

Impact Report
Extended Version

‘24

Contents

Governance 3
01

- Mission 4
- Overview 6
- Materiality and TFCD Alignment 8
- Privacy and Security 14
- Responsible AI 18

Environment 19
02

- Displacing Fossil Fuels 20
- Carbon Impact of Our Products 25
- Carbon Impact of Our Operations 38
- Water, Circularity and Biodiversity 56

Product & Safety 65
03

- Our Product Ecosystem 66
- Making EVs Affordable 72
- Freedom to Travel 76
- Maximizing Safety 80
- Powering a Safe and Reliable Grid 89

People & Community 105
04

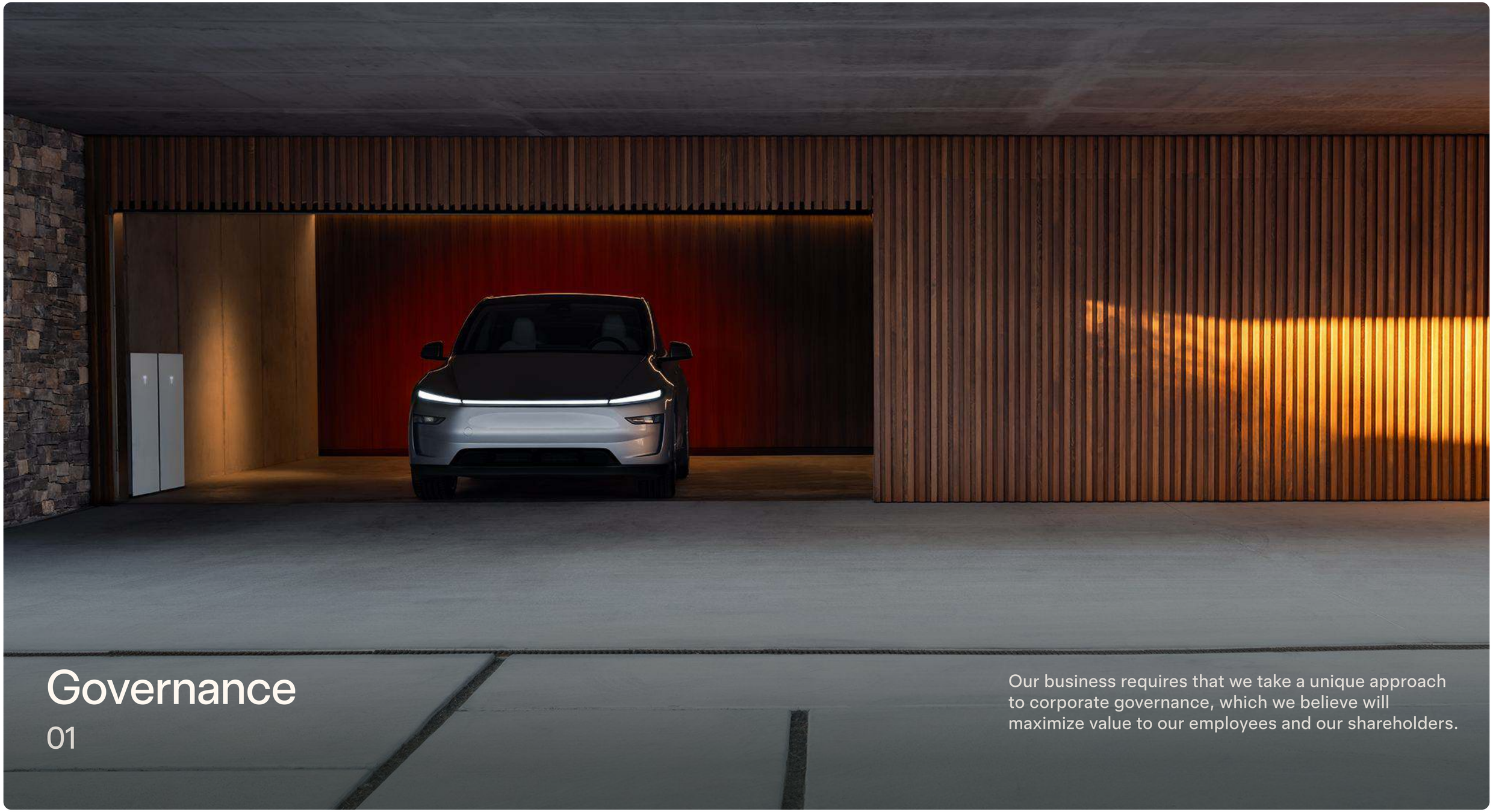
- Preparing the Workforce 106
- Centering Safety and Engagement 116
- Elevating the Employee Experience 129
- Social Impact 135

Supply Chain 138
05

- Our Approach to Responsible Sourcing 139
- Supply Chain Decarbonization 151
- Battery Circularity 156
- Responsible Sourcing of Materials 162
- Tools 182

Appendix 186
06

- TCFD, SASB and United Nations SDG Alignment 188
- Key Metrics 192
- Awards, Certifications and Additional Disclosures 199
- Management Assertion 202



Governance

01

Our business requires that we take a unique approach to corporate governance, which we believe will maximize value to our employees and our shareholders.



Our mission is to accelerate the world's transition to sustainable energy

We believe the best way to do this is by offering an ecosystem of products that comprehensively addresses our world's clean energy, transportation and manufacturing needs.

Governance

Mission	4
Overview	6
Materiality and TCFD Alignment	8
Privacy and Security	14
Responsible AI	18

Building the economy of the future

We are dedicated to solving the problems that have a meaningful impact on reducing GHG emissions and improving safety across sectors.

We are also focused on preparing the workforce for a sustainable future through our training, recruiting and employee retention programs.

To learn more, visit Tesla.com/Impact



Governance overview



Management

At Tesla, sustainability is everyone's job. Our Sustainability and Impact Team, in collaboration with leaders and teams from across the company, manages the collection, preparation and analysis of data used to create the content within this report.

Material issues and themes related to sustainability are presented to Tesla's Board of Directors (BoD) for review.

For more information on Tesla's corporate governance, refer to our Investor Relations site.

Board of Directors overview

Our BoD serves as a prudent fiduciary for shareholders and oversees Tesla's mission, purpose and strategy as well as the effectiveness of our impact priorities, initiatives and programs. With those responsibilities in mind, our BoD sets and upholds the highest standards for ethical behavior, corporate citizenship and corporate governance.

Our BoD oversees risks related to environmental, social and governance ("ESG") impacts, at both the full-board and committee levels. Our Audit Committee oversees ESG risks as part of our overall enterprise risk management approach, including risks relating to climate, data privacy, cybersecurity, human rights and our supply chain, among others.

Our Audit Committee also oversees our Impact Report and, as deemed appropriate, other ESG-related disclosures.

Our Compensation Committee oversees human capital management, employee engagement and relations. It also ensures our compensation philosophy and programs align compensation with the performance of our company and the success of our mission to accelerate the world's transition to sustainable energy.

Our Nominating and Corporate Governance Committee oversees our governance framework and practices, board composition, skills coverage and technical depth and diversity and engagement on ESG risks with shareholders.

Our BoD continuously evaluates its composition, seeking to ensure a balanced combination of skills, experience, background and viewpoint diversity to maintain the exceptional leadership necessary to fulfill our mission. We periodically add new, highly qualified independent directors to our BoD, including Joe Gebbia in 2022, JB Straubel in 2023 and Jack Hartung in 2025.

Sustainability assessment

In 2023, we conducted a sustainability assessment to identify areas that are material to our business and salient to society and the environment. This assessment resulted in the identification of 20 focus areas listed in the chart on the next page.

We started by surveying key global stakeholders, asking them to quantify the impact of certain topics on Tesla. Where appropriate, we followed up by conducting in-depth interviews with participants to contextualize quantitative scores.

Throughout the process, we partnered with a third-party expert. In 2024, we continued to periodically evaluate the saliency of these risks and opportunities to inform our overall strategy and have since addressed various focus areas through the initiatives described in this report.

For more information on how Tesla is addressing the focus areas listed in the chart on the next page, refer to our United Nations SDG Alignment on pages 190-191 in the appendix.

Final Assessment Findings

Our Employees · Our Supply Chain · Our Environment · Our Governance

Note: The following focus areas are ranked relative to each other and not relative to overall importance. We recognize this as a snapshot in time. As we continue to grow and the world changes, the degree of impact could naturally shift.



TCFD alignment

We have been working to align this report with the Task Force on Climate-Related Financial Disclosures (TCFD) since 2022.

While the focus of this report is to communicate the substantial positive impact Tesla is having on the world through our products, we understand the importance of discussing both the opportunities and risks presented by a changing climate.

Our dedicated governance strategy allows Tesla to assess, manage and act on its own climate-related risks. This strategy is based on recommendations from the TCFD.



Managing climate risk

Our Sustainability and Impact Team works with executives from across Tesla to make decisions affecting the business with consideration for our climate change strategy. The Vice President of Environmental, Health, Safety and Security (EHS&S) leads these interactions and is responsible for our decarbonization strategy, its implementation and its TCFD alignment.

Our Sustainability and Impact Team reports directly to the VP of EHS&S, and the Responsible Sourcing Teams report to the VPs of Supply Chain. These teams meet regularly with stakeholders from our Engineering and Design, Finance, Investor Relations, Legal, Policy and Supply Chain Teams, among others, to present megatrends and climate change updates. Executives report events directly to our BoD.

Tesla completes an annual Enterprise Risk Assessment (ERA) that integrates ESG-related risks by conducting interviews and surveys with members of management across the organization, including key stakeholders in sustainability. Through this exercise, climate-related risks are flagged to the relevant leadership team for management.

Beginning with our Gigafactories in Berlin-Brandenburg and Texas in 2021, we initiated site-specific reviews to identify physical climate-related risks that were then addressed during the design process of those factories. In 2022, this was followed by a systematic assessment of our entire manufacturing portfolio and any new locations.

Today, we continue to ensure that our current and future sites are prepared for the potential physical impacts of climate change by integrating assessments into considerations for site design and future expansion plans.

