

Electrifying Freight: Real World Experiences

Dave Schaller
December 2022



No Membership Fees: Thanks to Sponsors

Platinum



Gold



Silver



Bronze



Philanthropy



2022 Fiscal Supporters

Guidance on Electric Trucks

1

Electric Trucks: Where They Make Sense

May 2018



High Potential Regions



5

November 2020



MD Electric Trucks: Cost Of Ownership

October 2018

2

Viable Class 7 & 8 Electric, Hybrid & Alt Fuels Tractors



December 2019

Heavy-Duty Hydrogen Fuel Cell Tractors



6

December 2020

3

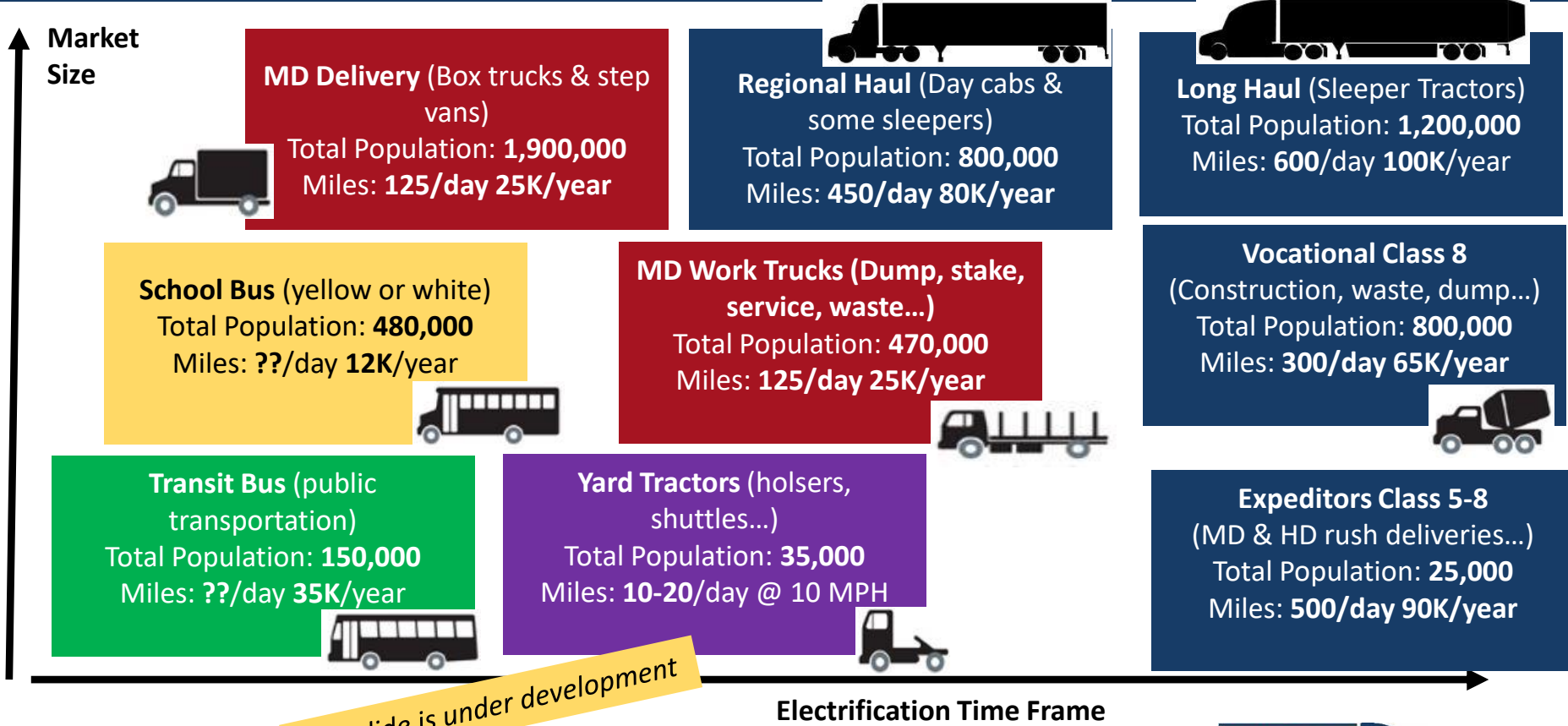
Electric Trucks: Charging Infrastructure

