

## US Autos & Industrial Tech

# The price is right? The case for Tesla to be more selective on US price cuts; analysis on EV pricing and IRA

EV pricing has been a key focus for investors, with the price reductions from OEMs creating questions about demand elasticity and profit implications, as well as on EV affordability and EV share compared to ICE and hybrid vehicles.

**Three key points we make in this report:** **1)** We believe that Tesla and Rivian should generally be firm with pricing in the US based on our analysis of elasticity of demand/profits, and the relative attractiveness of EV pricing for certain models especially with IRA credits, although targeted price reductions (coupled with reduced features/BOM cost) could be logical for entry level trims; **2)** EVs (BEVs) are a competitive option for at least a mid teens percent of the US market, or ~2X current penetration rates. We remain positive on long-term EV demand in the US, although recognize that EV growth is slower in the near to intermediate term. We also continue to expect strong hybrid and PHEV growth. **3)** While we take no view on the outcome of the upcoming elections in the US, we estimate that reducing the number of vehicles eligible for IRA credits (which could occur with a change in the presidential administration) could affect 5-15% of EV demand, and repealing the IRA (which would require both Congressional and Presidential support) could affect 10-30% of demand, although we'd expect the impact to reduce over time. Importantly, we believe that global regulatory policies and improved EV cost/choice over time would still be supportive of long-term EV growth.

**Mark Delaney, CFA**

+1(212)357-0535 |  
mark.delaney@gs.com  
Goldman Sachs & Co. LLC

**Will Bryant**

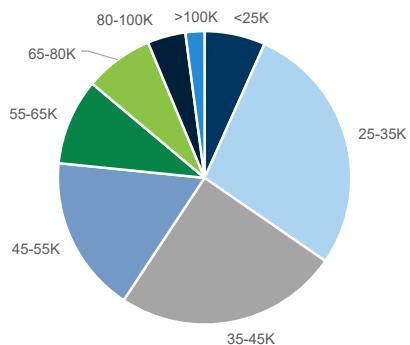
+1(212)934-4705 | will.bryant@gs.com  
Goldman Sachs & Co. LLC

**Morgan Leung**

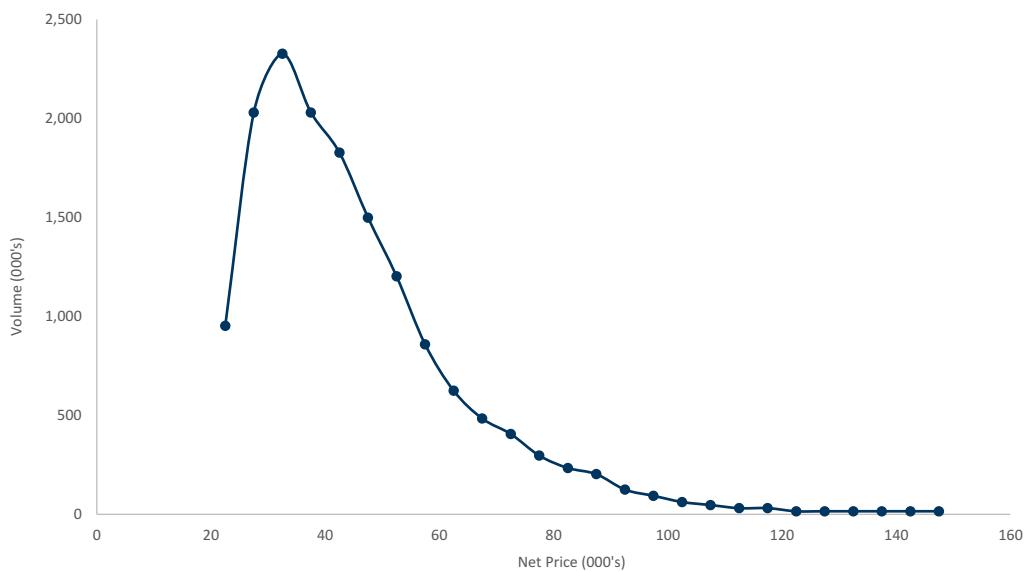
+1(212)934-4683 |  
morgan.leung@gs.com  
Goldman Sachs & Co. LLC

