

State of the EV industry

2022 – from early actors to sustained growth

Corey Cantor

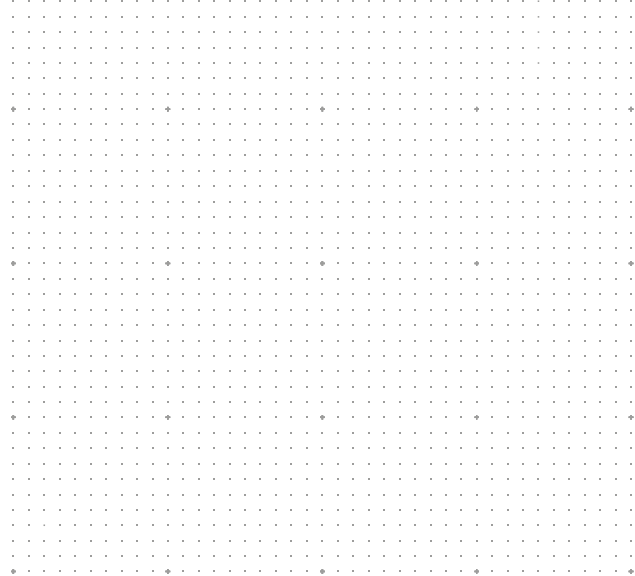
February 8, 2022

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EVs in 2022

The road to the inflection point



News about the EV transition seems to happen on almost a daily basis

GM unveils sharp-looking Equinox EV starting at game-changing \$30,000 price

Fred Lambert - Jan. 5th 2022 10:14 am PT [@FredericLambert](#)

Minivan Pioneer Chrysler Expands to Crossovers With EV Push

- Brand aims to be fully electric by 2028 with first EV in 2025
- Executive says large electric sedan and minivan could be added

January 24, 2022
2:35 AM EST
Last Updated 8 hours ago

Autos & Transportation

EXCLUSIVE Renault, Nissan, Mitsubishi to unveil 2030 EV plan this week

By Norihiko Shirouzu

Source: Electrek, Reuters, Bloomberg.

We are the cusp of a major shift in the EV industry – a far cry from 10 years ago

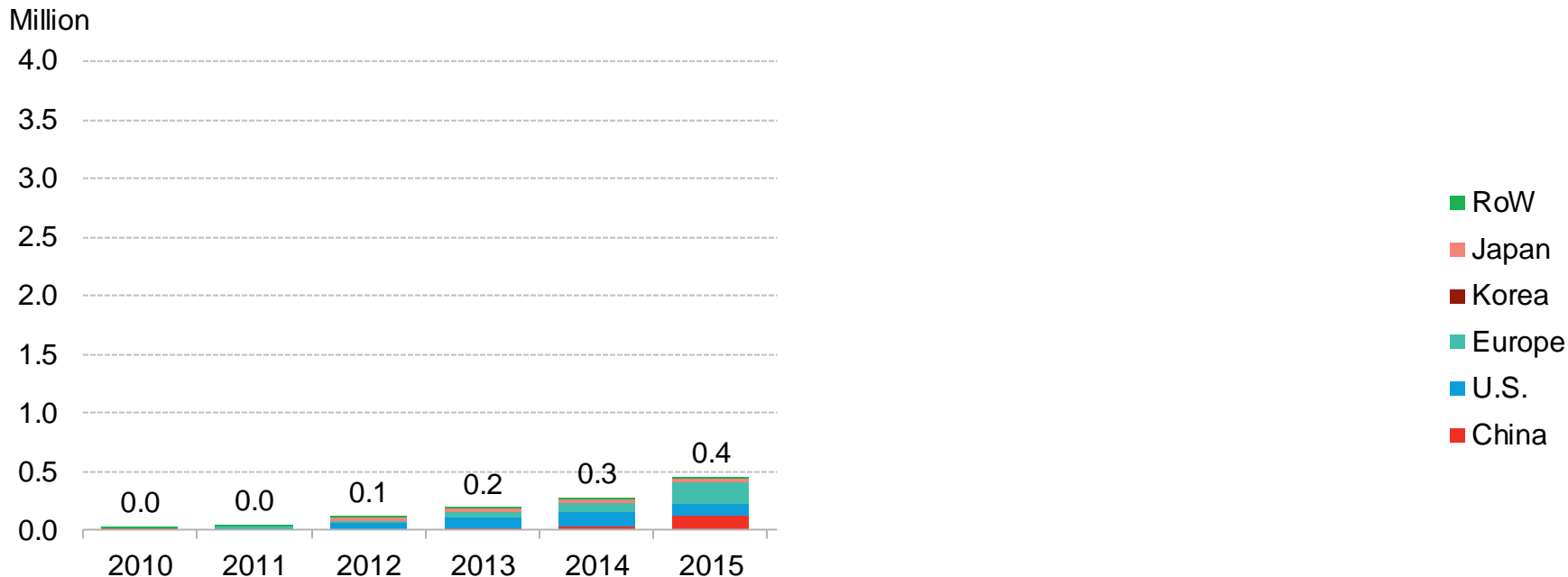
Annual passenger EV sales by region



Source: BloombergNEF, Marklines.

EVs have come a long way since 2015...

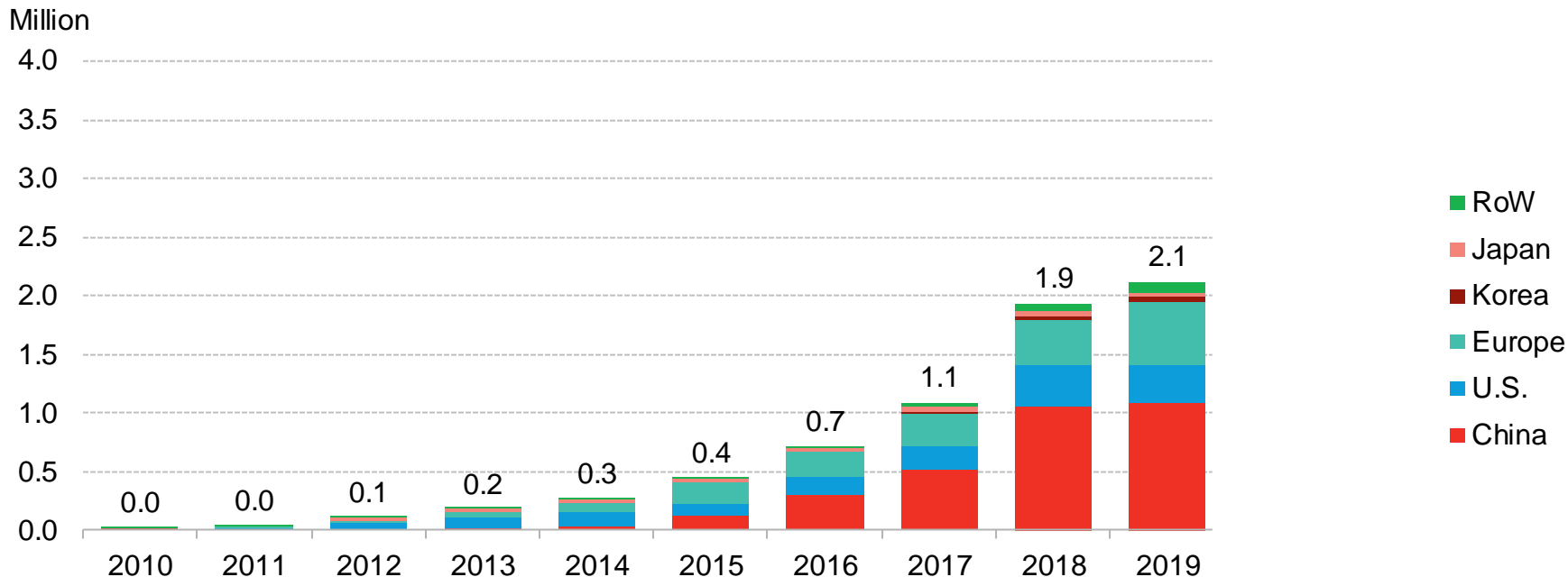
Annual passenger EV sales by region



Source: BloombergNEF, Marklines.

In 2017, EV sales hit >1 million, and >2 million by 2019

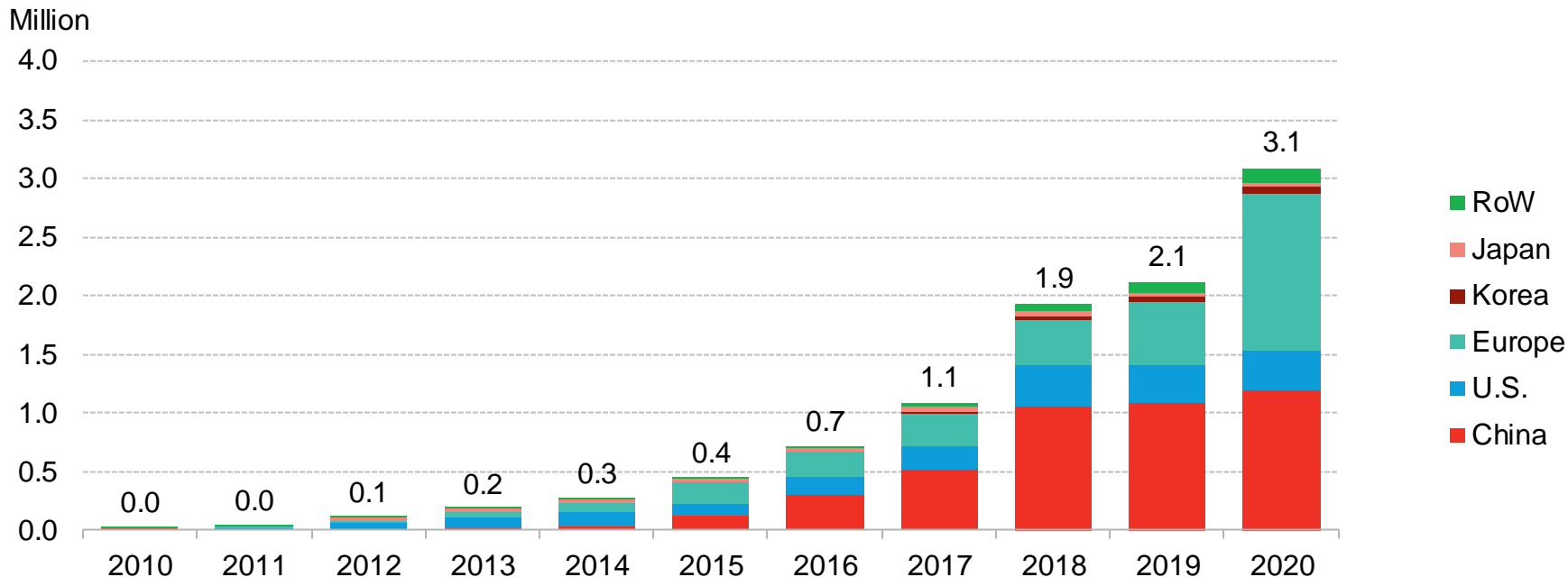
Annual passenger EV sales by region



Source: BloombergNEF, Marklines.

