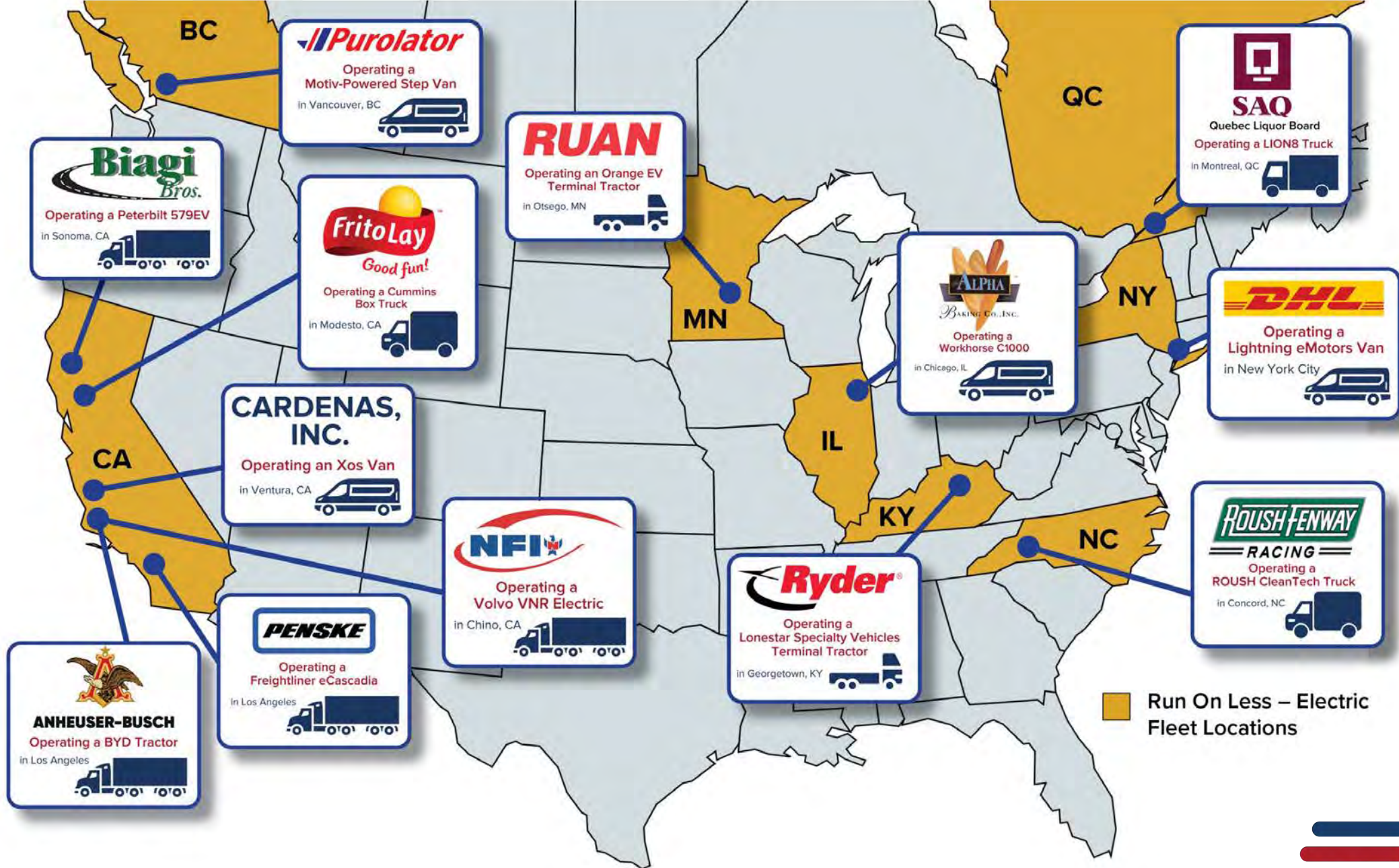


Incentives for Electrification

June 15, 2021





More info at www.runonless.com



Join NACFE this fall!



- **ACT Expo** – Aug. – Sept. (Long Beach)
- **TMC Fall Meeting** – Sept. (Cleveland)
- **SAE COMVEC** - Sept. (Rosemont, IL)
- **MOVE America** – Sept. (Austin)
- **NYC Climate Week** – Sept. (NYC)
- **ATA MCE** – Oct. (Nashville)

For details, sign up for [NACFE's newsletter](#).



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

Electric Truck Bootcamp

- 4/20 – What’s Driving e-Trucks
- 5/5 – Charging Planning & Buildout
- 5/18 – Charging Power Management
- 6/1 – Working with Your Utility
- **6/15 – Incentives for Electrification**
- 6/29 – Maintenance, Training, Safety
- 7/13 – Financing the Transition
- 7/27 – Sustainable Value Chains
- 8/10 – Global Perspectives
- 8/24 – Driver Behavior & Experience



Before we get started:

Q&A

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

Survey

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

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.