Using the results from these analyses, Tesla is actively working to harden our current and planned manufacturing portfolio against medium- and long-term climate impacts. Over time, we will begin to evaluate other assets such as our Sales, Service and Delivery network as well as our charging infrastructure, supply chain and other relevant assets.

As regulations around GHG emissions management evolve, we may need to make further capital investments that are different from or accelerated relative to existing plans, which may impact profitability. Policy changes may also impact certain practices or infrastructure, potentially reducing installed capacity because the technology used—such as with die casting or in our paint shop—cannot yet be fully decarbonized.

Physical climate risk assessment

Tesla performs physical climate risk assessments for our manufacturing and support locations, including for any new manufacturing sites.

We assess these sites using the following scenarios, which incorporate the science from the latest Intergovernmental Panel on Climate Change (IPCC) report: business as usual, emissions peaking in 2040 and 1.5°C -aligned—a combined approach using the latest Shared Socioeconomic Pathways (SSPs) and Representative Concentration Pathways (RCPs).

This includes the combined physical risks related to flooding, wind, heat stress, wildfires, precipitation and drought. We assess these hazards against the three scenarios across short- (2025), medium- (2030) and long-term (2050) time horizons.

Given the low likelihood of reaching a 1.5°C -aligned scenario, we report results on business as usual and emissions peaking in 2040.

In the short term, drought poses the biggest risk to our manufacturing portfolio, and in the long term, heat stress will become the more severe climate hazard.

Human rights are core to our mission

The ethical treatment of all people and regard for human rights is core to our mission of accelerating toward a sustainable future. Our Global Human Rights Policy formalizes our commitment to uphold, respect and embed human rights and the values they represent throughout our business.

We endorse and base our definition of human rights on the United Nation's Universal Declaration for Human Rights (UDHR). The UDHR focuses on dignity, respect and equality, without discrimination, for all people. We also utilize the United Nation's Guiding Principles on Business and Human Rights (UNGPs) and the Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises.

Tesla is committed to respecting the United Nation's Declaration on the Rights of Indigenous Peoples (UNDRIP) and we require that our suppliers similarly respect the UNDRIP.

We are committed to upholding and respecting all internationally recognized human rights throughout our direct operations and supply chain—including with respect to our employees, customers, shareholders, suppliers and the communities in which we live and operate. Tesla's Global Human Rights Policy outlines the company's salient human rights issues.

We seek to avoid causing or contributing to actual or potentially adverse human rights impacts, and we expect our suppliers to support and promote these values in their own operations and those of their suppliers.

Assessing and addressing human rights risks is an ongoing effort that involves engaging with and incorporating input from external stakeholders, including those impacted by our operations and our supply chain, as well as reviewing and updating our policies and procedures where necessary.

We seek to remedy adverse impacts, track and measure our progress and report our findings in our disclosures where appropriate.

Our work to respect human rights throughout our operations as well as our supply chain are overseen by cross-functional teams and executive representatives.

Cybersecurity and data privacy



We optimize our products for privacy and security

Our privacy-first policies ensure personal data is in customers' control, letting them decide what information they want to share—and when. We believe that responsible data management and transparency is a prerequisite for continuous innovation. Read more about our company-wide approach in our Privacy Overview.

Data privacy is a shared responsibility that every employee and board member is expected to uphold. Tesla has a large and diverse team of privacy and security professionals across our legal, engineering and product organizations who are dedicated to protecting customer data. Additionally, the Audit Committee of the Tesla BoD is regularly briefed on incidents, emerging trends, controls and corrective actions taken by Tesla to ensure we are living up to our obligations and privacy principles.

Our privacy principles



01

We build privacy into our products from start to finish

We ensure privacy across all our products and services, from inception to roll out and beyond.

02

We always give customers choices about their data

We put individuals in control by giving them clear and transparent ways to access, review, manage and delete their data.

03

We maintain our customers' trust through transparency

We are transparent and clear about the personal data we collect and how we use or share it.

04

We safeguard all of our customers' personal data

We have rigorous controls and standards that protect the security, confidentiality and integrity of Tesla's data environment.

Privacy from day one



Tesla's privacy principles and commitments are illustrated throughout all our products. For Tesla vehicles, customers' personal data is protected from the moment they take delivery, ensuring that, by default, the vehicle data generated when driving is not associated with their account or vehicle identification number. We put customers in control when it comes to data sharing by providing a dedicated in-vehicle menu to adjust preferences at any time.

Additionally, energy products are designed to protect customer privacy. We aim to collect as little personal data as necessary to provide an engaging in-app energy experience. To maximize transparency, Tesla has developed an easy way for customers to download and access their vehicle and energy data at any time directly in the Tesla app.

Embedding security and privacy

To uphold rigorous standards regarding the security, confidentiality and integrity of customer and employee data, Tesla maintains a global privacy program as well as an information security program (based on the industry-recognized ISO 27001 framework), which includes written policies, processes and standards designed to protect and secure Tesla's data environment.

Tesla maintains a current ISO/IEC 27001 certification that sets user security standards, for which we undergo yearly audits. We evaluate the health and effectiveness of our information security and privacy program through ongoing assessments, monitoring and testing.

Global privacy program

Guides product development and business practices across Tesla to ensure regulatory compliance by maintaining effective and standardized controls across vehicle and energy products as well as insurance and financial services.

Product security

Manages product vulnerabilities, including conducting design and code reviews, building defense into depth protections, testing, maintaining security policies, monitoring, partnering with external security researchers and financially rewarding people outside the company who find and report vulnerabilities.

Infrastructure security

Prevents, detects and responds to IT outages, security incidents or acts of nature to provide availability of underlying critical services and continuity of operations.

Third-party risk management

Identifies, mitigates and monitors risks from third parties such as vendors, suppliers and other business partners, including those in our supply chain who may require certain Tesla data to conduct operations.

