



North Central Texas
Council of Governments



Saving Money and Reducing Truck Emissions Webinar Series Driver Training

Date: Thursday, December 15, 2022

Time: 10:30 – 11:30 AM Central Standard Time

Hosted by the **North Central Texas Council of Governments (NCTCOG)**

Register at

<https://nctcog.zoom.us/meeting/register/tZUtcOmqpjspEtDoo128p53YUslysYY52aCp>

Webinar will be presented through **ZOOM**

Contact: Huong Duong, hduong@nctcog.org

Presenters:

Dave Schaller, NACFE

Andy Coulombe, Orange EV

OVERVIEW



Image provided by Getty

Welcome, Introduction

Presenter: Huong Duong, Transportation Air Quality Planner, NCTCOG

Driver Behaviors and Vehicle Controls

Presenter: Dave Schaller, Industry Engagement Director, North American Council for Freight Efficiency (NACFE)

Heavy Duty Electric Vehicle Training

Presenter: Andrew Coulombe, Technical & Sales Corporate Training Manager, Orange EV

Discussion

Local Updates and Close



Saving Money and Reducing Trucking Emissions Program



GOALS

Promote emissions reduction and cost saving strategies within the trucking industry



INITIATIVES

Build relationships within the trucking industry

Share information about emission reduction strategies

Connect SmartWay verified technology to trucking owner/operators and fleet managers

SMARTTE

Saving Money and Reducing Truck Emissions





North Central Texas
Council of Governments



SMARTe Webinar Series: Driver Behaviors and Vehicle Controls

Dave Schaller
December 2022



Finding, Keeping & Educating Drivers

Finding and **retaining** CDL drivers is a large challenge for fleets. Getting the drivers to perform with **safety** and **fuel efficiency** optimization is even more challenging. Some combination of vehicle features, control systems, and driver training/incentives is the correct answer.

Which combination is the best is the ultimate challenge.

Confidence Reports

Diesel Fuel Savings & Alternative Fuel Range Extenders



1. Tire Pressure Systems
2. Tires: LLR & Wide Based
3. Automated Transmissions
4. Idle Reduction
5. Engine Parameters
6. Lightweighting
7. Downspeeding
8. Maintenance
9. Trailer Aerodynamics
10. Tractor Aerodynamics
11. Lubricants
12. Platooning
13. Solar
14. 6x2 Axles
15. Engine Accessories



