

Freight Efficiency & Technology



Chris Trajkovski, C&S Wholesale Grocers and Mike Roeth, NACFE
March 4, 2019



Topics

- Introductions
- Fleet Fuel Situation
- Run on Less Demonstrations
- C&S Transportation in Numbers
- Available Technologies
- Emerging Technologies: Electric Trucks and Autonomy
- Questions & Answers



NACFE




www.NACFE.org

- Unbiased, non-profit
- Mission to double freight efficiency
- Fleets, manufacturers, shippers, software, governments, associations, etc.
- Scale available technologies
- Guide future change

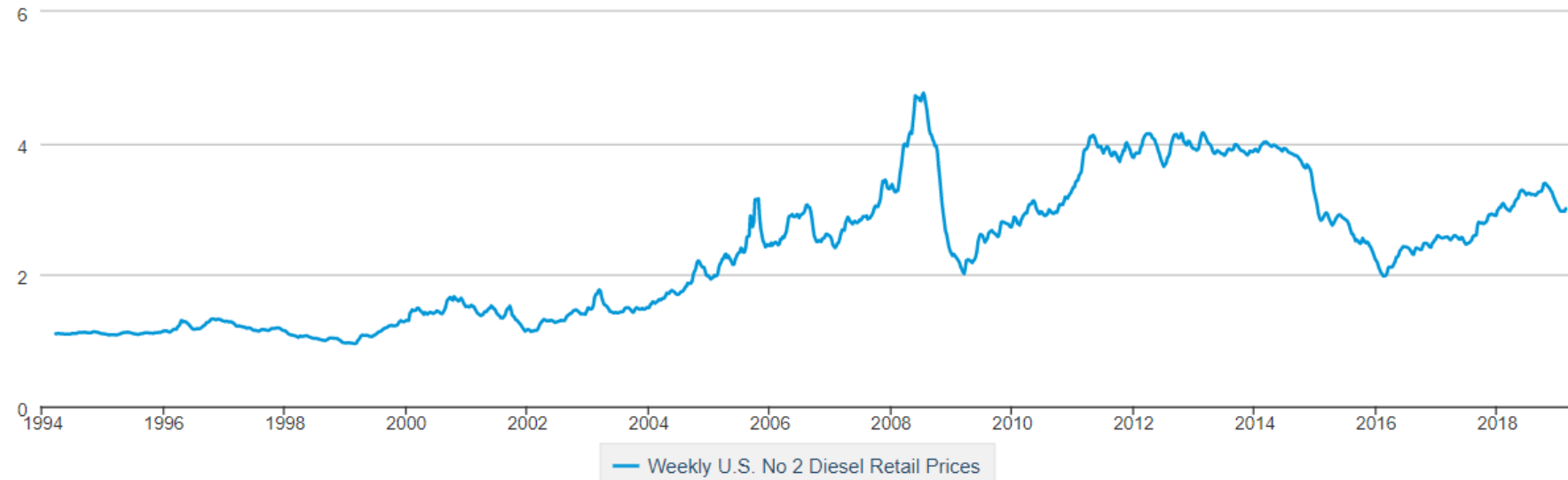


Fuel Situation

Weekly U.S. No 2 Diesel Retail Prices

 DOWNLOAD

Dollars per Gallon

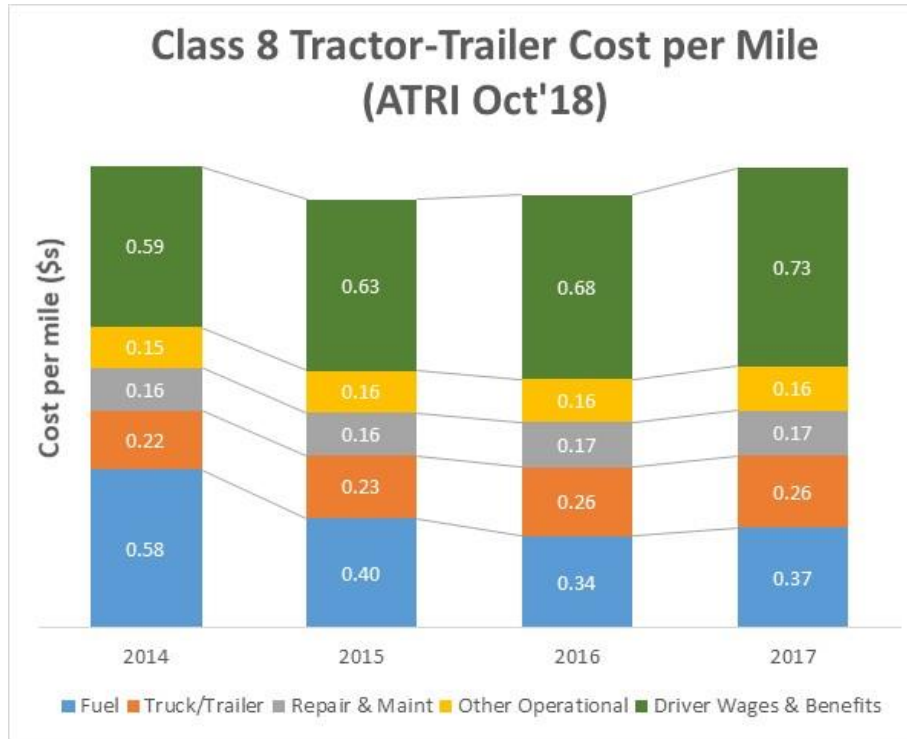


Source: U.S. Energy Information Administration

Equipment Ownership



Fuel Situation



Why bother?

- Fuel cost
 - 2017 Cost per mile up 9.5%, while cost at the pump was up 15%.
- Future fuel costs
- Government Regulations – US Federal GHG, State & Local
- Corporate Sustainability