Even during a pandemic, EV sales grew to >3 million in 2020... and then

Annual passenger EV sales by region

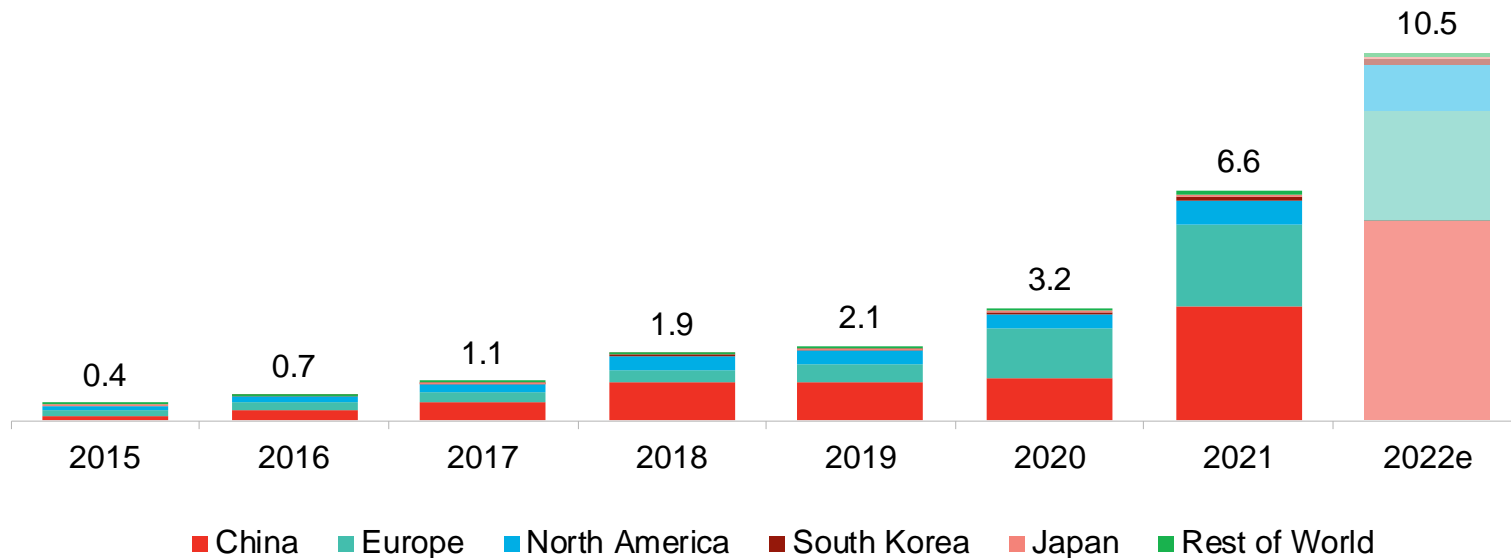


Source: BloombergNEF, Marklines.

EV sales hit >6 million in 2021... more than 6x 2017 final sales numbers

Annual passenger EV sales by region

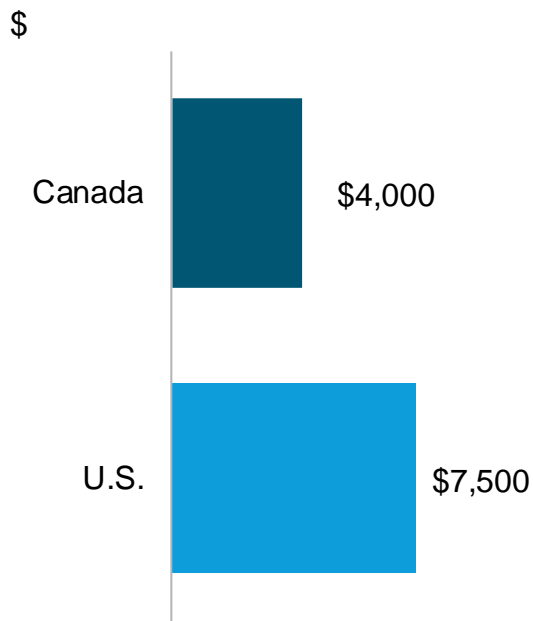
Million



Source: BloombergNEF, Marklines.

Drivers of adoption

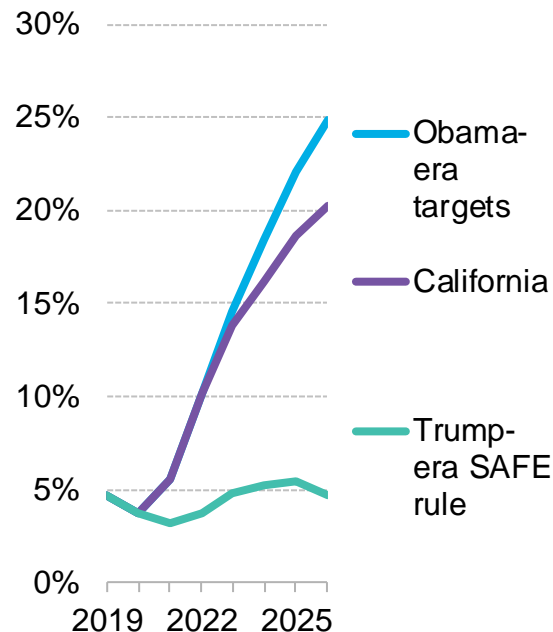
Purchase subsidies



Source: BNEF. Note: translated into USD.

Fuel economy

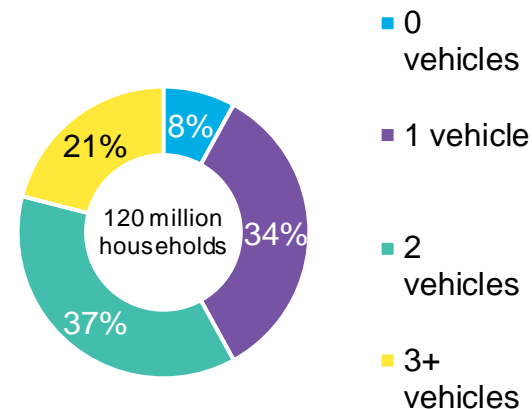
EV share under different scenarios



Source: BNEF.

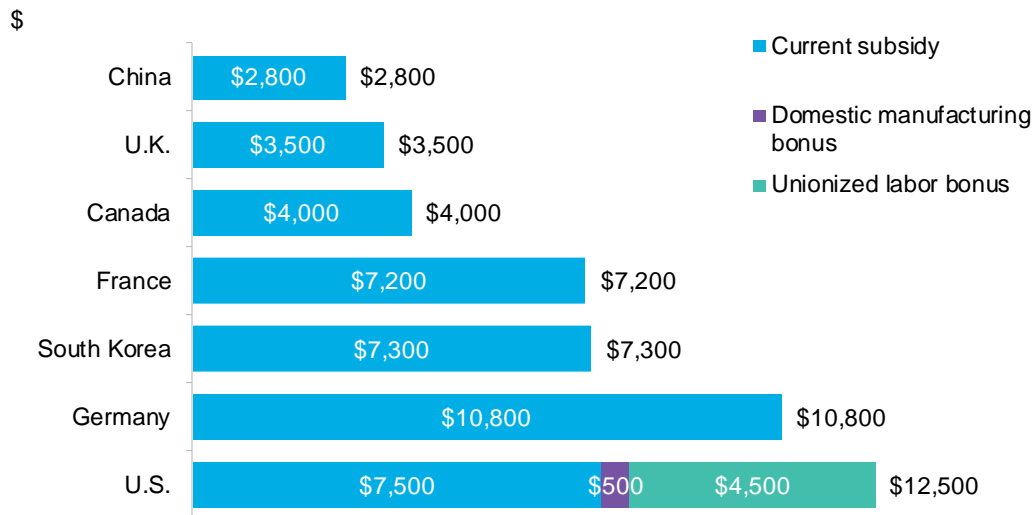
Two-car home ownership in the U.S.

%



Source: BNEF, EVO 2020.

New proposals in Congress could incentivize EVs even further



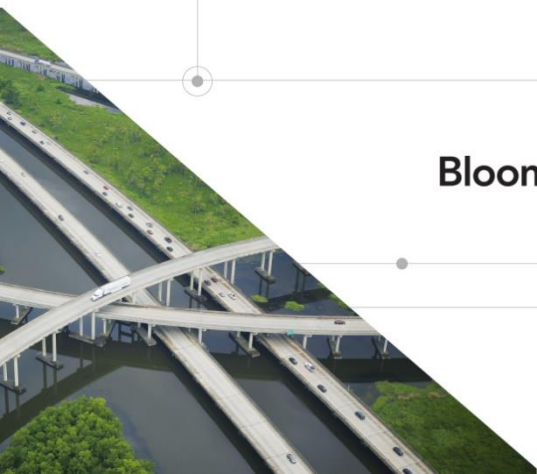
Source: BloombergNEF.

The EV acceleration

BNEF's Long-Term EV Outlook

Electric Vehicle Outlook 2021

BloombergNEF

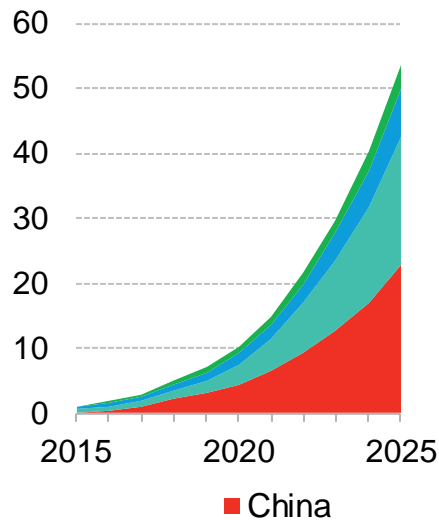


The global EV fleet continues to expand

Global EV fleet by segment and market

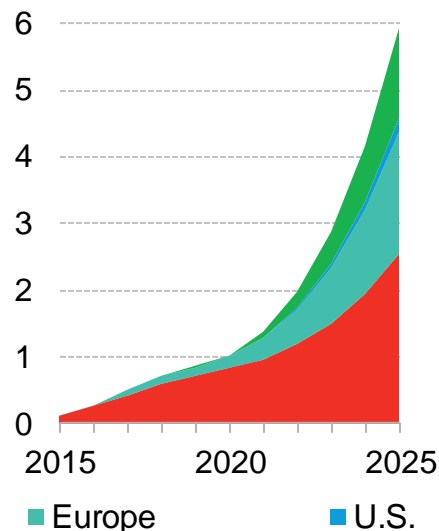
Passenger EVs

Million



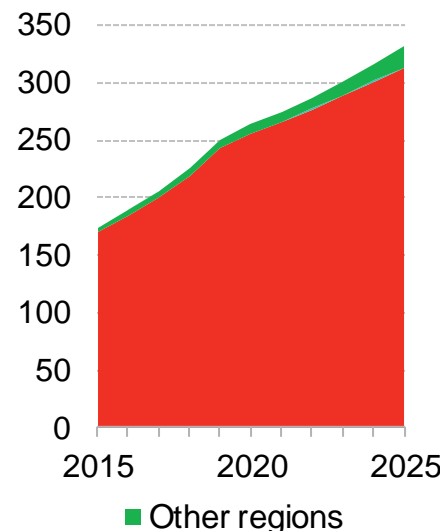
E-buses and commercial EVs

Million



Electric two- and three-wheelers

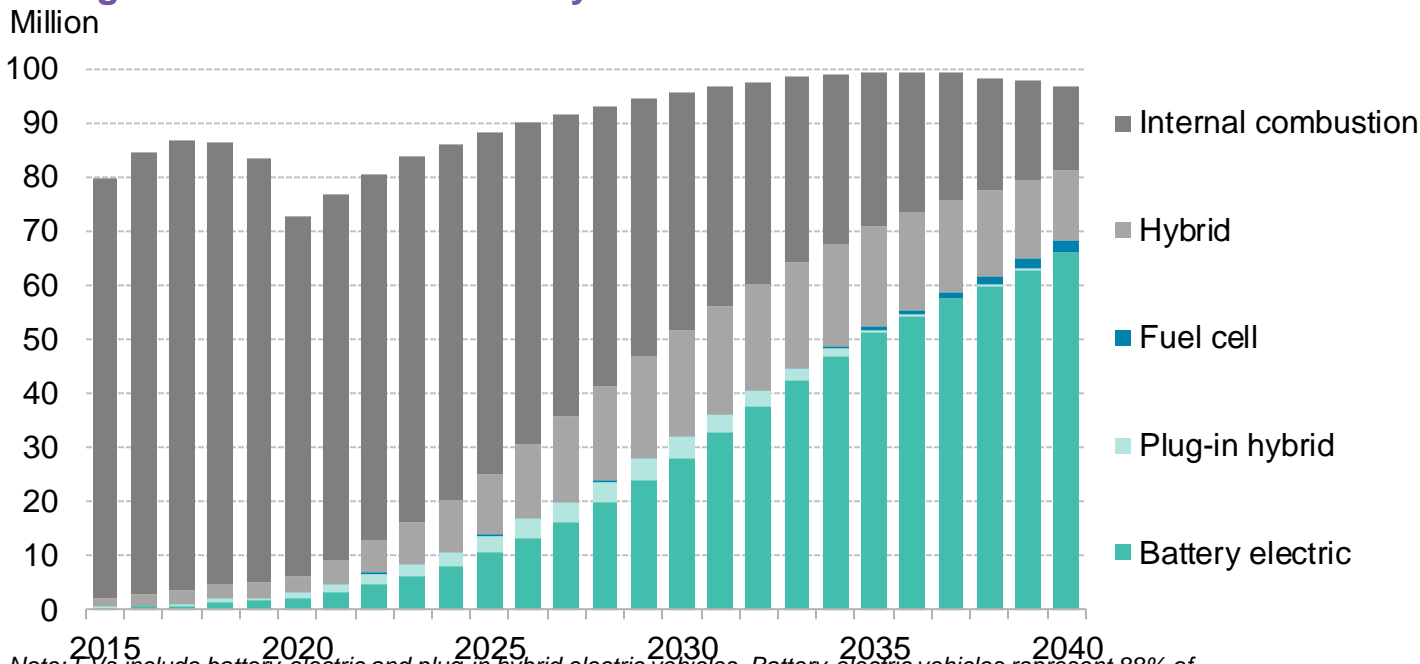
Million



Source: BNEF. Note: Two-wheelers includes mopeds, scooters and motorcycles, excludes e-bikes.

