# What's Driving Electric Trucks?

April 20, 2021

ELECTRIC TRUCK BOOTCAMP

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

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Join us for the 10th anniversary of the leading clean transportation event!

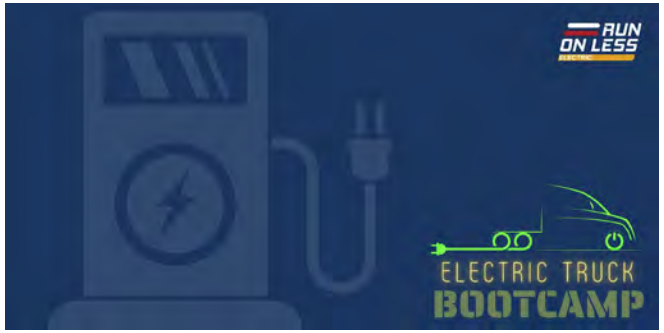
**August 30 to September 2, 2021**

Bootcamp Attendees Discount Code: **BOOTCAMP50**

Register at www.actexpo.com/register

# Thank you to today's sponsor!

# Coming Up




## Our next training is May 4 on Charging 101: Planning & Buildout


## To test your knowledge and earn your Electric Truck Expert badge, please visit: www.RunOnLess.com

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# Before we get started:

## Q&A

Submit your questions to the host using the Q&A box in the upper right-hand corner.

## Presentations

A recording of today's webinar will be available on the ACT News website, and you will be emailed a link by early next week.

## Survey

There will be a 30-second survey shown at the end. We appreciate your feedback!

## Technical Issues

Contact Benjamin Chan at:
**benjamin.chan@gladstein.org**
or call 310-573-8545 for assistance.

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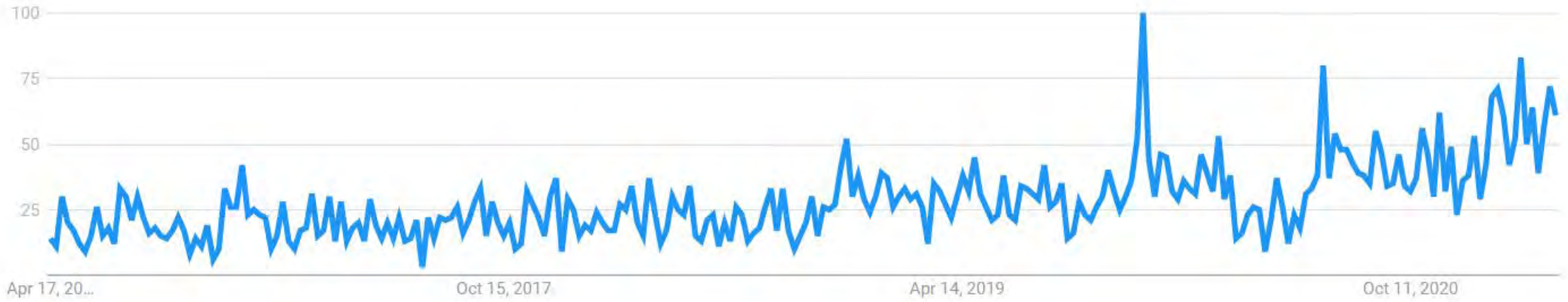
# Electric Trucks are gaining popularity.




Source: Google Trends

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# Electric Trucks are gaining popularity.

## Electric truck sales in US predicted to soar to 54,000 by 2025

AUGUST 14, 2020 · 1 COMMENT · 3 MINUTE READ · JOSHUA S. HILL


THE FORD F-VISION. SOURCE: FORD TRUCKS

Source: The Driven

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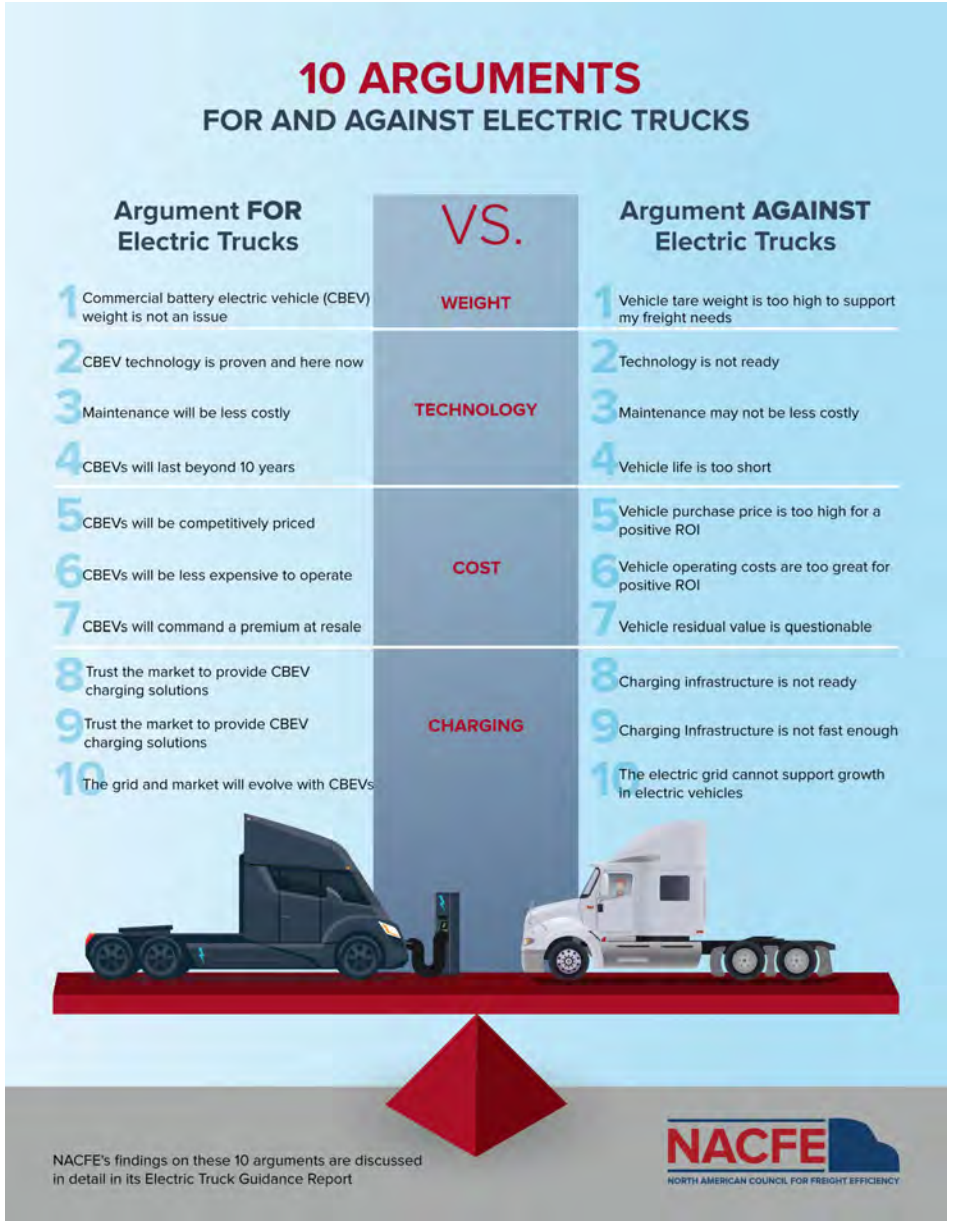
# There has been much debate in the industry about electric trucks.




Source: NACFE

# Model availability is increasing.


Source: CALSTART


Source: Daimler Trucks NA

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# Political momentum is growing for zero-emission vehicles.

## *New Rule in California Will Require Zero-Emissions Trucks*

More than half of trucks sold in the state must be zero-emissions by 2035, and all of them by 2045.

An Amazon warehouse in the Inland Empire of California last year. Philip Cheung for The New York Times

Source: New York Times

**MULTI-STATE MEDIUM- AND HEAVY-DUTY ZERO EMISSION VEHICLE**

**MEMORANDUM OF UNDERSTANDING**

WHEREAS, the Signatory States and the District of Columbia[1] recognize the importance of state leadership and coordinated state action to ensure national progress in the effort to reduce greenhouse gas (GHG) emissions and stabilize global warming;

WHEREAS, the Signatory States have statutory obligations or otherwise seek to significantly reduce statewide GHG emissions by 2050, consistent with science-based targets;

WHEREAS, transportation is now the nation's largest source of GHG emissions, and, after light-duty vehicles, medium- and heavy-duty trucks are the next largest source of transportation sector GHG emissions;

WHEREAS, the Signatory States have a statutory obligation to provide their citizens with air quality that complies with national health-based air quality standards, which are required to be protective of health and the environment with an adequate margin of safety;

WHEREAS, fossil fuel related emissions from medium- and heavy-duty vehicles (MHDVs) are a major source of nitrogen oxides (NOx), particulate matter, and toxic air emissions, which are preventing many densely populated areas from achieving compliance with federal ambient air quality standards;

WHEREAS, emissions from MHDVs are a widely acknowledged, but unaddressed, environmental justice problem that directly and disproportionately impacts disadvantaged communities located near freight corridors, ports and distribution centers;