**Aman Gupta**

+1(212)357-1549 |  
aman.s.gupta@gs.com  
Goldman Sachs & Co. LLC

**Exhibit 1: 2023 US light vehicle volume by price band**

Source: Goldman Sachs Global Investment Research

**Exhibit 2: Illustrative price to volume overview of US auto market**

Source: Goldman Sachs Global Investment Research

**PM Summary**

We believe our analysis suggests that Tesla and Rivian should be targeted on additional price reductions in the US that are faster than cost downs, with the Model 3/Y already affordable to many US consumers, and Rivian generally selling to a less price sensitive consumer at ~\$70K+ price points (and bringing BOM costs down materially faster than price will be necessary for Rivian to reach a positive gross profit). Moreover, while our analysis shows that a 1% price reduction generally correlates to a low single digit increase in volume in the mainstream part of the market, we estimate that incremental broad-based price cuts to Model 3/Y would be negative to profit dollars at least in the short-term.

Pricing is already attractive for vehicles like Model Y vs. ICE offerings especially when considering IRA incentives, in our opinion. Tesla now effectively competes in the

\$35K-\$55K portion of the market that we believe accounts for 35-45% of total volume with Models 3 and Y. A Model Y Rear-Wheel Drive (RWD) starts at a \$44K list price presently (and ~\$42K for new vehicles being sold from inventory), and with \$7.5K of IRA credits is relatively similar on up-front cost with a typically configured small SUV like the RAV4 and CRV that sell in the low to mid \$30K range on average in the US. Moreover, Model Y offers operating savings from lower fuel costs (suggesting a better TCO even if the Model Y is slightly more expensive up-front) that we estimate is at least \$500 per year for a typical consumer if charging at home (even assuming no additional state or local subsidies), as well as performance/acceleration benefits.

**We believe there could be merits to targeted modest price reductions for the basic vehicle trims, especially if coupled with bill of material (BOM) reductions** (e.g., a RWD Model Y or new trim option with a smaller battery supporting ~200-225 miles of EPA rated range vs. the 260 currently offered for the RWD Model Y). A more entry level configuration with a ~\$40K starting price, when paired with government credits like the IRA, could make a Model Y RWD more directly cost comparable up-front with even more basic/entry trims of small ICE SUVs like the RAV4/CRV. Tesla and Rivian have strong brand loyalty (per S&P and Consumer Reports), suggesting that bringing in new owners will help them to sell future vehicles to these owners, as well as an ability to monetize their fleets with software and services. Finally, expanding volume will also help with overall cost leverage for the companies. Importantly, expanding the market while sustaining prices and offering exclusive features for higher-end trims (e.g., AWD, faster acceleration, longer-range, premium colors) could preserve better overall economics with incentives for buyers to mix up.

We recognize the need to keep factories operating at reasonable volumes and avoid excess inventory, and that the auto market is competitive. However, we still see an opportunity to be more measured on the price-volume spectrum globally especially with Tesla not guiding to a specific vehicle delivery target for 2024. Separately, we'd note the high degree of competition in China could require a somewhat more aggressive pricing approach from Tesla in that region specifically. Inventory discounts rather than lower list prices could remain a tool for Tesla to balance inventory on hand globally.

Both Tesla and Rivian need to be mindful in our opinion of keeping a price tier for upcoming lower cost/more affordable vehicles that are designed with much lower BOMs, including the upcoming Tesla model using its next-gen architecture that the company hopes to begin shipping in 2H25 (we believe at a ~\$25-30K price point, and referred to in the media as the 'Model 2'), and the two-row SUV named R2 from Rivian that is scheduled to start shipping in 2026 (we believe likely priced in the \$40-\$65K range). These models could open up portions of the market that are not accessible with the current offerings.