Global passenger EV sales rise to 66 million units...

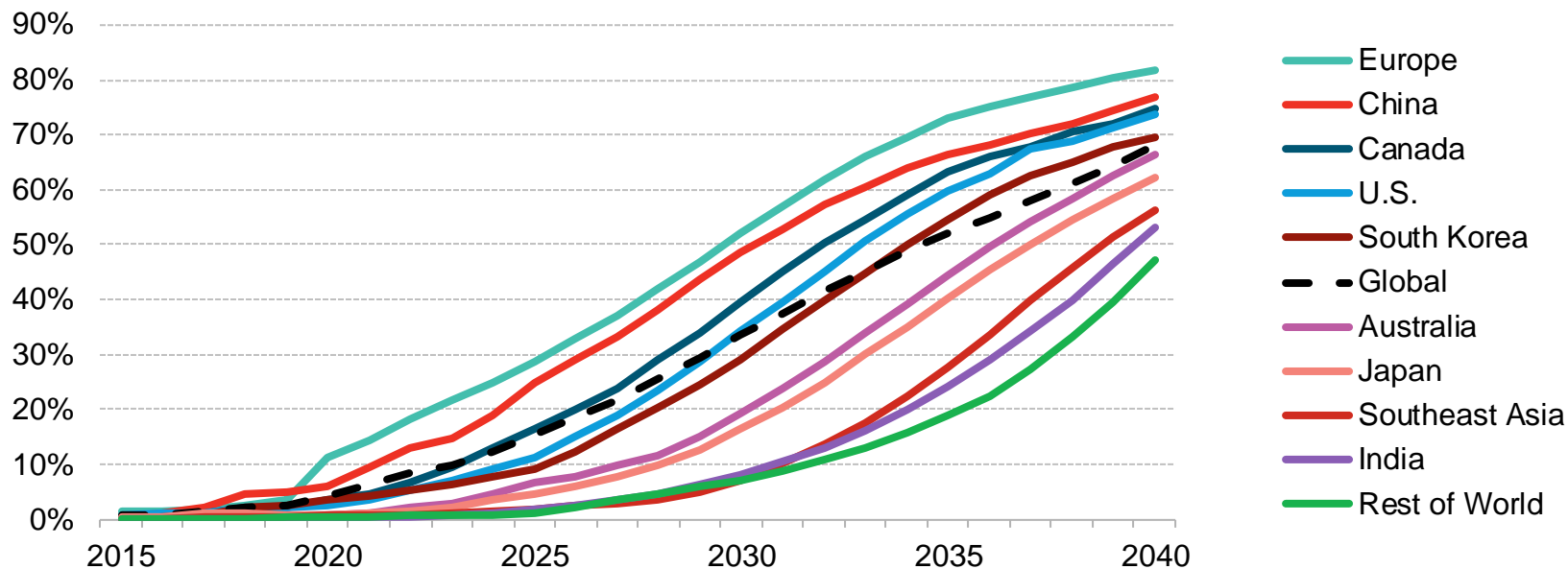
Global passenger vehicle sales outlook by drivetrain – Economic Transition Scenario



Source: BNEF. Note: EVs include battery-electric and plug-in hybrid electric vehicles. Battery-electric vehicles represent 88% of total electric vehicle sales in 2030. Europe includes the EU, the U.K. and EFTA countries.

... while reaching 68% of global new sales in 2040

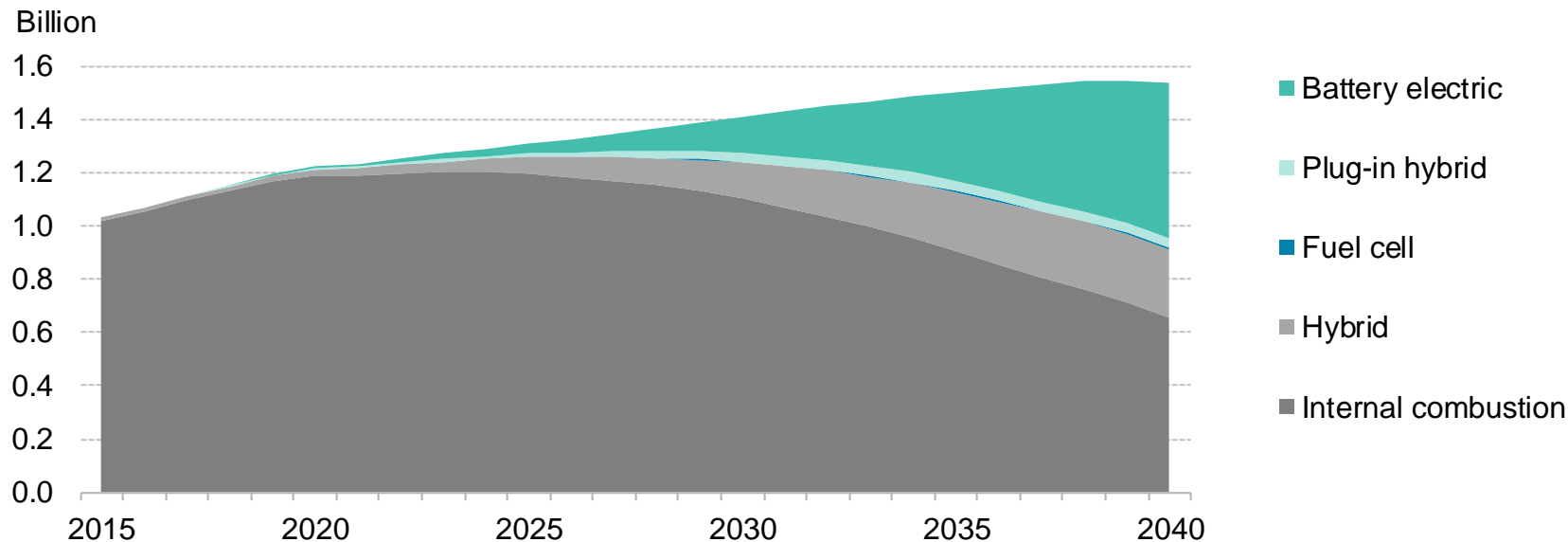
EV share of new passenger vehicle sales outlook by market – Economic Transition Scenario



Source: BNEF. Note: EVs include battery-electric and plug-in hybrid electric vehicles. Battery-electric vehicles represent 88% of total electric vehicle sales in 2030. Europe includes the EU, the U.K. and EFTA countries.

... and the global passenger EV fleet hits over 615 million vehicles

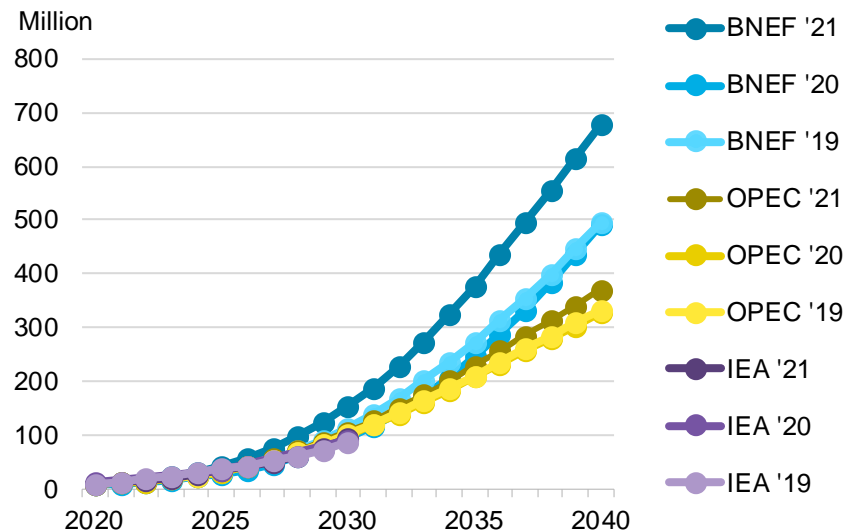
Global passenger vehicle fleet outlook by drivetrain – Economic Transition Scenario



Source: BNEF. Note: EVs include battery-electric and plug-in hybrid electric vehicles. Battery-electric vehicles represent 88% of total electric vehicle sales in 2030. Europe includes the EU, the U.K. and EFTA countries.

And it's not just BNEF that has seen a higher EV fleet in the future

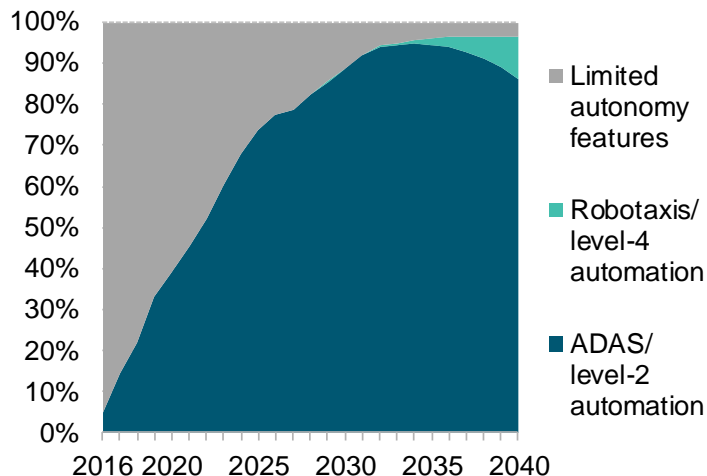
Global passenger and commercial ZEV fleet, various outlooks



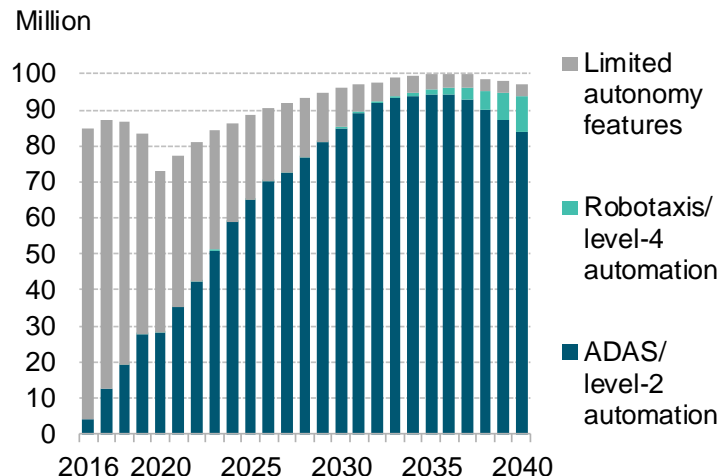
Source: BloombergNEF, IEA, OPEC. Note: IEA is their base-case (state policy scenario for 2020 and 2021, new policy scenario for 2019). BNEF '20 and '21 are BEVs and FCVs (excl. PHEVs). OPEC includes all EVs and FCVs. BNEF '19 and IEA reports are BEVs only. (*) IEA report only goes through 2030.

Rising sales of cars with ADAS features

Global share of new vehicle sales with different automation levels



Global new vehicle sales with different automation levels



Source: BloombergNEF. Note: For more, see our “Advanced Driver-Assistance Systems Outlook 2021”.