Source: NESCAUM

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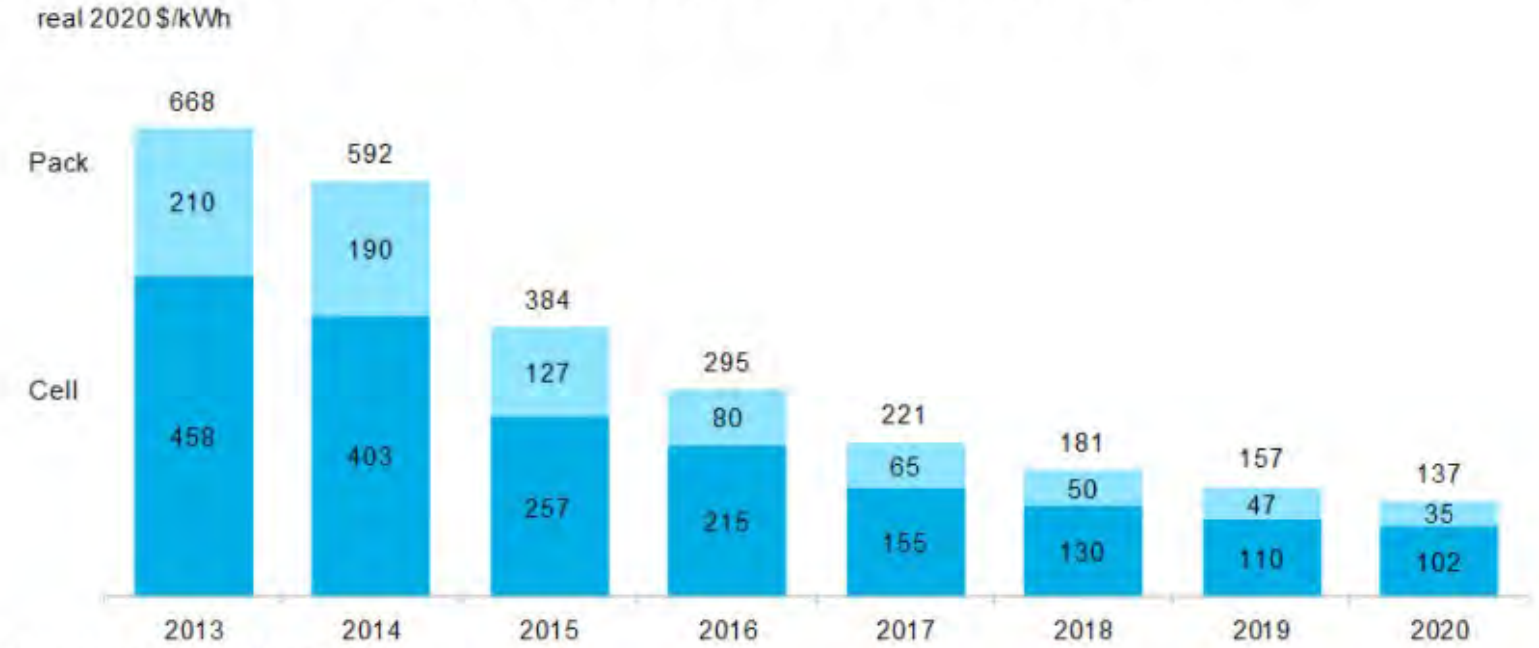
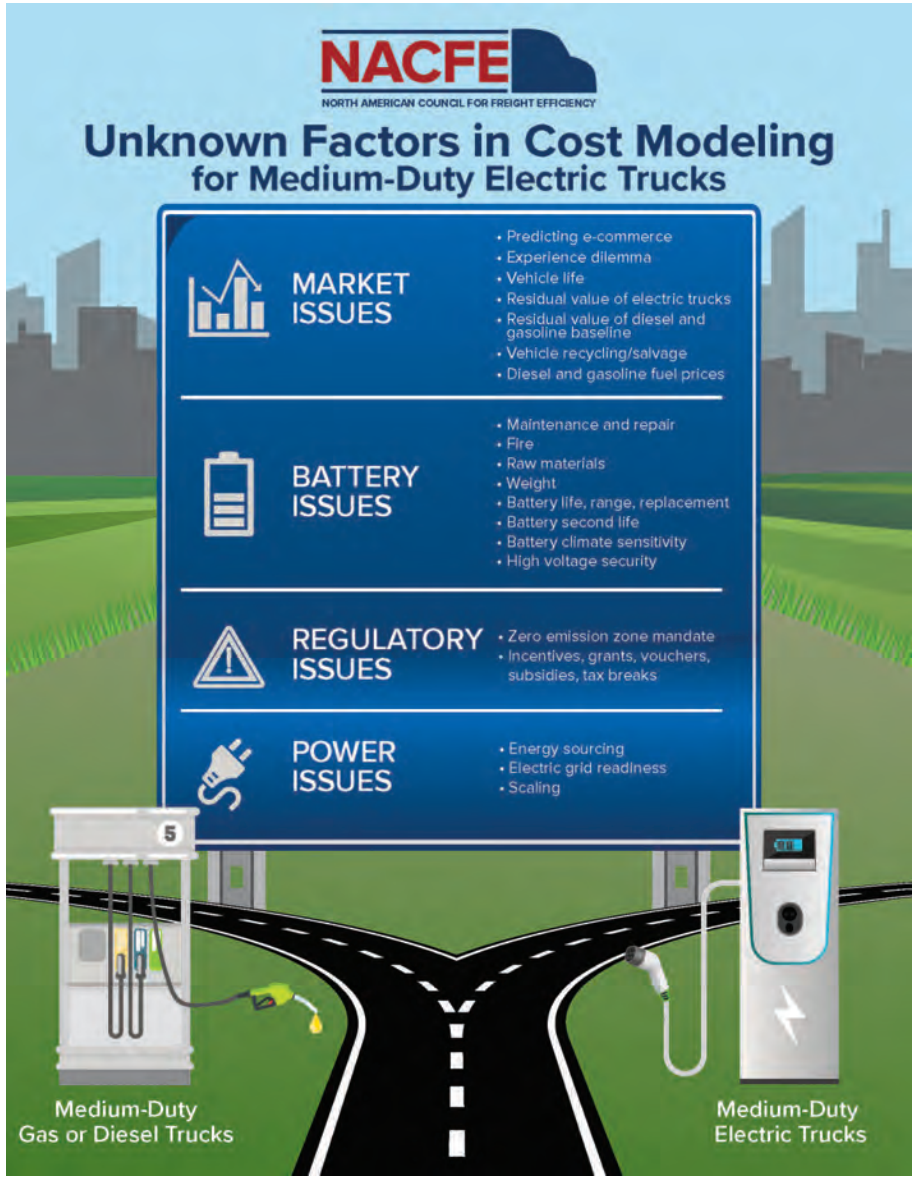
# Costs continue to fall.

**Figure 1: Volume-weighted average pack and cell price split**




*Source: BloombergNEF*

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# Charging infrastructure is being built out at an unprecedented rate.


Source: New York State


Source: ACT News

# Today's Speakers:

**Matt Wetta**
*National Account Manager – Alternative Powertrain*
Peterbilt

**Kathy Kinsey**
*Senior Policy Advisor*
NESCAUM

**Steve Slesinski**
*Director, Global Product Planning*
Dana Incorporated

**Kelly Schmandt Ferguson**
*Director, Market Transformation*
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*Vice President, Global Electrification*
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PETERBILT
579EV

# First to Top of Pike's Peak

# Electric Vehicle Line - Up

AVAILABLE NOW


579EV


520EV


220EV

LEADING THE CHARGE

# Applications for EV Adoption

- Less than 200 Miles Driven Each Day
- Cube Out / LTL / Diminishing Load
- Stop Start Duty Cycle
- Return Home Every Night