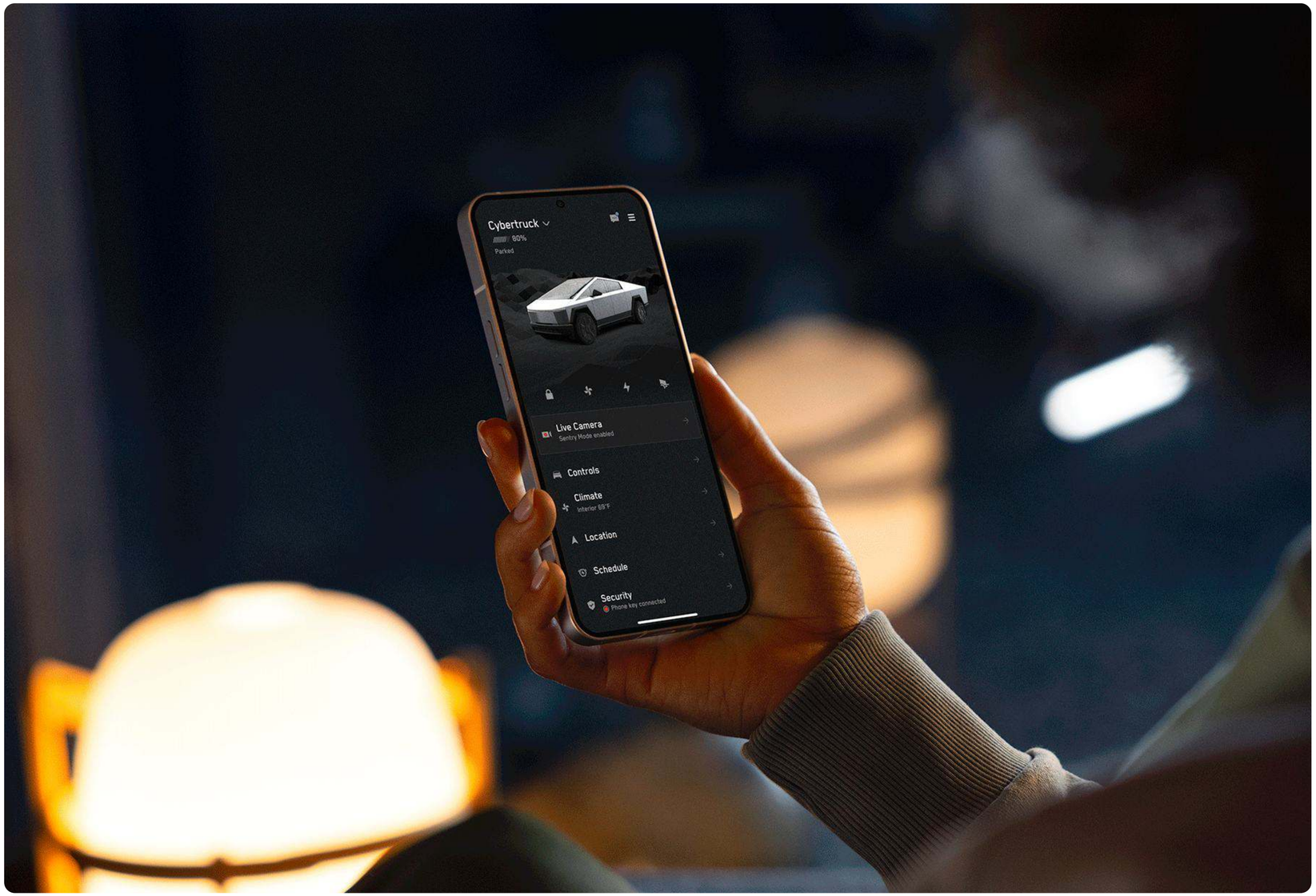
Responsible AI

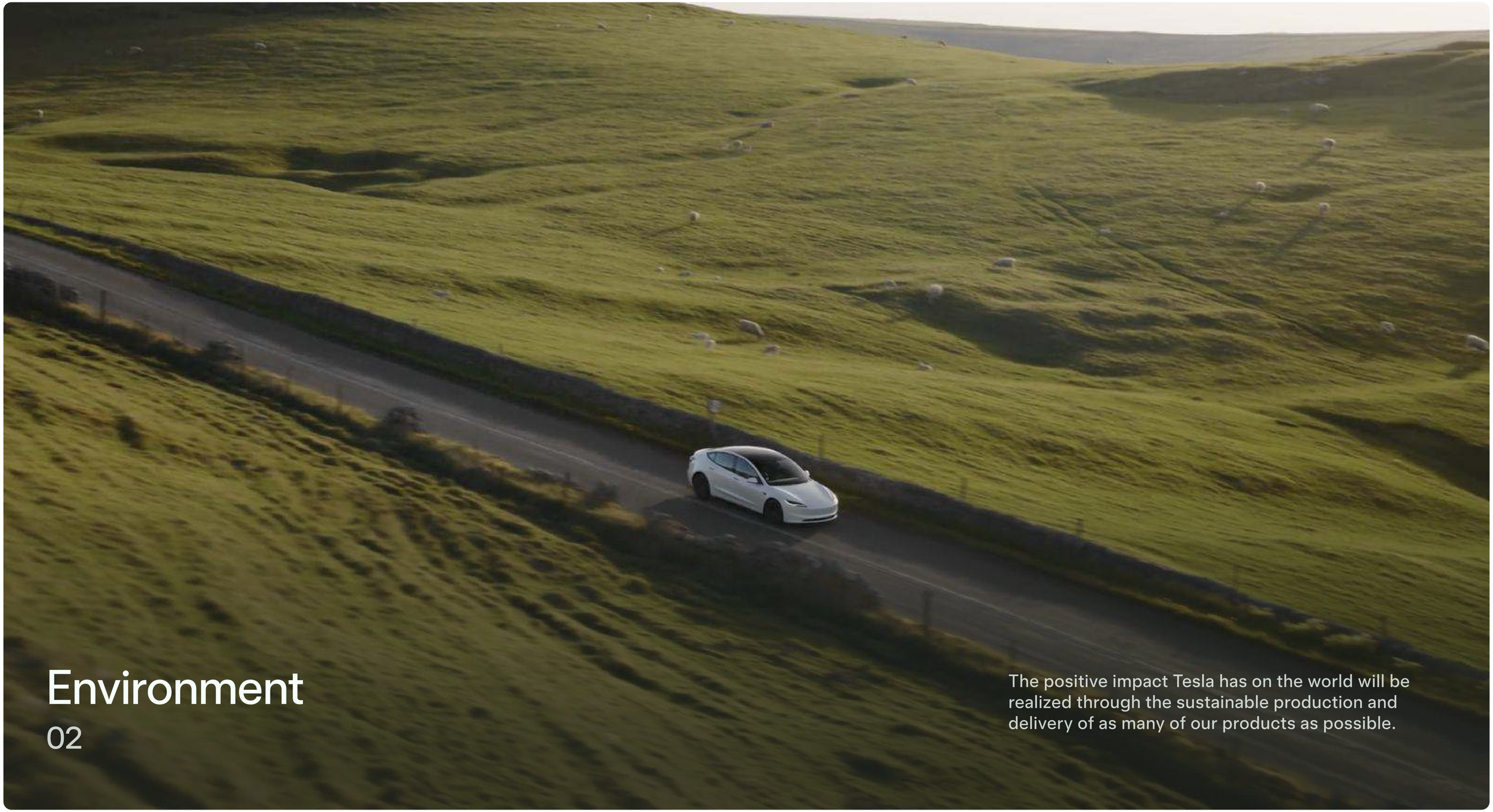
Tesla is committed to the responsible development of artificial intelligence (AI) with respect for human rights. In line with our commitment to product safety, our use of AI will focus on ensuring and improving safety for our employees, our customers and the communities where our products operate. Tesla is not developing digital super-intelligence.

In the long term, Tesla recognizes the risk of centralized control of a vast fleet of autonomous vehicles and humanoid robots. If ill-intentioned state or non-state actors gain power over such a fleet, this will not accrue to the good of humanity.

Therefore, to serve the best interests of civilization, Tesla believes in a balance between local override capability and centralized control.

Tesla's responsible development philosophy extends to hardware design, including limiting walking speed and strength, removing pinch-points of joints and minimizing the weight of our humanoid robots, among others.





Environment

02

The positive impact Tesla has on the world will be realized through the sustainable production and delivery of as many of our products as possible.



In 2024, our customers avoided releasing nearly 32 million metric tons of CO_2e into the atmosphere

The combined global fleet of Tesla vehicles and solar panels paired with energy storage enabled our customers to avoid emitting nearly 32 million metric tons of CO_2e in 2024. That's the same as driving an internal combustion engine (ICE) vehicle about 78 billion miles.

Environment

Displacing Fossil Fuels	20
Carbon Impact of Our Products	25
Carbon Impact of Our Operations	38
Water, Circularity and Biodiversity	56

Our Robotaxi network will further accelerate our mission

Emissions per Mile

(U.S. gCO_2e/mi)



With our incoming fleet of autonomous vehicles, we are well positioned to take sustainable transportation to the next level. With full autonomy and optimized ride efficiency, our Cybercab robotaxi will significantly reduce GHG emissions per mile—helping us avoid nearly twice as many emissions per mile compared to our Model 3 and Model Y vehicles.

By maximizing vehicle utilization and rideshare capabilities, our Robotaxi network will not only lower emissions, but it will also increase the accessibility of sustainable transportation. This marks a major step toward improving the sustainability of our cities and accelerating our mission. With each mile driven autonomously, we're shaping a cleaner, smarter and more sustainable future for all.

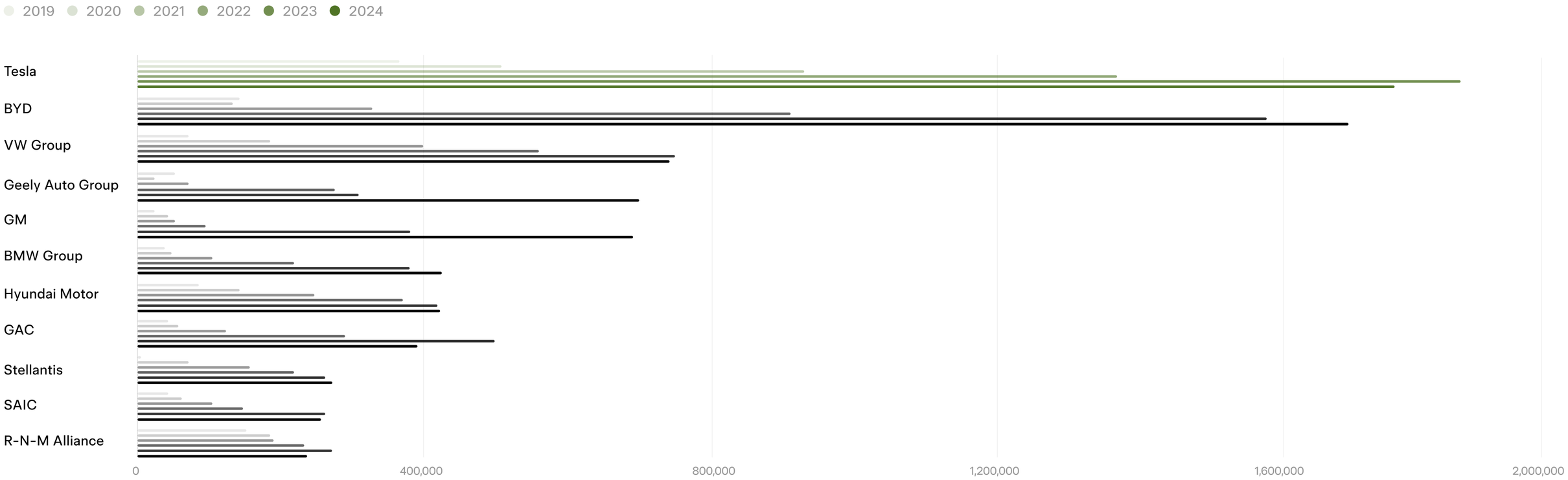


*Data shown is based on current product estimates.

The more products we deliver, the faster we accelerate our mission

Source: EV-volumes.com; microcars not included. Tesla data are production volumes; other OEMs' sales and delivery volumes are assumed to approximate their production for the year.

Electric Vehicles Produced



In 2024, we delivered around 1.8 million vehicles and deployed 31.4 GWh of energy storage globally

Our energy storage business continues to grow rapidly and achieved a record 31.4 GWh of deployed energy storage in 2024. We remained the world's largest EV producer in 2024.

Although we are focused on our own deliveries, electric vehicle (EV) sales by all automakers need to increase. We hope that every vehicle manufacturer will strive to produce hundreds of thousands of EVs per year, as significant reductions in emissions will only be achieved with an industry-wide shift.

