NACAA
national association of clean air agencies

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

Electrifying Freight: Real World Experiences

Dave Schaller

December 2022

No Membership Fees: Thanks to Sponsors

2022 Fiscal Supporters

Guidance on Electric Trucks

 # 1

Electric Trucks: Where They Make Sense

May 2018

MD Electric Trucks: Cost Of Ownership

October 2018

 # 2

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

December 2019

 # 3

Electric Trucks: Charging Infrastructure

March 2019

High Potential Regions

 # 5

November 2020

Heavy-Duty Hydrogen Fuel Cell Tractors

 # 6

December 2020

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

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

MD & HD Industry Segments

Market Size

MD Delivery (Box trucks & step vans)
Total Population: **1,900,000**
Miles: **125/day 25K/year**

Regional Haul (Day cabs & some sleepers)
Total Population: **800,000**
Miles: **450/day 80K/year**

Long Haul (Sleeper Tractors)
Total Population: **1,200,000**
Miles: **600**/day **100K**/year

School Bus (yellow or white)
Total Population: **480,000**
Miles: **??**/day **12K**/year

MD Work Trucks (Dump, stake, service, waste…)
Total Population: **470,000**
Miles: **125/day 25K/year**

Vocational Class 8
(Construction, waste, dump…)
Total Population: **800,000**
Miles: **300/day 65K/year**

Transit Bus (public transportation)
Total Population: **150,000**
Miles: **??**/day **35K**/year

Yard Tractors (holsers, shuttles…)
Total Population: **35,000**
Miles: **10-20**/day @ 10 MPH

Expeditors Class 5-8
(MD & HD rush deliveries…)
Total Population: **25,000**
Miles: **500/day 90K/year**