579EV

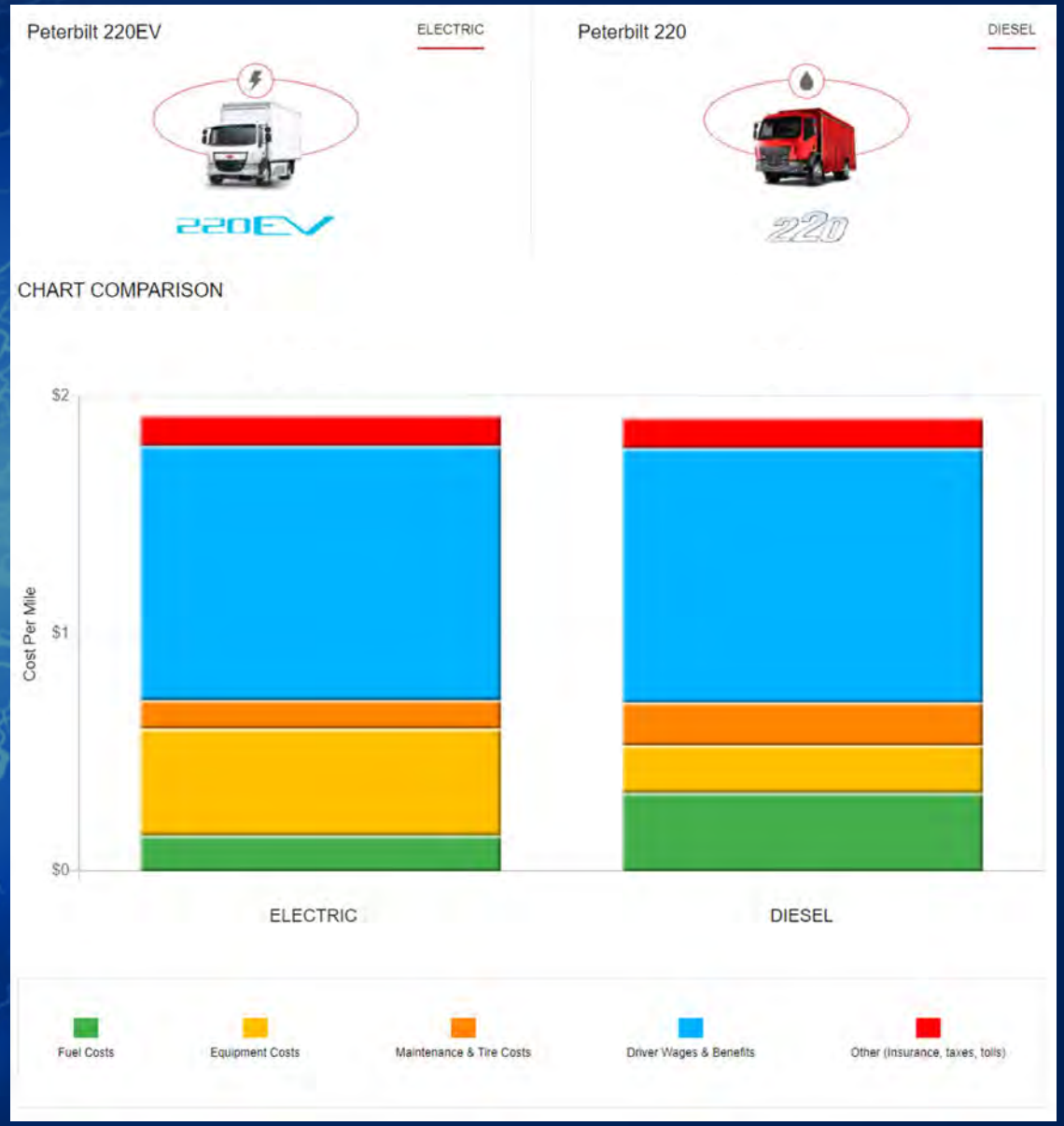

520EV


220EV

# EV TCO

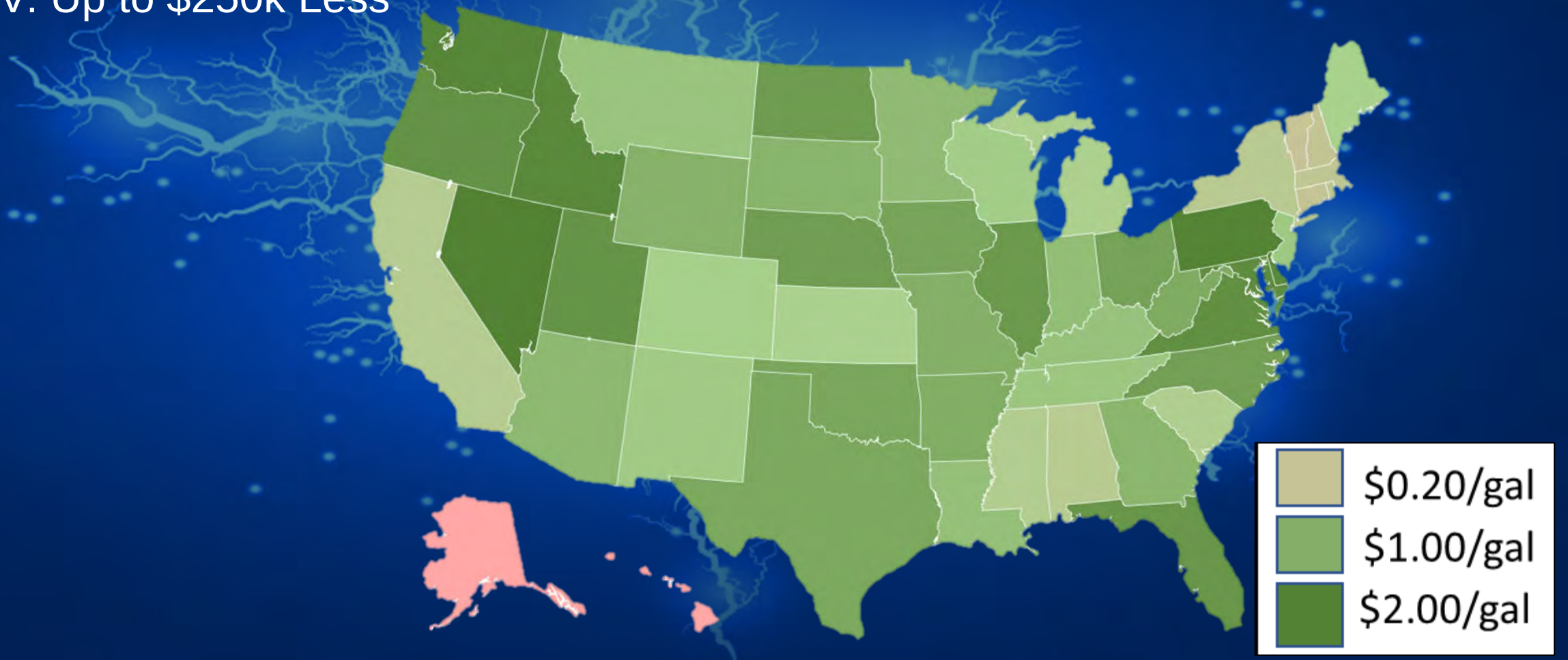
- Peterbilt.com


- Choose:
  - Fuel
  - Vehicle
- Input Costs
- Compare



# Energy Cost / Mile

- EVs have Lower Energy Costs/Mile
  - Diesel: $300k in Fuel Over Life
  - EV: Up to $250k Less



# The Whole EV Package

## Truck

Peterbilt


220EV

## Funding

Peterbilt

Grant Funding Opportunities

CALIFORNIA HVIP

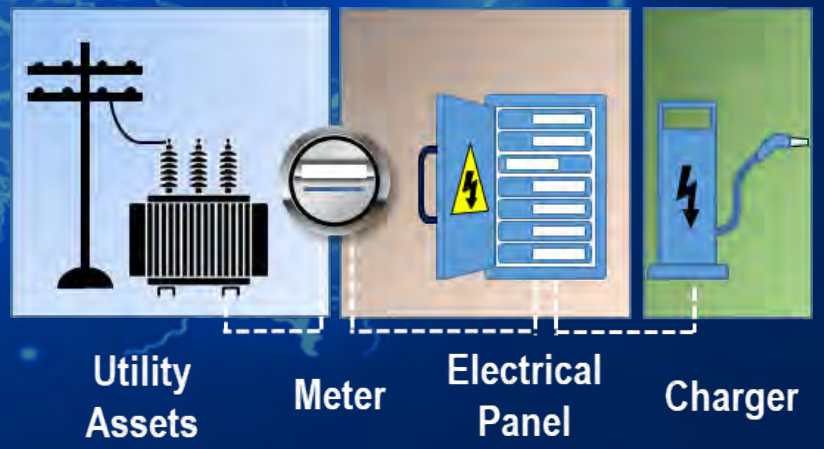
## Charger

PACCAR PARTS


## Infrastructure

FAITH TECHNOLOGIES

Schneider Electric



# Peterbilt Electric Vehicles

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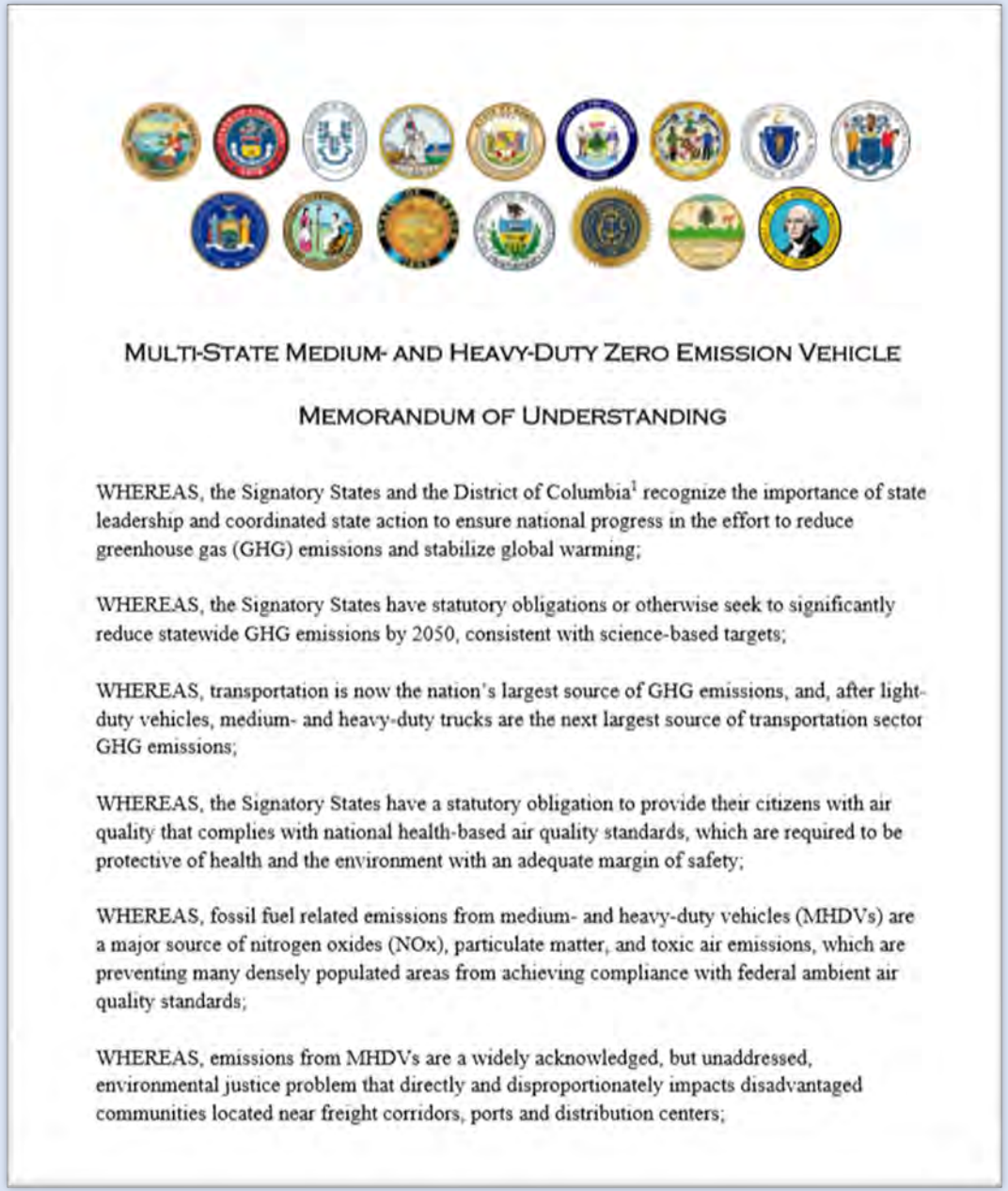
# The Multi-State MHD ZEV Initiative