Offering lower-cost vehicles (e.g., 'Model 2' and R2) and reducing prices only for basic trims (and with BOM reductions) would align with both Tesla's and Rivian's corporate goals tied to the environment, while also supporting profit dollars overall, in our opinion.

Separately, **our analysis of US buyer demographics and vehicle mix** (e.g., households eligible for IRA credits, have a garage and theoretically access to home

charging, and buying vehicles in segments where EVs are cost competitive like premium sedans or small SUVs) **suggests that EVs are likely a competitive option for at least a mid teens percent of the US market (or at least ~2X the current EV penetration rate for new light vehicle sales of ~8%)**. Increased EV attractiveness longer-term could be driven by: 1) expanded EV charging access and better charging station reliability; 2) improved service and support (including in person/phone based customer support, and more competitive repair costs); 3) increased vehicle affordability as the industry scales and matures (especially for larger vehicles with sizable batteries, and low priced entry vehicles for the most price sensitive consumers such as a 'Model 2'); 4) more vehicle choices. Managing and covering the cost of an L2 home charger install could be one tool OEMs use that is not a direct price cut, to help with EV adoption, especially for new consumers that are less familiar with how to switch to an EV (Ford made the point on its 4Q23 earnings call that it's hard for consumers to do the TCO math for EVs).

We've received questions from investors about what may happen if IRA credits are reduced due to a change in the US Presidential administration, as former President Trump has said he'd seek to reduce EV credits if elected. We take no view on the outcome of the upcoming elections, but believe it is helpful frame potential scenarios using the demand elasticity analysis from this report. If IRA credits were materially curtailed due to a change in the US presidential administration, we believe this would affect 5-15% of US EV volumes in the short-term (note several models like the Model 3 are not currently eligible for credits for consumer purchases, even under stricter IRA rules some vehicles may still receive credits, and OEMs/dealers could partly offset lower federal subsidies). If the IRA were repealed (which would require Congressional and Presidential support and thus would be a lower probability event), this could potentially affect 10-30% of EV sales at least in the near-term (given the loss of 45X credits for batteries in this scenario). While a reduction in credits would likely impact EV demand in the US, global emissions/regulatory policies (including in Europe and Canada) as well as economies of scale (e.g., developing EV architectures that can be used globally) and in turn improved EV cost/choice over time would still be supportive of long-term EV growth in the US in our view.

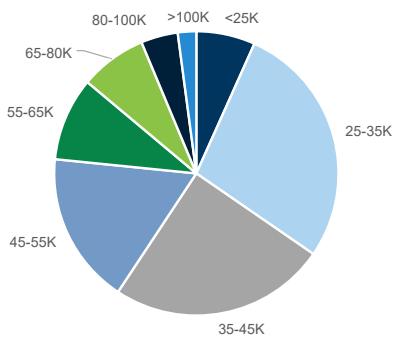
It's important to note that we continue to expect hybrid and PHEV growth too, and there has been strong consumer interest in hybrids. We expect PHEV mix to grow from 1.5% in 2023 to 5% in 2025, and hybrid penetration to increase from 8% in 2023 to 11% in 2025. YTD, PHEVs made up 1.9% of US mix, Hybrids were 8.5%, and BEVs were 8.1% per Motor Intelligence. We note the potential for more PHEVs to become eligible for IRA credits given the need for just 7 kWh battery pack sizes.

We estimate that EV (BEV) mix will increase from just under 8% of the US market in 2023 to 9.25% in 2024, 13.5% in 2025, and 50% in 2030. While we remain positive on long-term EV adoption, we believe risk to our 2024/2025 estimates is to the downside given recent product ramp issues (e.g., the Blazer EV and F-150 Lightning) and the ongoing focus of traditional OEMs on profit over volumes (and ramping EV programs more slowly in the near term).