Annual Fleet Fuel Study

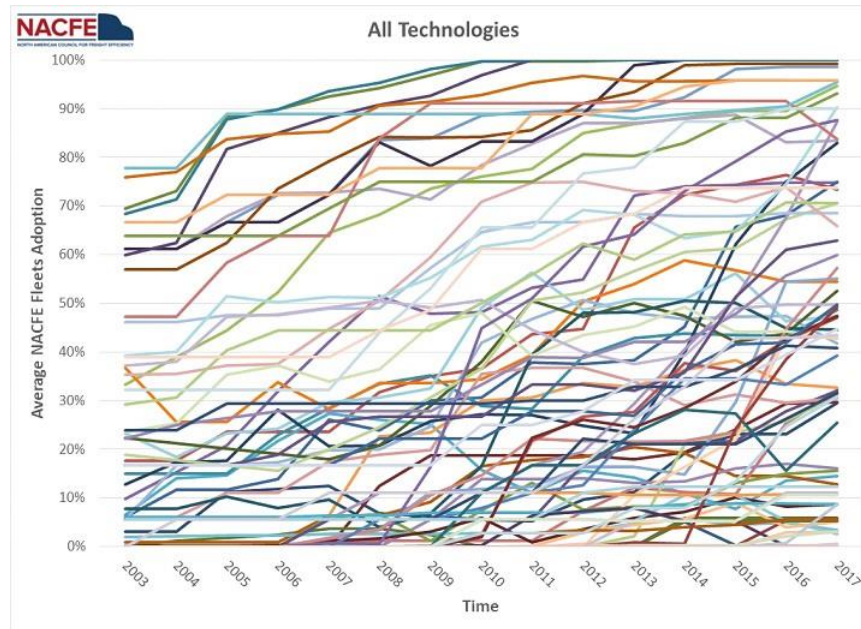


Figure 7: 85 Adoption Curves