Kathy Kinsey
Senior Policy Advisor
NESCAUM

April 20, 2021



MULTI-STATE MEDIUM- AND HEAVY-DUTY ZERO EMISSION VEHICLE

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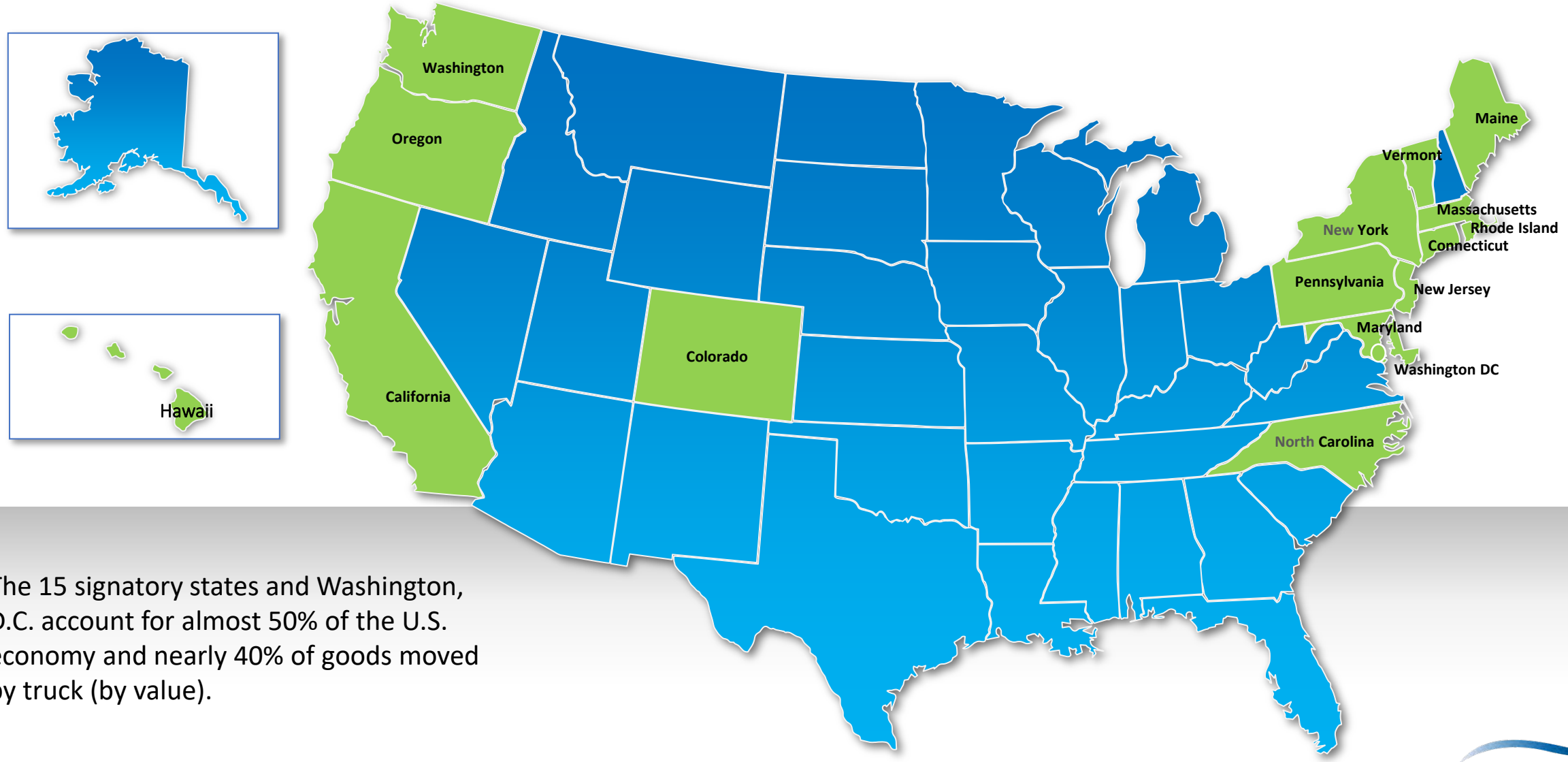
# MHD ZERO-EMISSION VEHICLE MOU

- Sets MHD ZEV sales targets
  - 30% ZEV sales by 2030 and 100% by 2050
  - Provides for 2025 mid-term review of targets
- Directs development and implementation of a multi-state MHD ZEV Action Plan and identifies 11 key focus areas
- Emphasizes need to accelerate deployment of zero-emission trucks and buses to benefit frontline communities

# MHD ZEV MOU SIGNATORIES




The 15 signatory states and Washington, D.C. account for almost 50% of the U.S. economy and nearly 40% of goods moved by truck (by value).

Sources:
U.S Bureau of Economic Analysis https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1;
FHWA Freight Analysis Framework https://faf.ornl.gov/faf4/Extraction1.aspx

NESCAUM



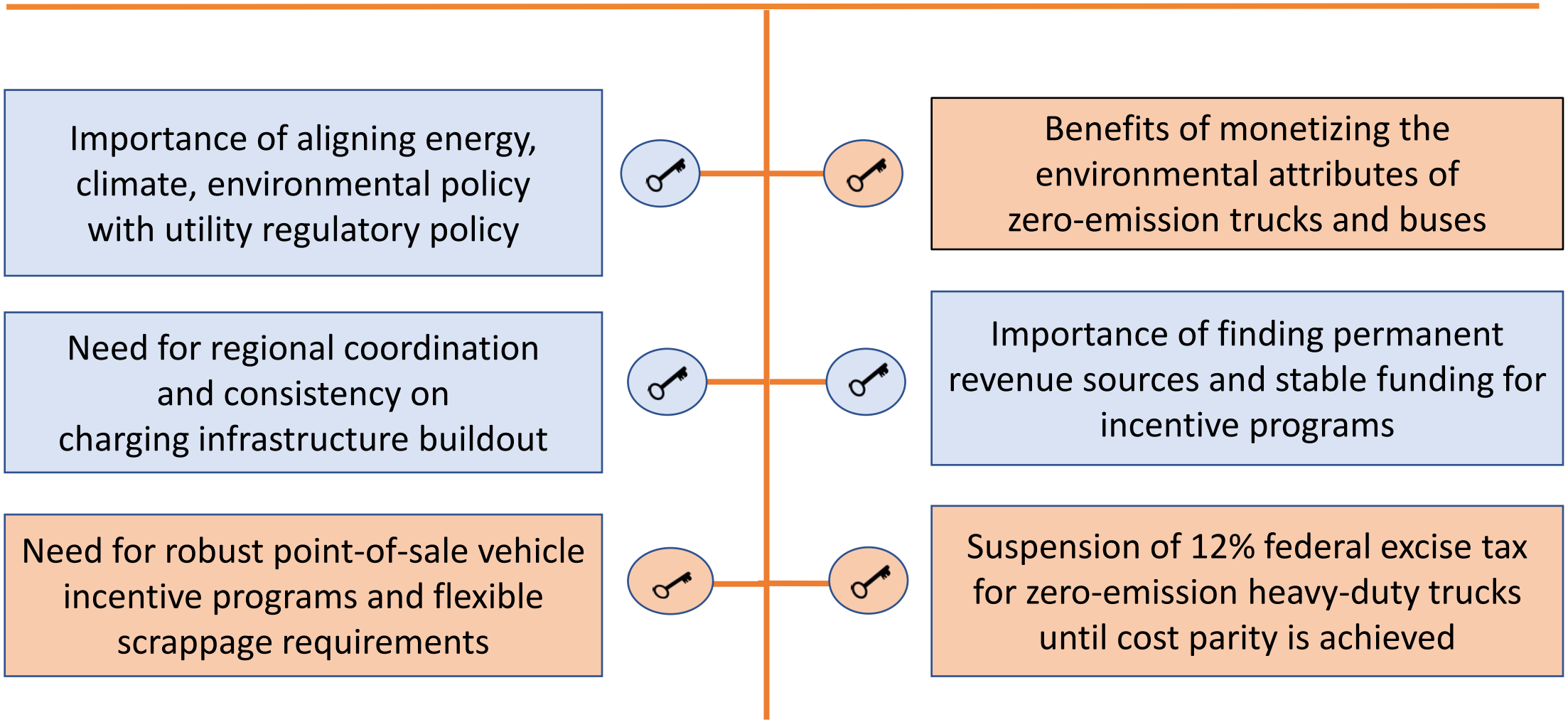
# SOME KEY FOCUS AREAS FOR ACTION PLAN RECOMMENDATIONS

- Purchase incentives for vehicles and infrastructure
- Adoption of regulatory standards (e.g., California's Advanced Clean Trucks Regulation)
- Utility make-ready investment to support infrastructure buildout
- Beneficial commercial rate design
- Measures to increase the use of zero emission trucks and delivery vans in densely populated areas
- Innovative financing tools and new funding sources
- Interoperability

# ACCOMPLISHMENTS TO DATE

- Completed initial stakeholder outreach effort
- Partnering with M.J. Bradley & Associates to facilitate convening of MOU state utilities
- Convened a state workgroup to discuss issues related to adoption of CA ACT and other MHD regulations
- Partnering with ICCT to model MOU and ACT emission benefits
- Engaging with the environmental justice community
- Hosting a series of informational webinars for states on key MHDV topics