Complete, unbiased review of available technologies

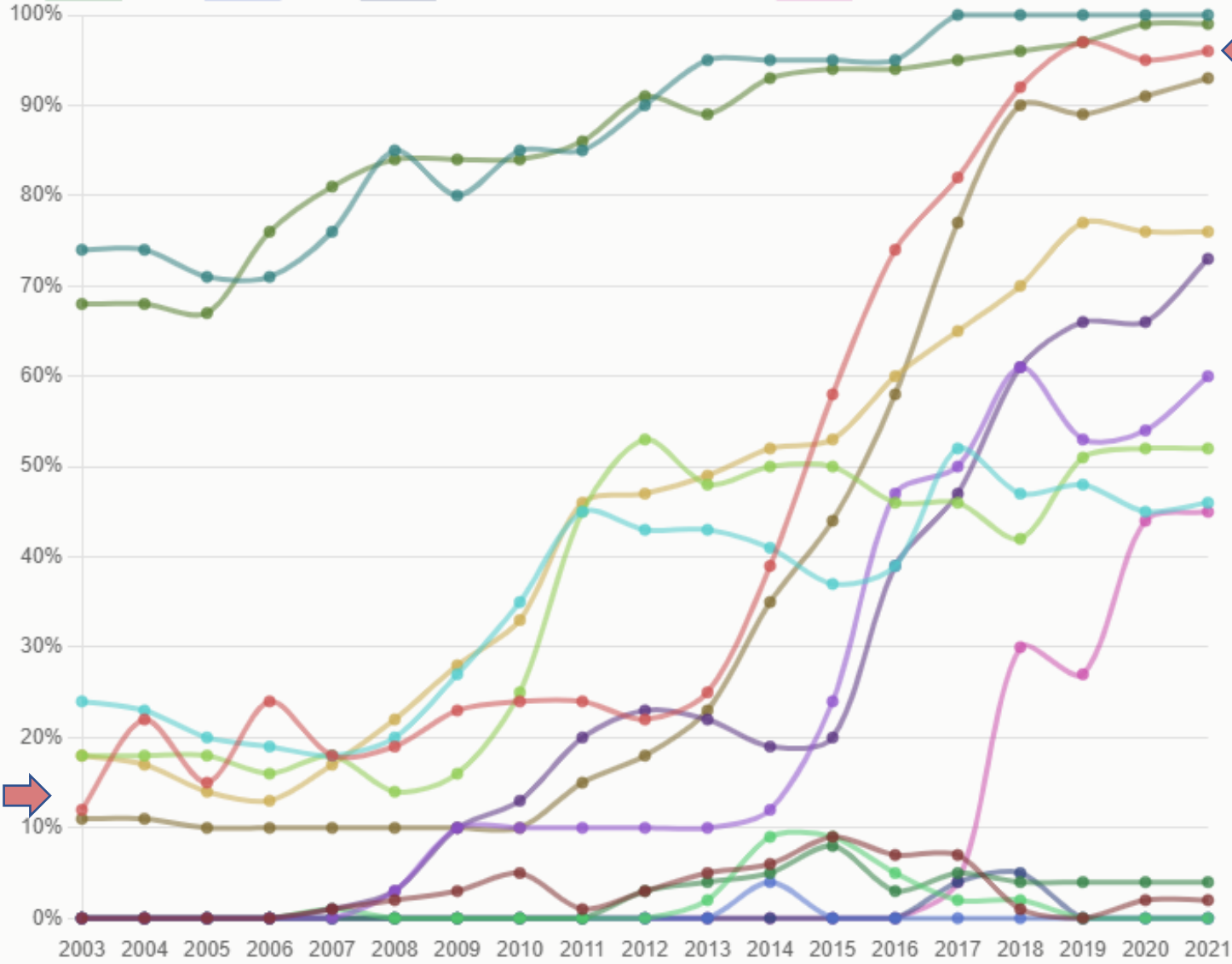
Automated Manual Transmissions

1. Simplify driver training *dramatically*
2. Reduce driver stress by finding the right gearing for the situation at hand
3. Improve fuel economy
4. Provide additional time for the driver's eyes to be on the road and mirrors, rather than the tachometer and gear shift lever



How many members of your family can drive a manual?

Automated Manual Transmissions



- Automated manual transmissions
- Automatic transmissions
- Direct drive transmission
- Synthetic transmission oil
- Engine parameters set for fuel economy
- Downsize engine (e.g. 15L - 13L)
- Downspeeding (Rear ratio<2.7:1)
- Lower viscosity engine oil xW-30
- Predictive cruise control
- Shift to Neutral
- Fuel additives
- CNG
- LNG
- Mechanical Turbo Compounding
- FA-4 High Efficiency Engine Oil

After a decade of 15 to 25% adoption, the industry is now producing ATMs at a 95% rate.

Try not to burn fuel when the truck isn't moving!

1. Driver Controlled Opportunities
2. Vehicle Retrofit Opportunities
3. Off-board Opportunities
4. Driver Training/Rewards
5. New Vehicle Order

Results depend on:

- Starting baseline
- Weather
- Driver Acceptance
- Execution & Support

Full NACFE Report on Idle Reduction Available here:

<https://nacfe.org/technology-guide/idle-reduction/>

Driver Controlled Opportunities

1. Park in the coolest possible spot
2. Draw the temperature down with main engine
3. Limit solar loading through the windshield
4. Create a small cool space using a blanket as a cold air trap