This slide is under development

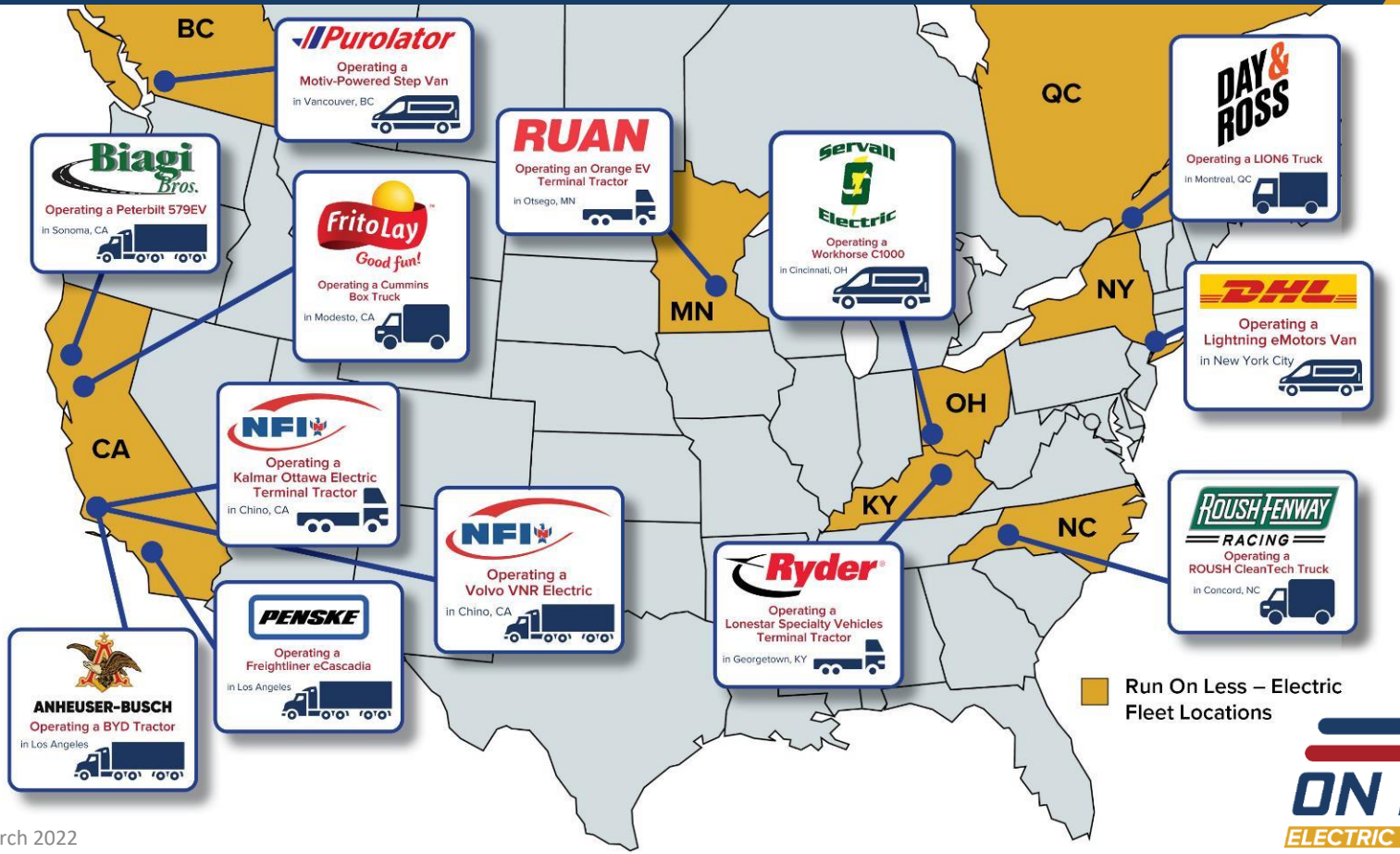
Electrification Time Frame

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

Run on Less – Electric Participants

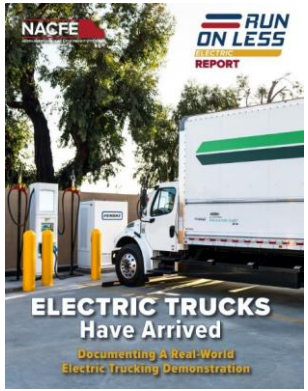


RUN ON LESS ELECTRIC

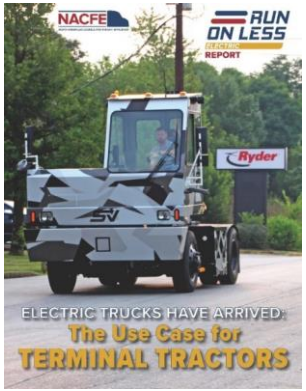
The Real World

RUN ON LESS ELECTRIC

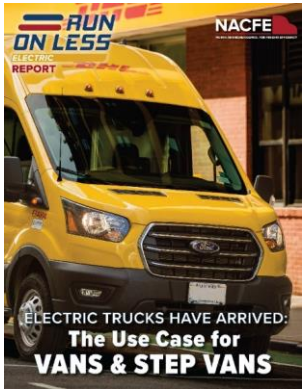
RoL–E Reports



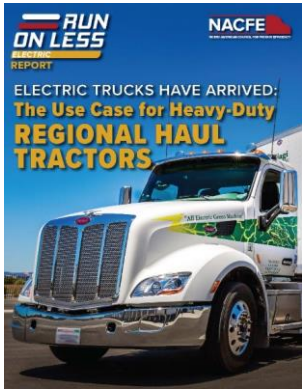
January 12, 2022
Review Of Complete Demonstration:
[Electric Trucks Have Arrived]



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]

[4 Market Segment Fact Sheets]

RUN ON LESS ELECTRIC

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

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

Terminal Tractors & Environment

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 & Step Vans Video

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**

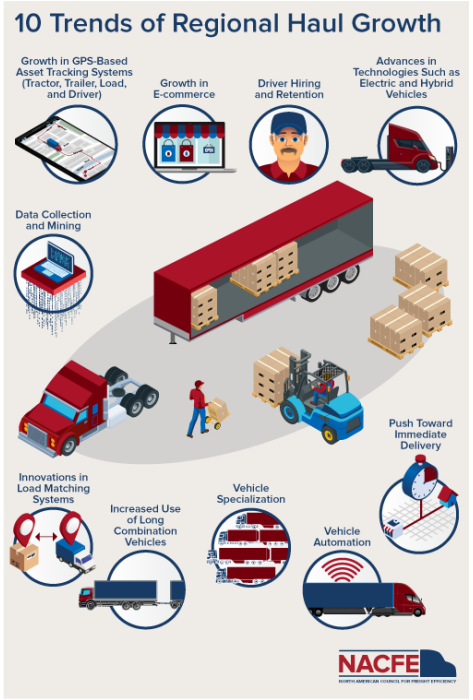
* 2021 average U.S. price of electricity – all sectors