# SOME KEY TAKEAWAYS FROM WEBINARS AND RESEARCH



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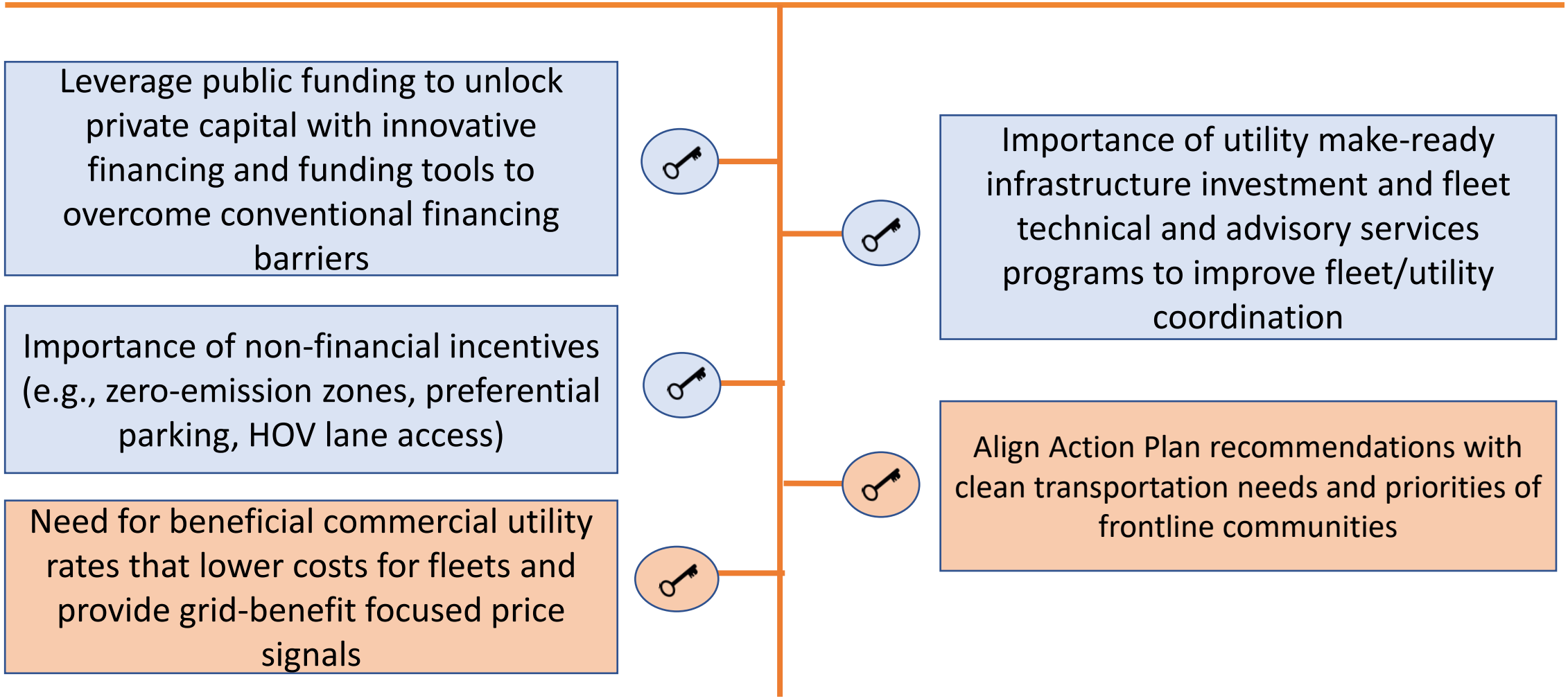

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**For questions, please contact:**

Kathy Kinsey // *kkinsey@nescaum.org*

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# Why Electric Trucks Panel
## Medium-Duty BEVs

**Steve Slesinski**
Dana Incorporated
*Director, Global Product Planning*

 

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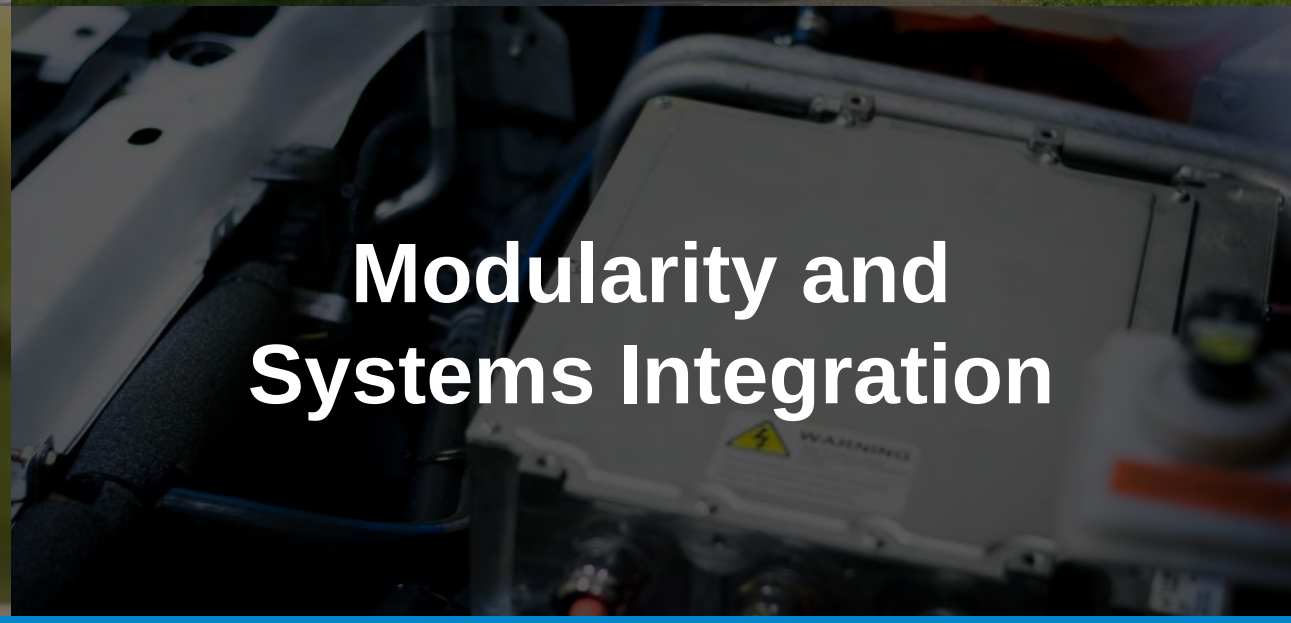





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# Low and zero emission zones are being rolled out all over the world.

**Canada, China, Chile, Finland, Germany, Japan, Netherlands, Norway, & Sweden To Collaboratively Grow Zero-Emission Commercial Vehicle Manufacturing, Infrastructure & Deployment**

September 17th, 2020 by **Guest Contributor**





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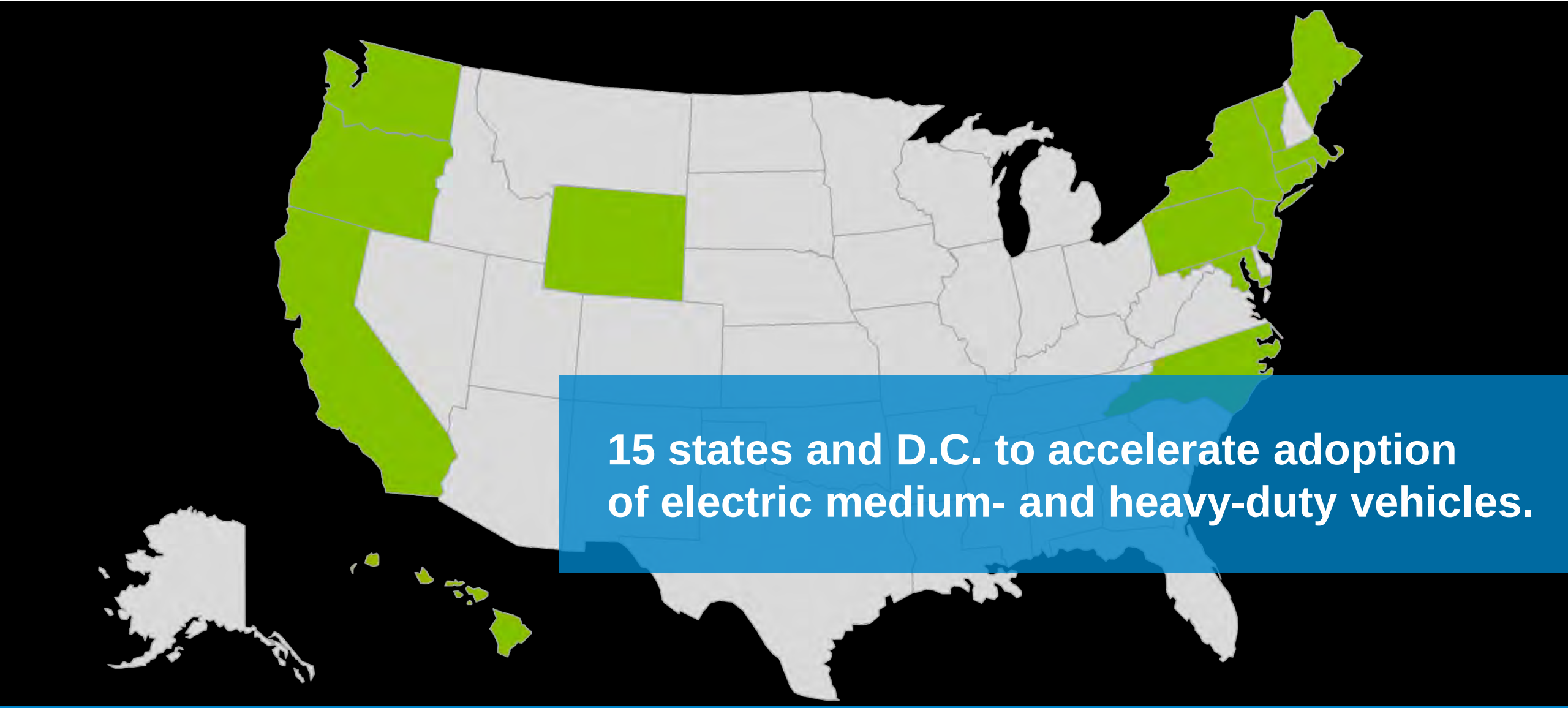


