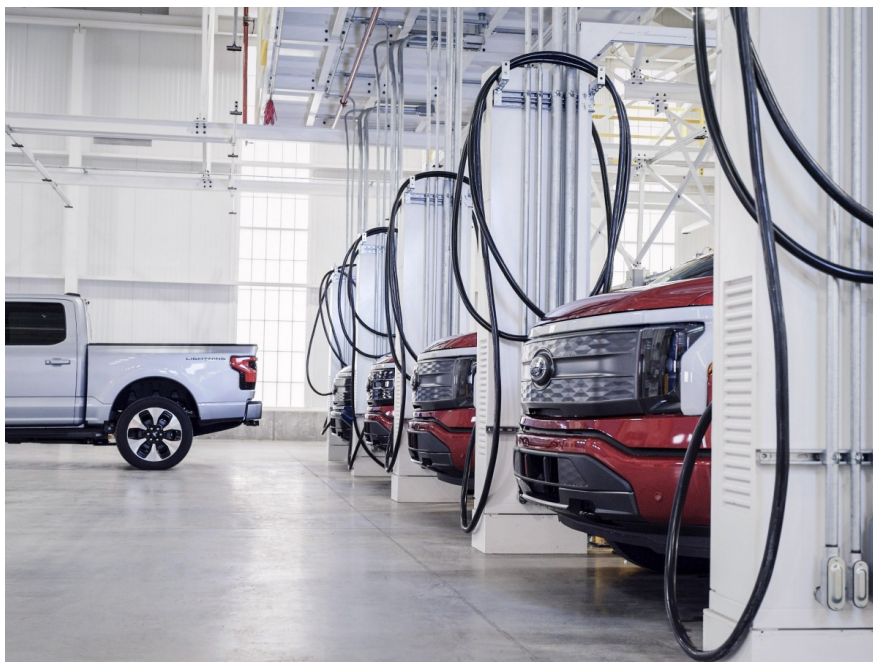


US electric vehicle market set for sustained growth despite stricter subsidy rules

Despite tougher rules for tax credits, US electric vehicle sales (including plug-in hybrids) are expected to grow to 1.4mn in 2023, accounting for 10% of total light-duty vehicle sales. This puts the US EV market in a better position to achieve the 2030 'step-up scenario' we've outlined, but it will take time to form a mature domestic EV value chain



US EV-sales are catching up on the back of support

We argued in [our previous article](#) that while the uptake of electric vehicles (EVs) in the US has been slow, times are changing. Indeed, the Biden administration has passed the landmark Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA), which allocates federal spending to improve EV charging infrastructure and offers considerable tax credits, respectively. This new policy environment is encouraging automakers to raise the level of EV ambition, triggering extra demand from consumers, and facilitating higher long-term EV growth in

the US, despite challenges from cost, infrastructure, and supply chains. On the back of the support framework, we have seen [the US catching up in electrification](#) with EV sales (full electric + plug-in hybrid) accelerating to 7% of total light-duty vehicle sales in 2022.

Strict qualifying rules for tax credits

The landmark Inflation Reduction Act will invest about \$12bn in clean vehicle credits, extending the EV tax credits of up to \$7,500 per vehicle. However, there are strict requirements for an EV to qualify for the full tax credit. These include price caps on EVs, income caps on customers, a rule that the final assembly of EVs must be in North America, as well as a series of requirements on battery and materials origins:

EVs selected on price, income, assembly and sourcing

- Retail price cannot exceed \$80,000 for an electric van, SUV, or pickup truck, and \$55,000 for any other type of EV.
- EV buyers' gross annual income cannot exceed \$150,000 for a single taxpayer, \$225,000 for a head of household, and \$300,000 for a married couple filing jointly.
- Qualifying EVs' final assembly must be in North America.
- 50% of the value of the battery components must be manufactured or assembled in North America.
- 40% of the value of the critical minerals needs to be extracted or processed in the US or a country with which it has a free trade agreement (FTA), or be recycled in North America.

Source: US Treasury

New qualification rules put locally-built models at the forefront

In late March 2023, the Treasury released battery and material sourcing guidelines for EV credit eligibility under the IRA. The guideline specifies that starting 18 April 2023, to qualify for full tax credits, 50% of the value of the battery components must be manufactured or assembled in North America, and 40% of the value of the critical minerals needs to be extracted or processed in the US, or a country with which it has a free trade agreement (FTA; discussed later), or be recycled in North America.

