



# **The Evolution of ZEV Incentives – Trends and opportunities for building a mainstream market**

*April 16, 2024*

Research by Alexander Tankou, Dale Hall, and Pete Slowik

# International Zero-Emission Vehicle Alliance

*A network of leading national and sub-national governments demonstrating their deep commitment to accelerating the transition to zero-emission vehicles within their markets and through collective action.*



For more information, see: <https://zevalliance.org>

# Agenda for today's webinar

- Opening & housekeeping, ZEV Alliance secretariat (5 min)
- Adapting zero-emission vehicle incentives for a mainstream market, ICCT (12 min)
- E-mobility and incentives in Austria, AustriaTech (12 min)
- EV incentives in New York State, NYSERDA (12 min)
- Q&A and discussion with panelists (15 min)
  - *Please submit your questions in the Q&A box*
- Closing, ZEV Alliance secretariat (3 min)

# Today's expert presenters



**Alexander Tankou**

Researcher, ICCT



**Tobias Begle**

Analyst, AustriaTech



**Adam Lomansey**

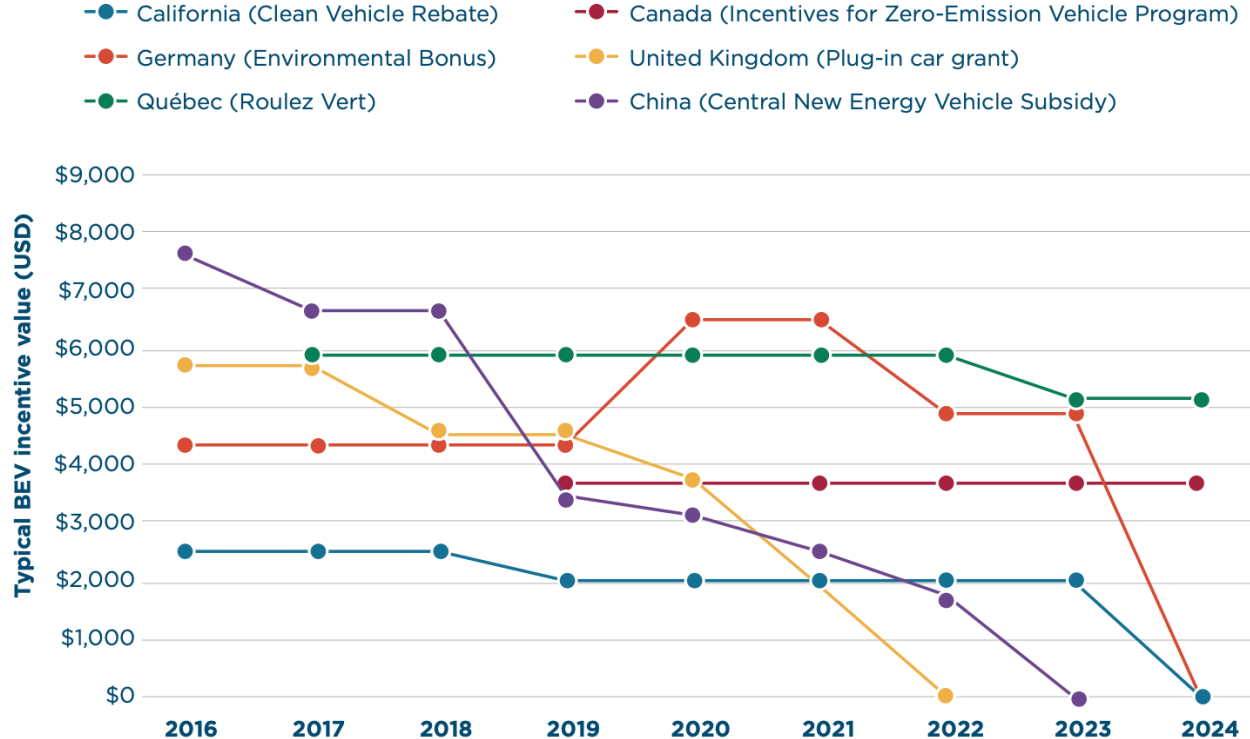
Project Manager, NYSERDA

*Discussion will follow presentations. Please share your questions in the Q&A box.*

# Adapting zero-emission vehicle incentives for a mainstream market

Alexander Tankou

# An overall decreasing trend of incentive values for LDVs



As ZEVs become cheaper, the rationale for providing incentives is diminished, however:

- Meeting ZEV targets will require that **the ZEV market remains dynamic**
- Phasing out incentives might limit low-income households' **participation to the ZEV market**

# Trends in IZEVA light duty vehicle incentive programs

Out of the 22 IZEVA governments as of the end of 2023, we have:

**7** Jurisdictions offer enhanced incentives for lower-income consumers

**6** have incentives for taxi fleets/carsharing programs

**3** have vehicle scrappage programs

**4** have an income cap eligibility requirement

**10** offer incentive on used ZEVs

**16** have set a price cap for eligible vehicles ranging from \$40,000 to \$70,000 USD

**Austria** is the only jurisdiction that proposes a carbon footprint-based incentive

**New Zealand** is the only IZEVA jurisdiction that had a bonus malus in 2023 – now ended

**4** jurisdictions [Germany, Maryland, Massachusetts, and New Jersey] have excluded PHEVs from their incentive programs

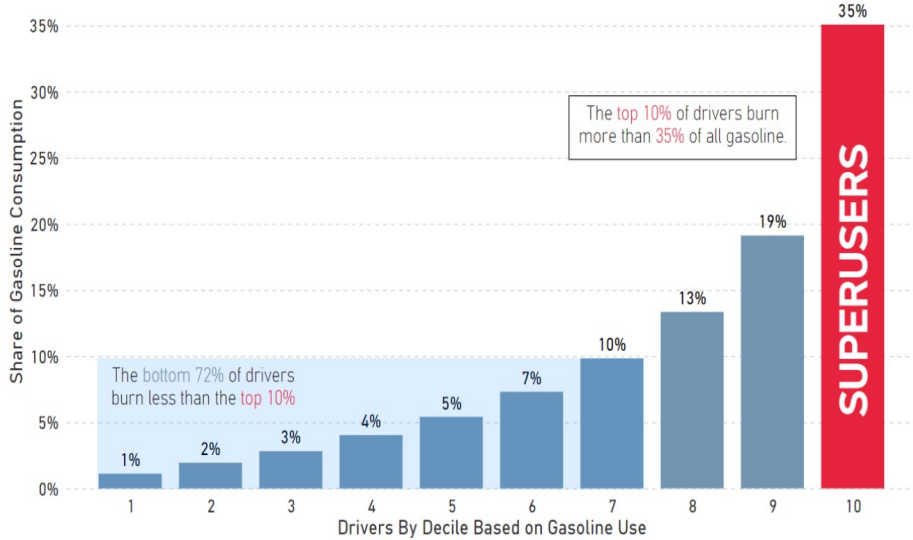
# IZEVA Heavy duty vehicle incentives

Out of the 22 IZEVA governments as of the end of 2023, we have:

- 10** have incentive programs from HDV in the form of grants or rebates
  - Incentives typically focus on classes 2-8(b) (North America) or N2-N3 (Europe)
- 7** allows leasing as a purchase option
- 2** have scrappage programs (for vehicle MY 2009 or older)
- 2** have enhanced incentives for small fleets/business
- 2** have enhanced incentives for vehicles operating within pollution-burned areas
- Most** heavy-duty incentive programs have been introduced recently (2021–2023)



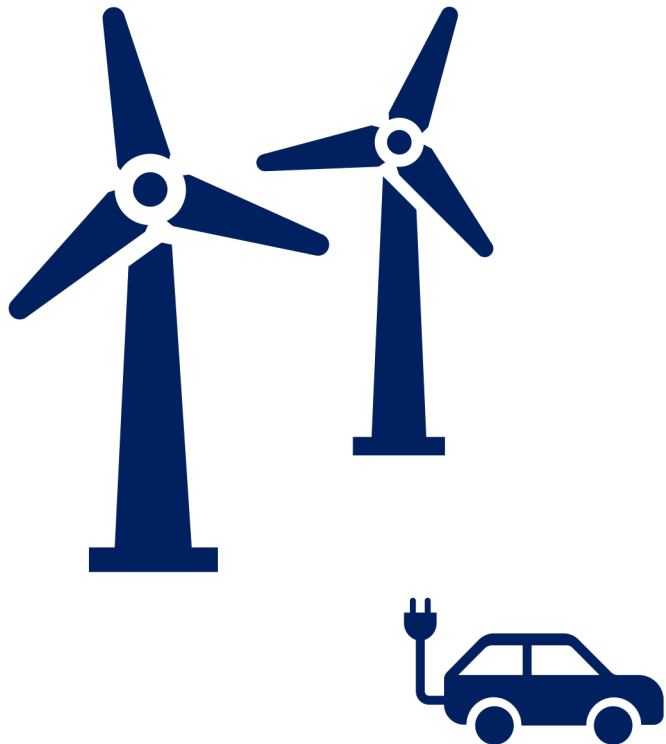
# Incentives targeted towards super user can help achieve faster environmental benefits



- In the U.S., the **top 10%** of drivers consume **35%** of all gasoline. The bottom **72%** consume less than **10%** of all gasoline
- Incentivizing super users will help achieve **faster climate benefits**
- In 2024, Vermont introduced a superuser incentive program for individuals: **up to \$500** on top of existing incentives
- Incentives for superusers could include **taxi fleets/car-sharing companies**

Figure source: <https://coltura.org/gasoline-superusers-2-report/>

# Incorporating carbon footprint criteria in incentive programs to maximize climate benefits of ZEVs



## Energy consumption requirement

- In Austria, incentives are available only to consumers or fleets **that charge or refuel their ZEV with electricity or hydrogen certified as renewable**

## Environmental score requirement

- France Bonus Ecologique (Ecological Bonus) incentive vehicles that meet **a minimum environmental score (60 over 80) are assessed through four criteria:**
  - Supply of raw mineral
  - Battery production
  - Vehicle assembly
  - Transport to the final point of sale

# Incentives on used ZEVs could unlock access to ZEVs in low-income communities

- Most drivers rely on the used vehicle market (e.g., 60% in Canada)
- The used ZEV market provides opportunities for **more affordable ZEVs** due to their typical **faster depreciation** rates compared to conventional vehicles
- Used ZEV might still present a premium compared to used conventional vehicle

As of the end of 2023, few jurisdictions have used ZEV incentives:

## Québec

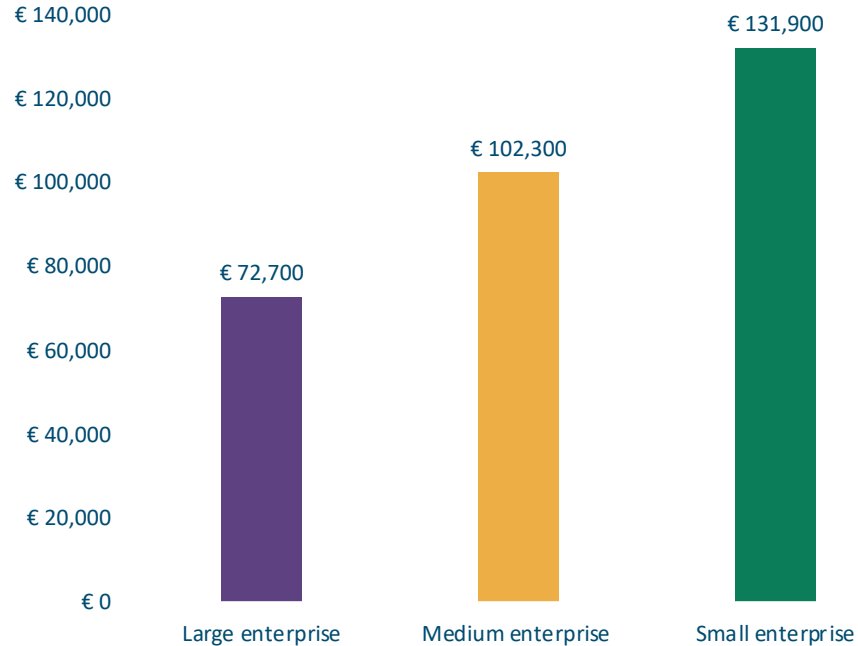
**CAD\$ 3,500** for used BEVs less than four years old