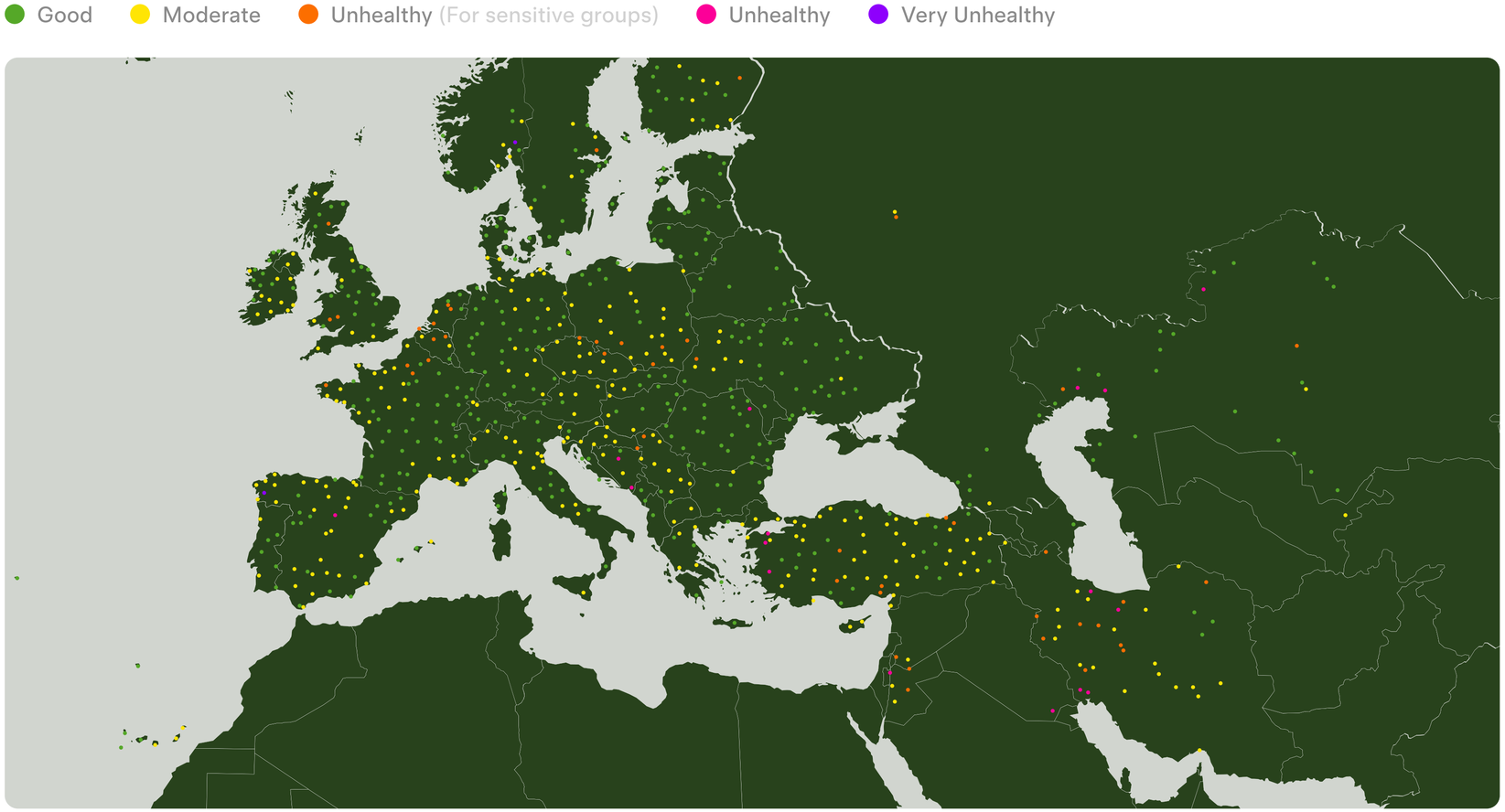
To support our mission, we are making it as easy as possible for drivers to own and charge their EVs. We shared our charging connector design with the world in 2022 and started opening our Supercharging network in North America to more EVs in 2024.

We are also sharing charge port technology with other OEMs to assist in the transition of their vehicle designs to make them compatible with the North American Charging Standard (NACS). This follows the opening of our network in other regions, including Europe and China.

Premature deaths from air pollution are avoidable

Air pollution from burning fossil fuels leads to eight million premature deaths globally each year—accounting for one-in-five premature deaths worldwide.

Our products are not just about the future of our planet, but also about addressing preventable deaths today. This is a major advantage of zero direct-emission products that is often overlooked.



Each Tesla vehicle on the road avoids around 35 tons of CO_2e

While EVs today produce more GHG emissions during the manufacturing phase (including emissions from the supply chain), in less than four years of driving, a Tesla vehicle's lifetime emissions are lower than those of a comparable ICE vehicle.

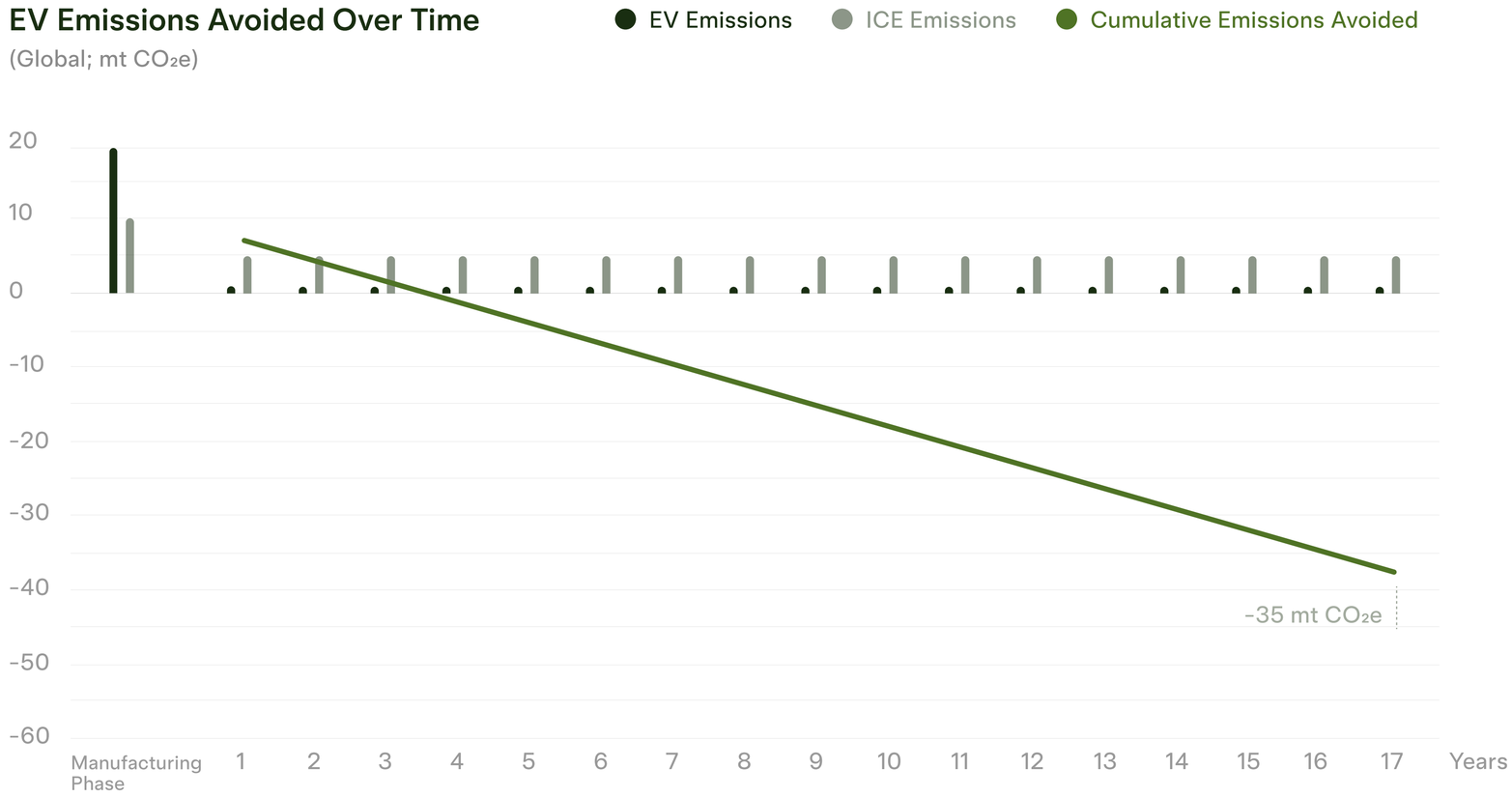
Tesla is actively addressing this manufacturing-phase impact. Through innovations in material efficiency, operational and supply chain decarbonization and end-of-life recycling, we are continuously reducing emissions at every stage of production. As these improvements scale, the emissions gap during manufacturing will shrink.

After 17 years of driving (which is the average life of a vehicle in the U.S.), a single Tesla vehicle will avoid about 35 tons of CO_2e globally. In the U.S. in particular, a Tesla vehicle avoids an average of 52 metric tons of CO_2e. These numbers are conservative for two reasons: they assume no improvement in grid emissions over time and assume an ICE vehicle maintains its fuel efficiency throughout its lifetime.

This year, we updated our avoided emissions calculation methodology and are using an improved model with more primary GHG-emissions data collected from our suppliers. Globally, a Tesla vehicle's avoided emissions range between 20 and 52 tons of CO_2e due to differences in grid mixes where our vehicles operate as well as expected annual mileage.

EV Emissions Avoided Over Time

(Global; mt CO_2e)



Our avoided emissions calculations are based on our Model 3 and Y All-Wheel Drive (AWD) vehicles.

We use real-world data to measure our emissions

Unlike the New European Driving Cycle (NEDC), Worldwide Harmonized Light Vehicles Test Procedure (WLTP) and Environmental Protection Agency (EPA), we used real-world energy consumption data from Model 3 and Model Y to analyze EV energy consumption. For ICE fuel consumption, we used data provided by Consumer Reports, which states that model year 2024 mid-size premium vehicles achieve 24.4 MPG on average. This translates to approximately 407 grams of CO_2e per mile once we account for emissions generated through the extraction, refining and shipment of oil.