Approximate Annual Fuel Savings per Vehicle:
$8,107

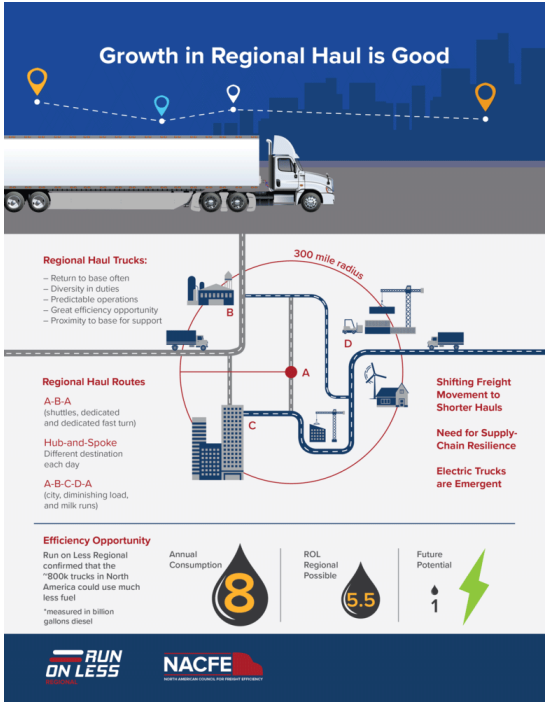
Vans, Step Vans & the Environment

NACFE and Regional Haul

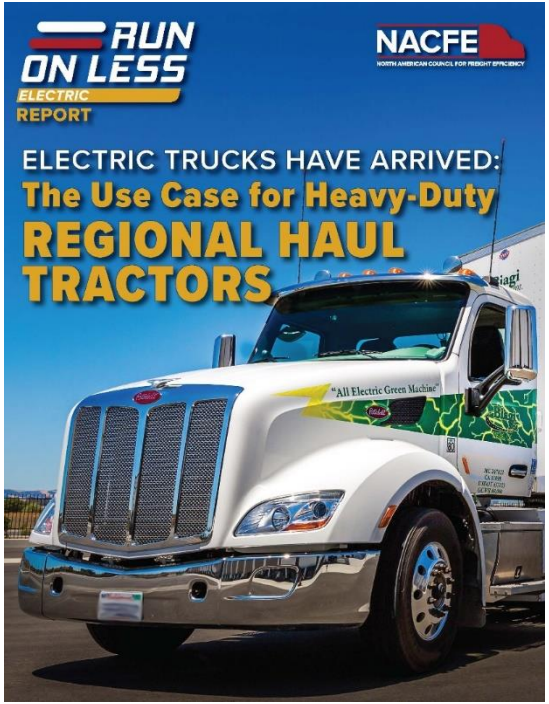
2019 RH Good for Trucking Less - Electric