Alternatively, if an EV model meets the price, income, and final assembly requirements, but is only able to meet one of the two sourcing criteria, then the consumer will only be able to claim half (\$3,750) of the total credit.

EV tax credit budget provides sales and industrial traction

The IRA is set to give a boost to the development of the US EV manufacturing industry. If the \$12bn tax credit spending does stay in place, a maximum of 1.6mn eligible EVs can get the highest amount of credits. This should drive the scale-up of EV sales and production in the following years, as well as the introduction of new (more affordable) models. The tax credits won't be enough to secure long-lasting support but the total cost of ownership of EVs is expected to come down in the

run-up to 2030 and the subsidies create a foundation for further growth.

Prominent American EV-producing brands benefit in the short run

The new rules provide further clarity on the implementation of EV policy following rules announced earlier this year on price caps and the categorisation of EVs. Admittedly, the new guidelines will result in a [much smaller number of EVs eligible for the highest level of credits](#), with some qualifying for half. The new rules will put the qualifying models in a more attractive position. The most prominent Tesla models (Y and 3) can qualify for the full tax credits; so can GM (Chevrolet) on multiple models using its own Ultium batteries (applying nickel-cobalt-manganese-aluminum chemistry). For Ford, the F150 lightning fully qualifies.

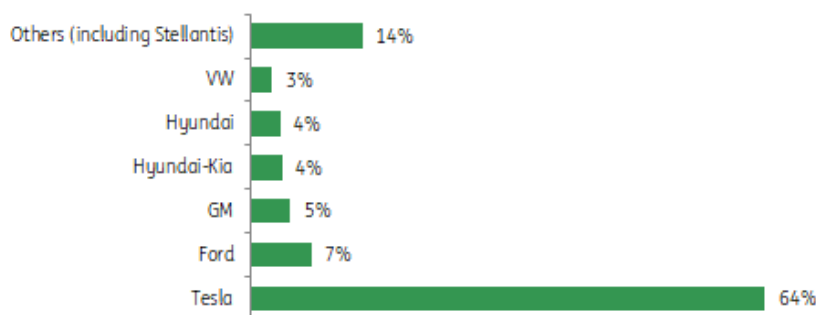
Although the VW ID.4 is able to qualify for full tax credits, many other EV models from European (e.g. VW and BMW), Korean (e.g. Kia, Hyundai), Japanese (Toyota) and Chinese brands (e.g. BYD) are currently not able to. This will put temporary downward pressure on US EV sales in the short run. Auto manufacturers that will not be eligible may have to reconsider commercial strategies in the short run to stay competitive.

Tesla still dominant, traditional manufacturers to gain ground

The full electric US market is clearly still dominated by Tesla, but its market share slipped from some 75% in 2022 to just under 65% in 2022 as full electric models from other brands like Ford ramped up EV production. Given the composition of the total light vehicle market and the available subsidies, other manufacturers including Ford, GM and VW are likely to keep gaining market share, especially when plug-in hybrid EVs are included. In a response to the increased competition, Tesla has cut its base prices more than once to continue its strong volume growth.

Tesla still by far the largest in full electric, but Ford, GM and VW are gaining ground

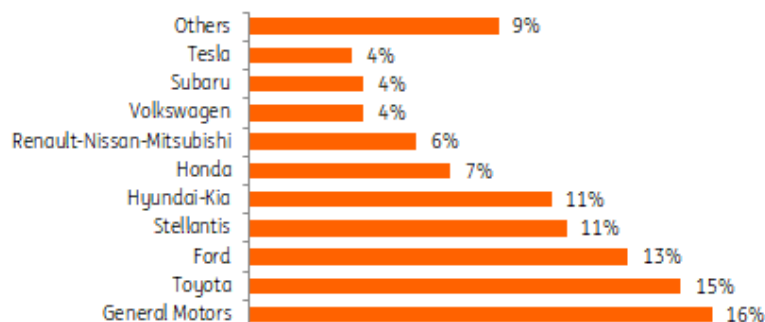
New full electric light vehicles (full electric) sales shares in the US (2022)