Technical Issues

Contact Stephane Babcock at: stephane.babcock@gladstein.org or call 424-363-0341 for assistance.

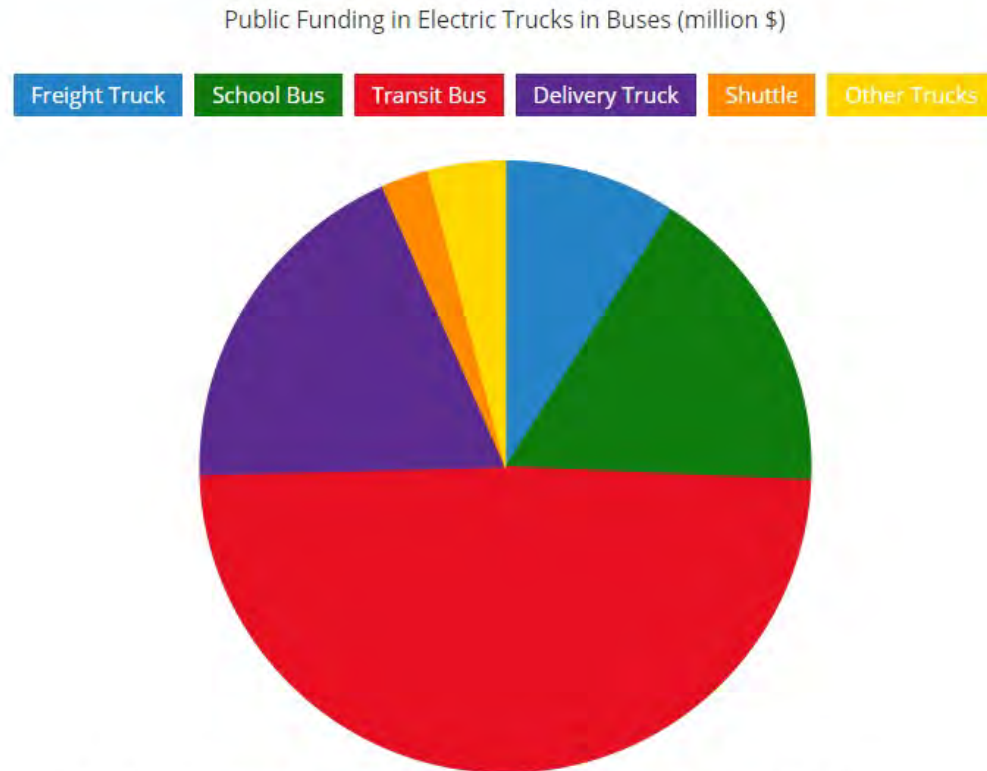


Electric Truck Incentives come in many forms!

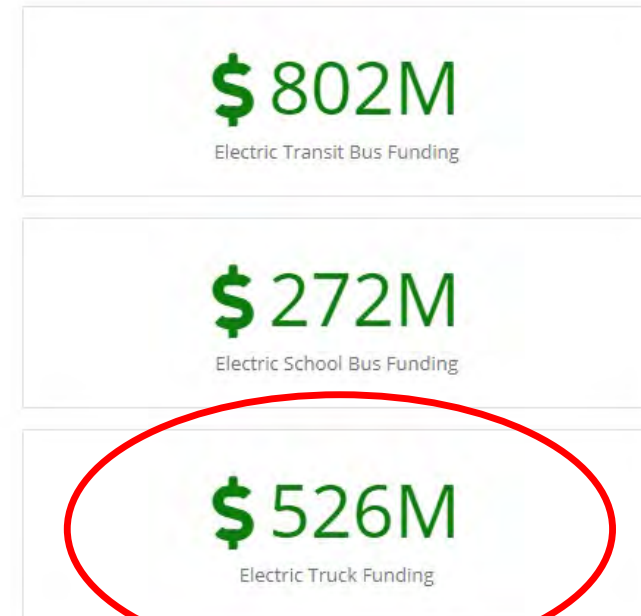
- Grants
- Rebates
- Vouchers
- Income tax credits
- Sales tax exemptions
- Make-ready funding
- And more!



\$526 Million Available in Public Funding for Electric Trucks



This chart draws on data from the Public Funding Dashboard. Units are represented in million dollars.



Source: Atlas Public Policy EV Hub



Need Help Identifying Available Incentives?

- CALSTART [Funding Finder Tool](#)
- ACT News [Advanced Transportation Funding Programs](#)
- Clean Cities Coalitions
- Your local utility

Advanced Vehicle Technology and Infrastructure Planning Grants >

Funding Finder Tool

The Funding Finder Tool is designed to help stakeholders search and filter for Medium-and-Heavy-Duty Alternative Fuel Vehicle and infrastructure programs in the state of California. Start by filtering results by ZIP Code then filter based on the other criteria you desire. Please note that for the most accurate and up to date information about each program, you should visit the website and/or speak with the agency directly.