## Costa Rica

**Full tax exemption** for used BEV less than US\$30,000 and less than 5 years old

# Enhanced incentives and flexible financing can support small fleets to transition to ZEV

## Netherlands incentive program values for tractor-trailer



## California Innovation Small e-Fleet (ISEF) program

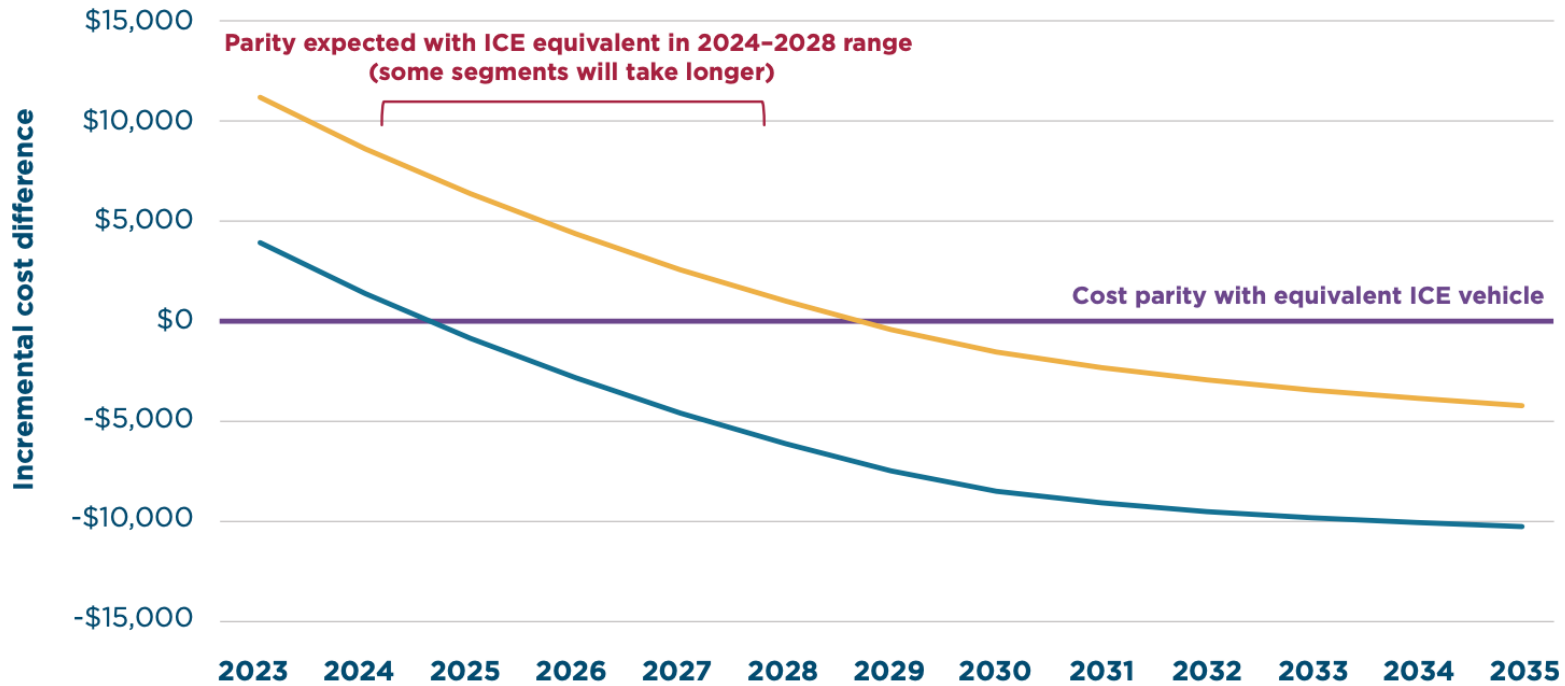
Fleets with 20 or fewer trucks and less than 15 million in revenue receive **double the incentive** that larger fleets qualify for

**Flexible schemes** are also being considered:

- leases
- short-term rentals
- or truck-as-a-service

# Governments may choose to align their incentive programs to the point of cost parity

- Purchase price of average U.S. BEV with a 300-mile range
- 6-year TCO for BEV's first owner



# Governments may choose to adopt a bonus-malus system or other “polluter pays mechanism”

## Examples of polluters' pay mechanism

### Feebates (bonus/malus)

- Places incentives on ZEVs and fees on conventional vehicles
- can be designed cost neutral

### California Low Carbon Fuel Standards

- Utilities generate credits for low-carbon fuels, including electricity used for ZEVs
- Excess credits can be sold, and part of the revenues are used to generate incentives for ZEVs

### Other polluter pay schemes to consider

- Carbon tax
- Cap and trade

## Advantages of polluter pays mechanism:

- Send a clear signal to consumers
- Relieve pressure on public finance
- Can provide more sustainable finance for ZEVs
- Can help meet long-term ZEV targets

# A vision for how incentives can be adapted for a mainstream market

## Light-duty vehicles

Eligibility criteria (vehicle price, income cap) tighten

Incentive value decreases

Additional environmental criteria added

General incentives phase out as upfront cost parity is reached for most segments of light-duty ZEVs

## Heavy-duty vehicles

Incentive programs introduced, scaled up









Incentive value decreases

Eligibility criteria (fleet size, location, vehicle price) added and tightened

Financing programs developed to help fleets realize total cost of ownership (TCO) savings