Source: InsideEVs, ING Research

GM still overall market leader in light-duty vehicles followed by Toyota and Ford

New light vehicle sales shares in the US (2022)



Source: S&P/IHS, ING Research

Car manufacturers plan to adapt supply chains

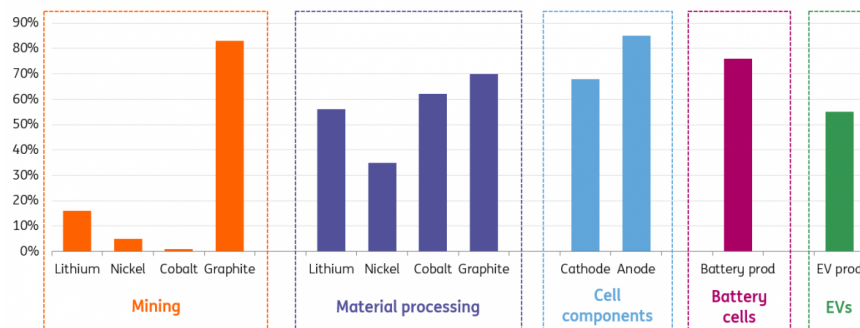
EV manufacturers looking to qualify for the tax credits will need to reroute supply chains, which is not an easy task. But recent [commentary](#) and announcements suggest several manufacturers are incentivised by the subsidy framework. Among them also major US market player [Toyota](#), which is trying to catch up in electrification. This means they need to form new business partnerships with new suppliers. It also means the US will not only need to rely more on exports from existing free trade partners such as Chile, Australia, and Canada, but also from more free trade partnerships, especially with countries with ample critical mineral reserves (China currently dominates global mineral processing but not mining). The US has recently achieved a free trade agreement (FTA) with Japan; it is also making progress in striking a similar deal with the EU.

As for the battery component requirement, it is true that China supplied a massive [75% of global production in 2021](#), but EV manufacturers can still meet this requirement by assembling the batteries in North America. That is why we are seeing manufacturers such as Tesla, BMW, VW, GM, Hyundai, Stellantis, Ford, and Honda investing in building battery manufacturing capacity. They are also ramping up EV production in North America to meet the final assembly requirement.

In the US, [70% of EV sales were assembled or produced domestically in 2020](#)—this number is lower than those in China (98%), Japan (79%), and Europe (76%). On the back of incentivised domestic production, the ratio in the US can quickly increase in the next years.

China still has a dominant position in the EV (battery) supply chain

Share of China in the global EV battery supply chain (2021)



Source: IEA, BNEF, ING Research

Subsidies remain important to support electrification

For consumers, some EV models may not be as tempting without tax incentives. A more fundamental challenge is the stickiness of consumer preferences. According to a recent poll conducted by the Associated Press and the University of Chicago on US consumers, just 19% of the respondents indicated that they are 'very likely' or 'extremely likely' to buy an EV, with 22% saying they are 'somewhat likely' to do so. A lowered level of tax credits could mean a slower switch to EV purchasing.

And importantly, EV costs are generally still not on par with those of internal combustion engines, and tax incentives have historically helped supercharge demand. In the US, the average price of an EV is \$58,000, compared to an average of \$46,000 for vehicles in general. This means more affordable models will have to be introduced to the market for wider adoption.

On a positive note, with at least some tax credits available, we should see a shift in the profiles of EV buyers. EVs are traditionally sought by premium buyers, and there are adoption hurdles in charging infrastructure and driving range. But the tax credits can open EV purchasing opportunities to more people across more demographic and income groups.

Car leasing is gaining popularity and will be a work around for subsidies

One way to work around the requirements is through EV leasing, as leased cars are not subject to the sourcing or price limits. This way, EV producers will be able to access tax credits more easily and also give consumers an opportunity to try out EVs before they commit to buying one. Today, an increasing number of customers are choosing to lease an EV, and we expect this trend to continue in the future. Meanwhile, it is worth remembering that while leasing companies can pass the credits on to customers through lower prices, it is not guaranteed that they will do so.