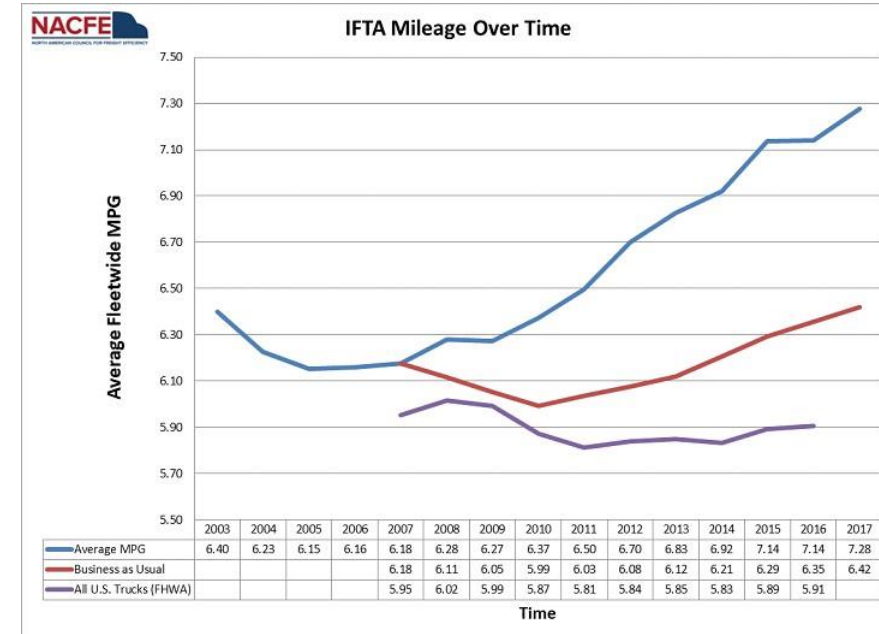
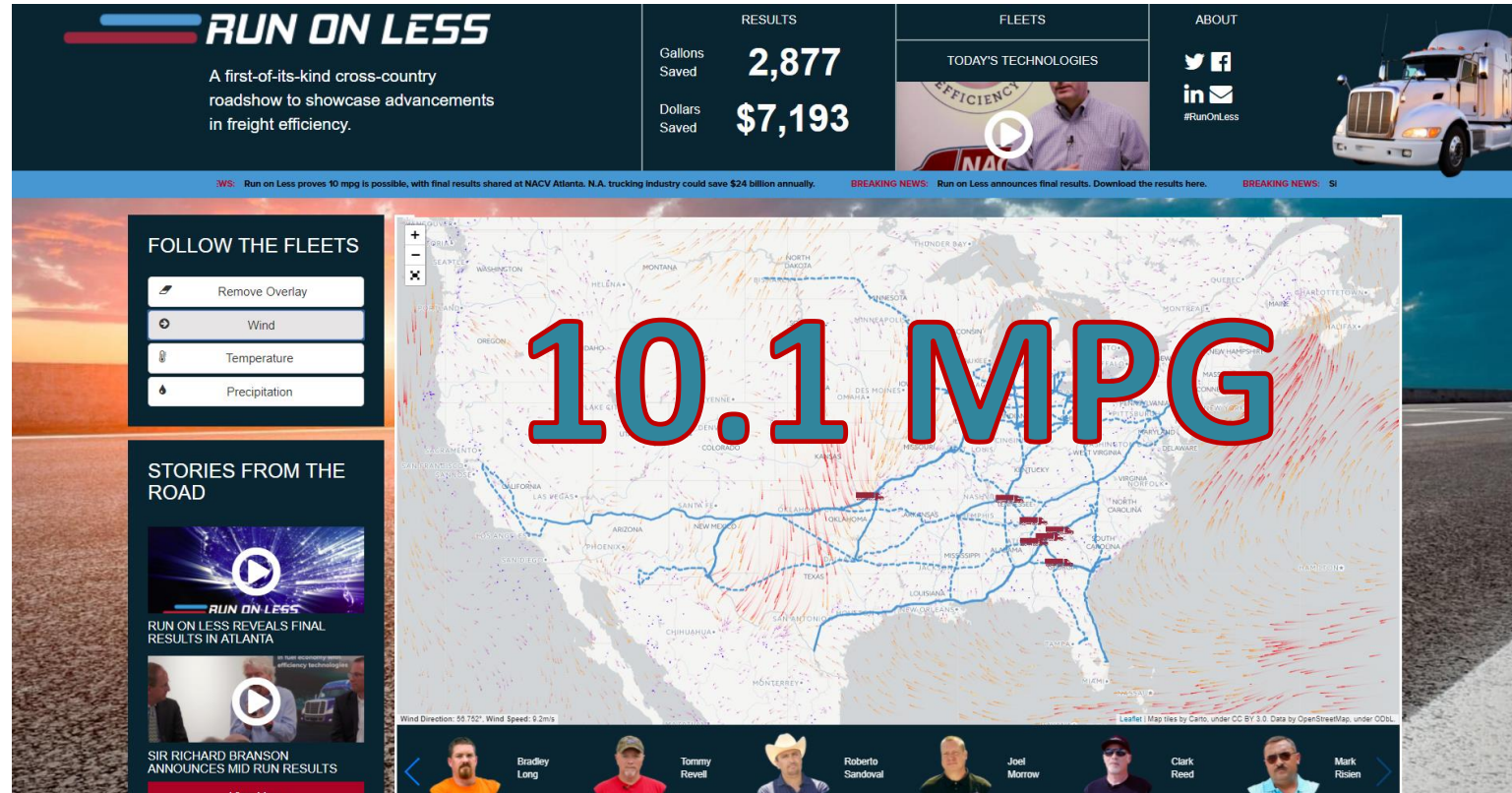