 

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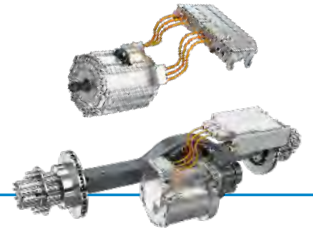
# Fleet Benefits

| | | |
|---|---|---|
| Reduced Maintenance | Increased Uptime | Reduced Componentry |
| Lower TCO | Reduced Noise and Vibration | Improved Corporate Image |
| Driver Retention | Meet Environmental Requirements | Increased Efficiency and Productivity |

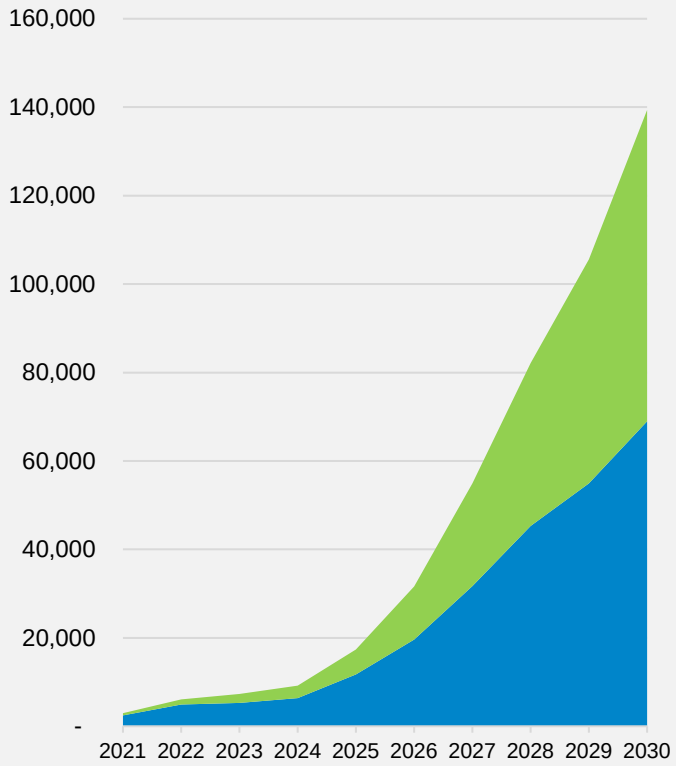
# Medium-Duty e-Propulsion Market through 2030



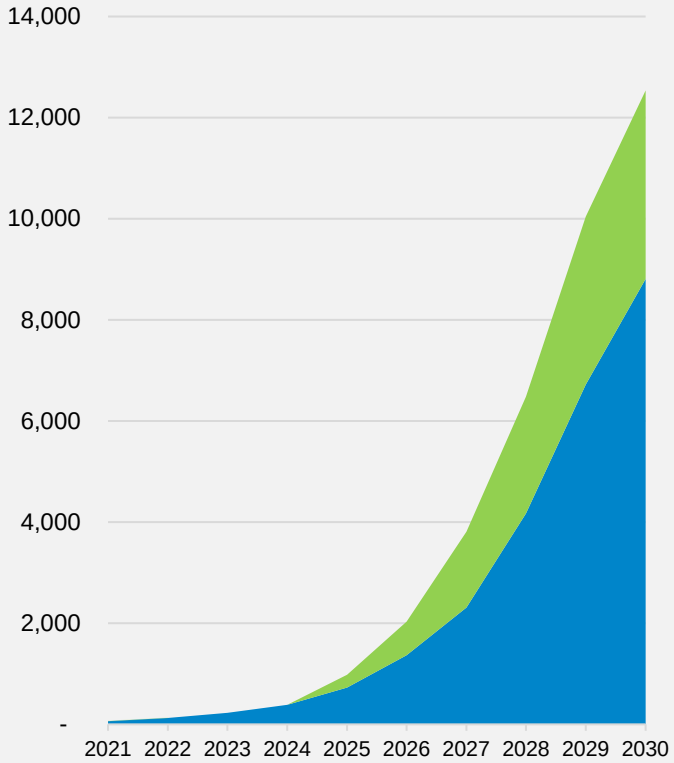
Central Drive
e-Axle

DANA

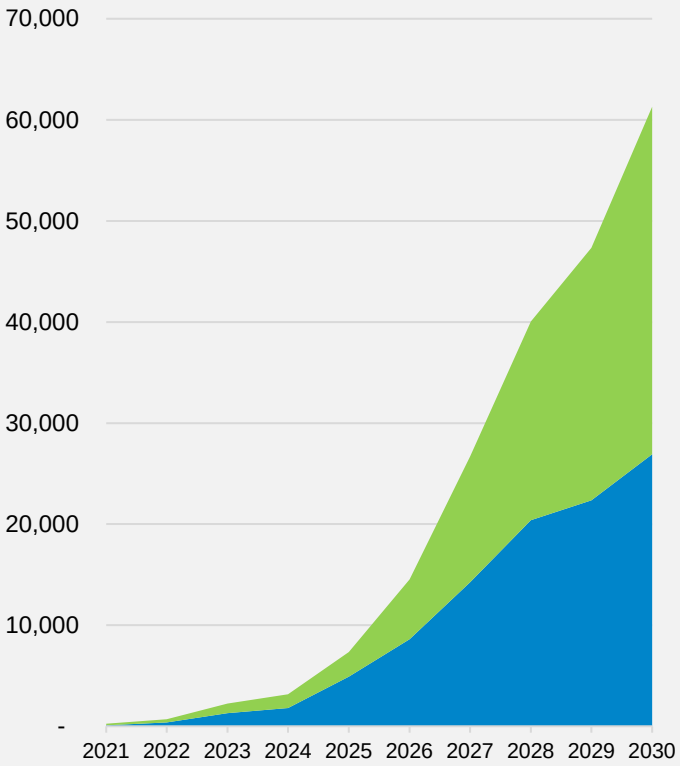
## Global




## Europe




## North America




Source: Interact Analysis

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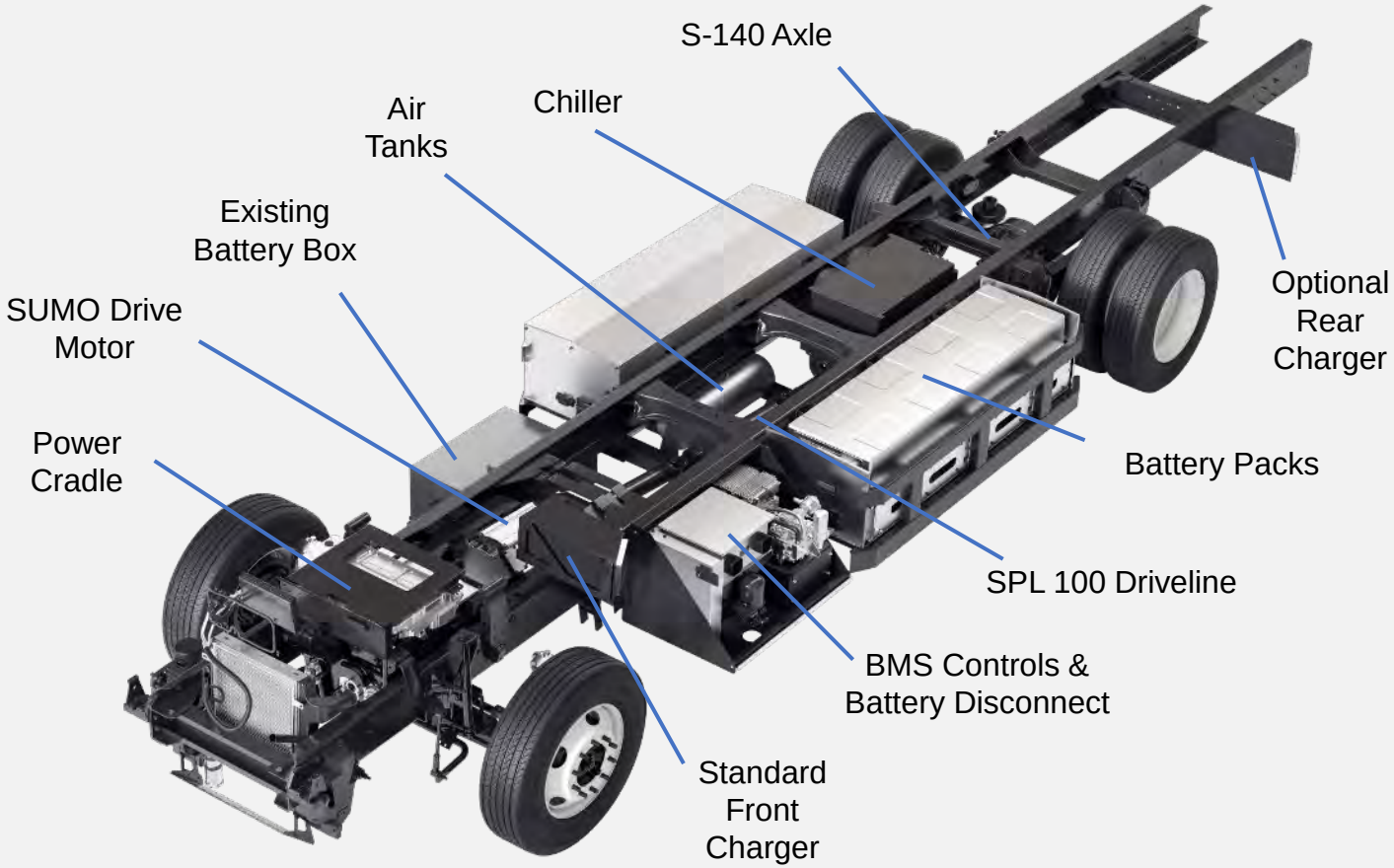
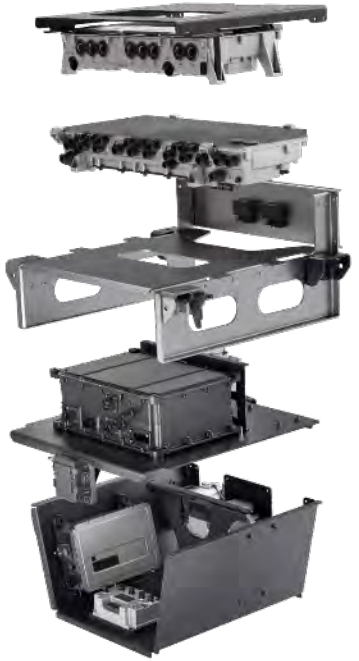
# Electric Propulsion and Integrated Systems