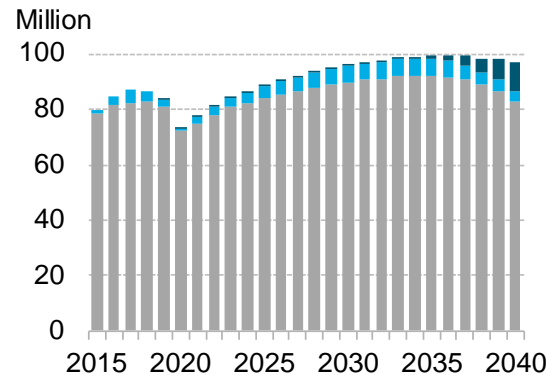
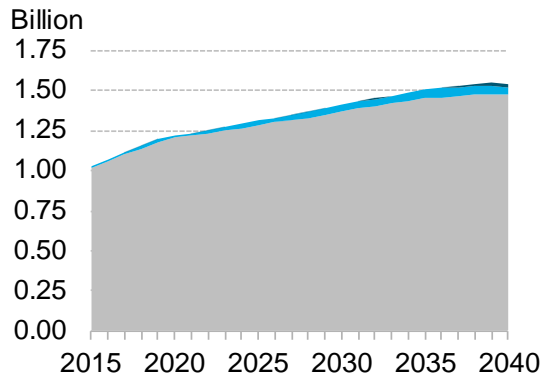
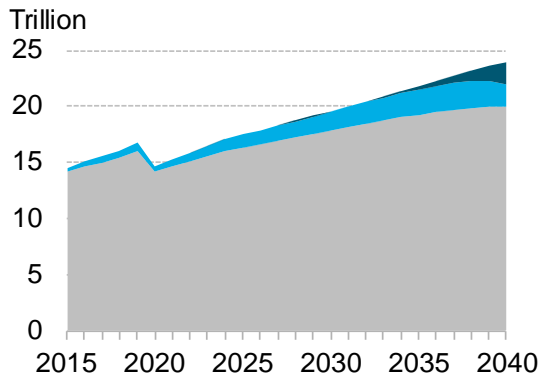
Economic Transition Scenario

Global results by type

Kilometers traveled: ▲ 43%

Fleet size: ▲ 29%

Sales: ▲ 16%



Legend:

Private cars

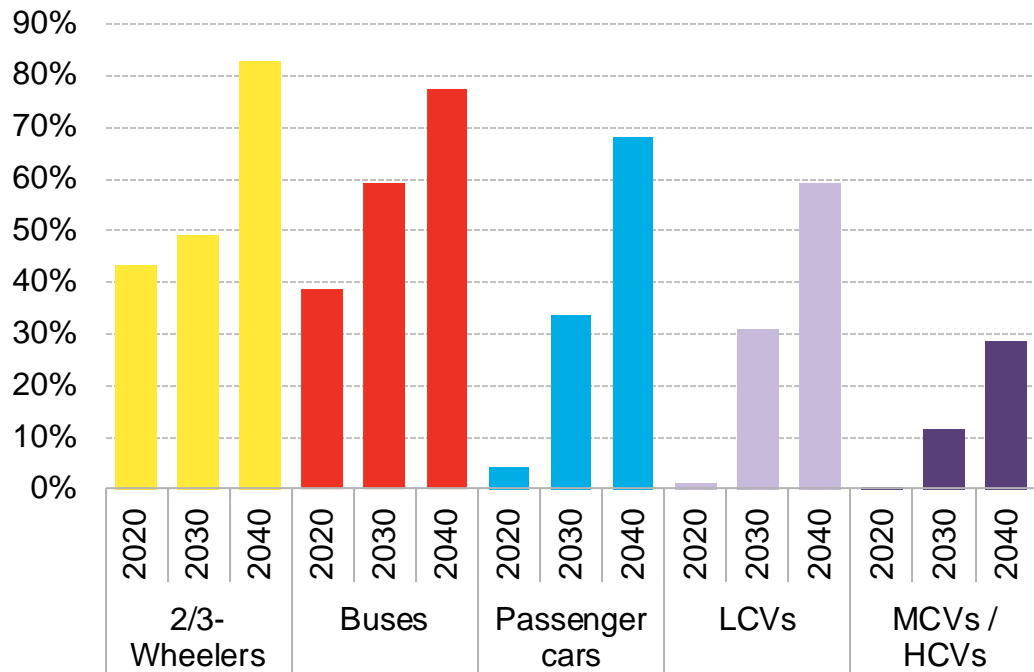
Shared cars

Robotaxis

Source: BloombergNEF, various government and industry organizations. Note: Shared cars are (non-autonomous) taxis, ride-hailing vehicles and fleet-based car-sharing vehicles. Robotaxis are Level-4 autonomous ride-hailing vehicles. For market-level data, see our "Peak Car? BNEF Light-Duty Vehicle Outlook 2021".

All but M/HCVs will have >50% EV share of sales by 2040

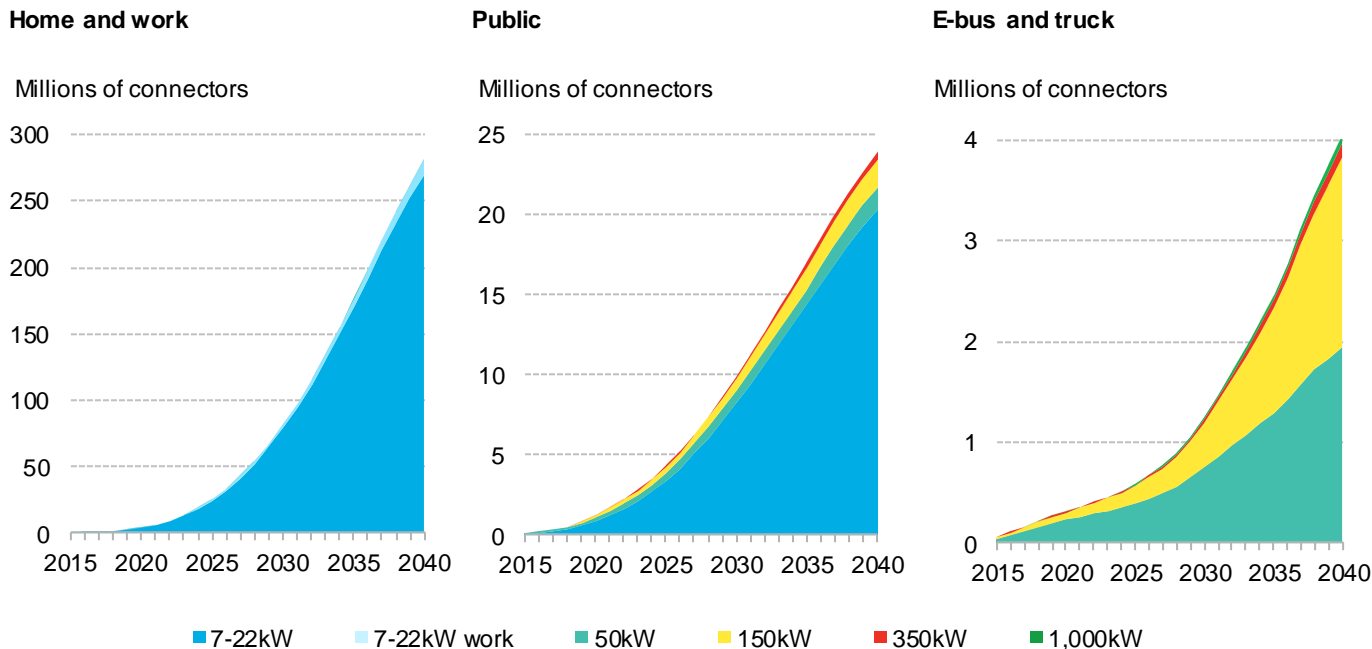
EV share of global new vehicle sales by segment – Economic Transition Scenario



Source: BNEF. Note: LCVs = light commercial vehicles. M/HCVs = medium/heavy commercial vehicles.

To meet the growing fleet, more charging will be needed

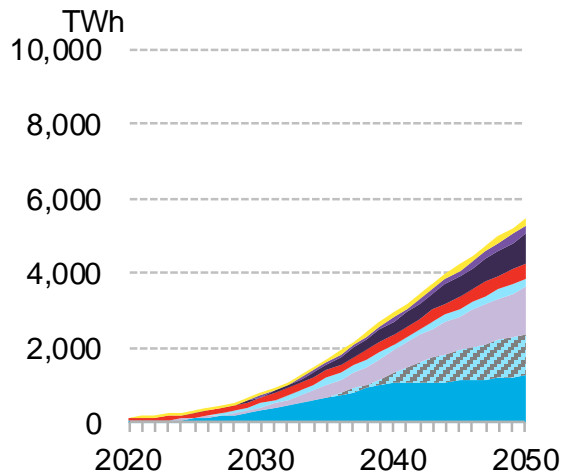
Cumulative global installed charging infrastructure by category: home and work, public, commercial – Economic Transition Scenario



Source: BNEF. Note: Light commercial EVs are considered within home and public infrastructure.

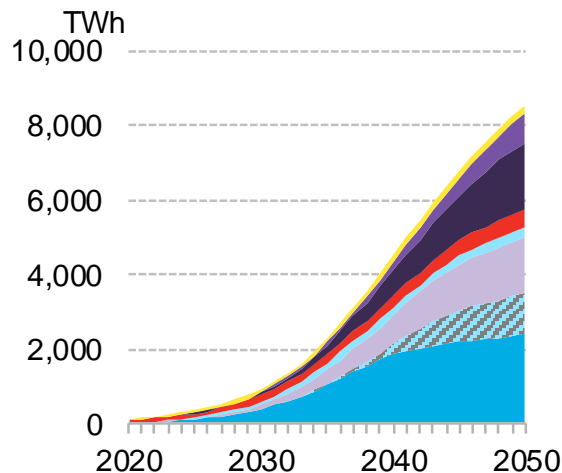
EV Electricity demand is 14%~24% of global demand by 2050

ETS – by vehicle type

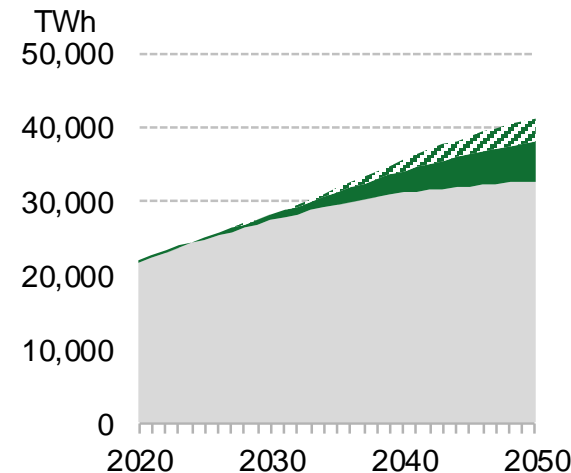


Private cars Robotaxi LCV Shared
E-bus HCV MCV 2/3W

NZS – by vehicle type



EV demand relative to general demand

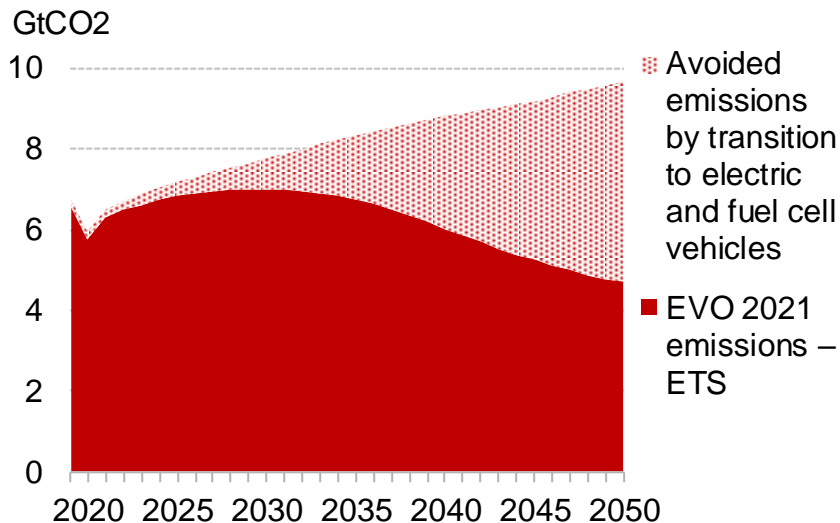


EV additional demand - NZS
EV demand - ETS
General electricity demand

Source: BNEF. Note: General electricity demand is from BNEF's 2020 New Energy Outlook. 'Shared' is shared mobility vehicles.