Megapack paired with renewables lowers grid emissions

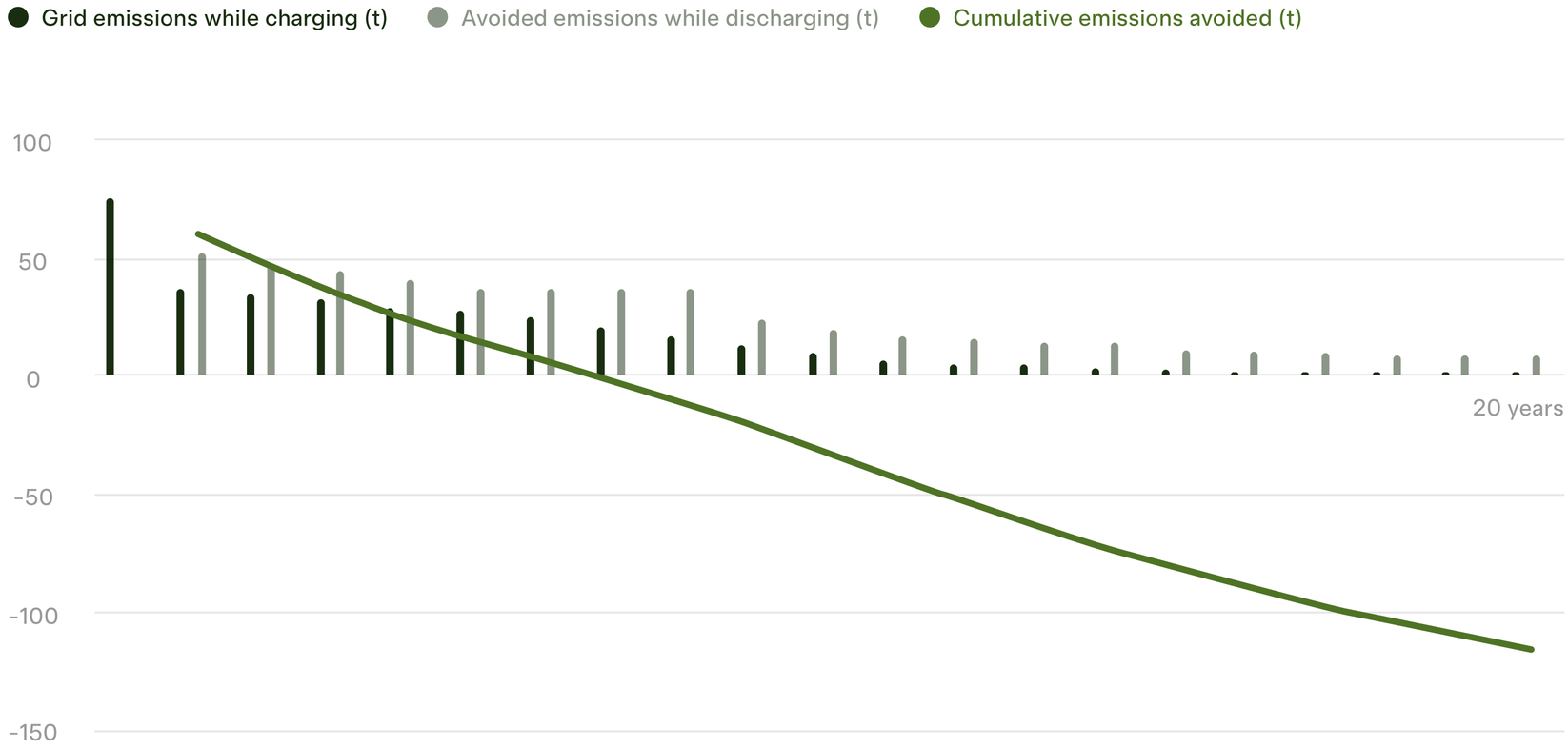
In addition to providing grid stability and reliability, Megapack allows low-cost, low-emission energy from renewable sources to be used during peak consumption hours, replacing expensive, high-emission energy from fossil fuel generators.

For this case study, we evaluated the median expected CO_2e emissions avoided in the U.S. in addition to CAISO (California Independent System Operator) where a notable portion of our global fleet operates. We assume a project size of 150 MW (which is typical for utility-scale deployments) and that Megapack units are used primarily for energy-shifting.

Ultimately, the amount of CO_2e emissions avoided by Megapack will depend on the mix of fossil fuels and renewables on the grid. When taking different grid mixes into account across the U.S., we expect median CO_2e emissions avoided to be about 80,000 tons, while in CAISO (which has more renewables) we expect 116,000 tons of CO_2e emissions to be avoided during the lifetime of a 150 MW deployment.

Megapack 2 XL Emissions Impact Over Time

(CAISO; mt CO_2e)



Assumptions:
Calculations are for a typical Megapack 2 XL four-hour deployment size of 150 MW with a lifetime of 20 years.
The National Renewable Energy Laboratory's (NREL) 2024 Cambium grid study informed the battery hourly operation and hourly long-marginal emissions factors used to capture system impacts over multiple years.
Supply chain and manufacturing-phase emissions and system auxiliary load emissions are accounted for to derive net avoided emissions.

Vehicle lifecycle analysis glossary

By examining every stage of a product's lifecycle, from raw material extraction to its end of life, a lifecycle assessment (LCA) helps identify key areas of environmental impact in order to implement targeted improvements and optimize resource use efficiencies. The per-mile lifecycle emissions of our vehicles include emissions from the upstream supply chain, electricity consumption and direct emissions from manufacturing- and use-phase emissions when charged from a grid with a generation mix that reflects the geographic distribution of Model 3 and Model Y deliveries in the U.S., Europe and China.

This year, we are presenting the revised long-range all-wheel drive versions of Model 3 and Model Y, integrating analyses from production across all factories. We have significantly improved GHG emissions data accuracy in our analyses. As we strive to gather more real and granular data, we will continue to update other product LCAs for future reports.

For our LCA methodology we follow the guidance of the ISO 14040 and 14044 frameworks.



Vehicle lifecycle analysis glossary

Model 3/Model Y*	Scenarios
Personal Use Solar Charged	Emissions per mile if Model 3/Model Y principally charged at home using a solar system and energy storage
Personal Use Grid Charged	Emissions per mile if Model 3/Model Y principally charged at home from the grid
Average Premium ICE Vehicle	Based on an average of mid-size premium sedans and mid-size premium crossover SUVs, with a real-world fuel economy of 24.9 MPG

Lifecycle Emissions	Assumptions
Global Analysis	Lifecycle emissions using solar panels and Powerwall exclusively to charge Model 3/Model Y adds emissions to the manufacturing phase and reduces use-phase emissions to as low as zero. No additional renewable energy capacity on the grid during the life of the vehicle—the shape of the renewable energy adoption curve is still up for debate. Manufacturing-phase emissions for Model 3/Model Y in the three regions are represented as follows: • U.S.: Vehicles produced in Fremont and Texas • Europe: Vehicles produced in Berlin and Shanghai • China: Vehicles produced in Shanghai

*In 2024, we followed the same methodology as 2023 to present the LCA as a weighted average of Model 3 and Model Y based on production share for each vehicle (for manufacturing-phase emissions) and delivery volumes in each region (for use-phase emissions). Given that Model 3 and Model Y have 70%-plus parts commonality and share many manufacturing processes, their GHG emissions are very similar.

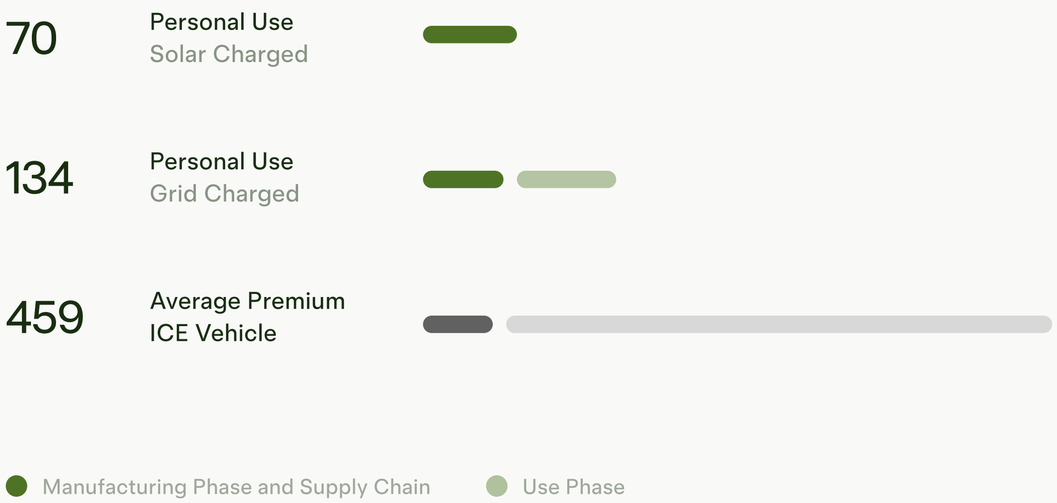
Note: For our full product portfolio of LCAs, including our Powerwall 3 and Megapack 2XL LCAs, see our Appendix on pages 196-198.

Average Lifecycle Emissions

(gCO_2e/mi*)