Solar Loading of the Windshield



Use a solar reflective barrier when parked

If a windshield curtain is available, use it behind the solar barrier

Vehicle Retrofit Opportunities

- 1) Exterior Paint Color
- 2) Diesel APU
- 3) Battery APU



Exterior Paint Color



- These trucks may appear identical, but the black color takes over 20% more energy to cool due to sun loading.
- Consider a vinyl wrap for the roof/sleeper in a very light color
- Repaint the surfaces to a lighter color

Auxiliary Power Units: Diesel APUs



- Can operate for long periods of time with fuel in the truck's diesel tank
- Both expensive to purchase and complex to maintain
- Provide long-term power with the main engine turned off
- Add significant weight to the truck

Auxiliary Power Units: Battery APUs

(also called eAPU or Electric Auxiliary Power Units)



- Utilize additional batteries to run the air conditioning and accessories
- Batteries add additional weight to the truck
- Less complex than a diesel APU but it can only run until the batteries discharge. (time depends on temperatures and other electrical loads)

Off-Board Opportunities



1. Shore power for electrical feed to sleeper
 - Provides household AC power to sleeper
 - Can charge the batteries if so equipped
2. Idle Air for complete HVAC & Electrical
 - Enters through cab door window
3. Hotels for Truckers
 - Discounts & Database of hotels with parking

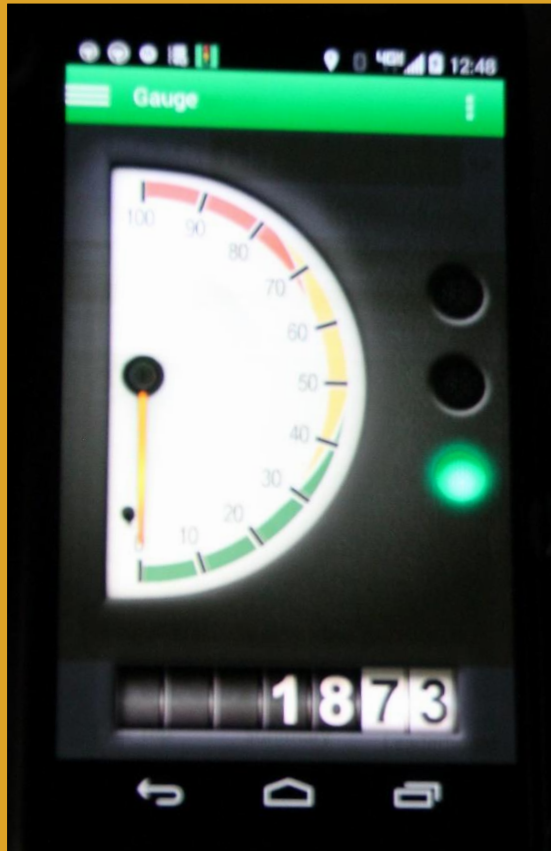


New Truck Orders



1. Utilize all of the advantages already discussed
2. Strongly consider additional cab and sleeper insulation
 - Frequently called “Artic Package” to protect drivers in Canada
 - Serves the same purpose in Mexico or New Mexico except the warmer air is outside the truck and the cooler air is inside
3. Ask your truck salesperson for additional support

Driver Training and Rewards



1. Direct training in the classroom or remotely via the internet
2. Financial bonus in paycheck based on:
 - Safe driving habits
 - Fuel economy maximization
 - Idle time reduction
3. In-cab electrical device to show driver performance