### Industry volumes by price segment

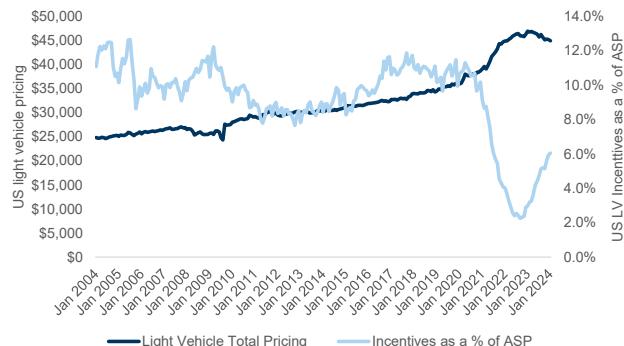
Most vehicle sales (about 70%) in the US occur at a price between \$25K and \$55K per our industry discussions ([Exhibit 3](#)), and the average price of a new vehicle in the US including incentives is currently ~\$45K per the BEA ([Exhibit 4](#)).

**Exhibit 3: 2023 US light vehicle volume by price band**



Source: Goldman Sachs Global Investment Research

**Exhibit 4: Average light vehicle net price, and incentives**

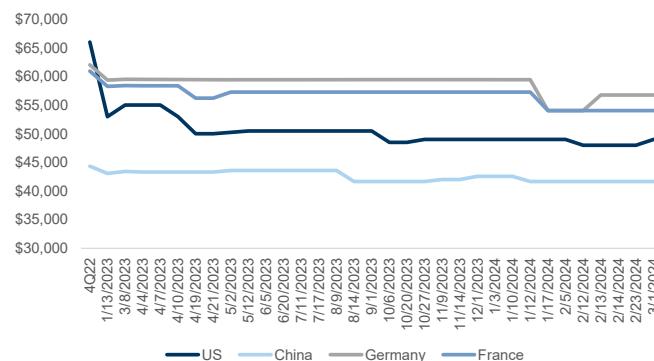


Source: BEA, Wards

As we argued in our January 2023 note, [Analyzing the impact of reduced Tesla vehicle prices](#), when Tesla lowered Model Y Long-Range pricing from the mid \$60K range to the mid \$50K range it roughly doubled its addressable market. We viewed this reduction as a positive given the material expansion to its TAM at still attractive margins (and also helping Tesla to gain share and improve cost per unit).

Tesla has continued to reduce prices since then ([Exhibit 5](#)), and the Tesla Model 3 (currently starting at \$39K and not eligible for IRA credits when being purchased by consumers) and Model Y (starting at \$44K for Rear-Wheel Drive and \$49K for the Long Range Drive skus, prior to \$7.5K of potential IRA credits) now effectively compete in the \$35K-\$55K portion of the market that we believe accounts for 35-45% of total volume. These price cuts have pressured margins, with Tesla's automotive non-GAAP gross margin falling from 24% in 4Q22 to 17% in 4Q23, and its consolidated GAAP EBIT margin has declined from 16% to 8% over this same period.

**Exhibit 5: Tesla Pricing for Model Y Long Range**



Source: Company data

This industry pricing data would imply that a 1% change in price roughly

**correlates to a low single digit change in volume (when looking at sensitivity in the mainstream part of the market where the Model 3/Y compete). Importantly, we estimate that like for like price reductions going forward on Model 3/Y are modestly negative to overall near-term profit dollars.** Tesla sold ~394K Model Ys in the USA in 2023 per Motor Intelligence, and we estimate that gross profit per vehicle for Tesla is roughly \$7K USD. We estimate that lowering prices by \$400-\$500 (or about 1%) for Model Y (and assuming ~\$50-\$150 savings in savings per vehicle from higher volumes and better cost leverage), would result in a low to mid single digit reduction in up-front total gross profit dollars (although Tesla could potentially make this up over time on sales of software and services to its fleet).