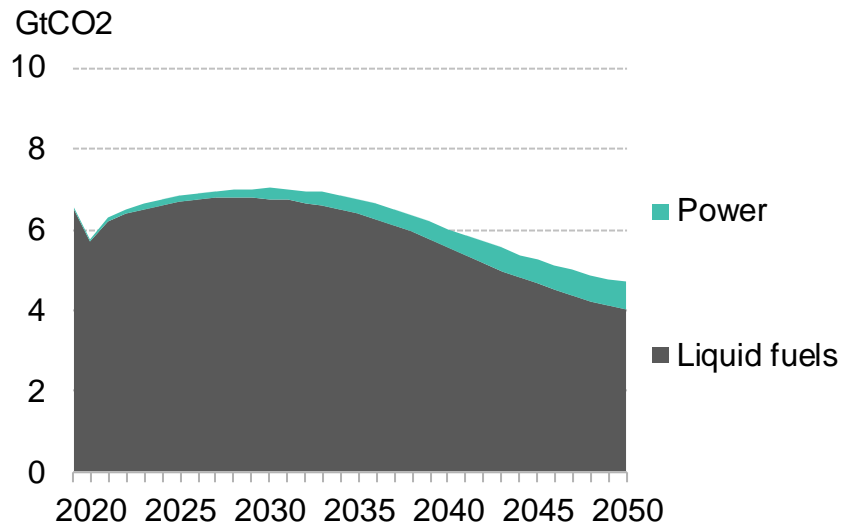
Where might this take us?

Road transport emissions avoided by the penetration of electric and fuel cell vehicles – ETS



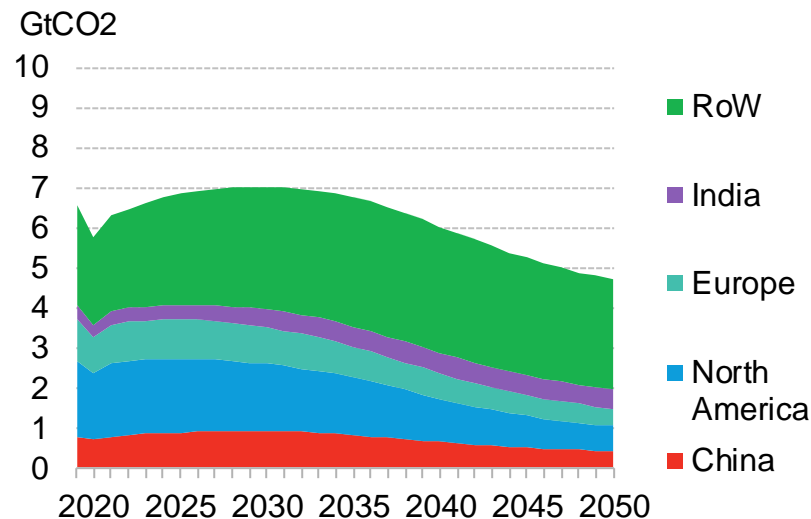
Source: BNEF. Note: Liquid fuel emissions include passenger vehicles, commercial vehicles and two/three-wheelers. Power emissions include passenger vehicles, commercial vehicles, two-wheelers and electric buses.

Total global CO₂ emissions from road transportation by energy source – ETS

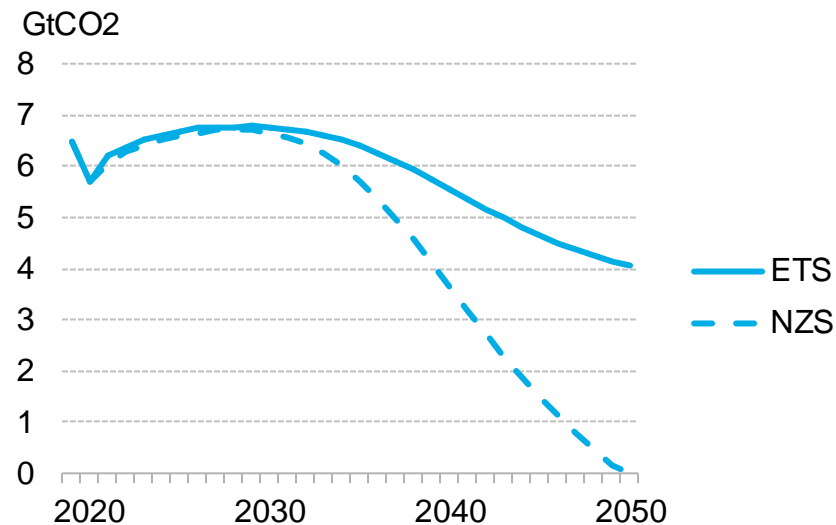


Emissions are on track to fall in road transport, but not enough to hit net zero

Global CO2 emissions from road transport by region – Economic Transition Scenario



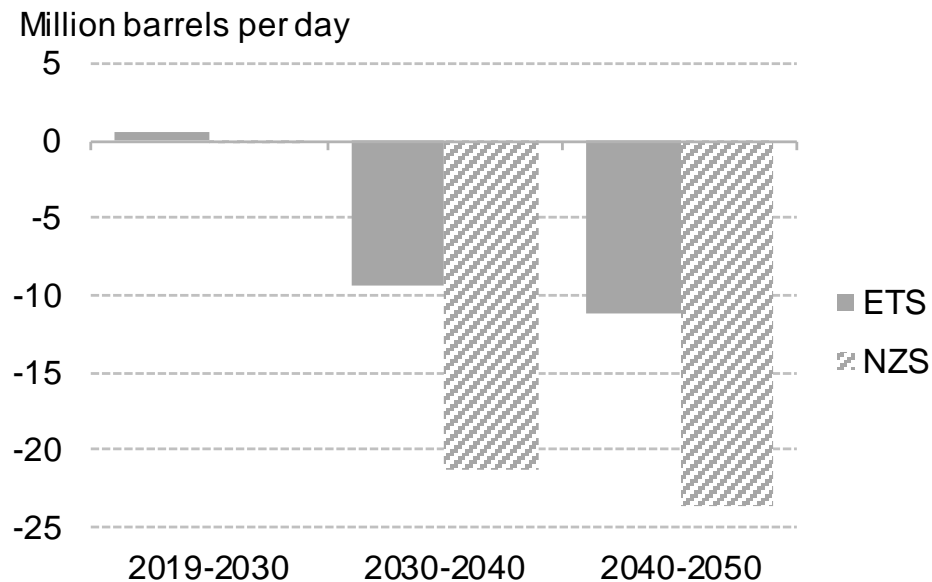
Global CO2 tailpipe emissions from road transport – Economic Transition Scenario



Source: BNEF. Note: Country breakdown includes tailpipe and power sector emissions. Scenario comparison is tailpipe only.

Oil demand will decrease no matter which scenario, but plummets under NZS

Oil demand growth from road transport by scenario

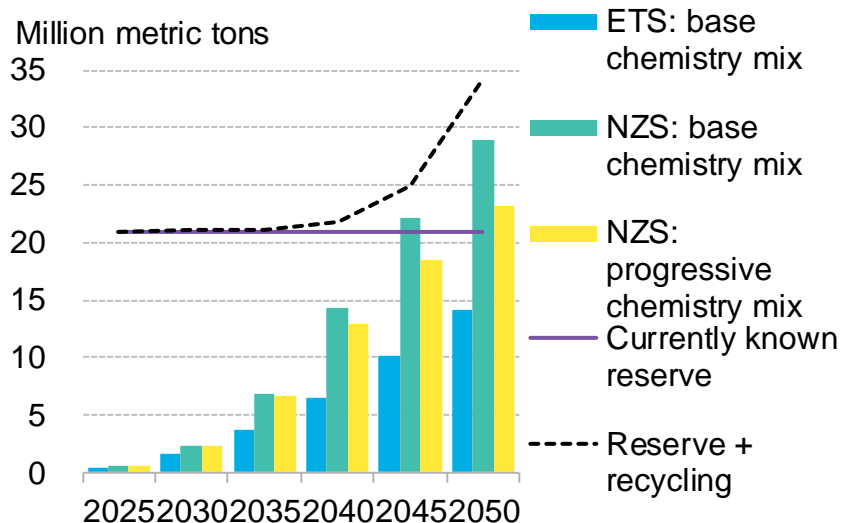


Source: BNEF. Note: 'ETS' is Economic Transition Scenario and 'NZS' is Net-Zero Scenario.

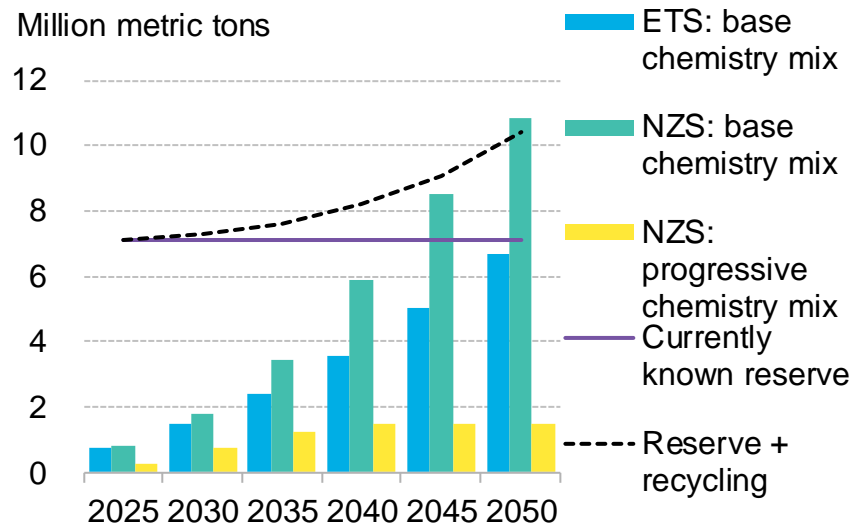
The report covers how much materials are needed under different scenarios

Cumulative lithium and cobalt demand and reserves under different chemistry mix scenarios

Lithium



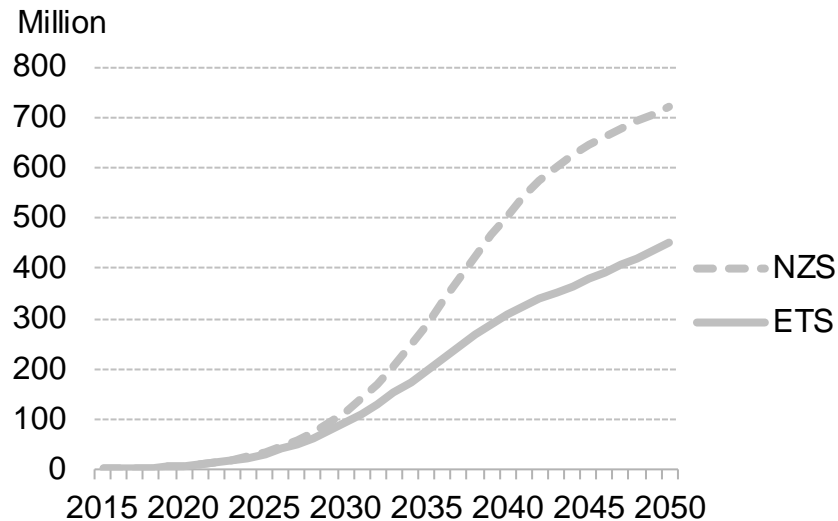
Cobalt



Source: BNEF. Note: Based on contained metal not lithium carbonate equivalent. Recycling uses our ETS chemistry mix with net zero battery demand. Assumes 70% of lithium is recovered from batteries after 15 years of use. Assumes 98% of cobalt is recovered from batteries after 15 years of use.

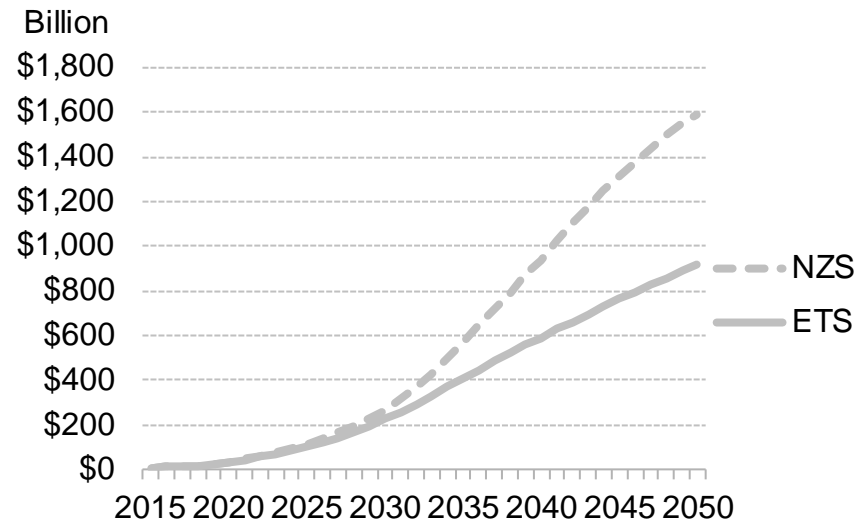
Charging infrastructure growth varies by scenario

Comparison of total charge connectors needed globally by 2050 in the Net Zero and Economic Transition Scenarios



Source: BNEF.