March 2019



Now Free Online at <https://nacfe.org/emerging-technology/electric-trucks-2/>

MD & HD Industry Segments



This slide is under development

Fleet Electrification Waves

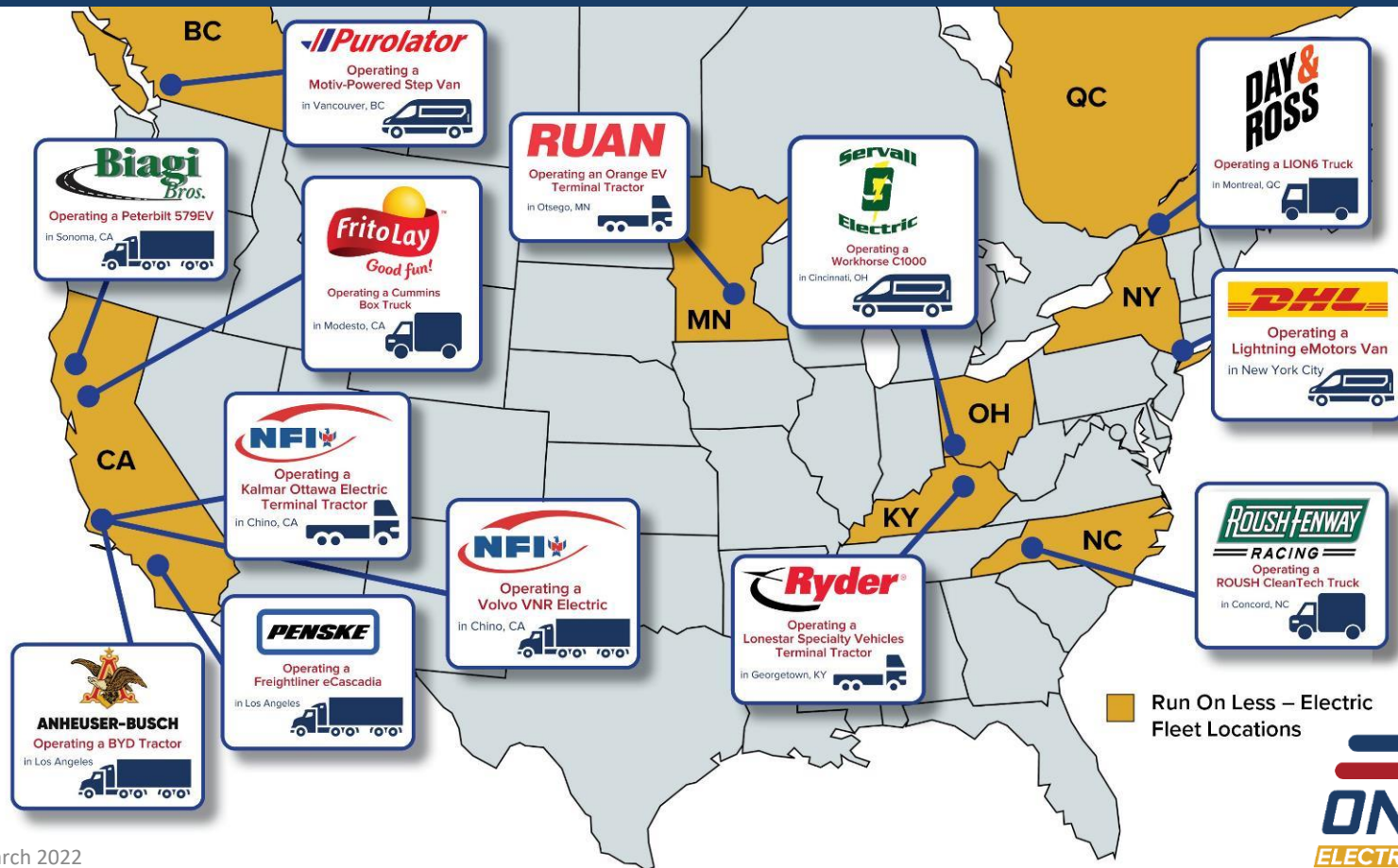
Electrification waves drive Run On Less - Electric scope