General incentives phase out as strong TCO benefit appears for all segments

After mainstream incentives phase out, limited programs focus on:

-  Low-income households
-  Taxi or ride-hailing fleets
-  Low-carbon footprint ZEVs
-  Fuel "superusers"
-  Disadvantaged communities
-  Niche vehicle types
-  Small fleets
-  High-pollution areas

2023 2024 2025 2026 2027 2028 2029 2030 2031 2032



**Thank you for your attention!**

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elektromobilität**

# E-mobility in Austria

OLÉ – National Competence Center for E-  
Mobility  
**Tobias Begle**

April 16th, 2024

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## Status quo: E-mobility in Austria

## Facts & figures / Date: March 2024

- ✚ **> 164,000** battery electric vehicles (BEV) in the car fleet (M1)
  - > 3.1 % of the car fleet are battery electric
- ✚ **> 11,000** BEV light commercial vehicles in Austria
- ✚ **> 22,500** public charging points available
  - > 4,000 new charging points in 2023
  - > 40 % growth in charging capacity in 2023
- ✚ **> 20 %** share of BEV in total new car registrations (plus 57 % compared to 2022)

## Facts & Figures

Neutral and fact based communication of facts

## Monitoring

Focus on tools and measures  
Expansion of our target audience

## Networking

Intensified cooperation and establishing new networks  
Connecting stakeholders (national + international)  
Workshops and committees

## Information

Improvement of legal framework  
Publications about ramp-up and technology  
Guidelines, articles and updates

## Charging infrastructure

Coordination of network expansion  
New funding programmes  
Further development of standards and guidelines



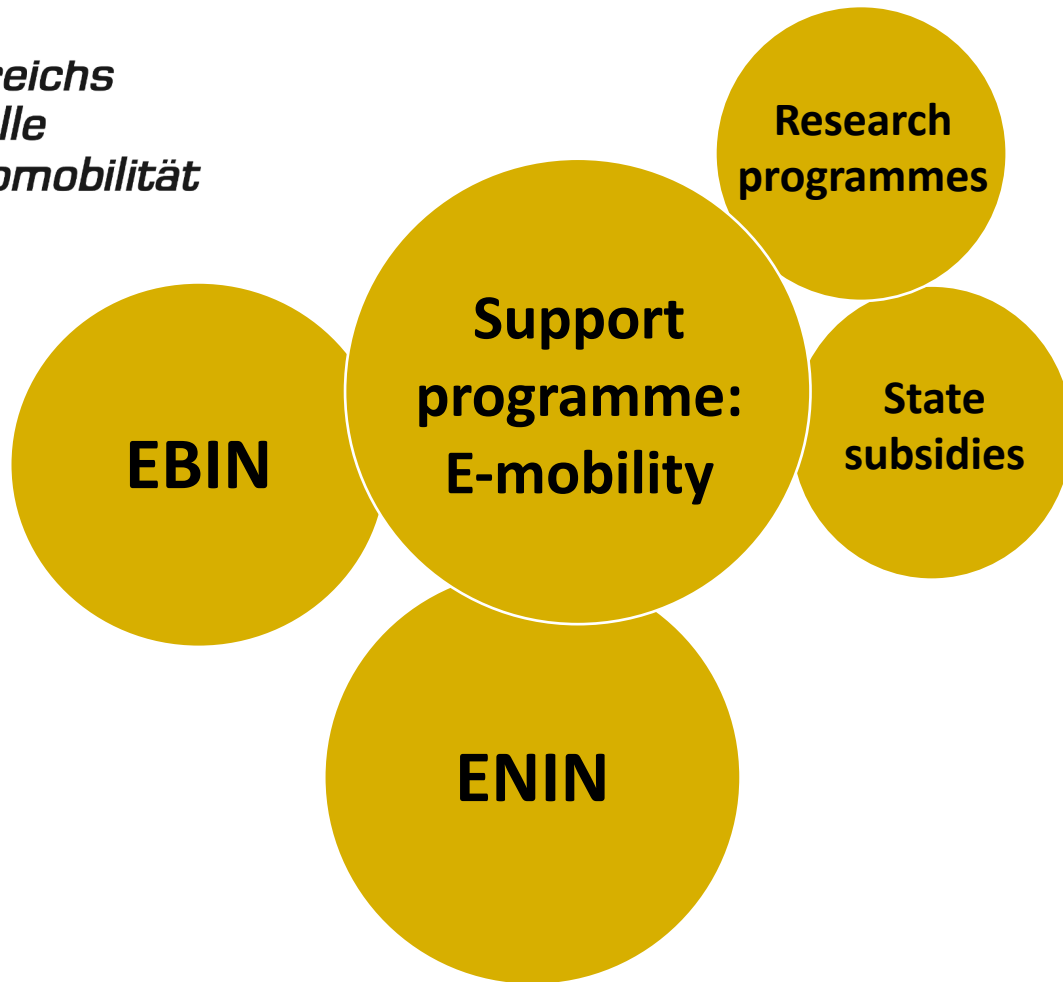
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Support  
programmes:  
**Fuel the EV  
market**

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# EBIN – zero-emission buses and infrastructure

- ✚ Budget: 312 mio. € spent so far
- ✚ Buses: 612 Buses incl. charging inf. split in 5 tenders
- ✚ Based on „General Block Exemption Regulation“
- ✚ Allows countries higher subsidies without further permission from EU
- ✚ 80% of additional costs to acquire ZEV, 40% of investment in infrastructure



INFOSHEET - EBIN

## FÖRDERUNG EMISSIONSFREIER BUSSE

DAS KLIMASCHUTZMINISTERIUM STELLT 250 MILLIONEN EURO FÜR EMISSIONSFREIE BUSSE UND INFRASTRUKTUR AUS MITTELN DES EU-AUFBAUPLANS NEXTGENERATIONEU BEREIT

Was ist das Ziel des Förderprogramms EBIN?