2020 Run on Less – Regional

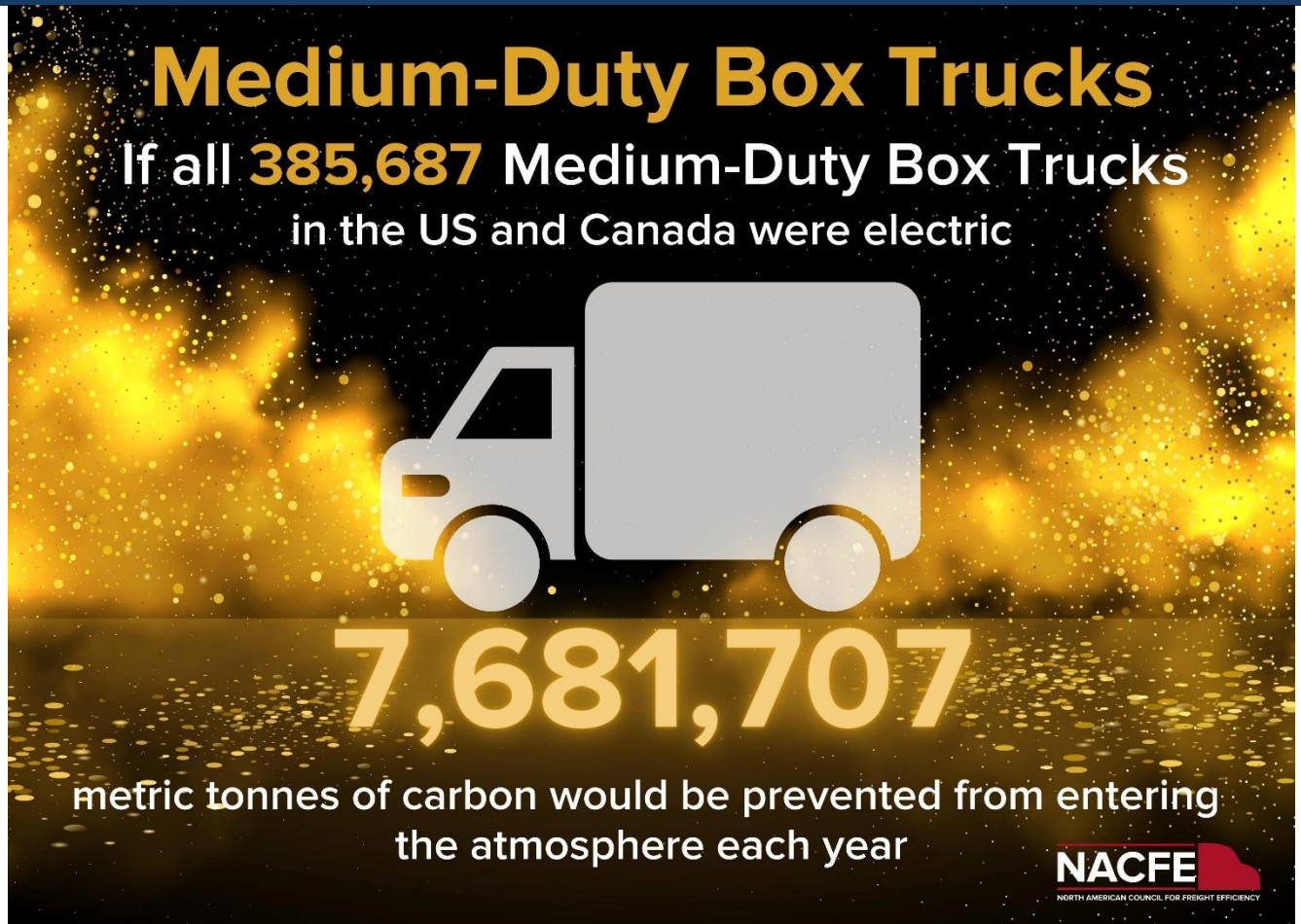


2022 Use Case given Run on



HD RH Tractors & the Environment

MD Box Trucks & the Environment



Run on Less – Electric Videos

Real World, Real Time Case Studies

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

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

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

RUN ON LESS ELECTRIC

SCAN for Training Videos, Quizzes and Badges

WWW.RUNONLESS.COM

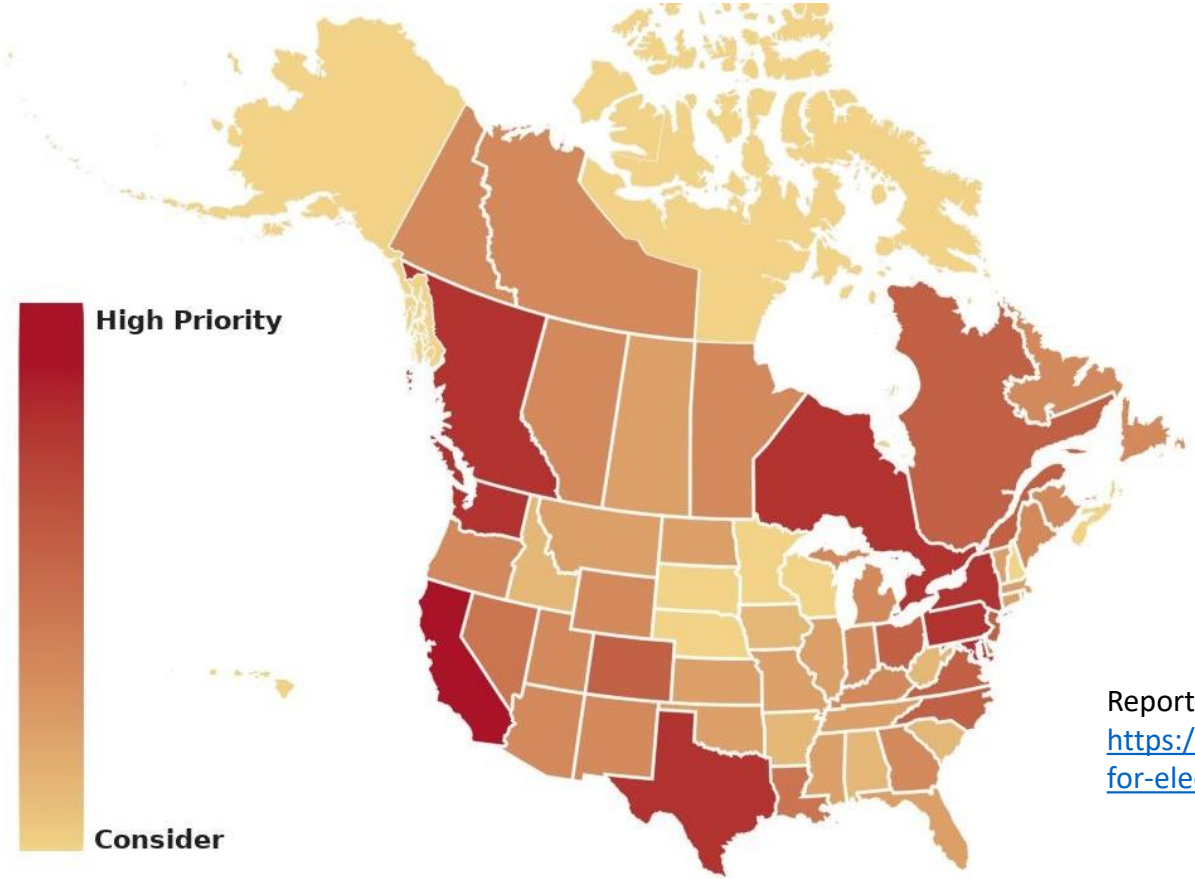
Run On Less – Electric Depots

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