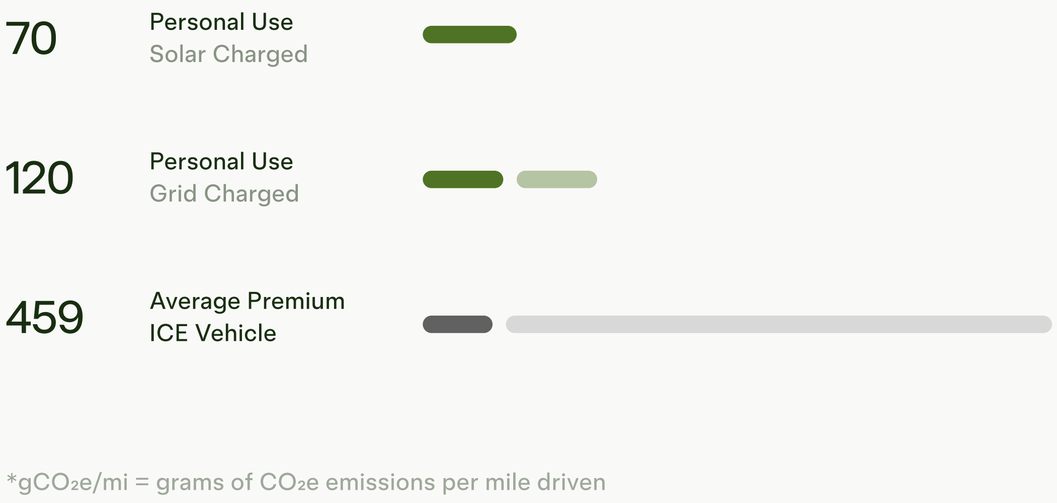
United States

Model 3/Model Y
Long Range AWD



New York

Shift to a Cleaner Grid
Long Range AWD



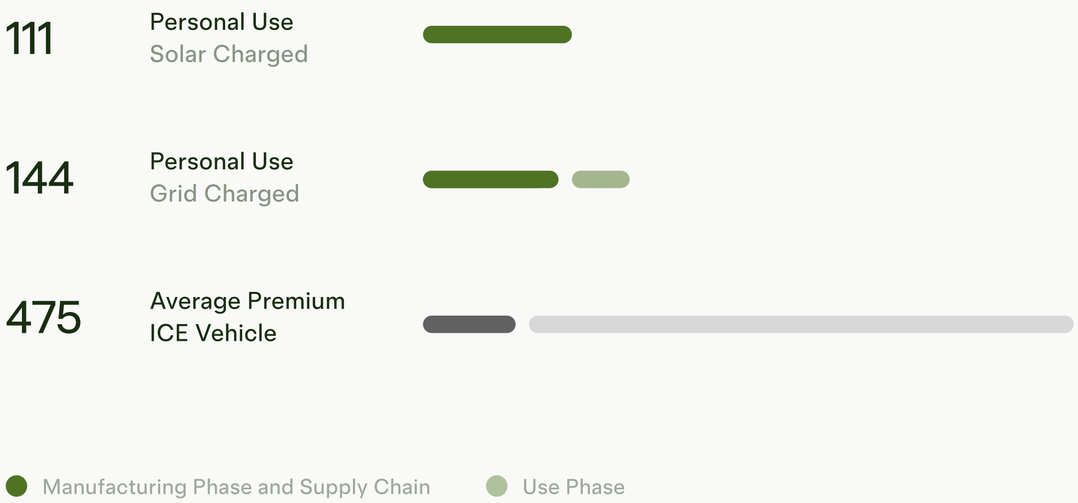
*gCO_2e/mi = grams of CO_2e emissions per mile driven

Average Lifecycle Emissions

(gCO_2e/mi*)

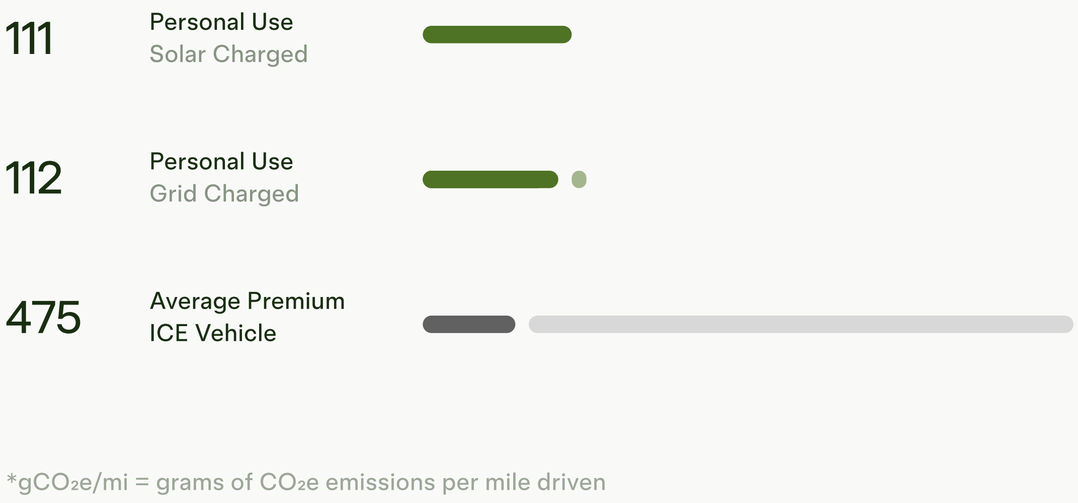
Europe

Model 3/Model Y
Long Range AWD



France

Shift to a Cleaner Grid
Long Range AWD



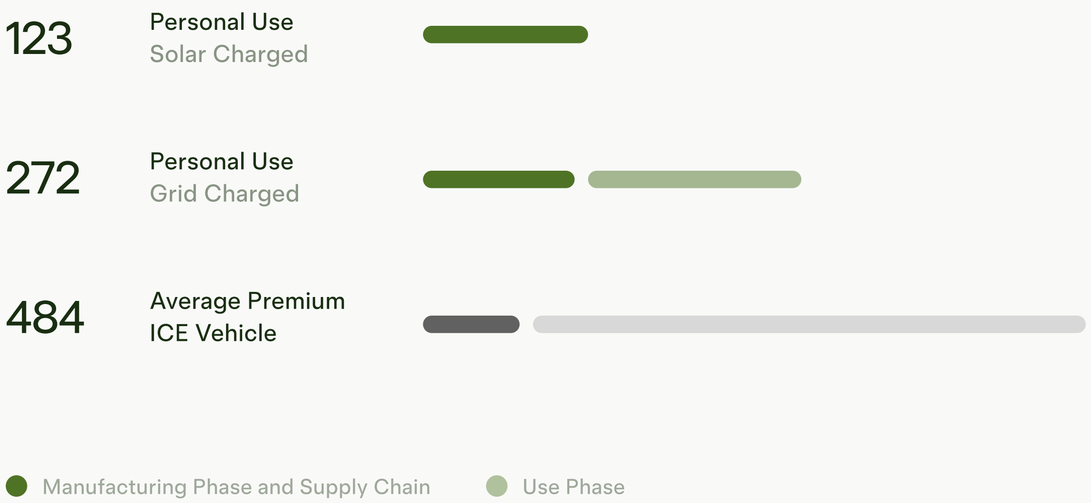
*gCO_2e/mi = grams of CO_2e emissions per mile driven

Average Lifecycle Emissions

(gCO_2e/mi*)

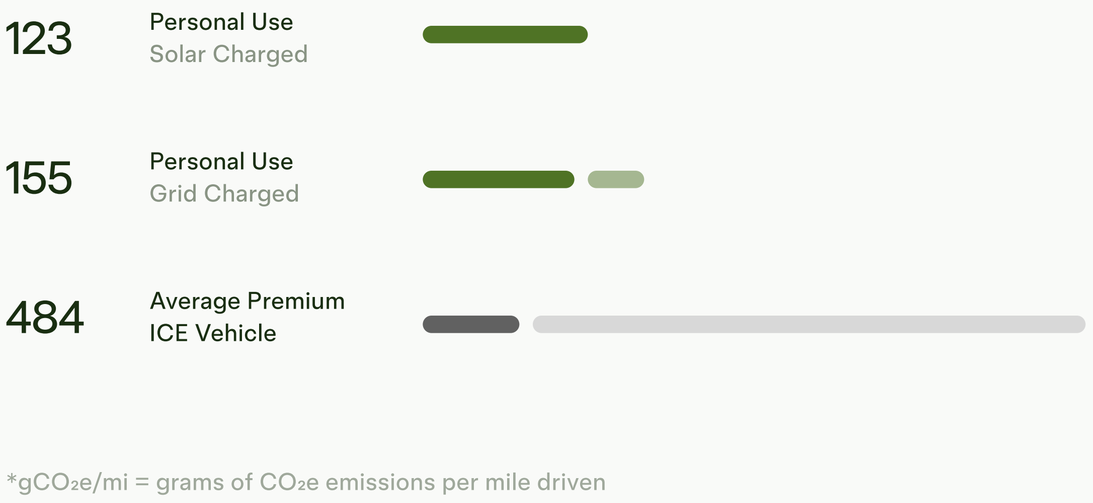
China

Model 3/Model Y
Long Range AWD



Sichuan Province

Shift to a Cleaner Grid
Long Range AWD



*gCO_2e/mi = grams of CO_2e emissions per mile driven

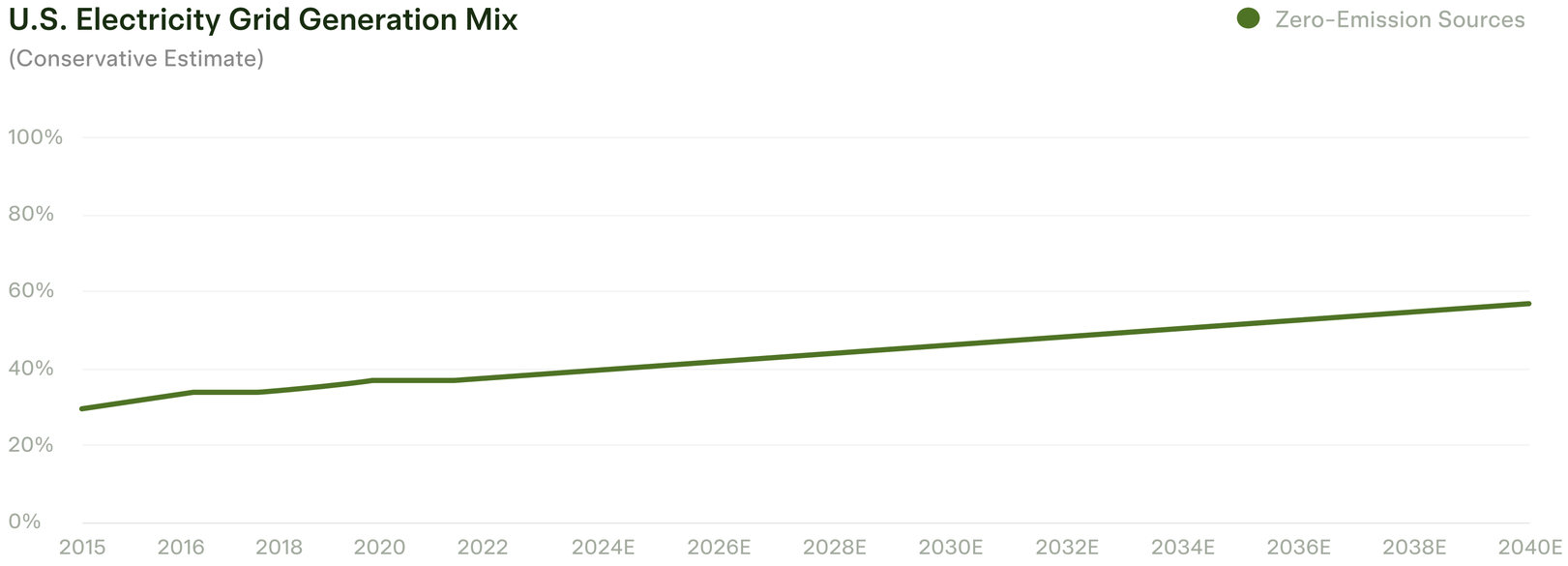
Unlike EVs, the carbon impact of ICE vehicles remains the same every year of use

The LCAs we present assume the same emissions per mile for our vehicles throughout their lifetime. This assumption is conservative given that the mixture of energy sources on the grid keeps getting cleaner. While emissions per mile for EVs will improve with the grid, emissions per mile for ICE vehicles will not.