Figure 12: MPG over the Study Period



Run on Less - 2017



Equipment



- Many Commonalities
- Many *Significant* Differences

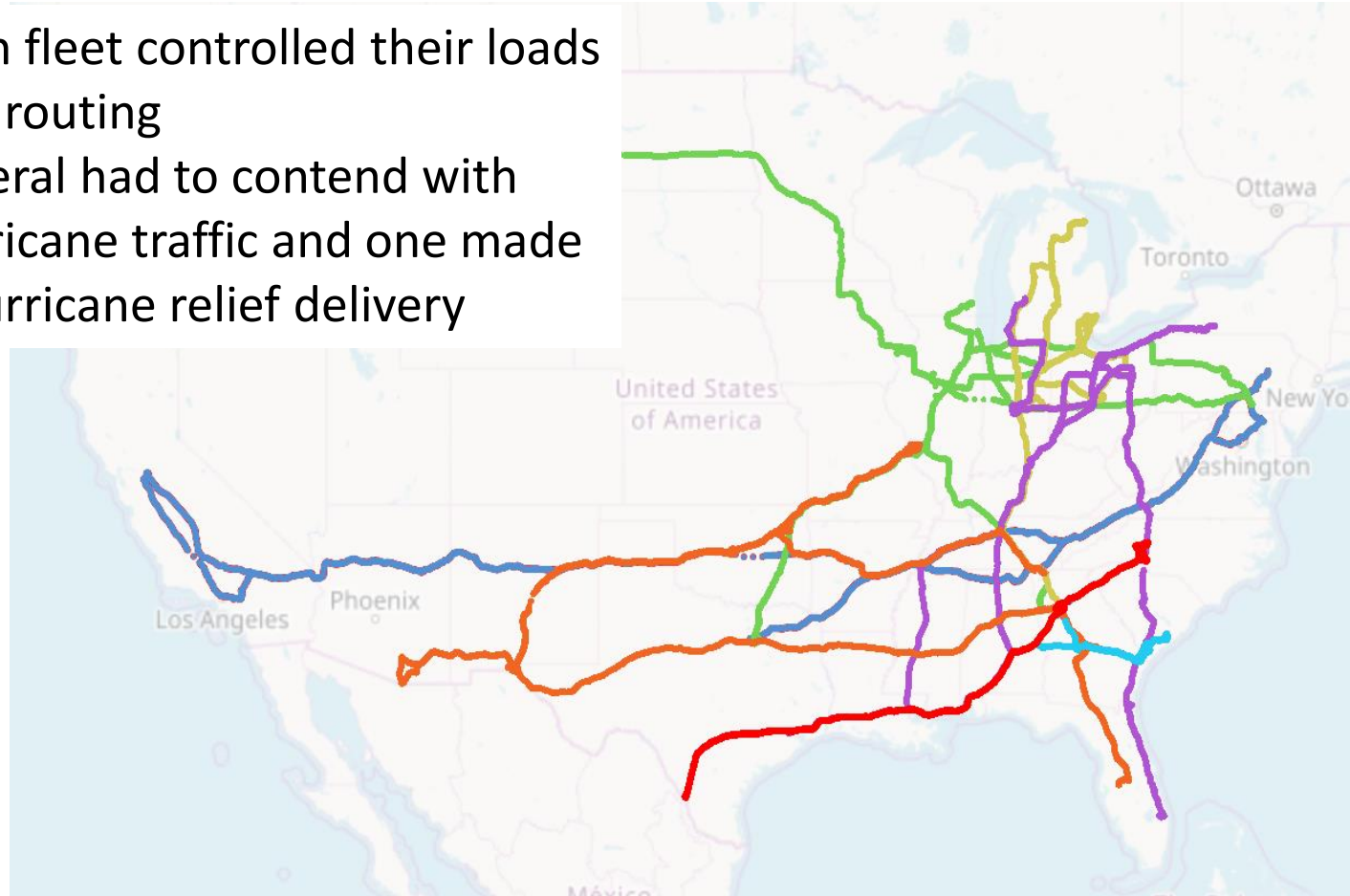


Drivers



Routes

- Each fleet controlled their loads and routing
- Several had to contend with hurricane traffic and one made a hurricane relief delivery