Search for Funds

Battery Electric x Truck x Clear All

ZIP Code

County

Technology

Vehicle Type

Infrastructure

36 of 41 programs displayed. keyword filter

Organization(s):	South Coast AQMD Proposition 1B – Goods Movement Program	Vehicle Types:	Infrastructure, Truck Hydrogen, Battery Electric, CNG/Low Nox.
Funding:	Varies	Total Program Fund: \$121,900,933 Show More +	
Organization(s):	CARB Low Carbon Fuel Standard (LCFS)	Vehicle Types:	Transit, School, Off-Road, Truck, Bus, Other Vehicle Type
Funding:	Varies	Technology:	Hydrogen, Battery Electric, CNG/Low Nox.
			Total Program Fund: TBD Show More +

Advanced Transportation Funding Programs

In partnership with clean transportation and energy consulting firm, [Gladstein Neandross & Associates \(GNA\)](#), we have identified the following federal, state, and local incentive programs that are currently available to assist fleet operators in the deployment of clean vehicles and equipment, and new infrastructure developments. As the landscape of funding opportunities for these types of projects is ever-changing, please contact us at funding@act-news.com for more information on how to apply for and potentially receive grant awards.

Search: battery electric

State/Region	Program Name	Maximum Solicitation	Eligible Fuels
Arizona	Balt River Project (SRP) - Level 2 Charging	Not specified	Battery Electric, Plug-In Hybrid Electric
British Columbia - Canada	CEV Specialty-Use Vehicle Incentive	Not specified	Battery Electric, Hydrogen Fuel Cell
California	California Electric Vehicle Infrastructure Project (CALeVIP) Northern California Incentive Project (NCIP)	\$4,000,000	Battery Electric



Today's Speakers:



Victoria Carey

Senior Project Officer
New Jersey Economic
Development Authority



Kyle Winslow

Federal Policy Director
CALSTART



Jess Dawe

*Policy Analyst, Clean Fuels
Branch*
Natural Resources Canada
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Joel Donham

Lead Engineering Consultant
Center for Transportation and
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Ecosystem development and incentives for zero-emission medium- & heavy-duty vehicles

June 15, 2021

Victoria Carey – Senior Project Officer
vcarey@njeda.com

Transitioning our MHDVs to zero-emission alternatives is critical to creating a clean future and equitable economy



Transportation accounts for 42% of NJ's emissions, with a quarter coming from medium- and heavy-duty vehicles (MHDV) that impact overburdened communities disproportionately



In meeting our zero-emission MHDV and grid targets, **we can reduce net emissions especially in environmental justice communities**



By pursuing the zero-emission MHDV transition, **we can create jobs and reduce costs, increasing economic opportunity**



A cohesive financial, strategic, and regulatory tool set coordinated across government and industry – and driven by communities' self-identified needs – is key to meaningfully achieving our goals

Why is the ZE MHDV transition a difficult problem to solve, and why does it require incentives?

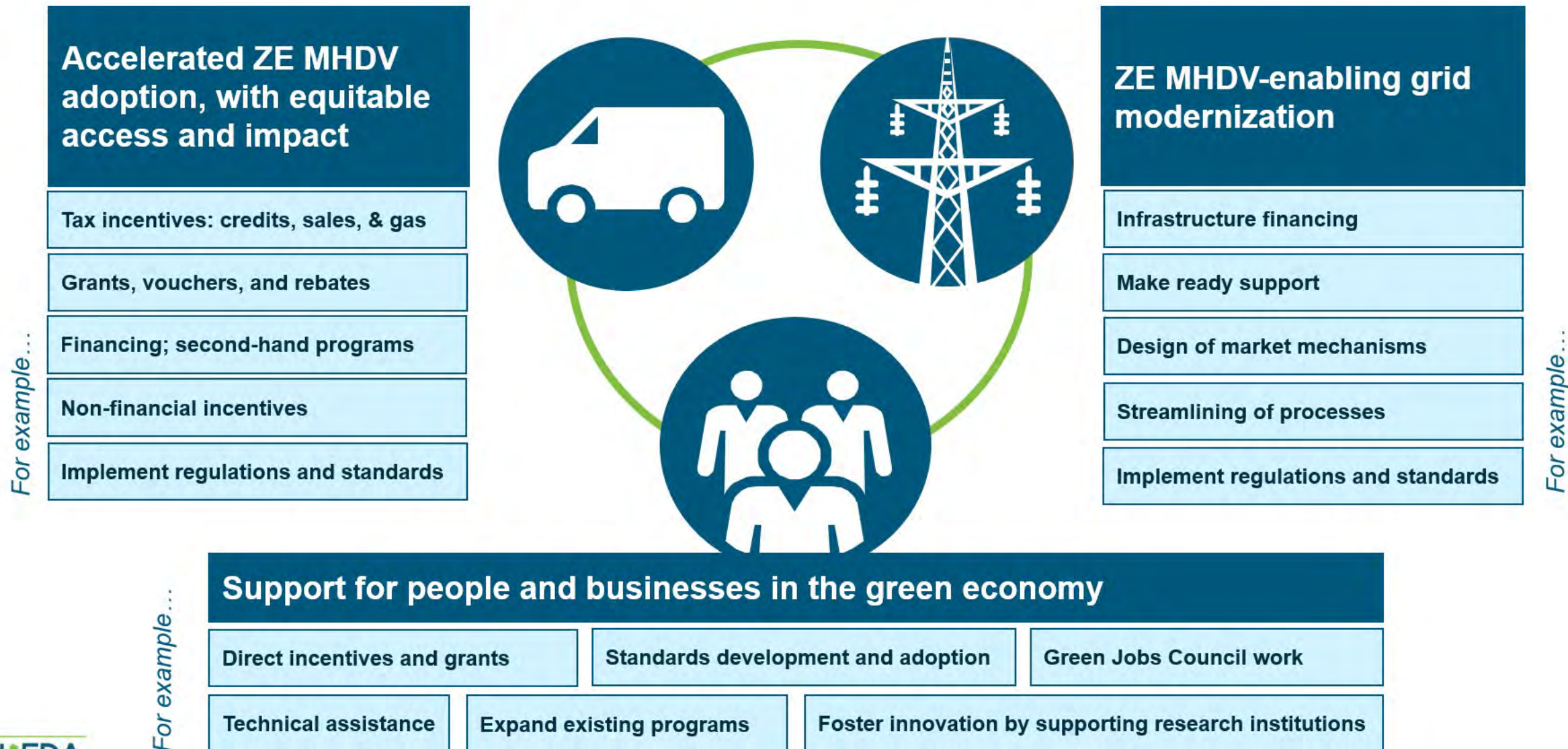
There are many interdependent and deeply established factors that may slow adoption:

- 20- to 30-year **equipment lifespan** creates long lead time to transition
- **High upfront cost** compared to gas/diesel alternatives
- **Lack of sufficient charging infrastructure** for long-haul and high-power applications
- **Unclear residual/resale value and recycling/disposal requirements**
- **Weight restrictions** may limit shipment volumes, impacting the bottom-line
- Greater **vehicle specialization** and variety than light duty passenger vehicles



Incentives can help break this catch-22 cycle to make real and necessary progress on adoption

Various tools and incentives are necessary to address the ZE MHDV transition at the intersection of environment, energy, and economy



NJ ZIP: Zero-emission Incentive Program – At a glance

Voucher Pilot for Medium Duty Vehicles

What is NJ ZIP?

The NJ Zero-emission Incentive Program, a first come, first served voucher pilot program, launched April 2021

What is the purpose of this program?

Reduce the upfront cost of buying a zero-emission medium-duty vehicle for NJ businesses and institutions – with a focus on small businesses in environmental justice communities – leveraging RGGI funding





How much voucher funding is available?

\$15M initially, with \$5M set aside for small businesses

Vouchers range from \$25,000 - \$100,000, with bonuses available



Illustrative program design process and considerations example

Sample of stakeholder-identified issues	NJ ZIP pilot design features	Future research?
<p>Upfront costs of ZE MHDV are too high</p> 	<ul style="list-style-type: none"> • Reduce upfront cost with voucher rather than rebate or tax incentive • Provide bonuses for small and minority-, woman-, and veteran-owned businesses 	<ul style="list-style-type: none"> • Financing options • Lease programs • Pre-owned vehicles • Repower/retrofit
<p>Environmental justice communities need immediacy of solutions</p> 	<ul style="list-style-type: none"> • Focus on medium-duty vehicles • Require registration of ZEV in 6 months • Require >50% operation within pilot overburdened communities, greater Camden and greater Newark areas 	<ul style="list-style-type: none"> • Heavy-duty sector • Expand to more areas • Use-case focused support
<p>There is limited charging infrastructure available</p>  	<ul style="list-style-type: none"> • Address supply / demand catch 22 by supporting vehicle purchases • Focus pilot on short-haul or depot-based use-cases 	<ul style="list-style-type: none"> • Make ready funding • Charger incentives
<p>ZE MHDV support structures in NJ are limited</p>	<ul style="list-style-type: none"> • Require the provision of a standard warranty and in-state servicing 	<ul style="list-style-type: none"> • Education campaigns & certs development • Business incentives