Based on publicly available sales and fleet data, we estimate that an average vehicle in the U.S. reaches its end of life after 17 years and just under 200,000 miles of driving. As an ICE vehicle ages, its fuel efficiency only remains stable if it's serviced properly. Meanwhile, electricity generation to charge EVs has become cleaner over time with the addition of more renewable energy sources to the grid. EV drivers can further reduce their carbon impact by increasing their renewable energy mix with the installation of solar energy generation or storage systems on their homes.

U.S. Electricity Grid Generation Mix

(Conservative Estimate)



Greater efficiency than a Prius, performance of a Porsche

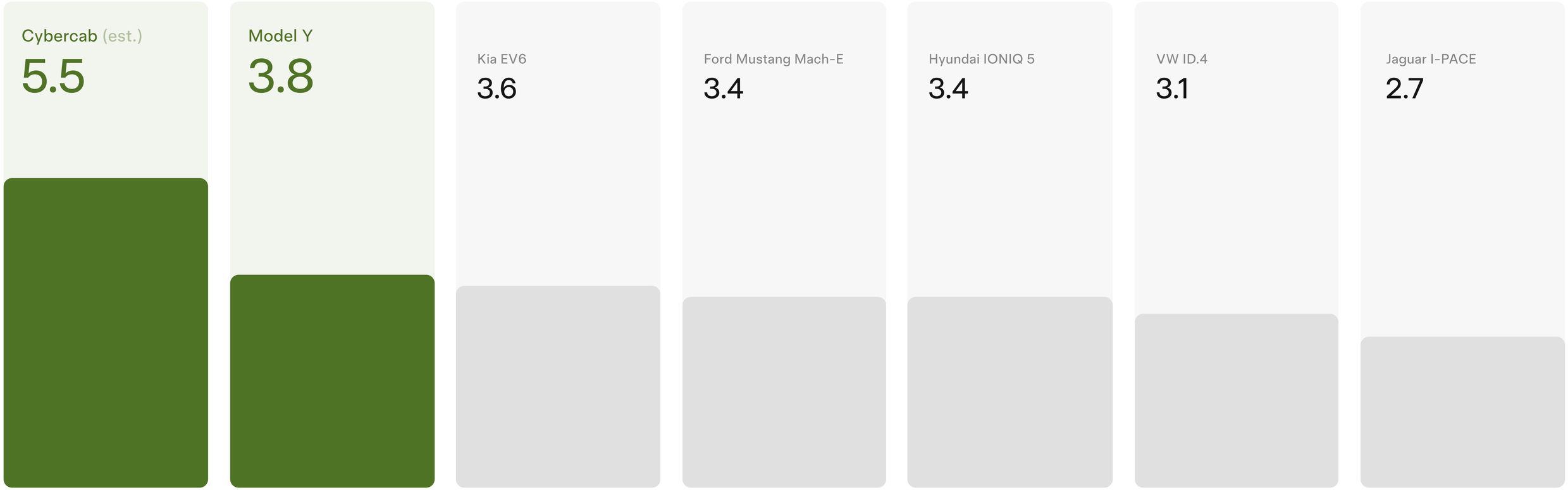
More efficient vehicles mean less energy use over time. Tesla vehicles are among the most efficient EVs built to date. Model Y All-Wheel Drive (AWD) achieves 3.8 EPA miles/kWh, making it the most efficient electric SUV ever made. While achieving best-in-class energy efficiency, our AWD models also provide impressive acceleration and speed. Cybercab will be built on our next-generation platform, which includes a new powertrain with an estimated 5.5 miles/kWh.

Model Y Long Range AWD	4.8s 0-60mph	135mph Top Speed
Model 3 Long Range AWD	4.2s 0-60mph	125mph Top Speed

We make the most efficient EVs on the road

EV Powertrain Efficiency

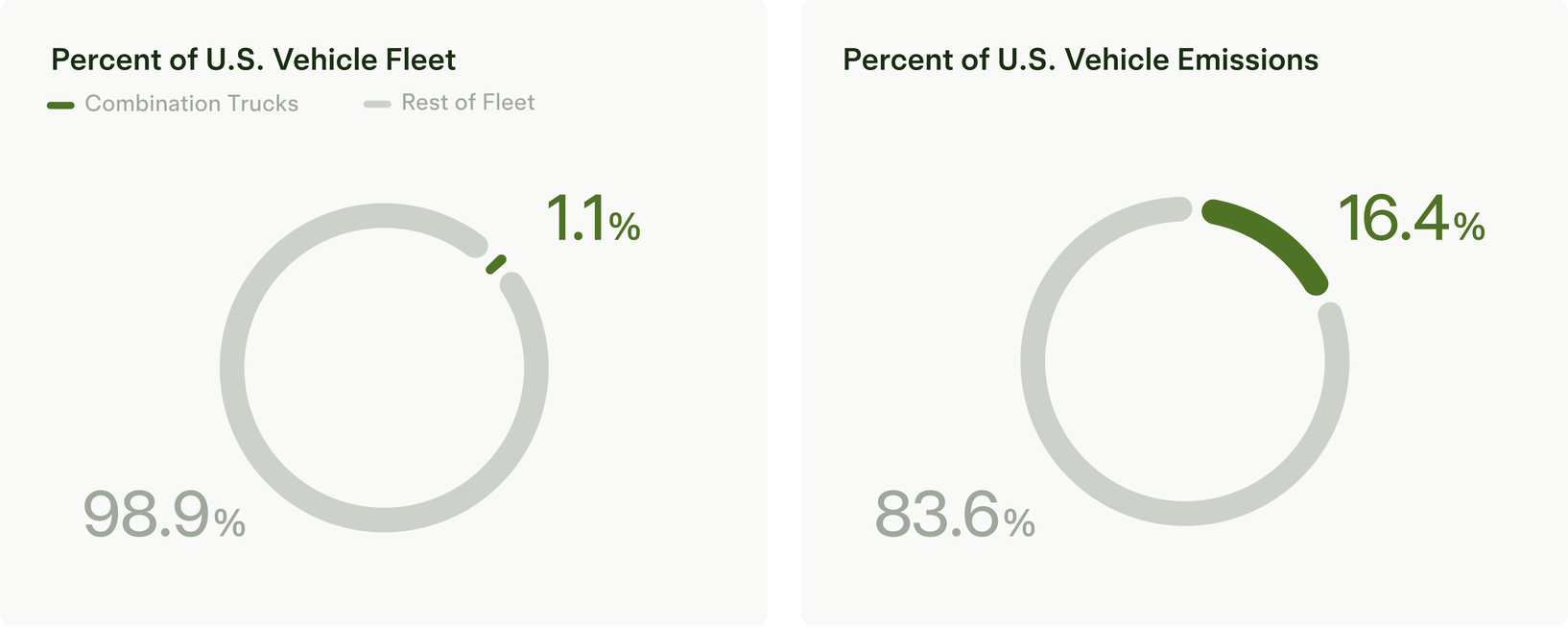
(mi/kWh)



Electrifying industrial transport with our Semi is critical to our mission

Combination trucks account for about 16% of U.S. vehicle emissions—Semi helps change that. With less than 2 kWh per mile of energy consumption, Semi can travel up to 500 miles on a single charge, fully loaded. Charging with electricity is cheaper per mile than refueling with diesel, and BEV (battery electric vehicle) maintenance costs are significantly lower given the absence of diesel after-treatment systems and the relative simplicity of electric powertrains. As a result of these savings, local and regional operators can expect a positive return on investment prior to their standard diesel fleet replacement turnover cycle. With remote diagnostics, over-the-air software updates and fewer moving parts to maintain, operators will spend less time at service centers and more time on the road.

*Based on average Q1 2024 diesel prices in California and latest electricity rates.

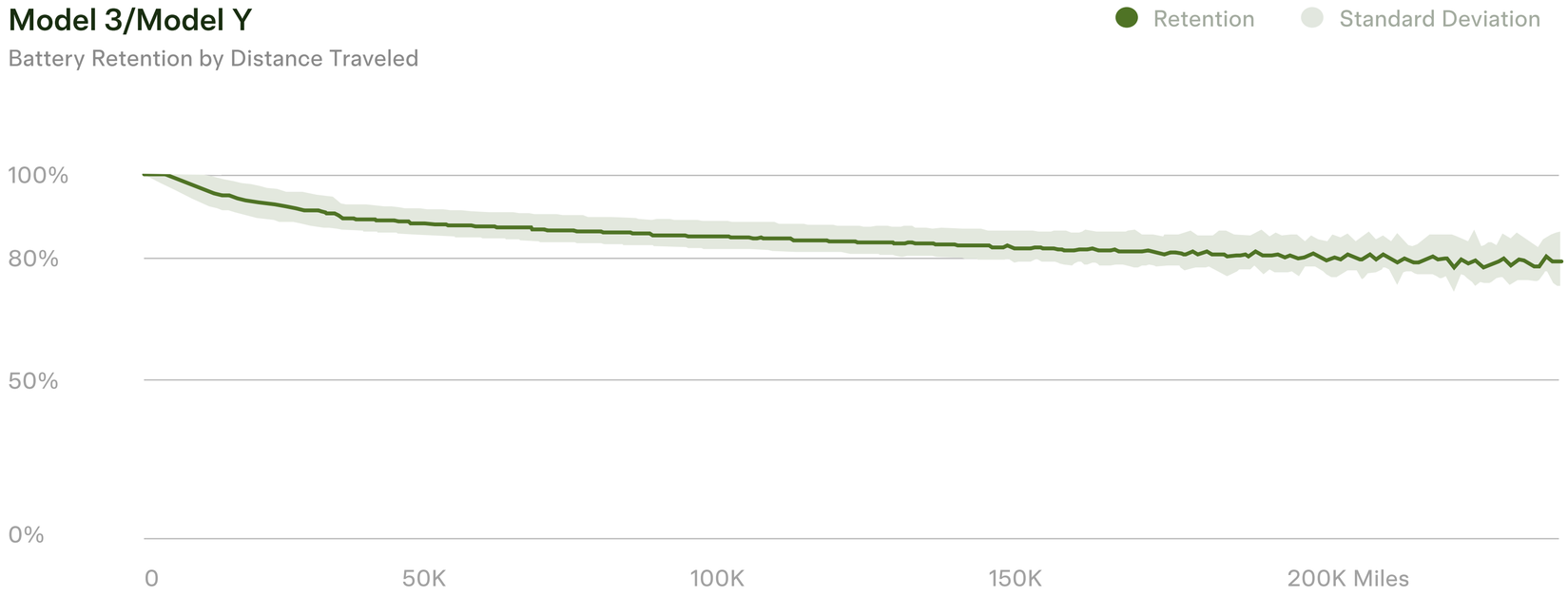


Our batteries are designed for 200K+ miles of driving

Vehicle battery production can result in over six metric tons of GHG emissions, so it's important the battery lasts as long as the vehicle. We are often asked: Will I need to replace my vehicle's battery? The answer is no.