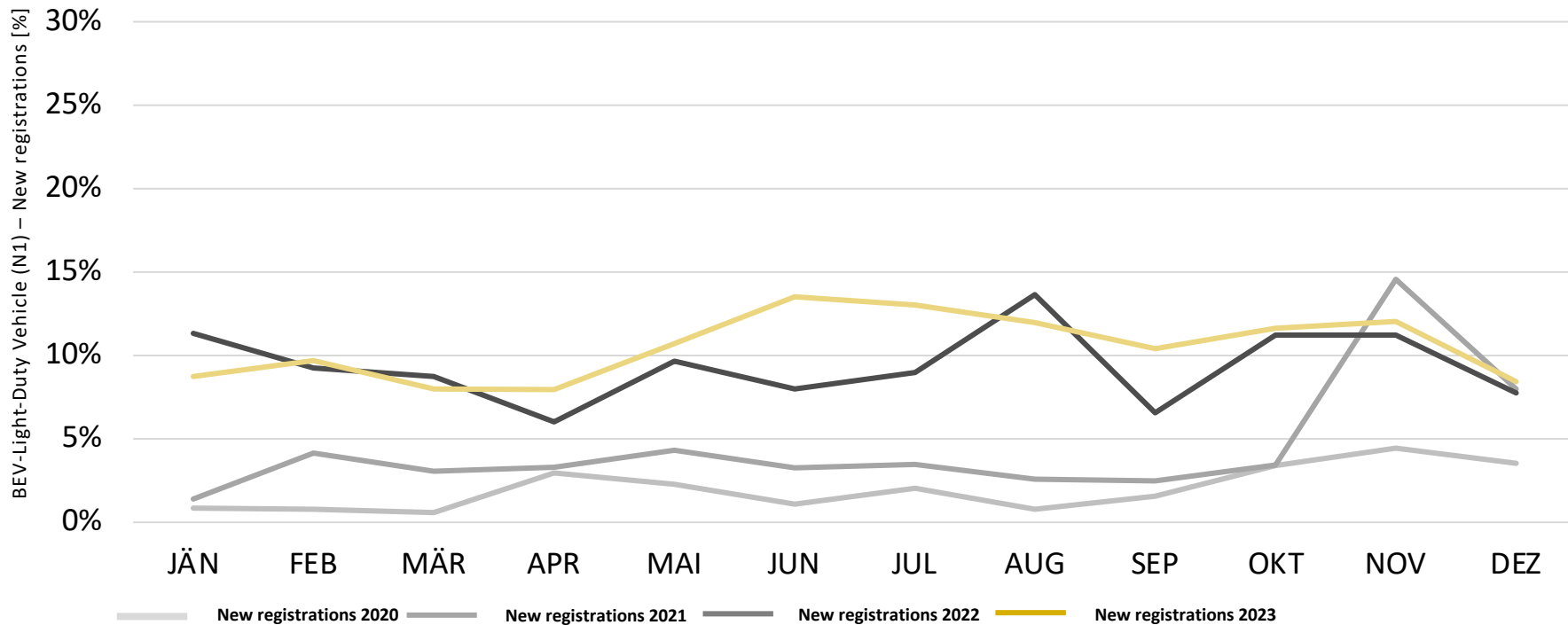
Durch eine Umstellung von derzeit fossil betriebenen Bussen auf emissionsfreie Antriebe und gleichzeitigem ausschließlichen Einsatz von erneuerbarer Energie können umweltschädliche Emissionen gesenkt werden.

Ziel des Programms ist es, den Anteil emissionsfreier, liniengebundener Busse deutlich zu steigern.



# Light duty vehicles: New registrations

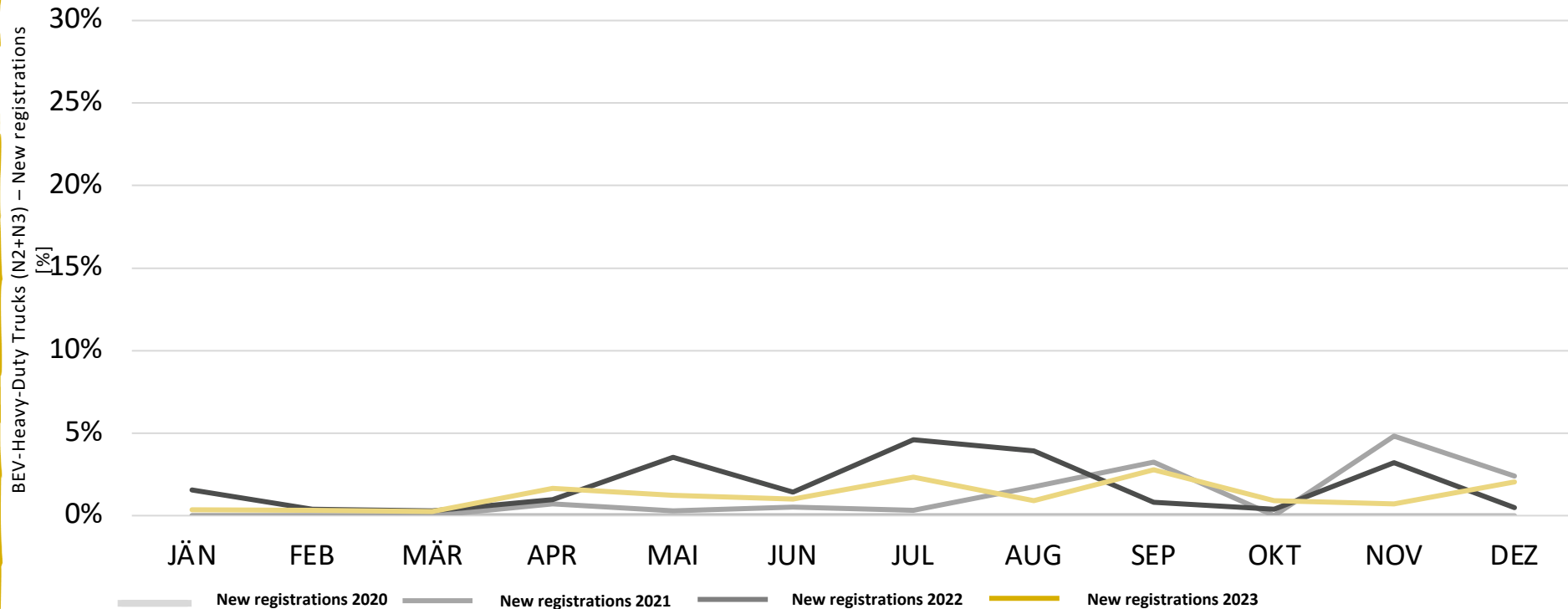
2020-2023





# Heavy-duty vehicles: New registrations

2020-2023



# Schwere Nutzfahrzeuge Neuzulassungen: Hochlauf

2020-2023

lität

## Approved grants via ENIN

⬇	832	Heavy-duty vehicles	(N2 + N3)
⬇	3.465	Light-duty vehicles	(N1)