1. Forklifts
2. *Yard Tractors*
3. *MD Urban Delivery*
4. *Drayage*
5. *Regional Haul Tractors*
6. Long Haul Tractors



March 2022

Run on Less – Electric Participants



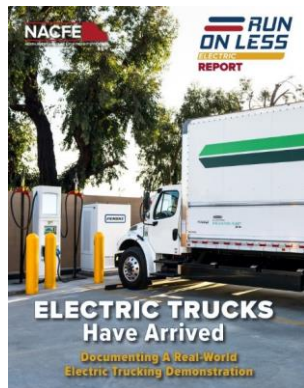
The Real World



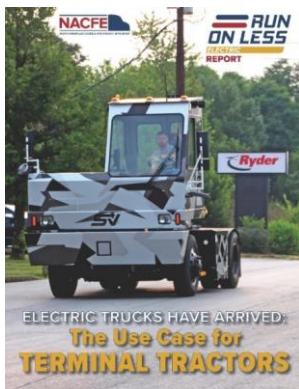
**RUN
ON LESS**
ELECTRIC



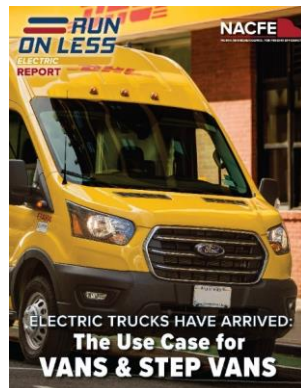
RoL-E Reports



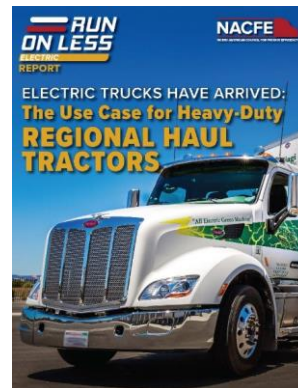
January 12, 2022
Review Of Complete
Demonstration:
[Electric Trucks Have Arrived](#)



March 6, 2022
The Use Case For
[TERMINAL TRACTORS](#)



April 11, 2022
The Use Case For
[VANS & STEP VANS](#)



May 5, 2022
The Use Case For
[REGIONAL HAUL TRACTORS](#)



June 28, 2022
The Use Case For
[MEDIUM DUTY BOX TRUCKS](#)

MD BOX TRUCKS 
Jennifer Wheeler, Senior Program Manager, NACFE

Market Segment & Fleet Profile Fact Sheet

Operational Characteristics	
Duty Cycle	Return to Base
Use Case	Pickup & Delivery
Average Range	Less than 100 miles
Routes	Variable
Fueling	Centralized
Miles per Gallon	10.0
Replacement Cycle	10.2
Average Age	8.6
Axis Configuration	4x2



[4 Market Segment Fact Sheets](#)



July 2022

Run on Less: Terminal Tractors

Findings

1. Great first step in electrification
2. Drivers rave about these vehicles
3. Maintenance costs lower
4. Positive environmental impact
5. Payback time without incentives is long
6. Plan tight data tracking to prove ROI

[Terminal Tractor Video](#)

ELECTRIC TRUCKS HAVE ARRIVED:

**The Use Case for
TERMINAL TRACTORS**

Terminal Tractors & Environment

Class 8 Terminal Tractors

If all **25,242** Terminal Tractors
in the US and Canada were electric



929,687

metric tonnes of carbon would be prevented from entering
the atmosphere each year

Run on Less: Vans & Step Vans



Findings

1. E-commerce is leading the doubling of the huge van and step van market.
2. Electrifying smaller commercial vehicles is easier.
3. TCO is approaching parity with IC engines.
4. EVs improve driver attraction and retention.
5. Transition will be challenging, but planning can mitigate risks.

