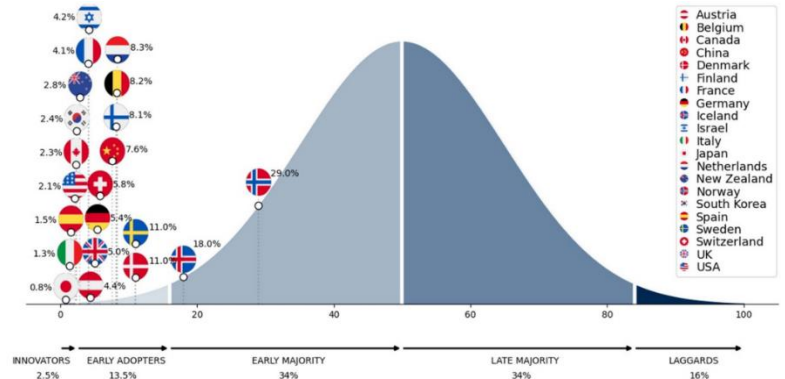


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Market Update

EVs have NOT reached mass adoption

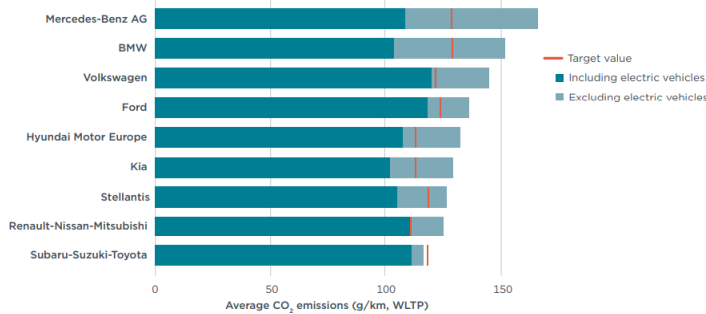
An [article](#) from the Electric Vehicle Research Center at UC Davis clarifies that vehicles with a plug have not reached mass adoption, despite claims often made to the contrary in media. The Diffusion of Innovation theory requires 16% adoption of EVs across the entire vehicle population and not, as is typically confused, the share of new vehicles sold. According to that criterion, no country other than Norway and Iceland have crossed the mass adoption threshold.



The second criteria for mass adoption requires resolution of early market issues and is also unmet given insufficient access to charging, fewer EV models, etc.

All EU OEMs have met the 2023 CO₂ targets, electrified powertrains have played a key role

Figure 3
Manufacturer pool average CO₂ emissions, including and excluding electric vehicles, compared with their respective 2023 targets



The European Environment Agency (EEA) has [released](#) the CO₂ emission levels from passenger cars in the European Union in 2023. In an analysis of the data, the ICCT found that the CO₂ emissions reduced by 1 g/km compared to 2022, and that all OEMs met their respective targets through increased sales of electrified vehicles.

EU votes in favor of China tariffs

The European Union has [voted](#) in favor of imposing tariffs on Chinese imported electric vehicles, notwithstanding opposition from Germany. The [provisional](#) tariffs range from 7.8% on Tesla (Shanghai), 17 – 18% for BYD & Geely, and 35% for SAIC.

Navistar is now International Motors

Navistar, part of the Traton group, has changed its name to International Motors effective October 1. The [rebranding](#) marks a shift from a producer of trucks & buses to a solution provider for improved customer experience and a portfolio including parts, maintenance, financing, connectivity, and charging.