## Major spike in new registrations expected:

- | First success stories already on track
- | Shorter lifetime leads to faster transition
- | ENIN important to catalyze industry
- | Charging infrastructure is key

**Megawatt Charging Standard is coming soon**



BEV-LKW (N2+N3)

10%  
5%  
0%

Anteil

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Key questions going forward:

- ✚ Small light-duty fleets not included in ENIN -> lower quota available
- ✚ Charging infrastructure strategy:
  - ✚ Public and depot
  - ✚ Overnight and Megawatt
- ✚ Separate systems for cars and trucks



# E-mobility initiative 2024

-  BEV-cars (private) ➤ 5.000 €
-  BEV-light commercial veh. ➤ up to 8.000 €
-  Wallbox ➤ 600 €
-  Charging infrastructure ➤ 1.800 €
-  Public charging inf. ➤ up to 30.000 €
-  Operational charging inf. ➤ up to 15.000 €
-  Combined measures ➤ Max. 3 mio. € per applicant

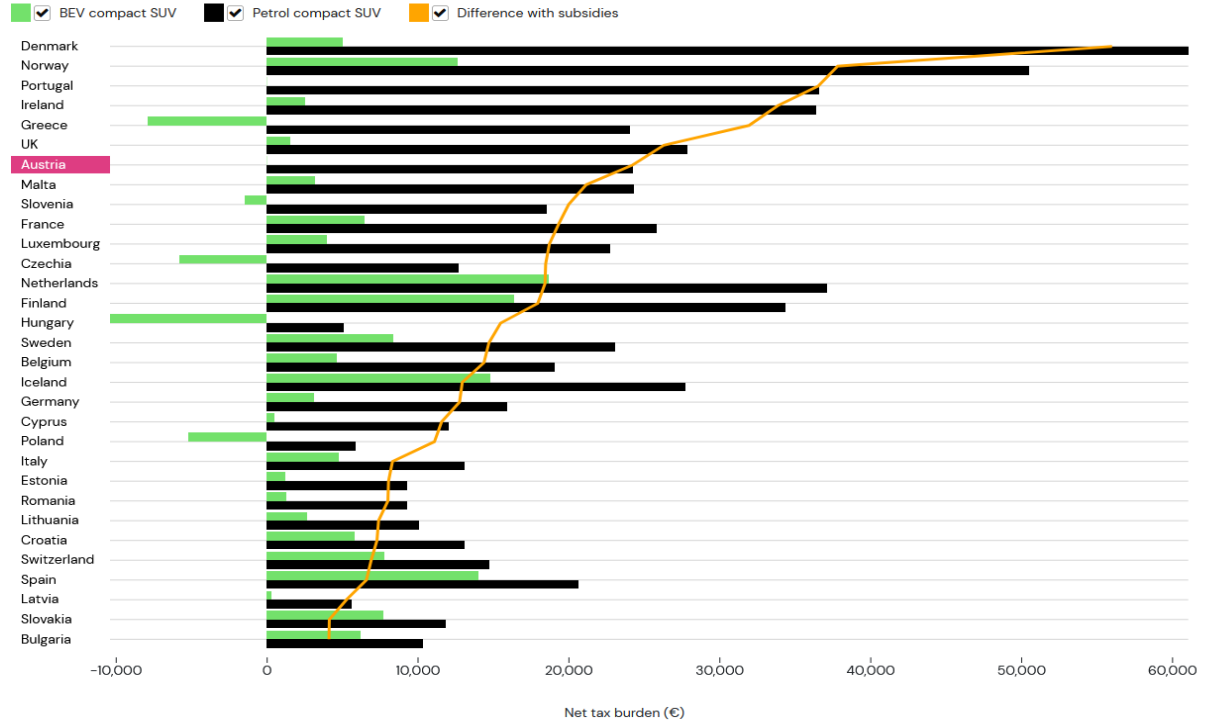


# Taxation of cars in Austria & EU

- ✚ Austria: High incentives to buy BEV for private and business customers
- ✚ High amount of new registrations of cars are business-owned -> contrary to most EU countries
- ✚ Explanation? Wait for cheaper cars -> „Osborne effect“

Tax differential (with subsidies) for a compact SUV over four years as a salary benefit: BEV vs petrol

SOURCE DATA





## **OLÉ – Working together to decarbonize mobility**

### Kontakt

Austria's National Competence Center for E-Mobility  
@AustriaTech



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<https://www.austriatech.at/de/leitstelle-elektromobilitaet/>

## Sources & Copyright:

- ✦ Slide 19: E-Control. 2024.
  - ✦ Slide 19, 24 & 25 : Statistik Austria. 2024.
  - ✦ Slide 23, 26: FFG Forschungsförderungsgesellschaft. <https://www.ffg.at/ENIN>. <https://www.ffg.at/EBIN>. 11.04.2024
  - ✦ Slide 28: Klima- und Energiefonds. <https://www.klimafonds.gv.at/mediathek/publikationen/#jahresprogramm>. 11.04.2024
  - ✦ Slide 29: Transport & Environment. <http://goodtaxguide.org/>. 11.04.2024
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- ✦ Slide 23: Christopherus Bus.
  - ✦ Slide 26: Paul Haider; Philipp Wieser.
  - ✦ Slide 27: Philipp Wieser.
  - ✦ Slide 28: Klima- und Energiefonds.
  - ✦ Slide 29: Transport & Environment.