Benchmarking past and current voucher-style programs

Program location	% Incremental Cost	 Class 2b Trucks	 Class 3 Trucks	 Class 4 Trucks	 Class 5 Trucks	 Class 6 Trucks	 Class 7 Trucks	 Class 8 Trucks
New York State	95% ¹	N/A	\$60,000	\$100,000	\$110,000	\$125,000	\$150,000	\$185,000
New York City	95%	N/A	N/A	\$100,000	\$110,000	\$125,000	\$150,000	\$185,000
Chicago	80%	\$55,000	\$60,000	\$90,000	\$90,000	\$100,000	\$110,000	\$120,000 - \$150,000
California	No cap ²	\$25,000	\$50,000	\$80,000	\$80,000	\$90,000	\$95,000	\$150,000 (\$300,000 FC)
New Jersey	No cap	\$25,000	\$55,000	\$75,000	\$85,000	\$100,000	N/A	N/A
Maryland	50%	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$20,000	\$20,000
		\$25,000	\$30,000	\$30,000	\$30,000	\$30,000	\$40,000	\$40,000
Oregon	Not specified	N/A	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Massachusetts	Not specified ²	\$7,500 (rebate)	\$12,000 (rebate)	\$18,000	\$25,000	\$35,000	\$45,000	\$60,000

Incremental Cost: difference in upfront cost between a zero-emission vehicle and a comparable conventional vehicle.

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ZERO-EMISSION TRUCKS (ZETs)

Market and Policy Opportunities

Run on Less: Incentives for Electrification

June 15, 2021

CALSTART



Zero-Emission MHDVs will Come in Waves

“Beachhead Strategy”

Wave 1 Transit

ZE transit buses
Available now



ZE industrial lifts
Available now



Wave 2 Delivery

Chanje Class 5 Delivery Van
Available now



Fuso ECanter
Available now

Orange EV yard tractor
Available now



Wave 3 Medium Freight

E-Fuso Vision One
Announced 2021



Freightliner eM2
Demo now
Announced 2021



Wave 4 Heavy Regional Freight

Freightliner e-Cascadia
Demo Now; Announced 2021



Volvo VNR
Demo now; 2019
Europe; 2021 NA?



Mack e-Refuse
Demo 2020;
Coming 2022?



Tesla demo
Coming 2021?

Corridor Long-Haul

Nikola FC tractor
Coming 2022?



Similar drivetrain and component sizing can scale to early near applications

Expanded supply chain capabilities and price reductions enable additional applications

Steadily increasing volumes and infrastructure strengthen business case and performance confidence

2019

2020

2021

2022

2023

Knocking Down ZET Incremental Cost

Point-of-Sale / Cash Purchase Incentives

- Point-of-sale programs effective for their accessibility, ease of use, administration.
- Significant upfront incremental cost difference of zero-emission trucks and buses, still in the early stages of commercialization, a key barrier to commercial fleet electrification in goods and people movement.
- Tailoring cash incentive to portion of incremental cost most effective, cash-on-the-hood industry “gold standard.”
- Most U.S. fleets operate six or fewer trucks and are unable to overcome the upfront incremental cost barrier to purchasing cleaner trucks, and cash payment can help.
- State policy has provided an example of how to move ZETs in early commercialized markets – but need to avoid patchwork across the nation.
- Buying down incremental cost with cash incentive = quicker ZET deployments, leading to:
 - Aggressively bending down curve on MHD emissions, with air and climate benefits especially for frontline communities, and
 - Bolstering manufacturing competitiveness, decarbonizing boom in e-commerce and goods movement.

Federal Zero-Emission MHDV Incentive

NATIONAL ZERO EMISSION TRUCK COALITION

- Calling for creation of a new cash in-lieu of investment tax credit / point-of-sale incentive for ZETs.
 - Unlike LD EVs and ZEBs, no ZET federal incentive exists.
 - A monetized / point-of-sale incentive would enable quick ZET deployment – **nearly half million clean trucks and buses deployed by end of decade.**
 - Modeled benefits: avoid emissions equivalent to **taking 5.4 million cars off the road**, support **55,000 direct and indirect jobs** over the incentive's lifetime.
- Two pathways:
 - Direct payment through administrative agency as cash payment to fleets.
 - Cash in-lieu of investment tax credit (i.e. direct payment option) through tax code to taxpayers / fleets.



Legislative Outlook

Biden-Harris Administration

- American Jobs Plan and White House FY22 Budget Request calls for ZE MHDV credits ranging from \$25,000 for purchases of Class 3 vehicles to \$120,000 for Class 8 vehicles, starting in 2022 and stepping down according to class through 2027.
- Fleets could elect ITC as a cash payment in-lieu of credit (i.e. direct pay option).
- Full proposal details are available on pp. 46-47 at <https://home.treasury.gov/system/files/131/General-Explanations-FY2022.pdf>.

Congress

- **Senate Finance:** Clean Energy for America Act 30% purchase-side ITC proposal for zero-emission MHDVs, also open to other zero-emission non-passenger vehicles (e.g. aviation, vessels, off-road etc.), does not include point-of-sale / cash in-lieu of ITC.
- **House Ways & Means:** GREEN Act updates this summer.

ZE MHDV Incentives in the American Jobs Plan



Thank You!