Results

7 Trucks
17 Days
50,107 Miles
99 Driving Days

10.1 MPG
VS. 6.4 MPG
National Average

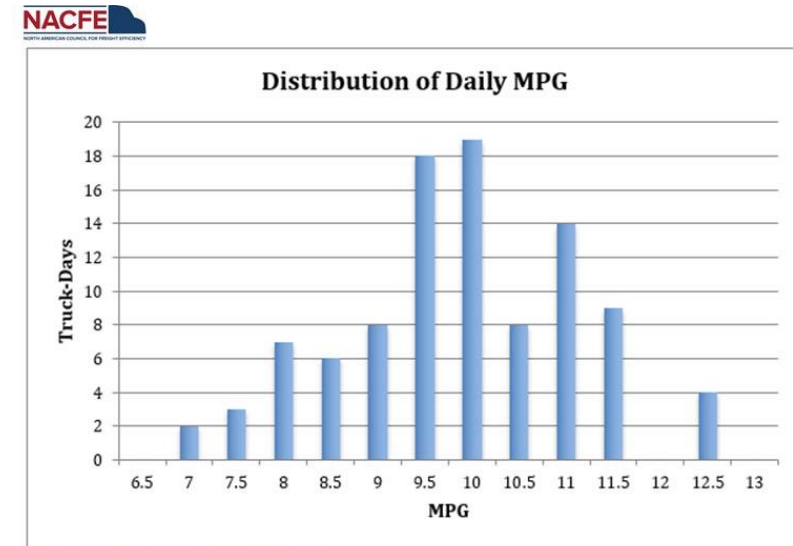
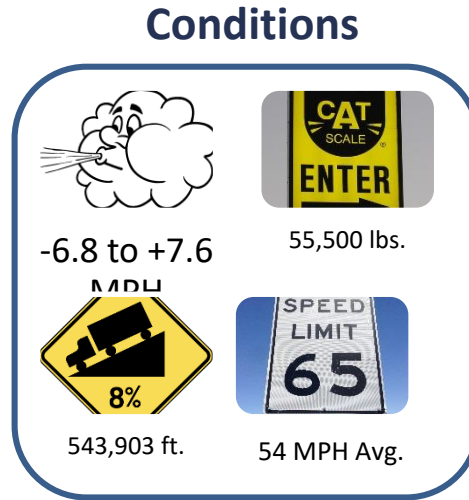


Figure 11: Daily MPG Distribution

All details available at <https://nacfe.org/run-on-less-report/>



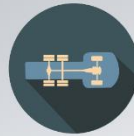
10
FOR
10

10 ACTIONS TO ACHIEVE 10+ MPG

LEARNING FROM NACFE'S RUN ON LESS



Keep Equipment
Well Maintained



Implement the Right
Axle Configuration



Provide Tools to
Reduce Idle Time



Build a Culture of Methodically
Choosing Technologies



Educate and Incent
Conscientious Drivers



Adopt Appropriate
Trailer Aerodynamics



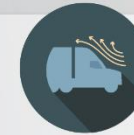
Embrace Low Rolling
Resistance Tires



Use Downsized
Powertrains and AMTs



Optimize Cruise Control
and Vehicle Speed



Buy All Available
Tractor Aerodynamics

RUN ON LESS by **NACFE**
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY



2019 Run on Less: REGIONAL

Regional Haul Focus:

- Sleepers -> Day Cabs
- < 300 Miles from base
- Home several times/week
- Real time monitoring
- Equipment with latest specs
- Highlight emerging technologies

Actual Run:

Currently
Seeking
Fleets

- October 2019
- Finale at NACV Show in Atlanta



Technologies

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



**Tire Pressure
Systems**



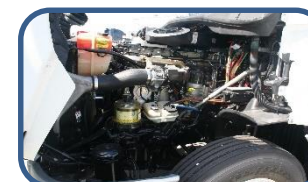
6x2 Axles



Idle Reduction



Transmissions



**Engine
Parameters**



LRR Tires



Lightweighting



Downspeeding



Maintenance
for FE



**Trailer
Aerodynamics**



**Tractor
Aerodynamics**



Lubricants



Platooning



Engine
Accessories



Solar



C&S Wholesale Grocers Transportation in Numbers...