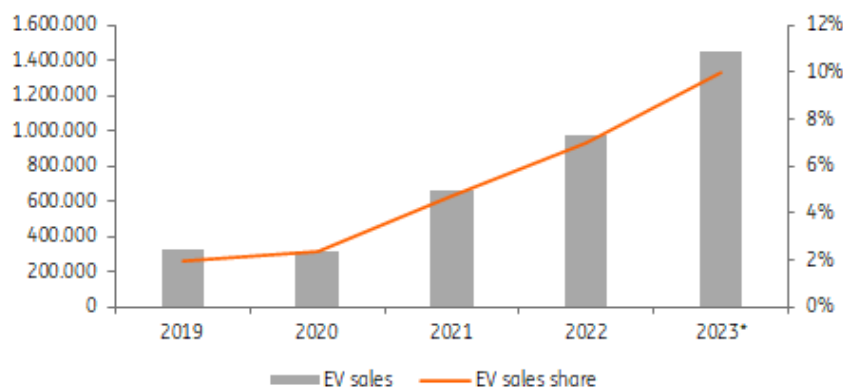
Resilient EV outlook for 2023: further growth to 10% of sales expected

The sourcing requirements under the IRA could hit EV sales initially. However, the range of models qualifying is less restrictive than initially expected and we expect sales to catch up over the course of the year. The picture for 2023 is still positive, also because customers can claim for partial tax credits under the IRA. The fact that EV makers such as Tesla have been slashing prices will also probably encourage more consumers to buy EVs. The waiting list for the Ford F150 lightning is a sign demand is there.

With the positive momentum so far, we estimate that US passenger EV sales will rise to some 1.45mn for 2023, a 48% year-on-year jump which is the same as the increase in 2022. One considerable improvement will be the percentage of EV sales in total light-weight vehicles—we are maintaining our projection that US new EV sales will account for 10% in 2023, up from 7% last year.

US EV sales forecast: heading to 10% of total sales

Development of sales volume of EVs (BEB + PHEV) and share in total sales



Source: BNEF, IEA, US Bureau of Economic analysis, ING Research

‘Step-up’ US EV scenario for 2030 more achievable

The outlook for 2023, as well as other recent developments in the EV industry, suggest that the US is now in a better position to achieve [the ‘step-up’ scenario we outlined](#), where the share of new EV sales (full electric + plug-in hybrid electric) reaches 50% by 2030.

Company targets and policy support create a ‘step up’ environment

1. Companies in automotive, logistics, and retail industries are setting up ambitious electrification goals. Ford, for example, aims to produce 600,000 EVs globally this year, much of which targets the North American market. GM plans to sell 1mn EVs by mid-decade. All this will increase US EV manufacturing capacity and bring US EV supply closer to demand.
2. We will see a more resilient US EV supply chain, as the IRA has already spurred \$45bn of

announced private-sector investment in the entire value chain with more to be expected. It is also crucial for EV manufacturers to plan early on, since establishing new supply partnerships takes time and the availability and prices of critical materials can fluctuate significantly.

3. The Biden administration is proposing restrictive regulations to boost EV production, in addition to pure incentives. The US Environmental Protection Agency has announced tough limits on automotive tailpipe pollution; the rule is forecast to drive up the share of EV sales to two-thirds by 2032.
4. Investment is being directed at improving the charging infrastructure. The IIJA is allocating \$15bn to build more EV charging stations and electrify buses and ferries in the US. This investment is not overly generous, but it can still enhance consumer confidence. Companies are also making efforts. Walmart is adding 1,300 EV stations in the US by 2030; Mercedes-Benz plans to build 2,500 high-powered EV chargers across the US by 2027.

Despite the strict sourcing requirements for tax credits, the IRA can still incentivise more EV demand. In the long-term, the US is set to become a leader in the EV race, with enhanced domestic manufacturing capacity and a more mature supply chain. This will then have a supercharging effect on the US market, lead to better economics of EVs, and encourage more consumers to switch to buying one.

Risks from the 2024 elections

One clear risk that could affect our outlook for the US EV market in 2030 is the US 2024 elections. If Republicans take control of Congress, and if a Republican president is elected, the IRA risks being repealed, and the absence of tax credits would hurt US EV production and sales. Nevertheless, it is also possible that even if the IRA were to be repealed, there could still be bipartisan policy to support the EV industry.

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