Vans Fuel Cost Comparison



Gasoline	
Average Miles per Gallon	7.4
Price per Gallon of Gasoline	\$2.98*
Daily Range	100
Operational Days	250
Gallons Burned per Mile	0.135
Gallons Burned per Day	13.51
Cost of Fuel per Day	\$40.26
Estimated Annual Fuel Cost	\$10,065

* 2021 average U.S. price of gasoline – all sectors

Electric	
Miles per Kilowatt Hour (kWh)	1.43
Price of Electricity per kWh	\$0.112*
Daily Range	100
Operational Days	250
Electricity Consumed Per Mile (kWh/mi)	0.699
Electricity Consumed Per Day (kWh)	69.93
Cost of Electricity Per Day	\$7.83
Estimated Annual Electricity Cost	\$1,958

* 2021 average U.S. price of electricity – all sectors

Approximate Annual Fuel Savings per Vehicle:
\$8,107

Vans, Step Vans & the Environment

If all **4,143,406** Vans and Step Vans
in the US and Canada were electric



43,476,632

MT of CO₂e would be prevented from entering
the atmosphere each year

NACFE and Regional Haul

2019 RH Good for Trucking Less - Electric

10 Trends of Regional Haul Growth

- Growth in GPS-Based Asset Tracking Systems (Tractor, Trailer, Load, and Driver)
- Growth in E-commerce
- Driver Hiring and Retention
- Advances in Technologies Such as Electric and Hybrid Vehicles
- Data Collection and Mining
- Push Toward Immediate Delivery
- Innovations in Load Matching Systems
- Increased Use of Long Combination Vehicles
- Vehicle Specialization
- Vehicle Automation

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

2020 Run on Less – Regional

Growth in Regional Haul is Good

Regional Haul Trucks:

- Return to base often
- Diversity in duties
- Predictable operations
- Great efficiency opportunity
- Proximity to base for support

Regional Haul Routes

A-B-A
(shuttles, dedicated and dedicated fast turn)

Hub-and-Spoke
Different destination each day

A-B-C-D-A
(city, diminishing load, and milk runs)

Shifting Freight Movement to Shorter Hauls

Need for Supply-Chain Resilience

Electric Trucks are Emergent

Efficiency Opportunity

Run on Less Regional confirmed that the ~800k trucks in North America could use much less fuel.
*measured in billion gallons diesel

Annual Consumption	ROL Regional Possible	Future Potential
8	5.5	1

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NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

2022 Use Case given Run on

RUN ON LESS ELECTRIC REPORT

ELECTRIC TRUCKS HAVE ARRIVED: The Use Case for Heavy-Duty REGIONAL HAUL TRACTORS

"All Electric Green Machine"

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

HD RH Tractors & the Environment

Heavy-Duty Regional Haul Tractors

If **468,782** HD Regional Haul Tractors
(half the total population)
in the US and Canada were electric



29,351,582

-metric tonnes of CO₂e would be prevented from entering
the atmosphere each year

Medium-Duty Box Trucks

If all **385,687** Medium-Duty Box Trucks
in the US and Canada were electric



7,681,707

metric tonnes of carbon would be prevented from entering
the atmosphere each year

Run on Less – Electric Videos

Real World, Real Time Case Studies

- Video for each fleet & OEM
- Fleet Interviews: Drivers & Leaders
- OEM Interviews & more



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Electric Truck Bootcamp

ELECTRIC TRUCK BOOTCAMP

SESSION

- 1 Why Electric Trucks?
- 2 Charging 101 — Planning & Buildout
- 3 Charging 201 — Power Management & Resilience
- 4 Working with Your Utility
- 5 Incentives for Electrification
- 6 Maintenance, Training & Safety
- 7 Finance & Innovative Business Models
- 8 Battery Supply Chains & End of Life
- 9 Global Perspectives
- 10 Drivers & Electric Trucks