- We oversee and influence **~\$1 Billion** a year in activity

We spend \$600,000,000 a year on things like...



We generate \$400,000,000 of revenue on things like...

DELIVERY



FEE



C&S Wholesale Grocers

Transportation in Numbers...

- We operate 1,000 tractors and 7,500 trailers dedicated
- We Execute 33,000 Deliveries to our Customers and Pick Up 3,500 Backhaul Loads into our Warehouses each week

Drive 3,000,000 Miles each week

***EQUAL TO GOING AROUND THE
EARTH 17 TIMES A DAY!***



Burn 560,000 Gallons of Fuel each week

***ENOUGH FUEL TO POWER YOUR
VEHICLE FOR 1,000 YEARS!***



Technologies

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



**Tire Pressure
Systems**



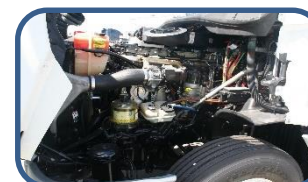
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Platooning

Findings

- Valid/proven fuel-saving strategy for fleets ~ 4%.
- Bulk of required technology currently available
- Intervals not as close as widely believed ~ 50 ft.
- Minimal stress on drivers
- Begin as intra-fleet option
- Become inter-fleet option quickly
- Will expedite autonomous driving tech