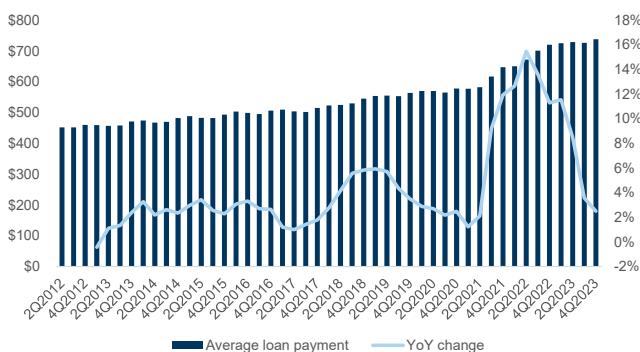
Lowering the RWD Model Y vehicle starting price to just under \$40K (or creating a new trim option) would make it roughly up-front cost neutral when counting government credits with even more basic trims of the RAV4 and CRV (where MSRPs start at ~\$29K but with typical options sell in the low to mid \$30K range), and we see merits to having a choice for more cost limited buyers (in particular given the opportunity to bring new drivers into the Tesla ecosystem for the long-term, to sell software & services, and to limit the pricing umbrella for competitors/gain scale). This could be funded in part with BOM cost reductions like a smaller battery (~200-225 miles rather than the 260 mile EPA range currently offered). However, we believe that reducing prices of other vehicles, such as the Model Y Long Range and Performance, should be much more limited (if at all).

For Rivian, its consumer vehicles (R1) are generally priced at \$70K and up, which accounts for about 10% of US industry volume, and Rivian is generally selling to a less price sensitive consumer in our view. Moving to the \$65-70K price band would open up a low to mid single digit percent of incremental industry volume, but we believe this should only be considered with substantial BOM cost reductions. Importantly, Rivian needs to reduce BOM meaningfully faster than prices to reach a positive gross profit. Rivian's Chief Commercial Officer, Dr. Kjell Gruner, was previously at Porsche and has experience operating a premium brand and sustaining margins.

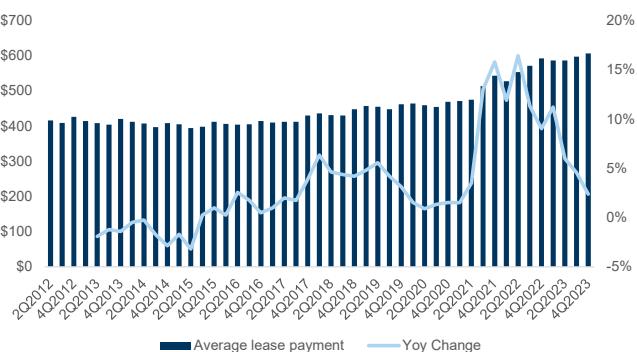
For both OEMs, we believe BOM reductions need to take into account quality/brand considerations (e.g., removing ultrasonic sensors at least initially impacted park assist functionality for Tesla). Different color choices or badging by trim could help sustain product segmentation in the mind of consumers.

### **How about the need to address vehicle affordability due to higher interest rates?**

The monthly cost of a loan or lease has significantly expanded in the US since 2019 per data from Experian, with lease payments in 4Q23 up 31% from 4Q19 to about \$606 per month and loan payments up about 31% to about \$738 per month in the same period ([Exhibit 6](#) & [Exhibit 7](#)).

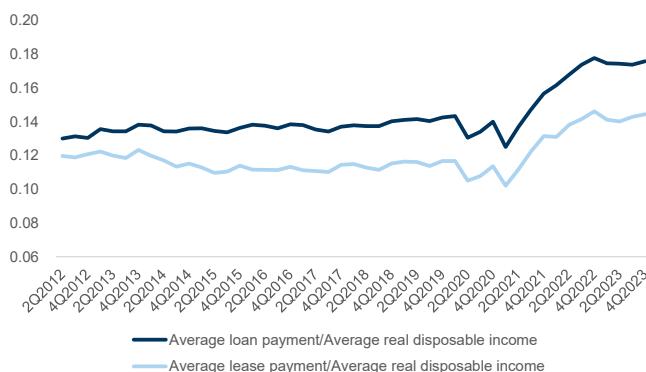
**Exhibit 6: Average auto loan payment since 2012**

Source: Experian

**Exhibit 7: Average auto lease payment since 2012**

Source: Experian

Average monthly payments have also risen as a percent of monthly disposable income by about 23% since 4Q2019.

