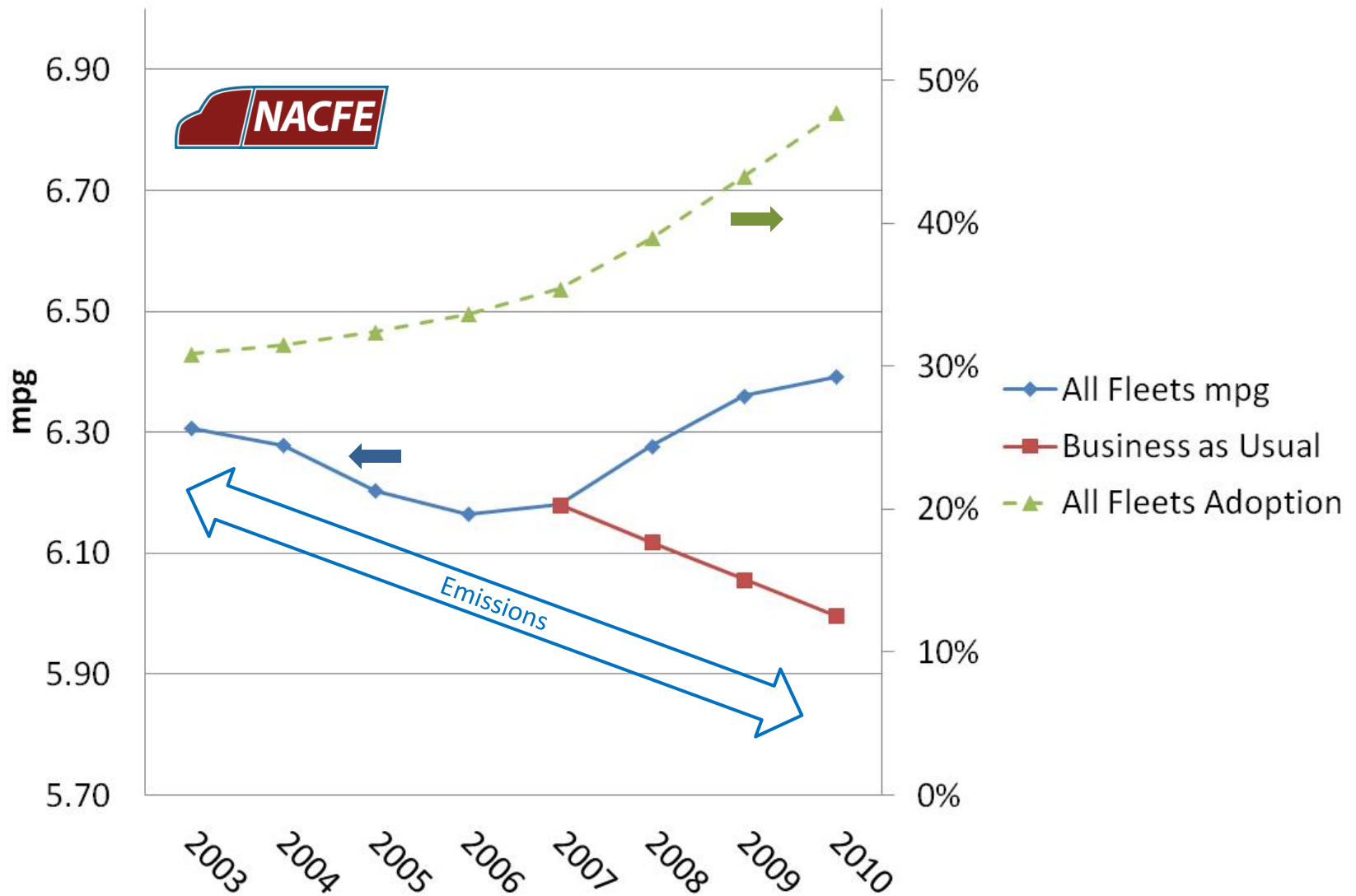
Technology Adoption vs IFTA mpg



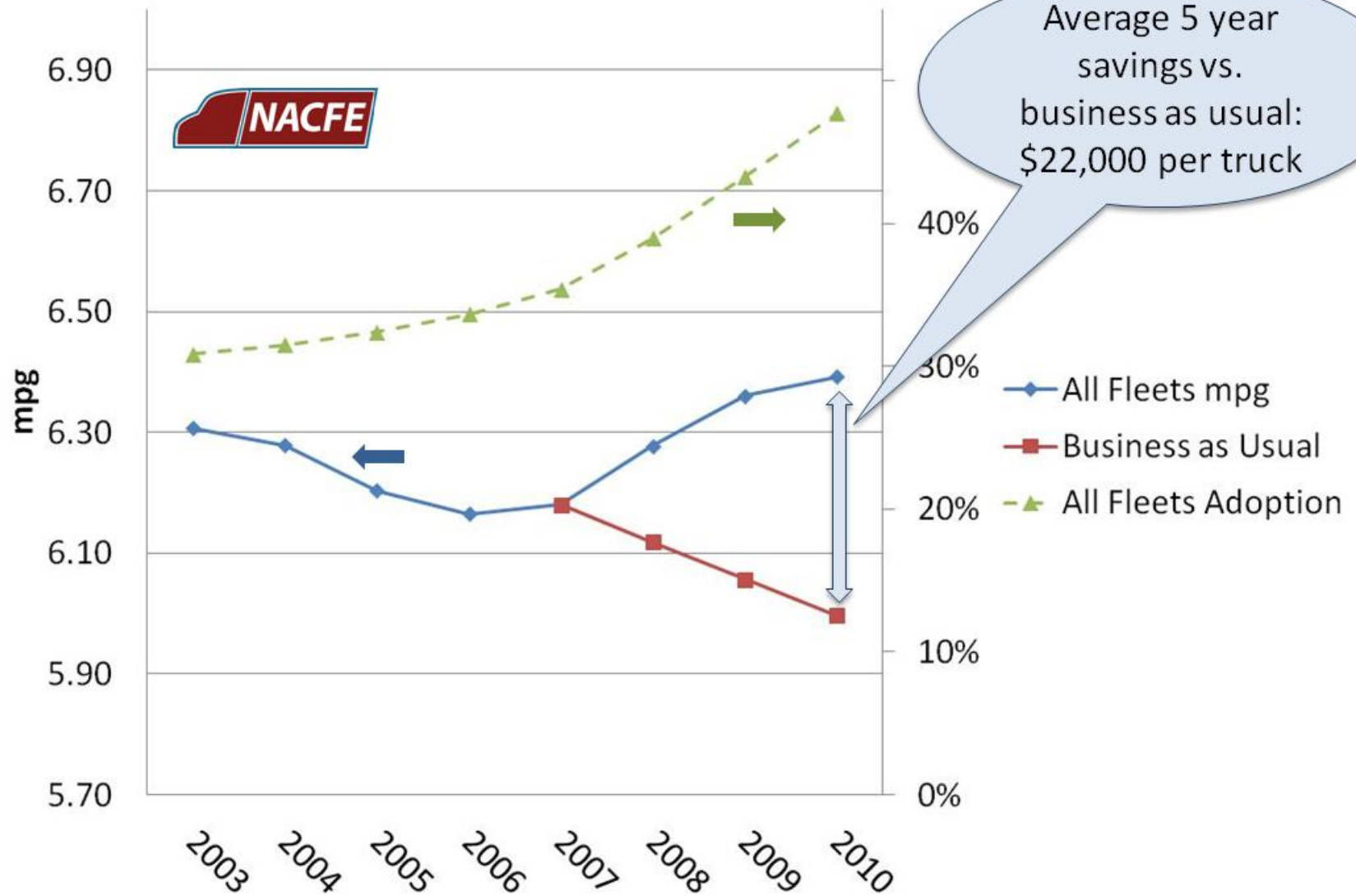
Technology Adoption vs IFTA mpg



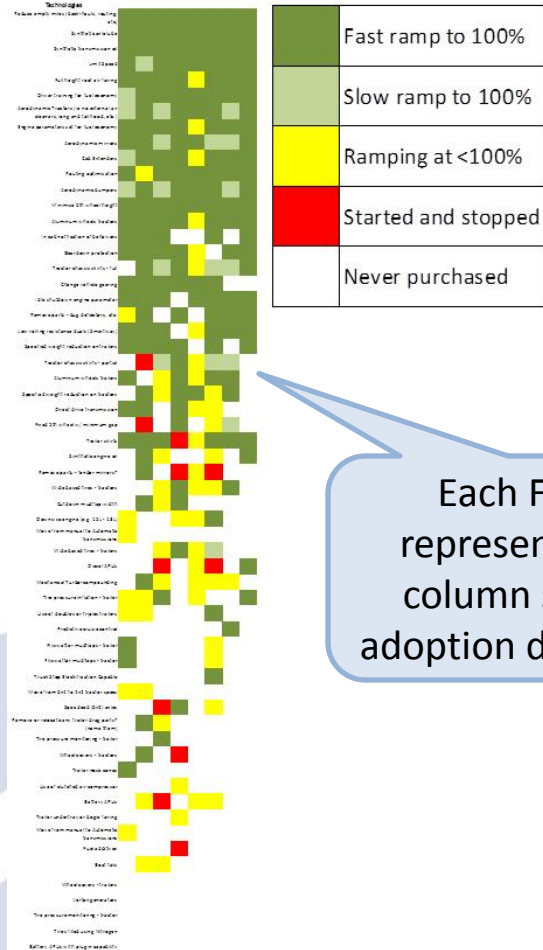
Technology Adoption vs IFTA mpg



Technology Adoption vs IFTA mpg



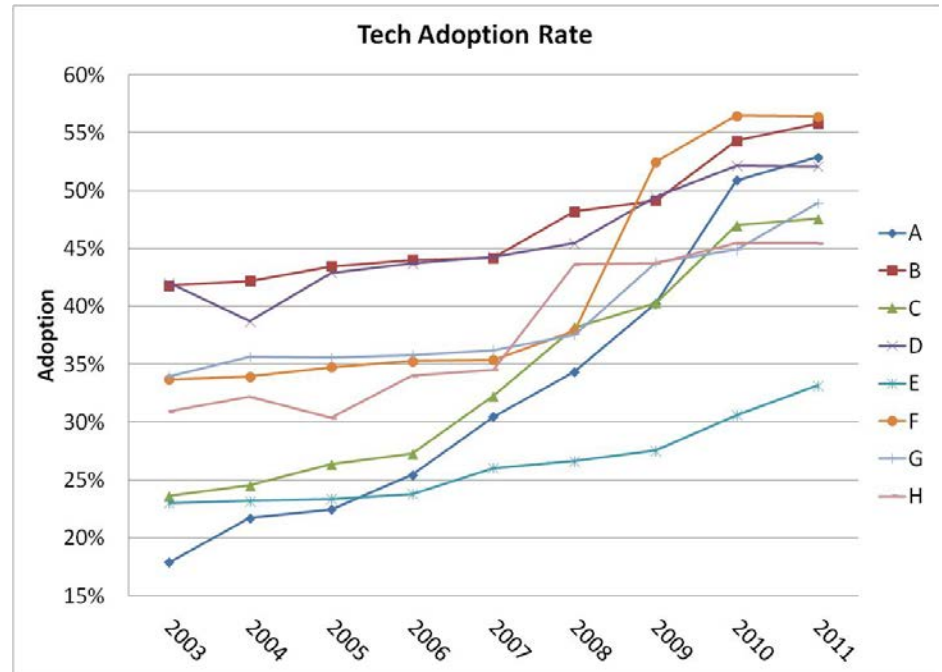
Example of Other Findings



- Adoption record of each technology or practice by fleet.
- 60 technologies and practices.
 - Fast or slow to 100%.
 - Ramping up.
 - Started and stopped.
 - Not purchased.

Adoption by Fleet

- All Fleets are in some stage of adoption of most of these technologies.
- These 8 fleets fell into three categories.
 - Early adopters
 - Late adopter / slow follower
 - Aggressive adopters
- 7 of the 8 fleets are now very similar in their overall adoption percentage.