WWW.RUNONLESS.COM

SCAN
for Training
Videos,
Quizzes
and Badges



Run On Less – Electric Depots

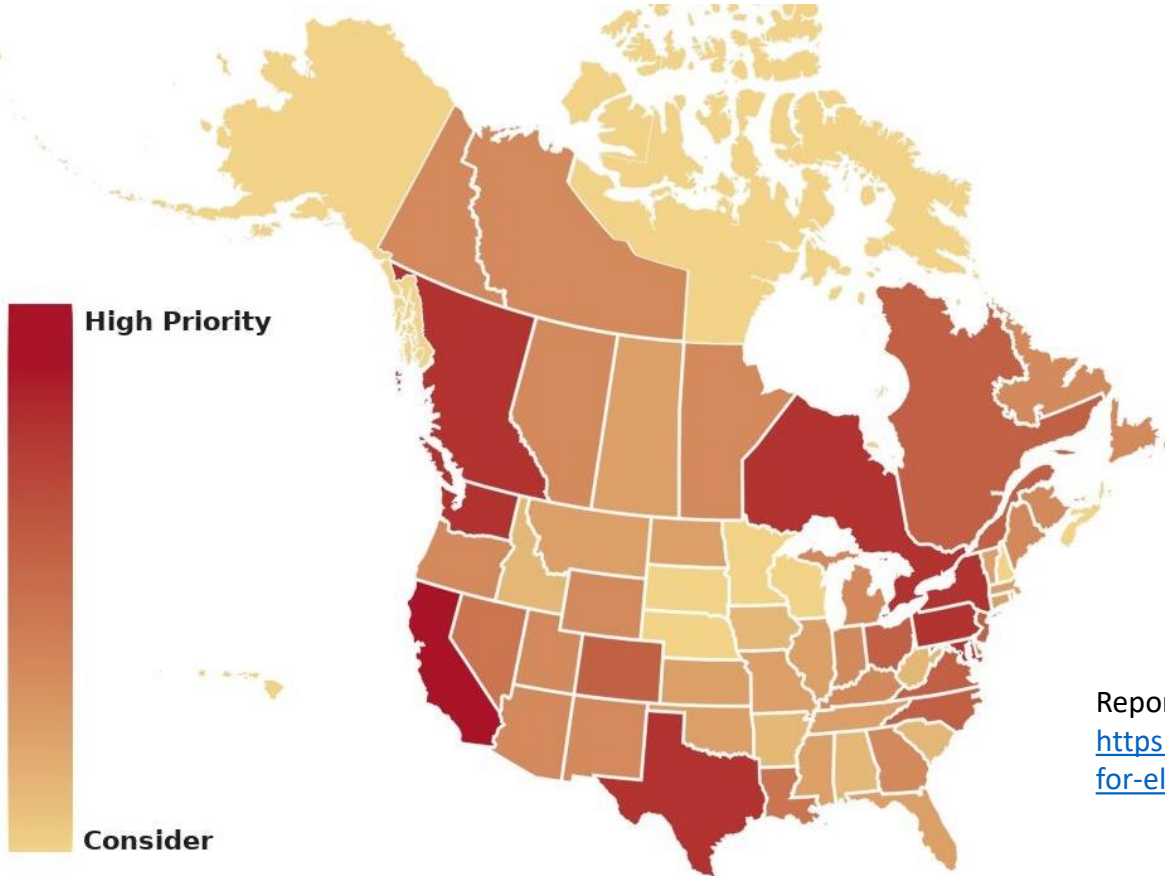


2023 Concept:

- Scaling Electric Trucks
- USA, Canada & Mexico
- Eight Depots
- **Focus on Infrastructure**
- Second EV Truck Bootcamp Series

Need participating Depots and Sponsors

High Potential Regions Report



June 2021

Megaregions with particularly high potential

- Northern California
- Southern California
- Texas Triangle
- Cascadia (WA, OR & BC)
- Front Range (CO & NM)
- Northeast
- Toronto & Montreal

Report Link:

<https://nacfe.org/downloads/high-potential-regions-for-electric-truck-deployments-technical-appendix/>

Hydrogen Fuel Cell Trucks

Current Status

- Several trucks under fleet test
- Others under OEM development
- Both Compressed & Liquid Hydrogen trucks planned



June 2021





CCS1



CCS2



CHAdeMO



J1772



MCS or CharIN



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[RunOnLess.com](https://www.RunOnLess.com)

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... And charged up!

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