# Charging New York with the Drive Clean Rebate Program

**Adam Lomasney, Program Manager**

Clean Transportation



**NYSERDA**



# State of New York Market

## Regulatory

- > Adopted Advanced Clean Cars rule in Dec 2022, requires 100% light-duty Zero Emission Vehicle (ZEV) sales by 2035
- > Advanced Clean Trucks rule adopted in Dec 2021, requires an increasing percentage of Medium & Heavy-Duty Vehicles (MHDV's) sales to be ZEVs through 2035

## EV Adoption

- > **200K + EV's** on the road (BEV and PHEV)
- > NYS new EV registration reached **5%** in Q2 2022
- > Over 10,000 publicly accessible charging ports (~9k Level 2 and ~1.5k fast chargers)
- > NYS has invested over \$3 billion in EV incentive and utility "Make Ready" programs

Visit [atlastpolicy.com/evaluateny/](https://atlastpolicy.com/evaluateny/) for more info

# Program Context

- Program launched in March 2017 with \$55M; and has continuously added funding since to a total of \$130+ million
- Applications approved for more than 130,000 electric vehicles
- Rebates are offered at “point of sale” and must be administered through a legally registered dealership
  - NYSERDA partners with over 700 individual dealerships
- The program is legislatively required to provide a rebate to all EV’s and cannot exceed \$2,000
  - Average number of monthly submissions has doubled compared to previous years

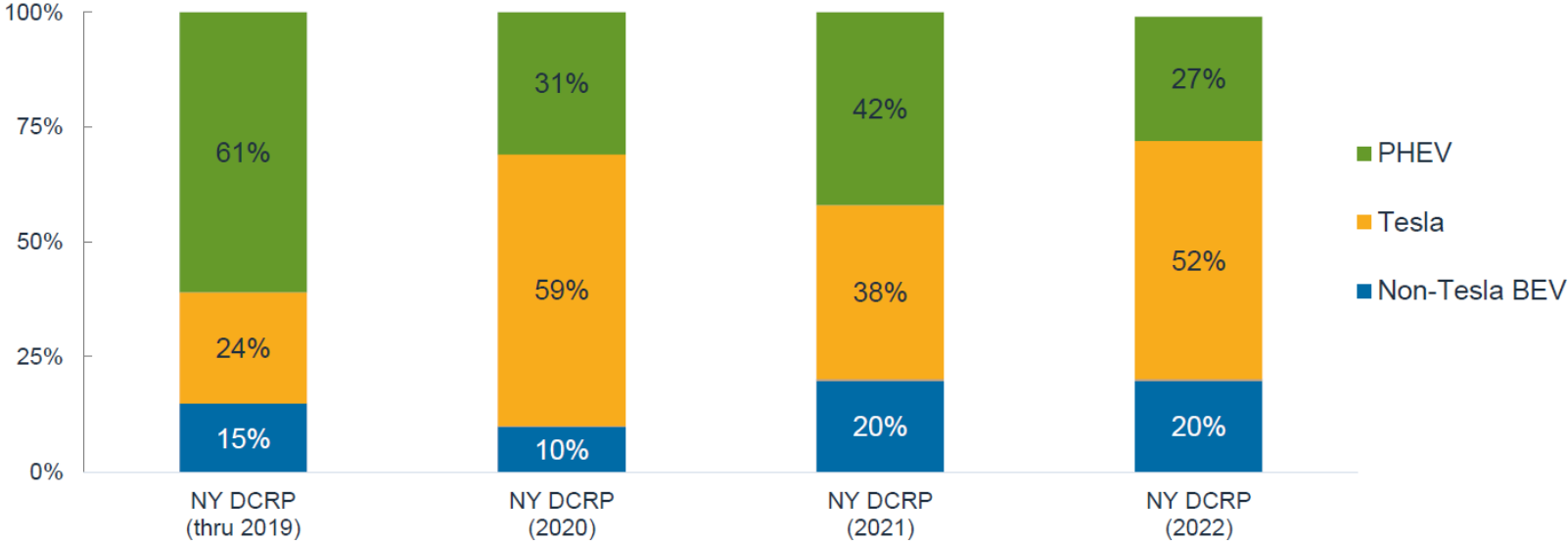


# Rebate Levels

Drive Clean Rebate offers car buyers up to \$2,000 when purchasing or leasing a *new* electric car in New York

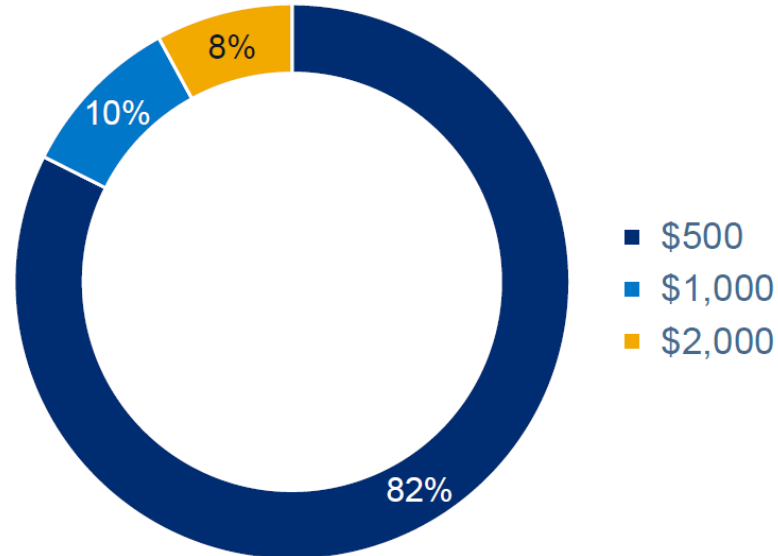
	<b>Purchase/lease dates <u>through</u> June 30, 2021</b>	<b>Purchase/lease dates <u>after</u> June 30, 2021</b>
<b>(Fuel-Cell EVs*), All-Battery EVs, and Plug-in Hybrid EVs</b>	<b>≥ 120 e-miles†: \$2,000 ≥ 40 e-miles: \$1,700 ≥ 20 e-miles: \$1,100 &lt; 20 e-miles: \$500</b>	<b>≥ 200 e-miles: \$2,000 ≥ 40 e-miles: \$1,000 &lt; 40 e-miles: \$500</b>
<b>Additional Elements</b>	<b>MSRP &gt; \$60,000 = \$500 Point-of-sale</b>	<b>MSRP &gt; \$42,000 = \$500 Point-of-sale</b>