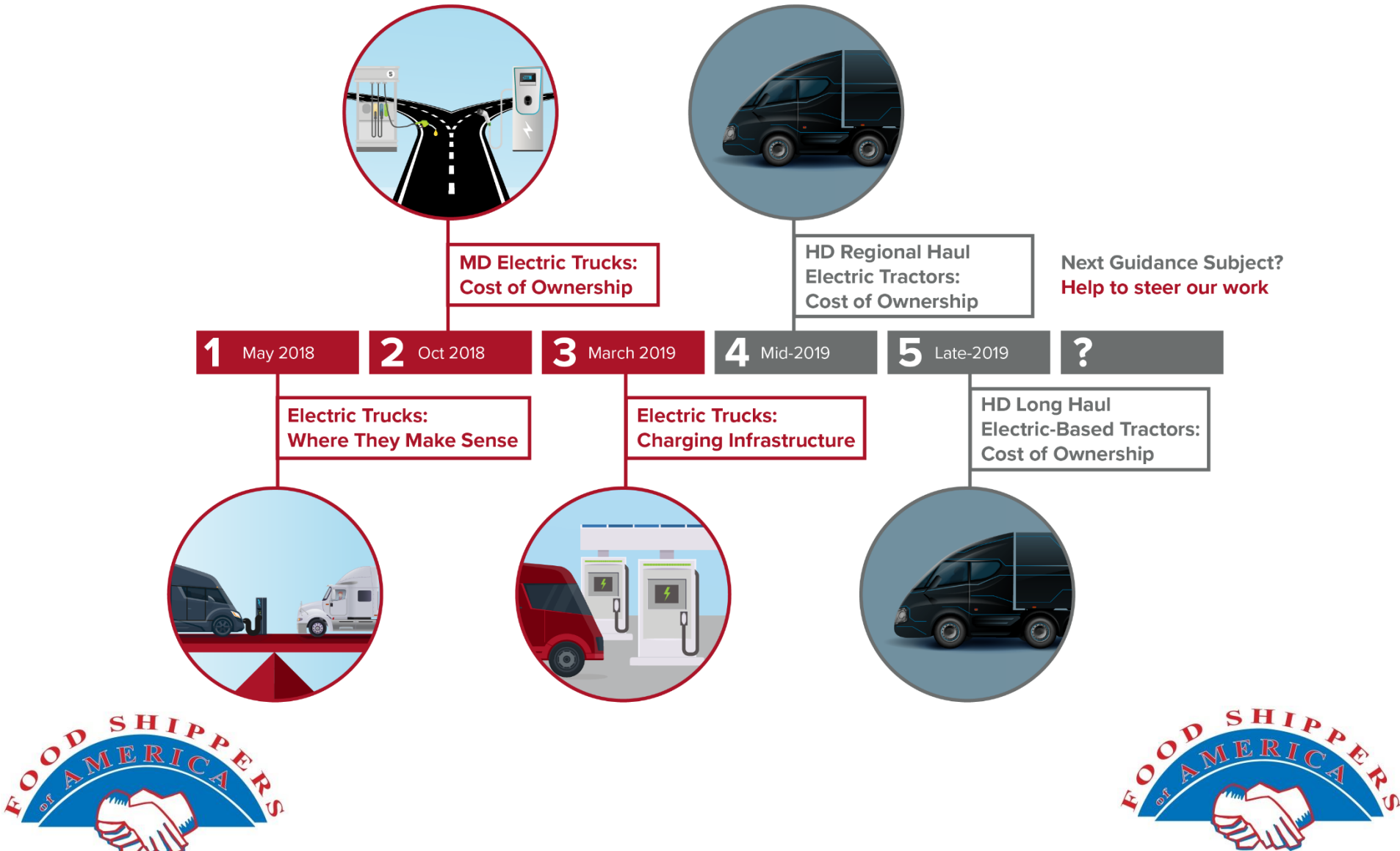
Solar

Findings


- Panels are flexible, thin, easily installed and reliable. Some cases are an excellent place for the technology.
- Fuel savings are generally a very small part of the overall benefit.
- Solar panels need to be sized appropriately for their use.
- There is limited hard evidence at this point from fleets on payback. The biggest benefits come from extending battery life and avoiding emergency roadside assistance for dead batteries.




NACFE Guidance on Electric Trucks



Argument FOR Electric Trucks	VS.	Argument AGAINST Electric Trucks
1 Commercial battery electric vehicle (CBEV) weight is not an issue	WEIGHT	1 Vehicle tare weight is too high to support my freight needs
2 CBEV technology is proven and here now	TECHNOLOGY	2 Technology is not ready
3 Maintenance will be less costly		3 Maintenance may not be less costly
4 CBEVs will last beyond 10 years		4 Vehicle life is too short
5 CBEVs will be competitively priced	COST	5 Vehicle purchase price is too high for a positive ROI
6 CBEVs will be less expensive to operate		6 Vehicle operating costs are too great for positive ROI
7 CBEVs will command a premium at resale		7 Vehicle residual value is questionable
8 Trust the market to provide CBEV charging solutions	CHARGING	8 Charging infrastructure is not ready
9 Trust the market to provide CBEV charging solutions		9 Charging Infrastructure is not fast enough
10 The grid and market will evolve with CBEVs		10 The electric grid cannot support growth in electric vehicles

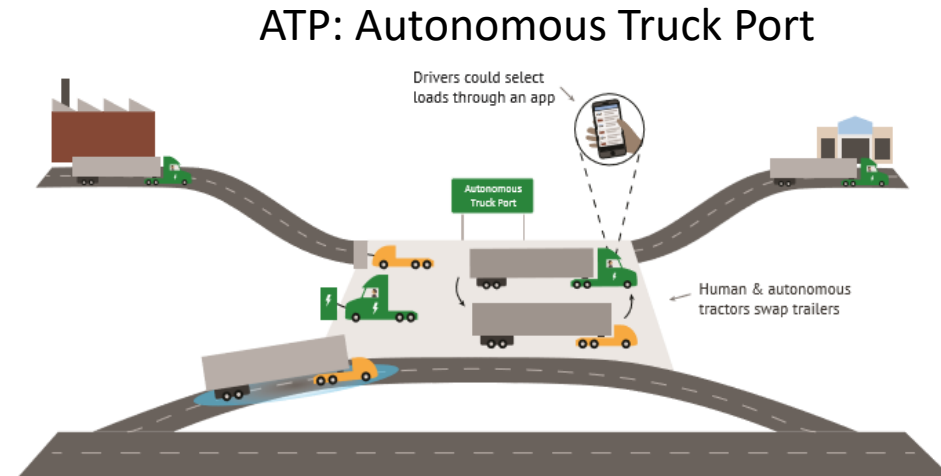


NACFE's findings on these 10 arguments are discussed in detail in its Electric Truck Guidance Report




Autonomy

1. Cooperative Adaptive Cruise-Control Platooning
2. Human–Drone Platooning
3. Exit-to-Exit Autonomous Trucks Plus Drone Operation
4. Driver-in-the-Sleeper Scenario
5. Exit-to-Exit Autonomous Trucks
6. Facility-to-Facility Autonomous Trucking



<https://gspp.berkeley.edu/centers/cepp/news-and-publications>

“Autonomous Trucks and the Future of the American Trucker”
By Steve Viscelli September 2018





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QUESTIONS AND ANSWERS

THANK YOU