NAVISTAR



INTERNATIONAL

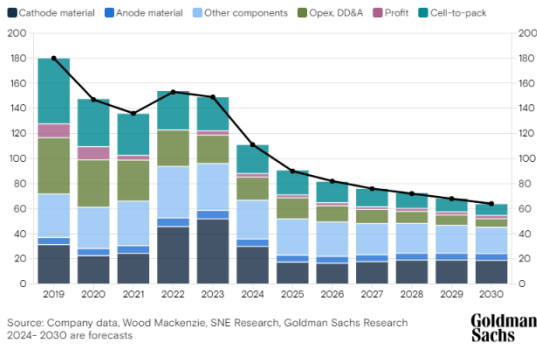
Regulations / Reports

CARB Workshop on Non-Road Low NOx

California Air Resources Board held a [workshop](#) on October 8th, 2024 to review updates to the Tier 5 Off-Road proposed rulemaking. Specifically on the agenda was the treatment of H₂-fueled internal combustion engines under this proposed rule. While H₂-ICE are mostly spark ignited, the proposal is for them to be subject to the Tier 5 requirements for compression ignited engines, starting MY 2029. H₂-ICE would not qualify for any zero-emission credits since they do not meet CARB's definition of a ZEV. There were several other changes proposed for topics such as test cycles, generation of criteria pollutants and zero emission credits, and a discussion on the on-board diagnostics and monitoring requirements.

Electrification

Battery prices forecast to continue to fall
Global: average battery pack prices (US\$/kWh)



Compared to 2023, battery prices could drop by 50% by 2026

Goldman Sachs [estimates](#) that average battery pack price will fall to \$111 by the end of 2024, a ~ 25% drop compared to 2023. It predicts that the price could further drop to \$80/kWh by 2026, at which point electric vehicles will achieve cost parity without subsidies.

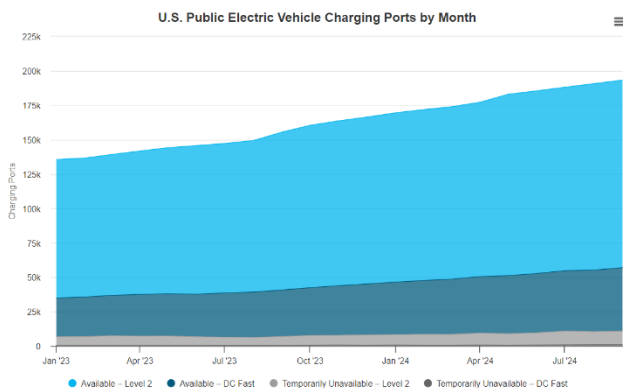
The sharp reduction is expected to occur from a combination of increasing energy density with improved pack designs, and through greatly reduced commodity prices of the constituent minerals (lithium, cobalt etc.) Also projected is an increase in the share of LFP

chemistry, reaching ~ 45% by 2025.

ICCT report examines alignment between GHG Standards & ZEV targets

An ICCT [study](#) points to the lack of coherent policies across most important parts of the world when it comes to mandating ZEVs. For light-duty, GHG standards which align with 100% ZEV goals are implemented for only 20% of the vehicle sales. Moreover, of the markets which have a 100% ZEV target (for 2030 or 2035), most are still in early stages and have a long way to go before meeting the 100% goal looks certain.

Jurisdiction	ZEV goal	Has standard in effect	Standards in line with ZEV goal	Standards adopted to 100% ZEV
Australia		✓	N/A	
California	100% EV by 2035	✓	✓	✓
Canada	100% EV by 2035	✓	✓	✓
Chile	100% EV by 2035	✓		
China	45% EV by 2027	✓	✓	
European Union	100% ZEV by 2035; 100% ZEV by 2030	✓	✓ (except for some member states)	✓
India	30% EV by 2030	✓		
Japan		✓	N/A	
Mexico	50% EV by 2030 (proposed)	✓		
New Zealand		✓	N/A	
South Korea	33% ZEV by 2030	✓		
United Kingdom	100% ZEV by 2035	✓	✓	Proposed
United States	50% EV by 2030	✓	✓	
Percent of global: Adopted	73%	63%		17%
Percent of global: Adopted and proposed	73%	63%		20%

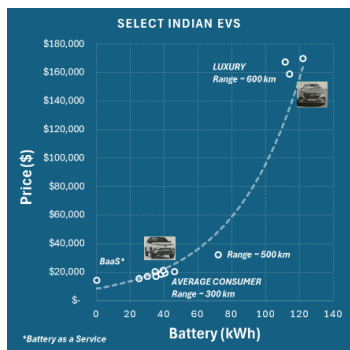


\$5B in public funding: 69 charging ports to date in the U.S.