Comparison of total charging connector investment needed globally by 2050 in the Net Zero and Economic Transition Scenarios



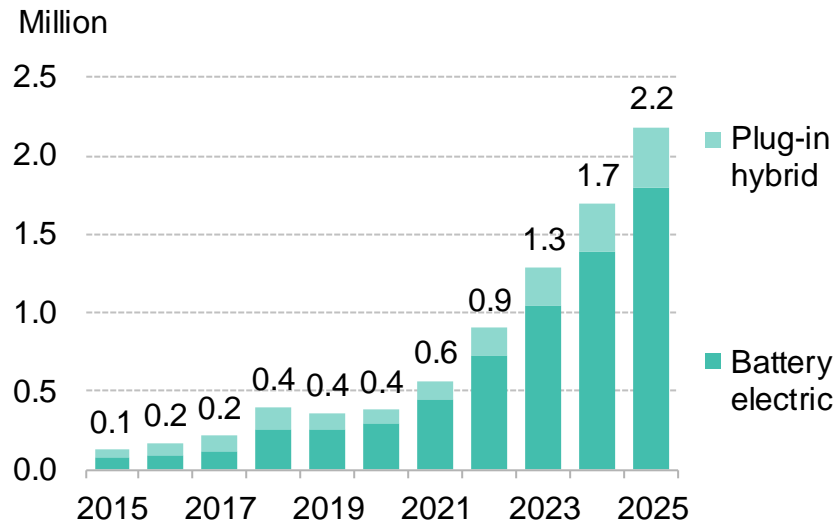
Source: BNEF.

North America EV Outlook

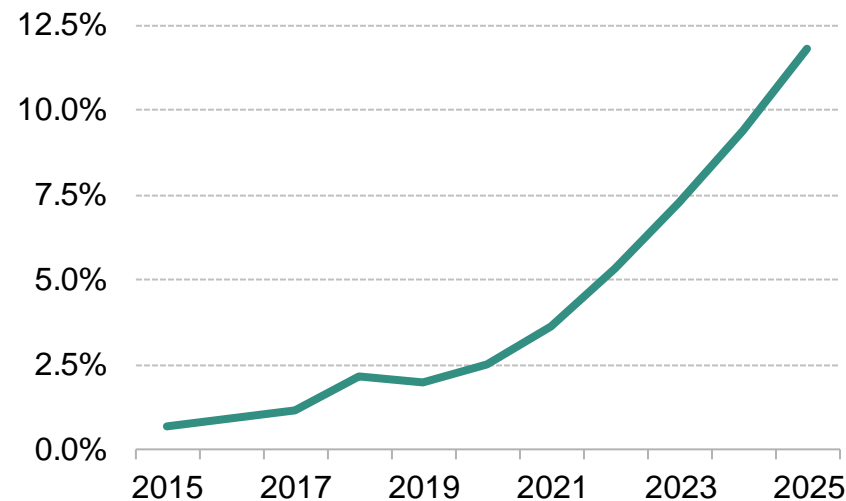
BNEF's Long-Term Electric Vehicle Outlook
2021

North American EV sales are at an inflection point...

North America near-term annual passenger EV sales by drivetrain



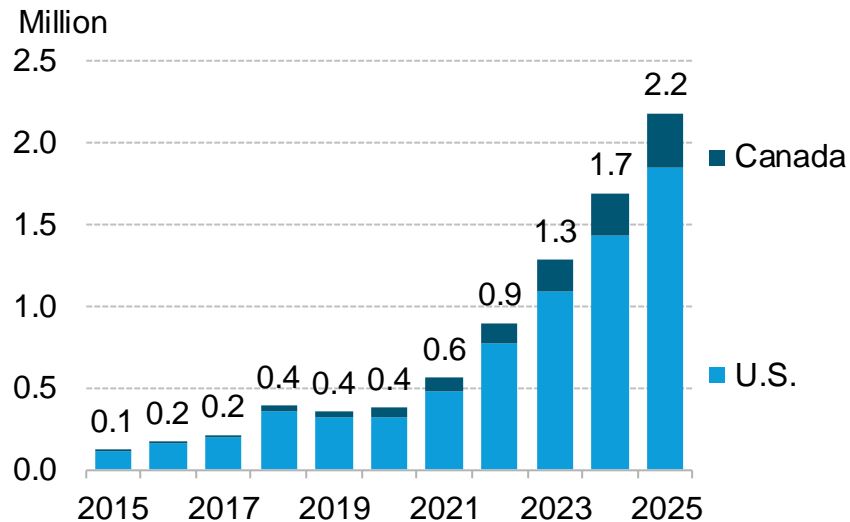
North America near-term EV share of new passenger vehicle sales



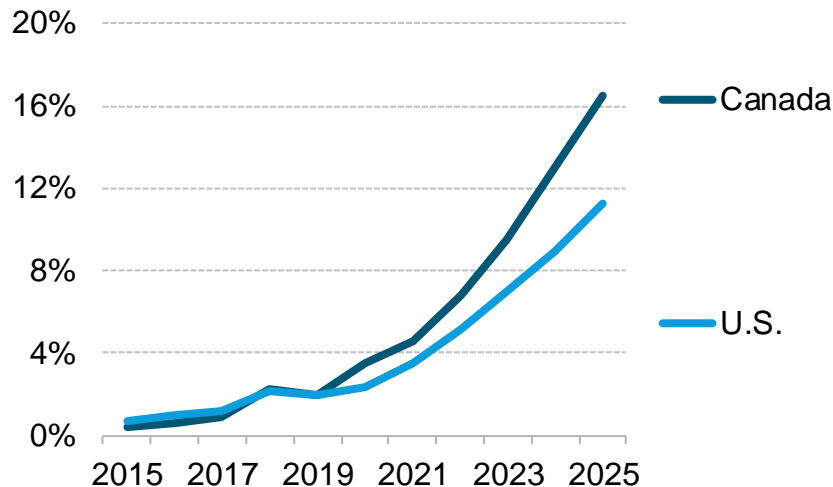
Source: BNEF. Note: EV includes battery-electric and plug-in hybrid electric vehicles.

EV sales will approach 2.2 million units annually, with Canada's share of EVs outpacing the U.S.

U.S. and Canada near-term annual passenger EV sales



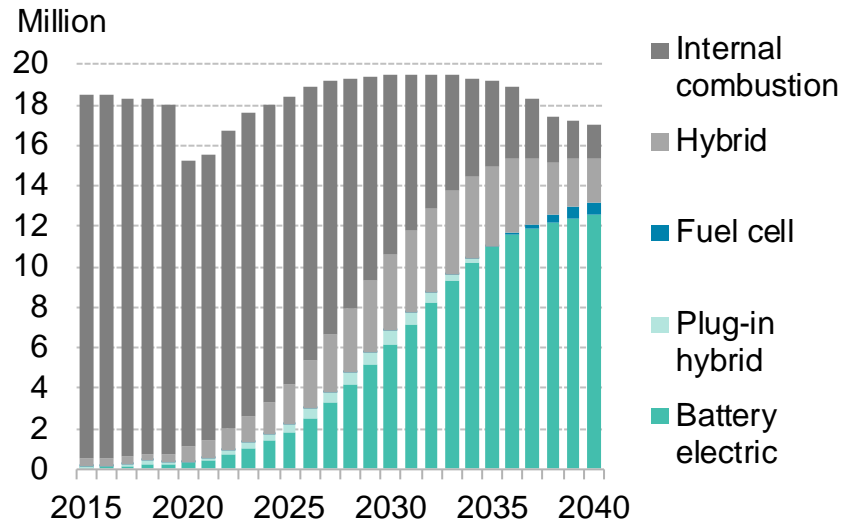
U.S. and Canada near-term EV share of new passenger vehicle sales



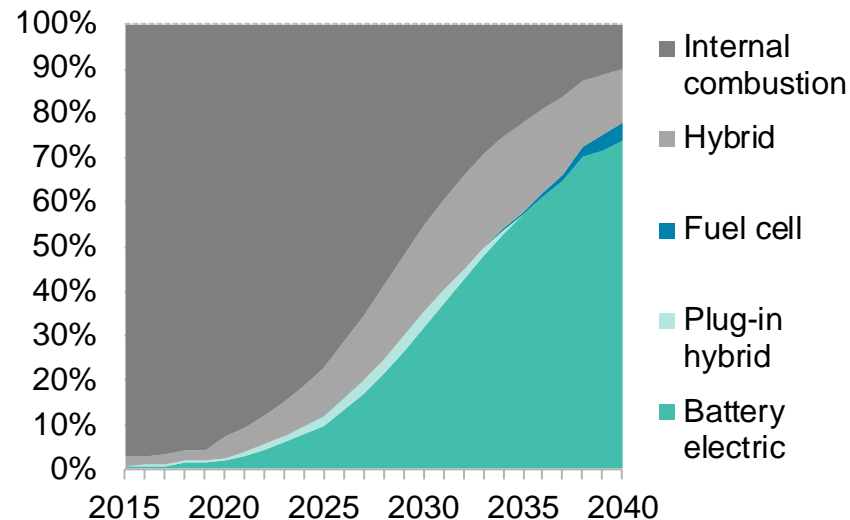
Source: BNEF. Note: EV includes battery-electric and plug-in hybrid electric vehicles.

By 2040, EV sales hit over 12 million each year, 78% of new sales

North America passenger vehicle sales by drivetrain



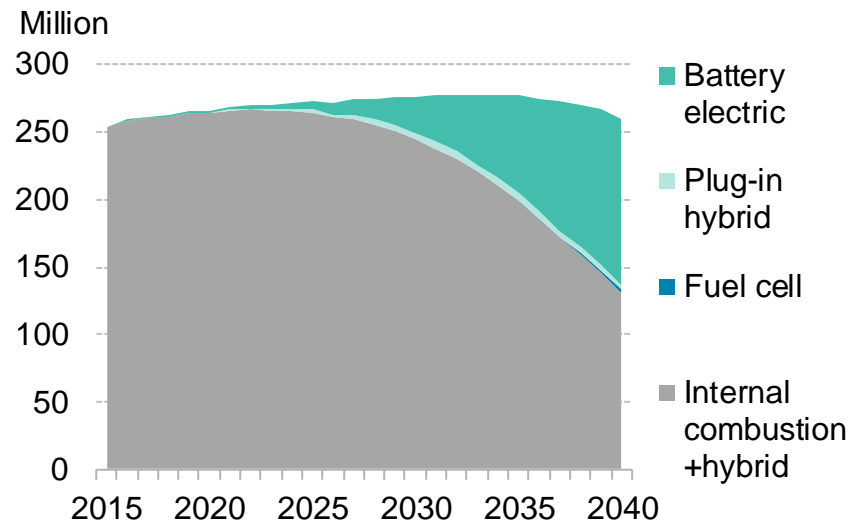
North America passenger vehicle share of sales by drivetrain



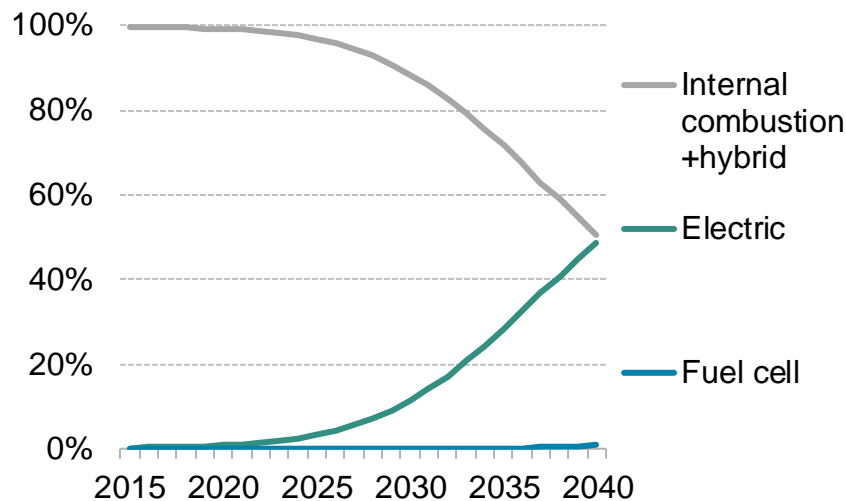
Source: BNEF.