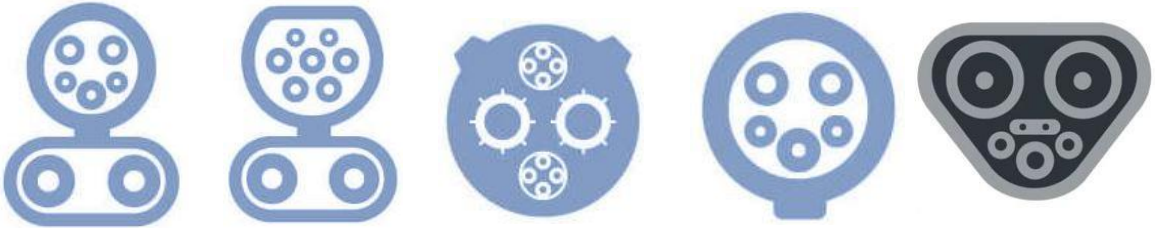
Report Link:
https://nacfe.org/downloads/high-potential-regions-for-electric-truck-deployments-technical-appendix/

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

Hydrogen Fuel Cell Trucks

Current Status

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



CCS1 CCS2 CHAdeMO J1772 MCS or CharIN

NACFE

NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

NACFE.org

Let's Stay Connected…
… And charged up!

RUN ON LESS ELECTRIC

RunOnLess.com

NACFE (& Spanish: NACFE LATAM)

NACFE

@NACFE_Freight & @RunOnLess

NACFE

Dave Schaller

David.Schaller@NACFE.org

260-602-5713