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Natural Resources
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Canada

Decarbonizing Transportation

Run on Less – Electric Bootcamp – June 15, 2021

Jess Dawe, Clean Fuels Branch – Fuels Diversification Division

Canada

Government Initiatives

- Canada's Strengthened Climate Plan (2020)
 - Invest an additional \$150 million over three years in charging and refueling stations across Canada
 - Work to align Canada's Light- and Heavy-Duty Vehicle regulations with the most stringent performance standards in North America post-2025, whether at the United States federal or state level
 - Build on historic investments in public transit in the Investing in Canada Infrastructure Program to develop next steps on public transit, including the government's plan to help electrify public transit systems
 - Invest \$1.5B to establish a Clean Fuels Fund to support the build-out of new clean fuel production capacity in Canada, including hydrogen, renewable diesel, and renewable natural gas
 - Support clean technology development in Canada's auto manufacturing sector through the Strategic Innovation Fund – Net Zero Accelerator
 - Include the 100% tax write off for commercial light-duty, medium- and heavy-duty ZEVs



Zero Emission Vehicle Infrastructure Program (ZEVIP)

- Budget 2019 and Fall Economic Statement (2020) – \$280M over 5 years (2019 - 2024)
- To support the deployment of ZEV infrastructure where Canadians live, work and play
- To date, 3 Request for Proposals (RFPs) have taken place
 - Resulting in the investment of \$88.1M for 131 projects, if all projects are successful it will result in 11,600 EV chargers in 11 jurisdictions
- Upcoming RFPs:
 - **Medium and Heavy-Duty Vehicle Fleets (June 2021)**
 - For Delivery Organizations (Summer 2021)
 - More funding opportunities in 2022

Look for the RFP
calendar on the
Program's
website!



Other Federal Freight Programming

- [Zero Emission Vehicle Awareness Initiative \(ZEVAI\)](#)
 - to address awareness and knowledge gaps among Canadians on ZEVs and ZEV technologies; including battery electric, plug-in hybrid electric and hydrogen fuel cell in all vehicle and equipment classes
- **SmartWay**
 - SmartWay helps carriers and shippers benchmark their operations, track fuel consumption and improve their overall performance
- **SmartDriver**
 - Fleet energy-management training that helps truckers, transit operators, school bus and other professional drivers improve fuel efficiency by up to 35 percent
- **Green Freight Assessment Program (GFAP)**
 - GFAP helps companies lower fuel costs and emissions by supporting decision-making and investments in fleet energy assessments, retrofits and fuel switching



Clean Fuel Regulations

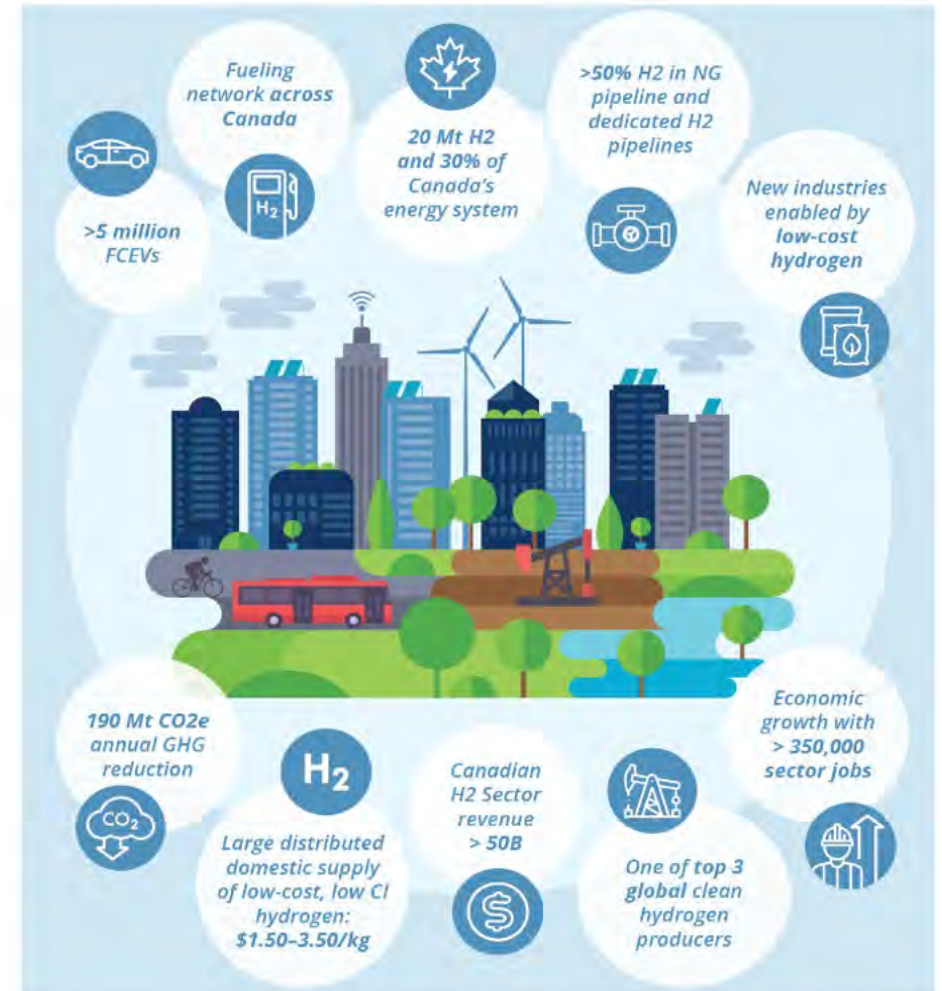
- In December 2020, Environment and Climate Change Canada published the draft Clean Fuel Regulations, which will require fossil fuel primary suppliers to reduce the carbon intensity (CI) of the fossil fuels they produce and supply to Canada
 - The regulations will result in up to 20 MT of annual GHG reductions by 2030
 - **Final regulations in fall 2021** and expected to come into force in December 2022
- There are a number of pathways for the obligated party to comply:

	Compliance Category	Examples
1	<p>Reducing emissions along the production lifecycle of fossil fuels</p> <p>*Quantification methodologies (QMs) are currently being developed to quantify the reductions and eligibility of credits from these projects **Projects in place since July 1, 2017 are eligible to generate credits</p>	<ul style="list-style-type: none"> • ECCC has identified several project categories, including: <ul style="list-style-type: none"> • Carbon capture sequestration/utilization (CCS/CCUS) • EOR • Integrating renewable electricity • Co-processing biocrude in refineries • Generic QM to cover a range of potential projects
2	<p>Blending low carbon fuels</p>	<ul style="list-style-type: none"> • Blending ethanol in gasoline • Blending renewable diesel or biodiesel in diesel
3	<p>End-use fuel switching in transportation</p>	<ul style="list-style-type: none"> • Fuel switching from fossil fuel (diesel, gasoline) to natural gas or electric vehicles



Hydrogen Strategy

- Launched in December 2020
- Ambitious framework to:
 - Integrate low emitting hydrogen across Canada's economy
 - Use hydrogen as a key pathway to achieve our goal of net zero by 2050
 - Position Canada as a global, industrial leader of clean renewable fuels
 - Transportation seen as an early deployment opportunity
 - Many thematic working groups—including a dedicated working group for vehicles—are being established to undertake the work that advances the policy and technical aspects required to take action on the recommendations outlined in the strategy



British Columbia

- Specialty Use Vehicle Incentive (SUVI) program
 - Post purchase rebate
- CleanBC Commercial Vehicle Pilots (CVP) Program
 - Funding support for eligible zero-emission vehicle fleets and supporting infrastructure
- Other programs
 - BC PST Exemption Rebate Program



Québec

- 2030 Plan for a Green Economy
 - Electrification and climate change policy framework
- Ecocamionnage program
 - Rebates for electric trucks
- Transportez vert program
 - Support for reducing fuel consumption and GHG emissions
- Technoclimat
 - Financial support for demonstration of technological innovation



International Initiatives

● Electric Vehicle Initiative

International multi-government policy forum under the Clean Energy Ministerial (CEM) with the objective of fostering greater electrification of transportation globally

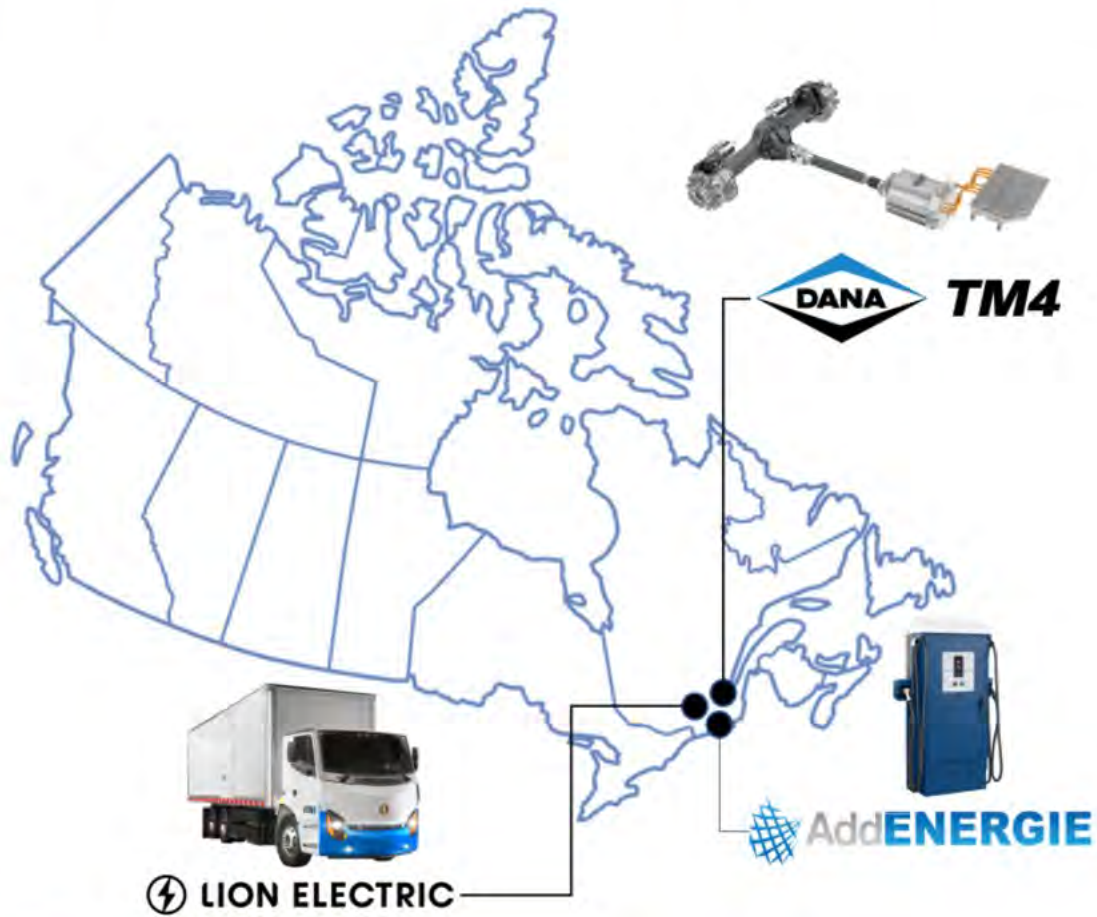
- In 2020, Global Drive to Zero was launched as an official campaign
- In 2021, Canada offered support for setting ambitious targets for zero-emission MHDVs through establishing a global MoU ahead of COP-26