**Included in Power Cradle:**

- On-Board Charger
- Vehicle Software & Controllers
- Electric Hydraulic Power Steering
- Cab HVAC
- Air Compressor
- DC / DC
- ePTO
- HV Junction Box


**Medium-duty vehicles with known routes are an ideal application for electrification.**

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People Finding A Better Way®

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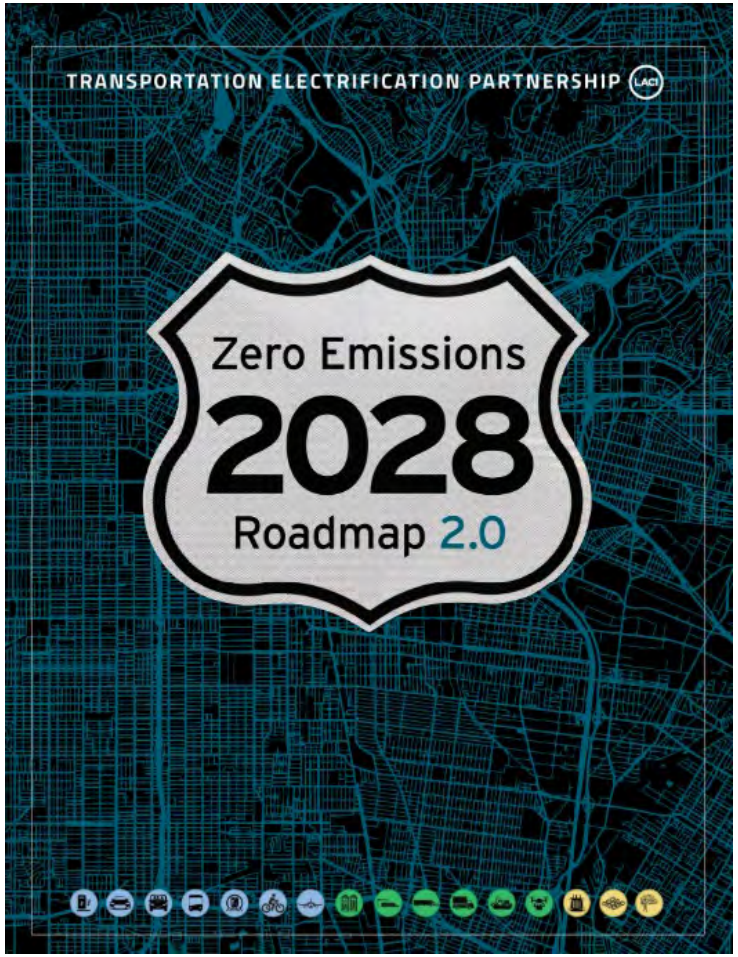
# A look into MD and HD Zero Emissions Pilots in Los Angeles

## Los Angeles Cleantech Incubator

Kelly Ferguson, Director Market Transformation; Kelly@laci.org

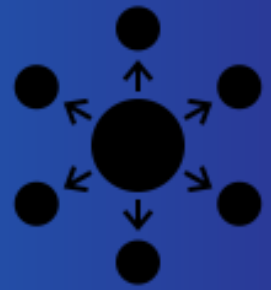
April 2021

# The Transportation Electrification Partnership seeks to accelerate zero emissions transportation in LA before the 2028 Olympic and Paralympic Games



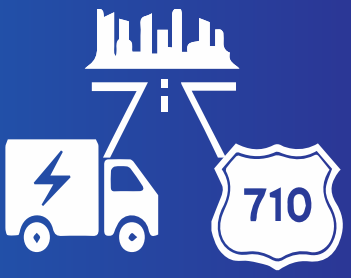

## MEDIUM DUTY, LAST MILE

Improve freight efficiency and transition goods movement to zero-emissions technologies and aim to have 60% of medium duty delivery trucks electrified by 2028.



## HEAVY DUTY, PORT DRAYAGE

Ensuring that by 2028, all public investments into goods movement, freight vehicles (i.e. trucks and cargo handling equipment) and related infrastructure to support goods movement will advance zero emissions solutions, and ensure that I-710 is the first zero emissions goods movement corridor in the nation



# LACI recently launched the nation's first voluntary Zero Emissions Delivery Zone focused on last mile delivery

## SANTA MONICA ZERO EMISSIONS DELIVERY ZONE
### A LACI PILOT

**What Does A Zero Emissions Delivery Zone Accomplish?**

- Provides a blueprint for cities to adopt zero-emissions delivery.
- Provides learnings for delivery companies for zero-emission delivery.
- Reduces air pollution, GHG emissions, noise and congestion, as well as improved safety.
- Economic opportunity to small businesses and individuals in the zone.

Press Announcement Launching the ZEDZ – 2/25/21


IKEA · AxleHire · GUAYAKÍ · FOODCYCLE LA · ALSCO UNIFORMS · shopify · REEF

# ZEDZ offers a unique opportunity to test ZE delivery modes including the nation's first public EV truck share

**EV Truck Share using Fluid Truck**

**Featuring vehicles from these partners**

fluid

NISSAN

ROUSH CLEANTECH

Motiv it's inEVitable

LIGHTNING eMOTORS

**Other zero emissions technologies featured include**

BLUESYSTEMS SMART MOBILITY

Automotus

COCO

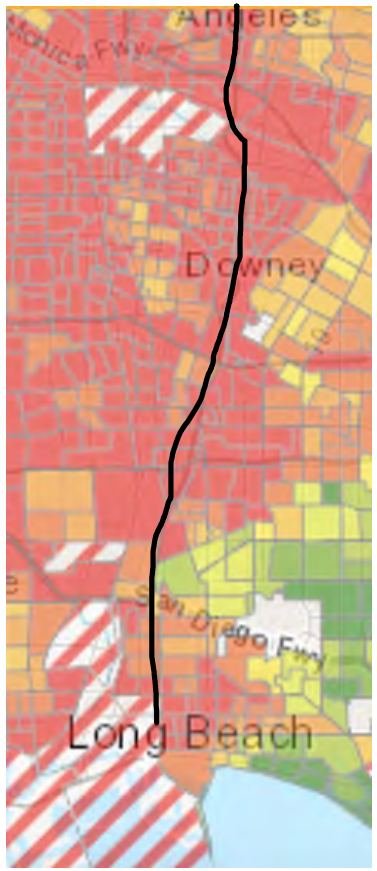
FREEWIRE

CIRCUIT

kiwibot

TORTOISE

# For Heavy Duty, I-710 is a crucial goods movement corridor and largest site of regional air pollution; continued growth anticipated




**CalEnviroscreen 3.0**
Red = +90% Disadvantaged Community

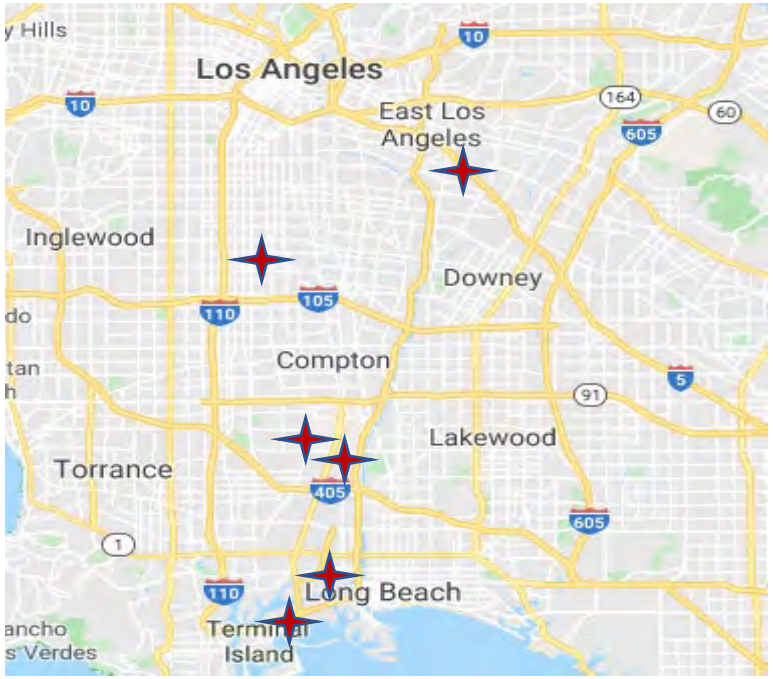
**At a glance**

- 40% of all the goods that enter the U.S. travel through the San Pedro Bay Ports
- LA Metro estimates that **36,000+ truck trips occur *daily*** on the I-710
- That number is expected to increase by up to 50% by 2035
- Medium and heavy-duty trucks = the largest source of air pollution in the region
- Low-income and communities of color surrounding the I-710 experience disproportionate rates of respiratory and other harmful illnesses stemming from exposure to truck emissions

# Our focus is on deploying the charging infrastructure to create a charging corridor

LACI and TEP partners are coordinating regional efforts to prioritize affordable and accessible infrastructure deployments, working with public agencies, truck manufacturers, fleets, utilities, charging infrastructure companies, private investors, insurance companies and community-based organizations to remove barriers to deploying the needed infrastructure at scale.