**Exhibit 8: Average loan and lease payments to average real disposable income**

Source: FRED, US Bureau of Economic Analysis (BEA), Goldman Sachs Global Investment Research

Tesla has argued that lower prices are needed to offset higher borrowing costs. Assuming a 10% down payment and industry average car loan rates (about 8.7% currently vs. ~5.5% in 1Q19), monthly payments for a Tesla in 1Q24 (without IRA credits) would be relatively similar compared to 2019 (at \$700-\$800 per month), but we estimate that affordability for a Tesla is actually better now than it was in 2021. With IRA credits, Tesla vehicle affordability has significantly improved compared to these prior periods.

**We believe that BEVs are a competitive option for at least a mid teens percent of US households, or at least ~2X the current EV penetration rate**

We believe that factors including fuel savings (especially with access to home charging), performance/safety, and government incentives (e.g., IRA credits) make EVs competitive for a meaningful part of the US population.

For instance, **given that about two-thirds of US housing units had a garage or carport based on the US Census Bureau's annual housing survey**, we believe the

savings on fuel costs would be compelling for a significant part of the US population that has access to a garage. **We estimate that for the typical US owner that drives ~13K miles per year, charging at home would save \$500-\$1k per year on fuel costs** (even assuming no additional state or local subsidies for at-home charging). There would be a one time ~\$1K cost to install a home L2 charger (managing and covering the cost of an L2 home charger install could be one tool OEMs use that is not a direct price cut to help with EV adoption, especially for new consumers that are less familiar with how to switch to an EV).

**Moreover, on average, each US household has about 2.28 vehicles and about 59% of US households had 2 or more vehicles in 2022, per the US Census Bureau. The average person in the US drives about 37 miles per day, per NHTSA, so we think it is feasible for households to have one BEV for daily use and an ICE vehicle for longer drives/road-trips, at least in the near to intermediate term until charging coverage improves and range anxiety subsides.**

We also note that Tesla addresses two very important segments of the US market with the Model 3 and Model Y, two-row SUVs and sedans. Per Motor Intelligence, SUVs made up 56% of total US industry sales volumes in 2023. **The small and premium SUV segments where the Tesla Model Y and X as well as the R1S compete made up about 30% of US market volume in 2023. Premium sedans (where Tesla offers the Model 3 and S) made up a mid single digit percent of the market.**

On regulatory credits, the income limits to qualify for IRA credits are \$300K for married couples filing jointly, \$225K for heads of households, and \$150K for others. Per the US Census Bureau, 11.9% of households made \$200K+ and 9.2% of US households made \$150K-\$200K in 2022. Therefore, **we assume that ~80-90% of US households qualify for IRA credits.** We also note that certain states offer additional EV tax credits, rebates, and exemptions. Finally, leased vehicles do not have an income limit to receive IRA credits, at least as the law is currently being administered.

**All together, we estimate EVs are already a competitive economic choice and address most use cases for at least a mid-teens percentage of the market, or at least 2X the current ~8% share that BEVs have of new US vehicle sales.**

Increased EV attractiveness longer-term could be driven by: 1) expanded EV charging access and better charging station reliability; 2) improved service and support (including in person/phone based customer support, and more competitive repair costs); 3) increased vehicle affordability as the industry scales and matures (especially for larger vehicles with sizable batteries, and low priced entry vehicles such as a 'Model 2' for the most price sensitive consumers); 4) more vehicle choices.

**Surveys on consumer willingness to buy an EV suggests room for EV volume growth, but less interest than in 2021**

According to a 2023 survey by S&P Global Mobility published in November, 67% of respondents would be open to getting an EV. This is up from 58% in 2019 but down from 86% in 2021.

Per the survey, affordability is the main reason consumers would not purchase an EV with nearly half of respondents globally considering EV prices to be too high. Charging access and reliability was another reason some consumers would not be open to an EV.