The National Electric Vehicle Infrastructure (NEVI) Program was established in 2021 and provides \$5 billion in funding to states over five years (2022–2026) to build a network of EV chargers along designated highways.

The Joint Office of Energy and Transportation, which administers this program, provides a [quarterly update](#) on the U.S. public EV charging infrastructure. The U.S. added 9,000

public charging ports in the last quarter, bringing the total to 192,000. However, the total ports added through NEVI is only 69 to date, across eight states. An article by Politico probes deeper into this topic, attributing the lack of success to various factors such as difficulty with identifying sites, bureaucracy and electric utility readiness.



OEMs look to introducing low-cost EVs in India

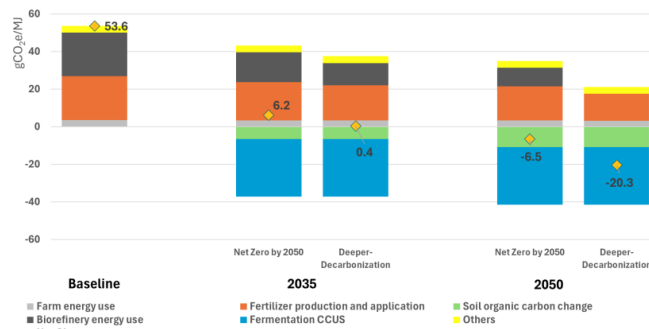
Given the low urban driving distances in [India](#), OEMs are introducing vehicles with smaller batteries (25 – 45 kWh) and offering battery-as-a-service (lower upfront cost of vehicle with a per km battery cost). Several OEMs are targeting the introduction of mass-market EVs by 2025-2026. India is still in its early stages of electrification and has to address other issues such as charging infrastructure.

Low carbon fuels

Ethanol for transport decarbonization

The [Growth Energy Biofuels Summit](#) was held in Washington DC on September 9–12, 2024. The event focused on a few key topics - the need for E15 year-round, nationwide, seeking clarity on the 45Z Clean Fuels Production tax credits, and an increase to the 15-billion-gallon implicit cap on ethanol through the renewable fuel standard. Speakers highlighted the potential for ethanol to further reduce its carbon intensity to near-zero levels in coming years.

A [report](#) published by the EFI Foundation gives an in-depth analysis of the carbon intensity of ethanol, pathways to get to near-zero and even negative CI by 2050, and the cost implications.



Source: EFI Foundation analysis.

World-first cryo-compressed hydrogen heavy-duty truck



Cryo-compression, the cooling and compression of H₂, is being explored to improve hydrogen storage density and ultimately increase range or reduce vehicle weight and storage cost.

[Verne](#), a start-up founded in 2020 focusing on developing high-density hydrogen storage solutions, has achieved a maximum hydrogen density of 73 g/L, a 33% improvement over liquid hydrogen and an 87% improvement over traditional 700-bar compressed gas hydrogen.

It unveiled a Class 8 truck powered by cryo-compressed hydrogen (CCH₂) at the Alberta Motor Transport Association Innovation Expo in Edmonton. Next steps are on-road testing and commercial pilots.

Conferences

Here are some upcoming conferences to consider attending –

ASME ICE Forward 2024, October 20 – 23, 2024, San Antonio

[2024 ICEF - The ICE Forward Conference \(asme.org\)](https://www.asme.org/ice-forward)

Emissions Analytics Tire Emissions & Sustainability Europe 2025, February 11 – 12, Prague

[Tyre Emissions and Sustainability Europe 2025](https://www.emissionsanalytics.com/tire-emissions-europe-2025)

Emissions Analytics Tire Emissions & Sustainability USA 2025, April 30 – May 1, 2025, Irvine CA

[Tire Emissions and Sustainability USA 2025](https://www.emissionsanalytics.com/tire-emissions-usa-2025)

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