**LACI has conducted detailed site assessments for half a dozen strategic properties that are primed for investment as charging depots for public or private fleets. We aim to secure funding in 2021 to jumpstart these pivotal infrastructure deployments along the I-710 corridor.**




## Infrastructure Location Typologies

- Private Depots – One Fleet Access
- Collective Depots – Shared Access, Many Fleets
- Truck Stops – Public Access
- Mobile Charging – On Demand Access

## Infrastructure Equipment Typologies

- ‘Overnight’ Charging – 100-200 kW
- Opportunity Charging – 1MW+
- Energy Storage
- Solar PV Panels

# Today's Speakers:

**Matt Wetta**
*National Account Manager – Alternative Powertrain*
Peterbilt

**Kathy Kinsey**
*Senior Policy Advisor*
NESCAUM

**Steve Slesinski**
*Director, Global Product Planning*
Dana Incorporated

**Kelly Schmandt Ferguson**
*Director, Market Transformation*
LA Cleantech Incubator

**T.J. Reed**
*Vice President, Global Electrification*
Meritor

ELECTRIC TRUCK BOOTCAMP

NACFE NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY IN PARTNERSHIP WITH RMI ENERGY. TRANSFORMED.

RUN ON LESS ELECTRIC

MERITOR | BLUE HORIZON™

# TJ REED

*Vice President, Global Electrification*

April 20, 2021

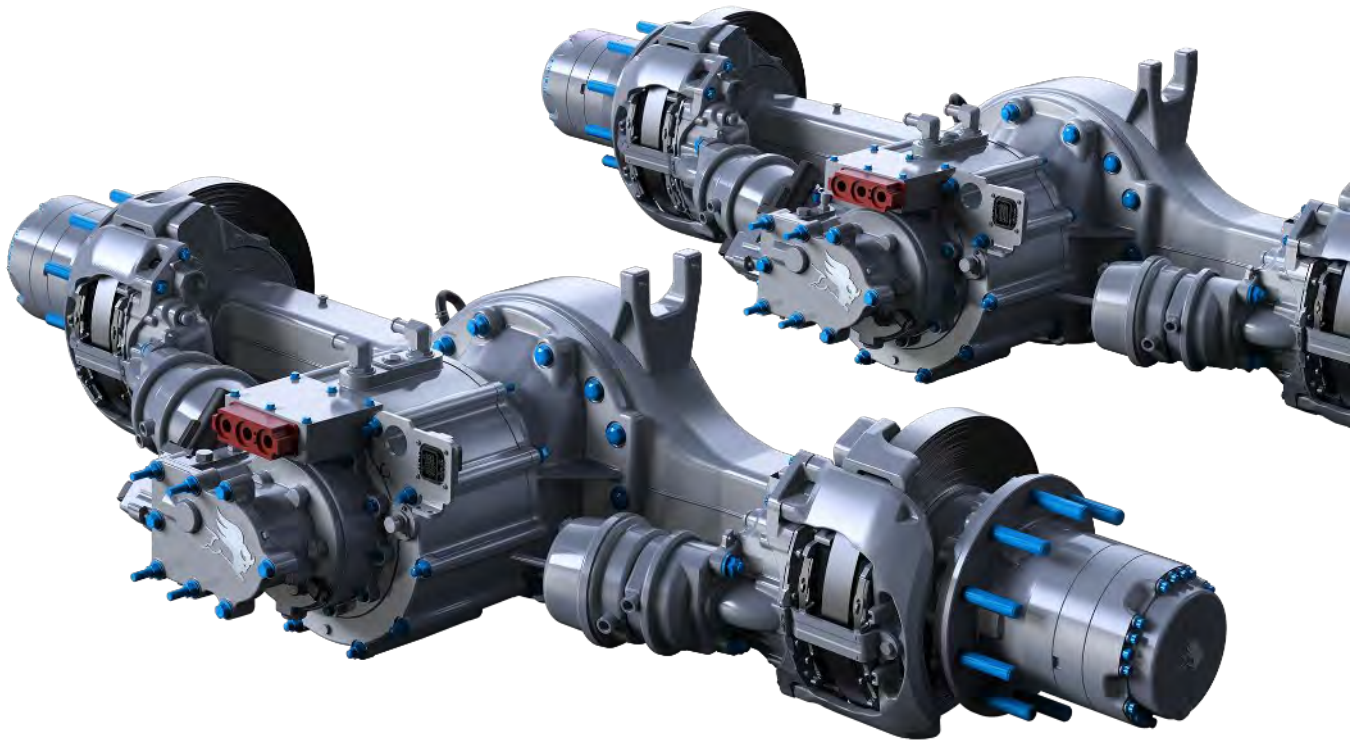
# Advanced Technology Focus

MERITOR®

BLUE HORIZON™

## The Future, 20 Years in the Making

The quest for more efficient and more intelligent systems is nothing new, but there's only so much you can do by traveling the same path. That's why we've been focused on the future of advanced technologies, such as electrified drivetrains, for more than 20 years. Today, that focus has a name: Meritor Blue Horizon.



ELECTRIFICATION

CONNECTIVITY

EFFICIENCY

# HD BEVs – Adoption Drivers and Limitations

MERITOR | BLUE HORIZON™

| Drivers | |
|---|---|
| Regulatory | Zero emissions goals by CARB and at State level. $CO_2$ reduction targets. |
| Sustainability | Large fleets and corporations pledging zero emissions goals. |
| Technology | Heavy investment from OEMs and suppliers as well as lower technology costs, e.g. battery cost reduction. |

| Limitations | |
|---|---|
| Range | Energy requirements for HD trucks is very high and space for batteries is limited. |
| Infrastructure | Limited charging stations and charge times are still a challenge. |
| Duty Cycle | Linehaul cost prohibitive today, some applications don't return to a central depot each day. |

Earliest — HD Application Adoption — Latest


Drayage


Construction


Regional haul


Linehaul


Refuse


Emergency


Off-highway




Hydrogen fuel cell has the potential to be the predominant technology for long range, linehaul type applications when infrastructure is ready.

# HD BEVs – Applications

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**Class 8 Drayage**

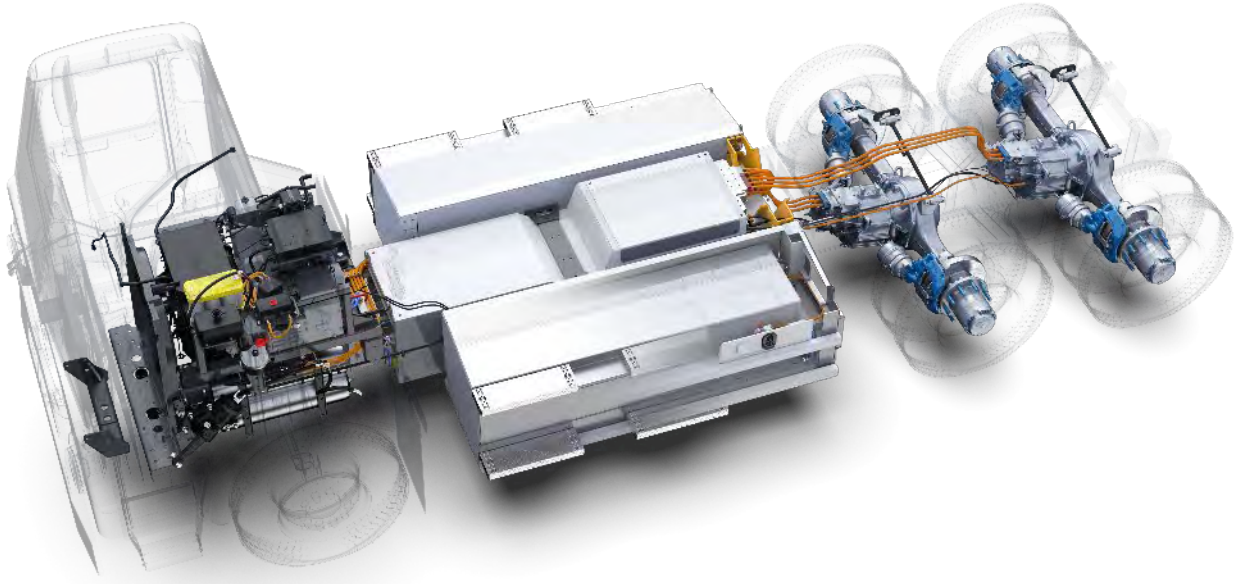
**Class 8 Refuse**

**VALUE PROPOSITION**

**PERFORMANCE:** ACCELERATION, SMOOTHNESS, REDUCED NVH

**ZERO EMISSIONS**

# HD BEVs – Customer Demands



## PERFORMANCE EXPECTATIONS

- ✓ Increased driver satisfaction
- ✓ Zero emissions
- ✓ Increased efficiency
- ✓ Reliable, proven, tested and validated performance
- ✓ All-weather reliability, thermal performance (heat and A/C)
- ✓ Decreased NVH

# Q&A

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# Thank you!

**Please complete the survey at https://subscribe.act-news.com/NACFE-RoL-E-Survey**

**For more information & to earn your Electric Truck Expert badge, please visit: www.RunOnLess.com**


Our next training is **May 4** on Charging 101: Planning & Buildout

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