● Hydrogen Initiative

Launched by 23 countries at CEM10 in May 2019. Focused on accelerating the global commercialization of hydrogen and fuel cell technologies across all sectors of the economy

- In 2020:
 - Developed a comprehensive multi-year work plan
 - Work began on the development of an international standard to determine the carbon intensity of various hydrogen production pathways
- In 2021:
 - Launched the Global Hydrogen Ports Coalition

Canadian Innovation



Canadian companies and innovation are supporting the electrification of medium and heavy duty vehicles, including companies such as:

- **Lion Electric**, an emerging manufacturer of electric trucks and buses
- **Dana TM4**, a manufacturer of electric motors and power electronics for MHDVs and other vehicles
- **AddÉnergie**, a provider of charging equipment, and an EV charging network operator, for MHDVs and other vehicles



Canada

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Natural Resources
Canada

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Canada

Canada

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Location Matters for Electric Truck Incentives

Electric Truck Business Case, City by City



Joel Donham

Lead Engineering Consultant
Center for Transportation & the Environment



June 15, 2021

Impact of Incentives Case Study

- Evaluated lifecycle costs of three different markets to gauge the impact of different types of incentives.
- Did not include grants, due to the uncertainty of obtaining grant funding.



Goodwill San Francisco 11-Truck Electric Fleet

San Francisco

- **Low Electricity Rates**
 - EV rate
- **High Incentives**
 - EV purchase voucher
 - Charging Infrastructure Program

Shreveport

- **Low Electricity Rates**
- **Low Incentives**

Cleveland

- **High Electricity Rates**
- **Low Incentives**

Types of Incentives

1. Purchase Subsidies

Grants, tax credits, and vouchers to offset purchase cost of the Truck (e.g. NJ's NJ ZIP & CA's HVIP program)

2. LCFS Credit Programs

'Low carbon fuel standard' programs that award tradable credits for using low carbon fuels such as electricity (CA, OR, WA, & BC)

3. HOV Lane Access for EVs

Access to carpool lanes for EVs (vary state to state)

4. EV Electricity Rates

Rates developed to reduce the high demand charges associated with high-power EV charging

5. Infrastructure and Charger Programs

Offered by some utilities to develop charging infrastructure for fleet operators and/or subsidize charging equipment

How the business case varies based on region

Lifetime Costs of One Class 6 Electric Straight Truck in Different Markets



■ Effective Truck Cost ■ Effective Charger Cost ■ Energy ▨ LCFS Revenue

Cost Benefit of Incentives

Purchase Voucher: 15%

Electricity rates: 8% - 14%

LCFS: 10%

Charger programs: 5%

Total: 39 - 44%

Best practices

Make sure the trucks will meet your needs: Model and/or test truck performance, and develop operational strategies that will ensure the trucks will work in your operations.

Evaluate anticipated costs: Research and coordinate with experienced organizations to get guidance on what your capital and operational costs will be.

Research incentives: Identify funding opportunities and programs that can reduce your costs (<https://afdc.energy.gov/laws> is a great resource)

Manage operations: Monitor your vehicles in service and identify unanticipated cost drivers, and opportunities for improvement.



For More Information

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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 **June 29** on Maintenance, Training, & Safety