The top reasons for purchasing an EV or hybrid has remained relatively consistent over the past few years. The main reasons to purchase an EV include fuel savings (69%), environmental benefits (56%), and performance/driving experience (31%).

### **What happens if IRA credits go away?**

We've received questions from investors about what may happen if IRA credits are reduced or eliminated, as former President Trump has said he'd seek to reduce EV credits if elected. IRA credits could be reduced by actions from the executive branch, but eliminating the IRA would require both Congressional and Presidential support. We take no view on the outcome of the upcoming elections, but believe it is helpful to frame potential scenarios using the demand elasticity analysis from this report.

As of February 2024, the US Department of Energy's website lists over 20 EV models and a handful of PHEV models that qualify for IRA credits. We estimate that the EV vehicle models that currently qualify for IRA credits make up roughly ~30-50% of US EV deliveries (although some buyers of those vehicles are ineligible for credits due to the income limits). However, business EV purchases (including leasing vehicles to consumers) are not limited by battery content or income restrictions (and thus vehicles not on the DOE list could get credits).

For PHEVs, we estimate that the PHEV platforms that qualify for IRA credits made up roughly 40-60% of PHEV volumes in 2023 (PHEVs comprised ~1-2% of total US vehicle sales in 2023).

The Treasury Department noted that more than 19.5k point of sale (POS) deductability requests totaling ~\$135 mn in credits were made between Jan 1 and Feb 6 of this year. Of this, ~17.5k requests were for new vehicle purchases.

It is difficult to determine what percentage of the market would be IRA eligible in 2025, as battery requirements become more stringent but OEMs are also seeking to adjust supply chains to access credits.

We also believe that a meaningful percent of EVs are benefiting from 45X credits of up to \$45 per kWh for batteries, which could be ~\$2.7K per vehicle for a 60 kWh pack, and we estimate that many EVs being sold by 2025 would have some level of 45X support as the industry ramps up US battery manufacturing.

In a scenario where there is a meaningful reduction in IRA credit eligibility due to executive branch actions on how to interpret IRA rules, we believe this could lead to a 5-15% reduction in EV volumes in the short term, which assumes a 10-15% price impact for a quarter to half of US EV sales (note that some vehicles could remain eligible for credits, and OEM pricing could mitigate the net effect). If the IRA were repealed, this would likely impact the majority of EV sales in 2025 in the market (given the 45X credit effect), with some vehicles losing both the \$7.5K consumer credits and embedded 45X battery support, and other vehicles only impacted by the loss of 45X support. In this

type of scenario we'd assume a 10-30% impact on EV volumes in the short-term. We'd note that in Germany in early 2024 Tesla vehicle sales were down 26% yoy after losing access to the €6.75K credit (noting, however, that there may have been some pull in of demand from early 2024 into December 2023 as many automakers, including Tesla, agreed to cover the credit from mid-December through year-end 2023).

While a reduction in IRA credits would likely impact EV demand in the US, global emissions/regulatory policies (including in Europe and Canada) as well as economies of scale (e.g., developing EV architectures that can be used globally) and in turn improved EV cost/choice over time would still be supportive of long-term EV growth in the US, in our view.

### Stock implications

**We are Neutral rated on both Tesla and Rivian, and increased confidence on the path to improve margins over the near-to-intermediate term is something that could make us more positive on each stock.**

We continue to see the best investing opportunities among our broader 'supplier' coverage, including companies with higher content on EVs and a wide range of OEM exposure, such as TEL, APH, JBL, and APTV. These companies all generate strong margins and FCF. While OEM profits are directly impacted by the negative pricing, we see suppliers as benefiting from the higher volumes that lower EV pricing creates (albeit partly mitigated by potentially more difficult pricing that OEMs will seek from suppliers given the market conditions).

**For Tesla,** while we continue to believe that Tesla is well positioned for longer-term growth given its leading position in the EV and clean energy markets (which we attribute to factors including its ability to offer full solutions including charging, storage, software/FSD and services, and with a strong cost structure), we believe that softer near-term EV market conditions are an overhang on the stock. Given the recent pricing pressure, especially in China, we believe risk to our estimates is currently to the downside.