Drivers & Battery Electric Trucks



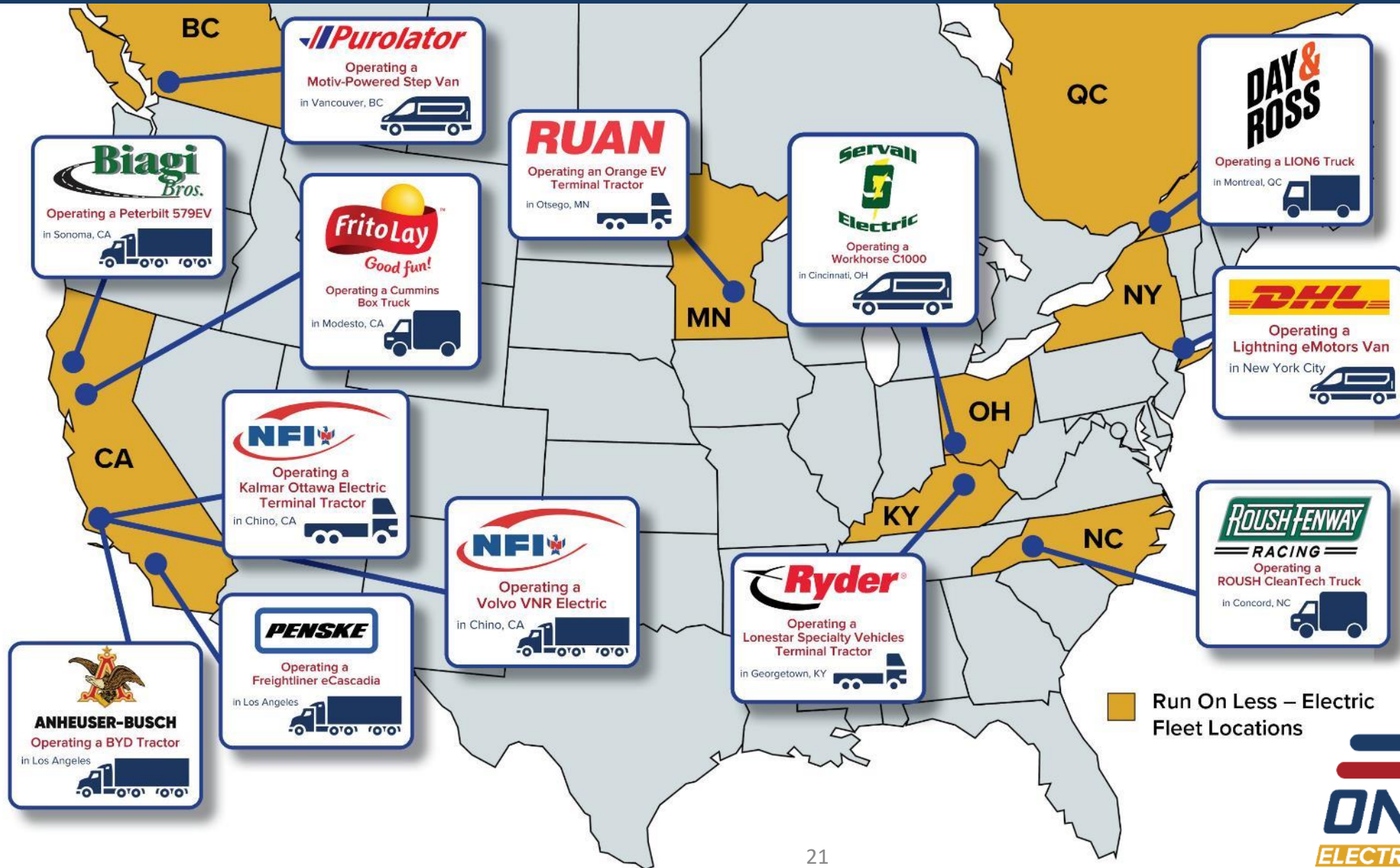
Drivers LOVE:

- 1. Better acceleration**
- 2. No noise**
- 3. No diesel tank to fill**

[Website Link: Guidance Reports on EVs](#)

Video Link: [Drivers Love Electric](#)

Run on Less – Electric Participants



Battery Electric Trucks



**RUN
ON LESS
ELECTRIC**



Properties & Charging Systems



Will property owners allow or financially support the installation of expensive electrical infrastructure for charging systems?