The passenger EV fleet reaches just under 50%, over 127 million units

North America passenger vehicle fleet by drivetrain



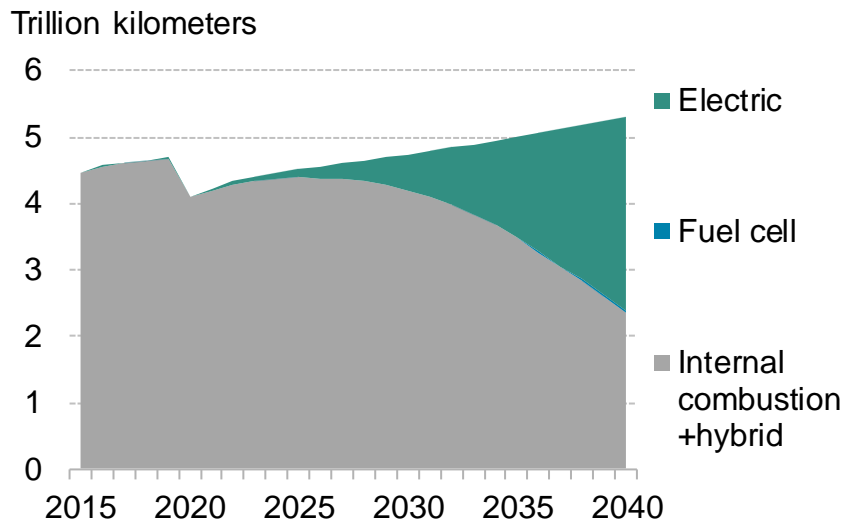
North America passenger vehicle fleet share by drivetrain



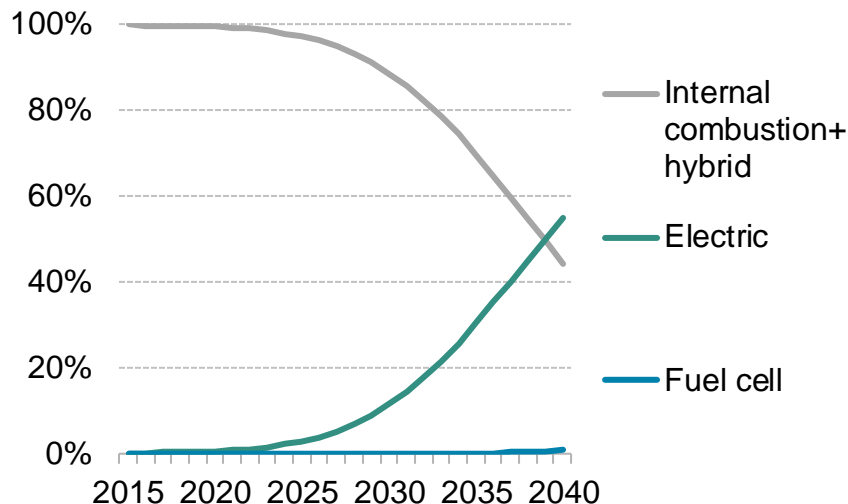
Source: BNEF. Note: Electric contains battery electric and plug-in hybrid electric vehicles.

Electric drivetrains represent 55% of all distance traveled

North America total annual passenger vehicle distance traveled by drivetrain



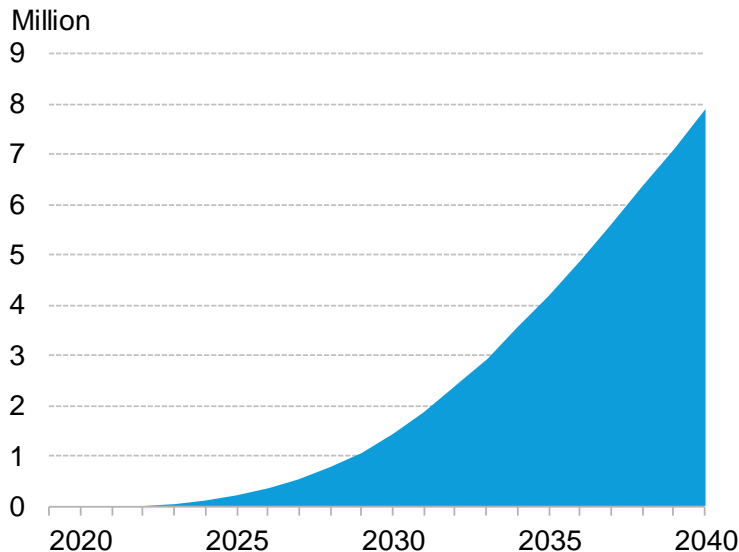
North America share of annual passenger vehicle distance traveled by drivetrain



Source: BNEF. Note: Electric contains battery electric kilometers and electric-driven share of plug-in hybrids. Internal combustion contains conventional internal combustion and internal combustion share of kilometers by plug-in hybrids.

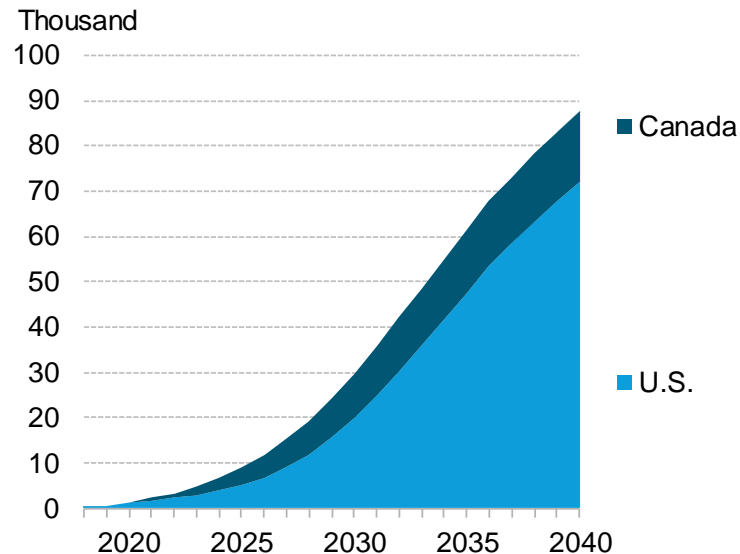
Other segments will electrify too

U.S. commercial EV fleet



Source: BNEF.

North America municipal e-bus fleet



Source: BNEF.

Long-term policy and business trends

Recent announcements on the next stage of the transition

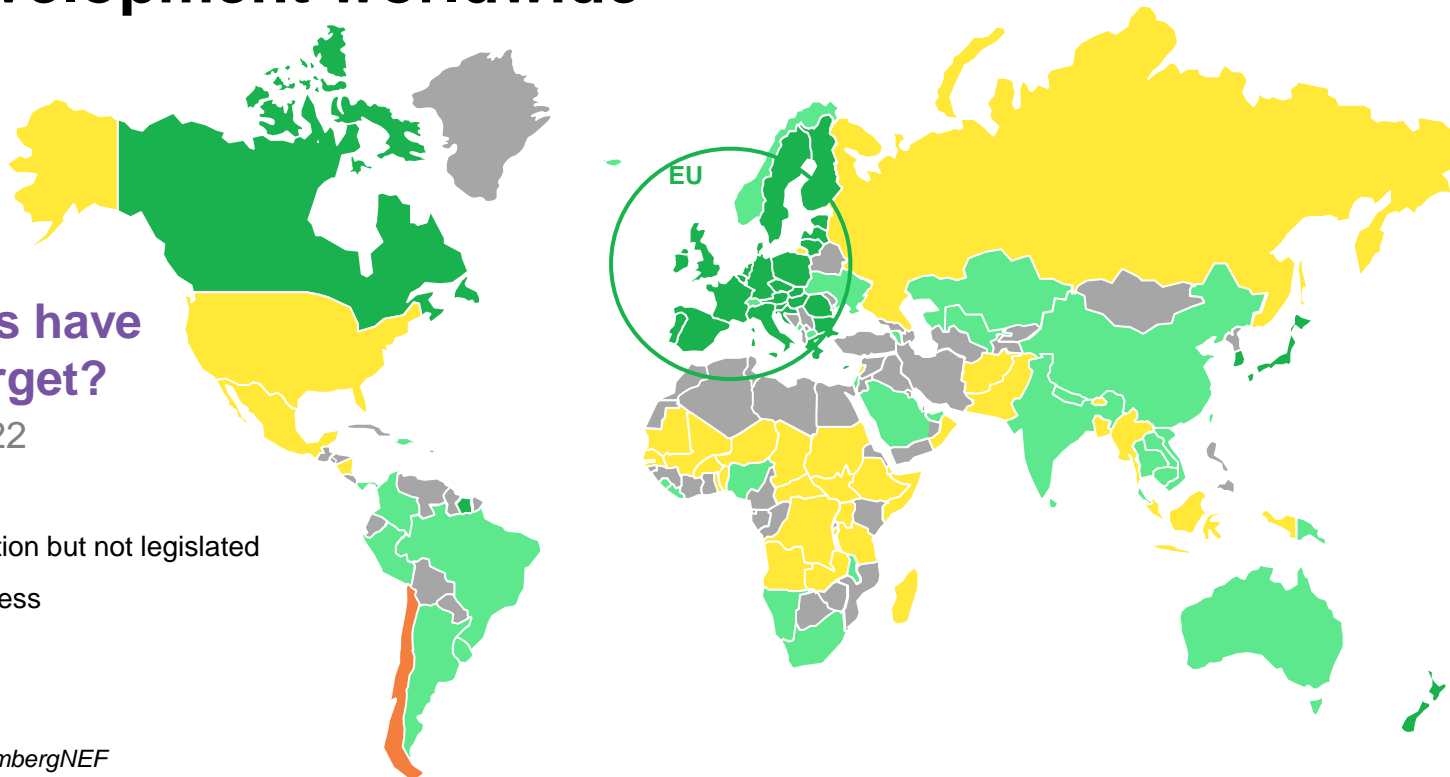
Net Zero targets continue to come under development worldwide

Which parties have a net-zero target?