Our 12-month price target is \$220, and is based on 50X applied to our Q5-Q8 EPS estimate including SBC. We believe an upside scenario for the stock over the next 12-24 months could be ~\$300 using a multiple of 50X-55X applied to 2026E EPS (note we model 2026 EPS including SBC of \$5.40 and excluding SBC of \$6.00). We believe a downside scenario could be ~\$70-\$90 using a multiple of ~30X applied to 2024 EPS (note that we model 2024E EPS including SBC at \$2.45 and excluding SBC at \$3.00).

Key downside risks to our view relate to potentially larger vehicle price reductions than we expect, increased competition in EVs, delays with products/capabilities like FSD/the third generation platform/4680, key person risk, the internal control environment, margins, and operational risks associated with Tesla's high degree of vertical integration. Upside risks include faster EV adoption and/or share gain from Tesla, a stronger macroeconomic environment for new vehicle sales more generally, earlier new product launches than we expect (e.g., a vehicle using the third generation platform), and an earlier/larger impact from AI enabled products (e.g., FSD and Optimus) than we

currently anticipate.

**For Rivian**, we believe more difficult market conditions for EVs, including on pricing, will be a headwind in 2024 and an overhang on the stock, but we believe Rivian can still improve profitability over the course of the year as it benefits from material cost reductions and vehicle design improvements, as well as growth in software and services. Whether the company can reach its positive gross profit target by late 2024 will be a key debate in our view. We believe progress with software & services, given Rivian's electronic architecture that is over the air updateable and strong brand/growing installed base, will be a key factor in longer-term profitability. We are Neutral rated on the stock with our positive view of Rivian's long-term potential offset by market headwinds.

Our 12-month price target is \$13, and based on 1.5X Q5-Q8 revenue. To the extent the multiple expanded to 3X (still in the lower-end of the historical range) the valuation would be ~\$25. If the multiple were to compress to ~1X, the valuation would be ~\$8-9. Key upside/downside risks to our view relate to EV adoption, volumes/price, the competitive landscape, and cash burn/the balance sheet.

#### Exhibit 9: Key Risks and Price Targets

Pricing as of March 4, 2024

Company	Ticker	GS Rating	Current Price	Price Target	PT Methodology	Key upside/downside risks
<b>Auto OEMs</b>						
Tesla	TSLA	Neutral	\$188	\$220	Q5-Q8 EPS	EV adoption, margins, market share, the auto cycle, operational execution, key person risk
Rivian	RIVN	Neutral	\$11	\$13	Q5-Q8 Sales	Pre-orders/sales volumes, production ramp, market share, margins, software/services mix, the auto cycle, and EV adoption
<b>Tier 1 Suppliers</b>						
Aptiv	APTV	Buy	\$78	\$118	Norm. EPS	Ability to grow CPV, the auto cycle, market share, margins, debt
<b>Electronic Components</b>						
Amphenol	APH	Buy	\$112	\$119	Norm. EPS	Sales trends, margins, capital allocation
** TE Connectivity	TEL	Buy	\$143	\$175	Norm. EPS	Revenue growth and auto demand, margins, and M&A
<b>EMS</b>						
Jabil	JBL	Buy	\$149	\$161	Q5-Q8 EPS	Revenue growth, trends at Apple and in key end markets, macroeconomic trends, margins, M&A, capital allocation
**TEL is on the GS Americas Conviction List						

Source: Goldman Sachs Global Investment Research

# Disclosure Appendix

## Reg AC

We, Mark Delaney, CFA, Will Bryant, Morgan Leung and Aman Gupta, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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**Growth** is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACP) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

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## Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

## Disclosures

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Goldman Sachs Investment Research global Equity coverage universe

	Rating Distribution			Investment Banking Relationships		
	Buy	Hold	Sell	Buy	Hold	Sell
Global	48%	35%	17%	62%	55%	43%

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