Grid Growth Challenge

Trucking facilities
tend to be located
together

Warehouses
Distribution Centers
Truck Dealers



Autonomous Trucks

Want PERFECT driving behaviors?

24/7 Operations?

Let a computer with numerous cameras and sensors do the job.

May have a driver or it may not.



[Website Link: NACFE on Autonomy](#)

New Companies in Truck Autonomy



tu simple

TORC
ROBOTICS



EMBARK



LOCOMOTION

Outrider



IK



NURO

Ike

Gatik



GAUSSIN
Be Faster... Safer & Cleaner



plus.ai

Aurora



WAYMO



SOLO AVT



einride



Thought Leadership Blogs



Autonomous Time

Autonomous vehicle technology could transform freight efficiency by an exponential factor.



NACFE's Three Laws of Autonomous Trucking

The autonomous trucks of the future likely will need some permutation of these laws to guide their decisions in complex daily life and to deal with "edge" scenarios.



Autonomous Partnership to Focus on Uptime

A new strategic partnership between Waymo and Ryder System will focus on an overlooked aspect of autonomous truck operations.



Autonomous Trucks and Law Enforcement

Driverless trucks won't just stop for fuel and maintenance. There will be times they will need to respond to the directions of law enforcement officers and emergency response personnel. But how?



The Insurance Angle

A prime example of just how disruptive autonomous trucks will be to the logistics status quo can be seen by considering how this technology will affect the insurance industry.



In the Beginning

Autonomous trucks won't just appear everywhere at once. Their deployment will be measured, studied and tempered by some very harsh operational realities.

39 Blogs by Jack Roberts & Mike Roeth dive into Autonomous Trucks



[Website Link: NACFE on Autonomy](#)

Run on Less - "Best of the Best"

2017



2019



2021



2023



Long Haul
7 Fleets
10.1 MPG



Regional Haul
10 Fleets
8.3 MPG



All BEVs
13 Fleets
New metrics!



BEV Depots
8 Depots
Infrastructure





CCS1



CCS2



CHAdeMO



J1772



MCS or CharIN



NACFE.org

**Let's Stay Connected...
... And charged up!**



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Dave Schaller

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Heavy Duty Electric Vehicle Training



#1 Electric Terminal Truck Manufacturer

**Founded in
2012**

Deployed nationally since 2015 initial production, across weather and duty cycles

- *In-market longevity and experience*
- *Company based in USA*
- *Trucks built in USA*
- *100% EV focus*

**> 500
deployed**

Growing exponentially since first deployment

- *"We come to you" service and support model*
- *75% greater uptime*
- *Real-time telematics*

> 130 fleets

Chosen by more than 130 fleets across 28 states, Canada, and the Caribbean

- *References and referrals available from other sophisticated, industry-leading customers*

**> 7.3 million
miles**

Commercially deployed fleet has surpassed 7.3 million miles and 2.2 million hours

- *Designed for driver comfort and safety*
- *Smoother and quieter truck handling*
- *50% shorter stopping distance*
- *120V max operation*

Safety and Differences

- Regenerative braking and effects on daily operation
 - Regenerative braking, what is it?
 - Hooking Trailers
 - Dock Door spotting
 - Tug Tests
- Situational Awareness when operating a silent vehicle



Charging and Charging Safety



*Orange EV Fast
Offboard Charging
Cabinet:
Up to 70 kW*



*Orange EV
Standard Offboard
Charging Cabinet:
Up to 22 kW*

- Charging Process
- Charging protocols and EV life expectancy
 - Opportunity Charging and fleet operation
 - Charger/truck safety monitoring systems

Wrap Up



- Safely and Successfully Replacing an ICE vehicle with an EV
- Operational Considerations, Training, and Communication





Andrew Coulombe

Technical & Sales Corporate Training Manager

AndyC@OrangeEV.com

Discussion



Local Updates

North Texas Freight Terminal Electrification

Deadline: 01/13/2023

North Texas Clean Diesel Project

Deadline: 01/13/2023



CONTACT US



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