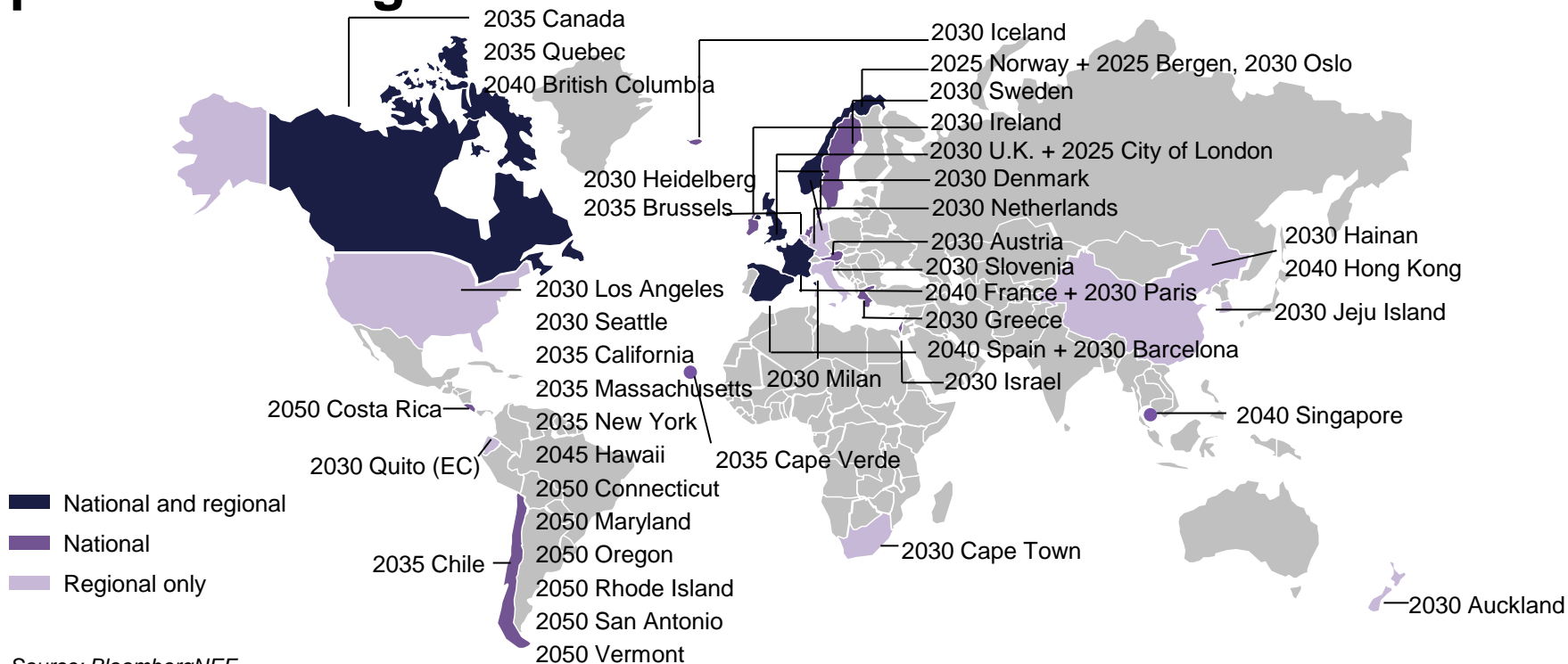
As of January 2022



Source: Governments, BloombergNEF

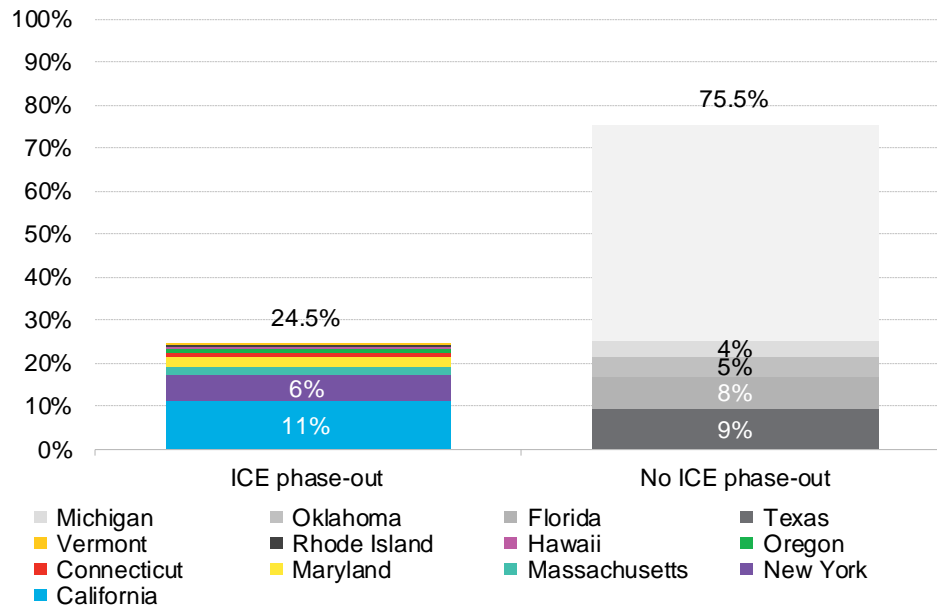


National and regional ICE vehicle phase-out targets



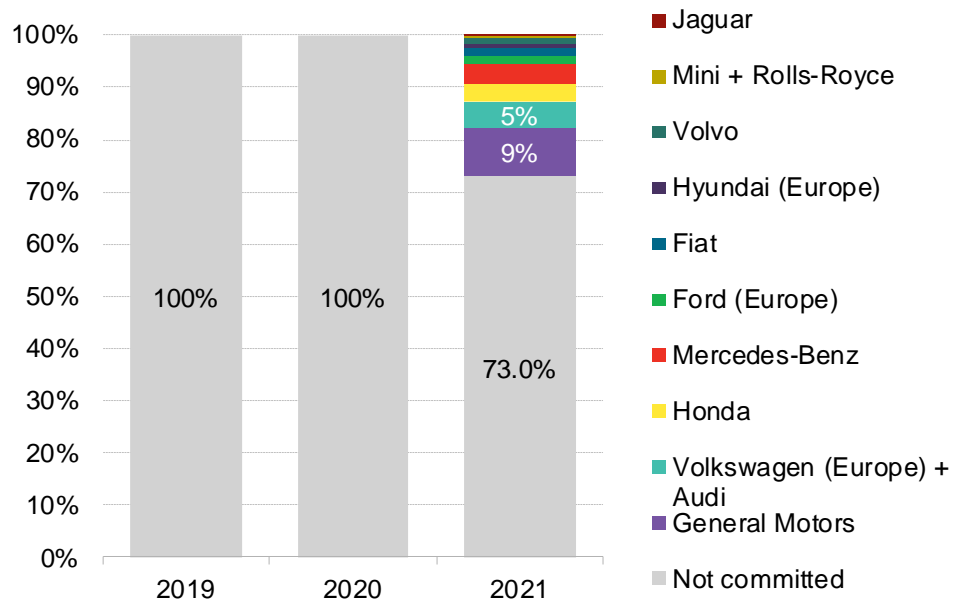
Source: BloombergNEF.

Share of U.S. auto sales covered by states with and without ICE phase-out targets



Source: BloombergNEF, NADA.

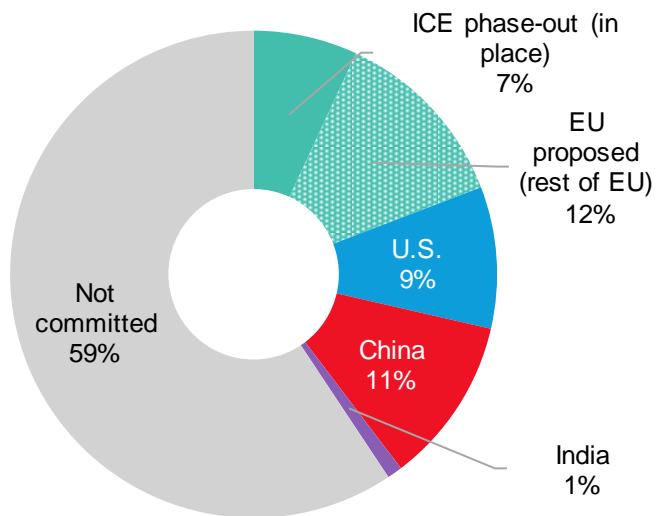
Share of passenger vehicles sold by automakers with an ICE phase-out announcement



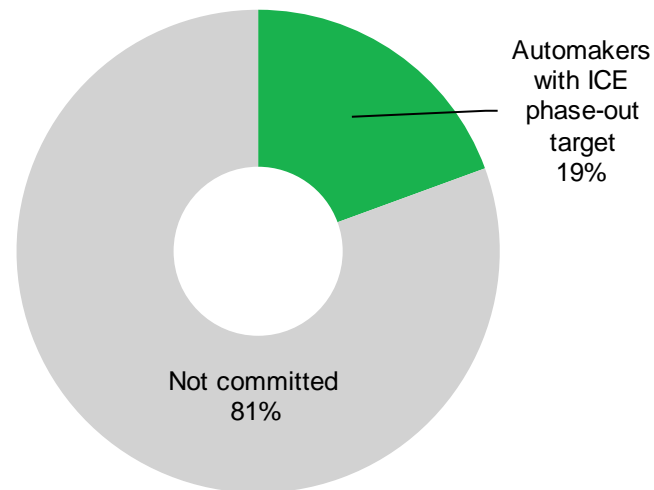
Source: BloombergNEF, Marklines, various automakers. Note: Share of 2020 passenger vehicle sales. Announcements made through September 2021.

Automaker and country ambitions

Country ICE phase-out targets and interim / partial ZEV targets by 2035



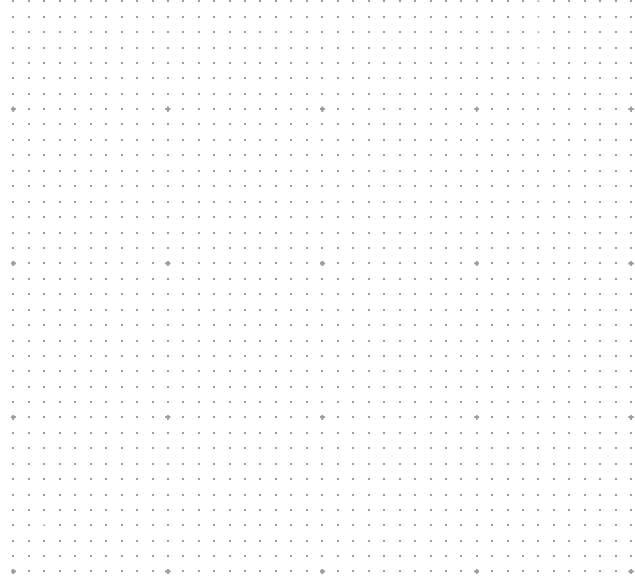
Automakers' ICE phase-out targets by 2035



Source: BloombergNEF.

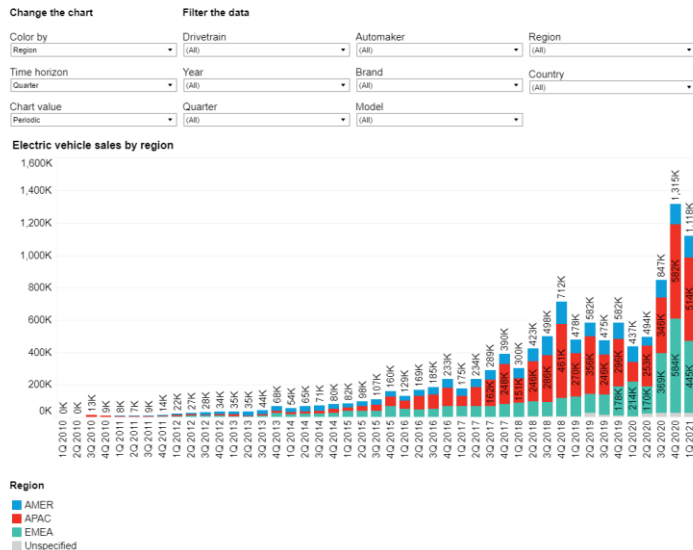
Tools & research library

Useful elements for BNEF clients



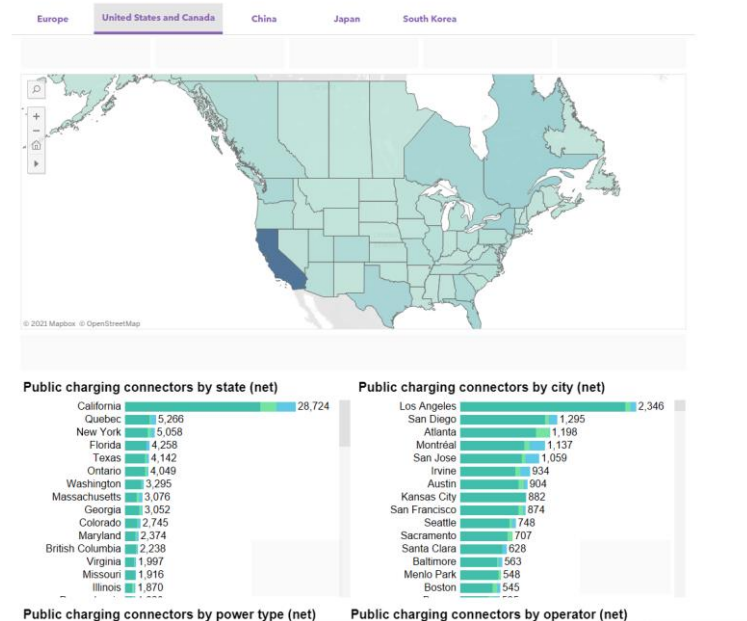
BNEF has a wide array of online tools

BNEF EV sales hub










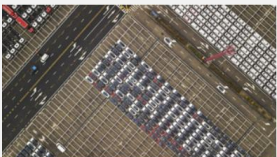







Source: BloombergNEF.

BNEF charging infrastructure hub



Theme pages

Intelligent Mobility		Electrified Transport		
Mobility Services	Safer and Smarter Vehicles	EV Cost Competitiveness	Commercial EVs	EV Charging Infrastructure
				
Decarbonizing Ride-Hailing	Autonomous Vehicles	Fuel Economy Regulations	Implications of EV Adoption	Comparing EV Forecasts
				
Inputs and Impacts				
Critical Metals	Battery Supply Chain	Materials for Transport	Hydrogen	Road Fuels Outlook
				

Source: BloombergNEF.

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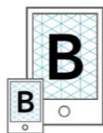
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