Additional Findings

Interesting Technologies

IT#1	Practices
IT#2	Tractor Aerodynamics
IT#3	Trailer Aerodynamics
IT#4	Tires and Wheels
IT#5	Tire Inflation
IT#6	6x2 Package
IT#7	Automated Transmissions
IT#8	Weight
IT#9	Auxiliary Power Units

Fleet Best Practices

BP#1	“MPG” Committee
BP#2	Competent Fuel Team
BP#3	Lifecycle Cost Analysis
BP#4	Focused Specifications
BP#5	Driver Ed & Incentives
BP#6	Dedication to Testing
BP#7	Outstand’g Maintenance
BP#8	Ensure Latest Features

NACFE 2011 Fleet Study (37:44 / 46:17)

| LINKS | EXIT



Fuel Performance

- All eight fleet's average adoption over the study period moved from 30% to 48%.
- Each provided an average mpg for their trucks in the study group, by giving total miles travelled and gallons of fuel purchased by year as reported under the International Fuel Tax Agreement (IFTA). MPG decreased through 2008, then drastically improved.



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Next Projects

1. Fleet Fuel Update – adding 2011 & 2012 Data
2. Barriers to Technology Adoption - ICCT
3. Road Test 6x2 Axle Package Combinations
4. Deep Dive on Tire Pressure Options
5. Deep Dive on Anti Idling Options

Please contact the me if you would like to support these next projects.

Conclusions

- Fleets are saving fuel \$s.
 - Technologies and practices to adopt.
 - Specific fleet adoption experiences.
 - Overcoming declining mpg.
- Best Practices in fuel management.
- Suppliers and Support Organizations can learn.
- Report is available at www.nacfe.org.

Thank You!

Questions?

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