# Which Type of Car Did NY Consumers Buy?



# How Were Rebates Distributed? (2022)

\$500 rebates dominated 2022, likely with lower influence



# Program Administration Considerations

- Outreach, education and communication is essential with dealer partners
- Keeping a program continuously open is very important to industry and consumers
- There is no “right” rebate amount, but impact should be proportionate to the MSRP of a vehicle to make it worthwhile
- Equity of who gets rebates is a major consideration, but difficult to balance
- KEEP IT SIMPLE!

The background of the slide is a solid blue color. In the center, there are several concentric circles of a lighter shade of blue, creating a ripple effect. The text 'Q&A' is centered within these circles.

**Q&A**



# Thank you for your attention

For all questions:  
[secretariat@zevalliance.org](mailto:secretariat@zevalliance.org)





# Annex

# Scrappage-based incentives could reduce the number of old polluting cars on the roads while increasing ZEVs

A study of vehicles in two U.S. states found that the **oldest 11% of vehicles accounted for 50% of total light-duty nitrogen monoxide pollution**

## Light-duty vehicle program

- California's Clean Cars 4 All program offers up **to \$9,500 for low-income drivers** who turn in an old car and purchase a new ZEV

## Heavy-duty vehicle programs

- In New Jersey, the Zero Emission Incentive Program can offer a grant of **up to \$175,000 for a new zero-emission truck** with the scrappage of a model year 2009 or older vehicle

# Proposing incentives to support electrification of taxi and car sharing fleets

Advantages of incentivizing taxi and car-sharing fleets:

- These companies tend to have high mileage
- When operating in dense traffic areas (e.g., urban centers) can help improve air quality
- Help introduce EV technology to the masses while potentially reducing the number of cars on the roads



As of the end of 2023, several jurisdictions offer such incentives:

## **UK Plug-in grant for taxis:**

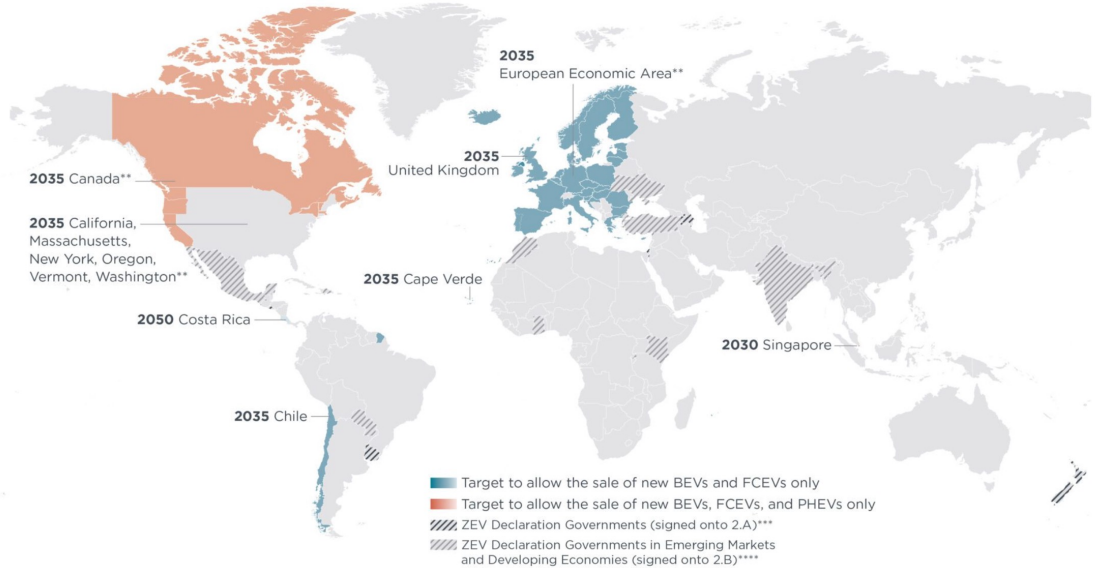
- Up to £7,500 or 20% of the vehicle's purchase price for the purchase of a new wheelchair-accessible zero-emission taxi

## **Baden-Württemberg, Germany,**

- €3,000 for electric taxis and car-sharing vehicles

# Governments may align incentive programs to ZEV targets

Governments with official targets to 100% phase in sales of new zero CO<sub>2</sub> emission cars and vans/light trucks by a certain date\* (Status: Through February 2024)



- Several governments have ZEV sales targets (e.g., 2035 for LDV – 2040 HDV)
- Aligning an incentive program budget to a ZEV target could create a more **stable, predictable environment to ensure ZEV targets are met,**
- Self-funded programs such as a feebate might be more suitable

# Enhanced incentives in pollution-burdened areas could help alleviate air pollution concerns



## New York the Truck Voucher Electric Program

\$220,000 for battery electric school buses located within **0.5 miles (approximately 1 km)** of designated pollution-burdened areas

## Massachusetts, MOR-EV Trucks program

Up to \$90,000 for class 8 trucks, and an **additional value of 10%** can be granted if the vehicle operates more than **50% of the time** within a pollution-burdened area

# Purchase price and TCO of zero-emission long-haul tractor-trailer trucks in Europe compared to diesel equivalent, model years 2023–2035