Since we've been selling EVs for over a decade, we have a reliable dataset that shows battery degradation over time. We estimate a vehicle reaches end of life after about 200,000 miles of usage in the U.S. and about 150,000 miles in Europe. Even after 200,000 miles of usage, the batteries in Model 3 and Model Y lose only 20% of their capacity on average, regardless of battery chemistry.

When designing our batteries, we evaluate the tradeoffs of prioritizing range, energy density, cost and charging speeds, among others. We use battery cells that vary by region, model and trim, and prioritize range to provide enough charge capacity for a compelling roundtrip as supported by our Superchargers.







We minimize the carbon impact of our operations with our decarbonization strategy

Unlike ICE vehicles, it is possible to fully decarbonize the manufacturing and lifetime use of EVs. Electric vehicles and sustainable energy products have a far better environmental impact than fossil fuel alternatives. This includes the full lifecycle: raw material mining, manufacturing, product use and disposal.

Decarbonization at Tesla

With our mission to accelerate the world's transition to sustainable energy, decarbonization is at the heart of everything we do.

Our products address direct emissions from energy and transport. Tesla strives to achieve net-zero GHG emissions across our full product lifecycle, from mining and production through use and end-of-life recycling. As we have scaled the manufacturing of our sustainable energy products into new factories that have not yet reached full capacity, we have inevitably increased emissions in the short term. Therefore, it is more important now than ever before to continue developing our plan to achieve net-zero emissions quickly.

Each year, our growing fleet of vehicles and energy storage products enables greater avoided emissions, significantly reducing the world's reliance on fossil fuels. Our Robotaxi service will help accelerate this. As we continue to scale, these avoided emissions bring us closer to achieving a truly sustainable future, reinforcing our commitment to setting a target that is both meaningful and actionable.

An ambitious stance on GHG emissions reduction is necessary to continue moving the world toward a sustainable energy economy. We are already doing this with our products and will continue to find ways to decarbonize within our full value chain.

We are prepared to continue our decarbonization journey, acknowledging the constantly changing landscape of technological advancements and sustainable energy markets. As we evolve, we strongly believe that starting with an ambitious strategy is not just wise, but necessary.

With the sustainable energy sector ascendant, we anticipate a rising demand for zero direct-emission products across energy and transportation. Despite this, our dedication to meticulously tracking and reducing our GHG emissions remains unwavering alongside our commitment to nurturing innovation—a fundamental aspect of our organizational identity.

We aim to transition our operational electricity load to 100% renewable electricity well before we achieve our net-zero emissions goal and to continue matching 100% of our Supercharger electricity load annually with renewable electricity.



Net-zero GHG emissions as soon as possible

100%

operational renewable electricity achieved ahead of net-zero emissions

For more information, see our supply chain decarbonization strategy on pages 151-157.

Emissions frameworks continue to fail companies like Tesla

We continue to drive the reduction of GHG emissions from energy and transport through the use of our products by our customers. This will continue to be the most impactful thing we can do to achieve our mission, and we will only see this impact accelerate as our fleet of autonomous vehicles in our Robotaxi network grows. The popular frameworks for measuring and reducing GHG emissions continue to benefit their authors and those well-established companies with polluting products—they do not recognize real-world impact. These frameworks do not account for the impact of emissions that are avoided through the sale of zero direct-emission products (referred to in this report as “avoided emissions”).

As we grow, Tesla will need to build more factories to support the production of our products. Each one of these products will avoid many tons of CO_2e throughout its life. Even as Tesla constructs more efficient factories with maximum renewable energy utilization, there will undoubtedly be incremental emissions from our growing factory footprints in the near term while we still work to decarbonize our industrial processes and supply chain inputs.

While we have made significant efforts to address our emissions, there are still many emissions in our value chain for which solutions are limited. We are currently able to mitigate a certain percentage of our emissions with available technologies and instruments, but a significant portion remains that is much harder to address. Many of these emissions are classified as "hard-to-abate," and we depend on the future development and invention of new technologies to help us close this gap.

Decarbonization remains urgent, but achieving it is complex across industries and companies. Net-zero targets must be crafted with ambition and a deep understanding of the challenges each sector and organization faces. Goals must be designed thoughtfully to drive real progress.

There is a lot of work left to be done to build a GHG emissions-accounting system that holds polluters accountable and highlights the work being done by companies to build zero direct-emission products and achieve the goal of decarbonizing the economy.

Our data-driven approach to measuring and tracking emissions

Refining our data-collection process

Tesla has been measuring GHG emissions from our full value chain in accordance with the GHG Protocol for several years, beginning with our supply chain and manufacturing processes and through to our Sales, Service and Delivery and end-of-life activities. Each year, our data collection process becomes more refined, prioritizing the collection of primary data over database estimates that do not accurately reflect our emissions. We have built an in-house data collection system with integrated controls that continues to improve and evolve over time with our business and external requirements.

Evolving our approach to Scope 3 emissions

Scope 3 GHG emissions calculations have traditionally been highly academic. Even when they conform to popular frameworks like the GHG Protocol, they rely on large estimations and assumptions that often lead to figures that do not reflect the true impact. Tesla is in a unique position for two reasons: we obtain primary data from the use of our products and our high level of vertical integration and direct sourcing relationships enable us to collect primary data from upstream activities, such as sourcing.

Calculating emissions from our products

With data from nearly eight million vehicles on the road and a fleet of solar and energy storage products, we can calculate our emissions at a much higher level of accuracy than most manufacturers and can therefore develop emissions-reduction solutions accordingly. Our ability to precisely measure our use-of-product emissions year-over-year instead of estimating their lifetime value has allowed us to directly procure renewable electricity for all vehicles that use our Superchargers.

See more on our renewable energy program starting on page 43.

Our data-driven approach to measuring and tracking emissions (cont'd)

Advancing innovative approaches to end-of-life emissions

Our approach to understanding the end-of-life impact of our products goes beyond standard frameworks and emissions factors. Our circular solutions programming offers an avenue to obtaining primary data for the end-of-life of our products. This includes gathering data on the carbon impact of our recycling processes, allowing for more precise calculations of emissions compared to relying solely on standard global carbon impact methodologies for battery recycling. Recognizing that our products will reach their end-of-life far in the future, we also forecast regional grid mixes to accurately model future energy scenarios.

This innovative methodology ensures that we reflect the true environmental impact of our products, setting a higher standard for GHG emissions management in the industry.

Continuously enhancing the granularity of our data collection processes across all Scope 3 categories is a priority. Given that Scope 3 emissions make up most of an OEM's total GHG impact, leveraging real and accurate data empowers us to begin implementing impactful emissions reduction strategies.

Renewable energy for decarbonization

We are focused on building a sustainable future through both our operations and the products we offer. Our priority is to generate as much renewable energy on-site as possible to directly match our energy consumption. This helps reduce the carbon impact of our operations. In the long run, to reduce energy use, the world will require greater battery integration.

Batteries are crucial. They allow us to store excess energy and use it any time, making renewable energy more reliable. This is why batteries are key to unlocking the renewable energy solution, and Tesla holds that key through its suite of energy storage products.



Renewable energy for decarbonization (cont'd)

When on-site generation is not enough, we turn to credible and validated power purchase agreements (PPAs) to secure renewable energy from trusted sources. This ensures that the consumption we match comes from projects that guarantee a long-term market for energy. When it comes to PPAs, we strategically select locations and timing that best match our energy use.

We are committed to maximizing on-site renewable energy, using PPAs only when needed and integrating battery storage to ensure a reliable and sustainable energy supply as we move toward a fully decarbonized future.



Powering the economy with renewables

Where feasible and actionable, we prioritize on-site renewable electricity projects over renewable energy certificates (RECs) or PPAs, enhancing energy resilience and reliability. We are able to leverage our own fleet of products—solar, energy storage and EVs—to enable sustainable, self-sufficient energy solutions.

An example of this is Project Oasis, which will be the largest EV charging microgrid in the world. We broke ground on Project Oasis in 2024 and expect to launch operations in summer 2025. Located on the I-5 corridor in central California, this site will feature 164 Superchargers powered by an 11 MW solar system, 39 MWh of Megapack storage and a 1.5 MW utility connection. By integrating the Tesla ecosystem of solar and energy storage, we are deploying reliable, sustainable charging efficiently.

By delivering this project, we are not just meeting demand—we are demonstrating how clean energy can scale faster and more effectively with innovative, self-powered infrastructure.

We continue to empower our customers to be a part of our mission to accelerate sustainable energy through the use of our products. In 2024, Tesla solar owners generated over 1.4 times the renewable electricity needed to power all Tesla locations including manufacturing, support, sales, research, service and delivery. While customer-generated energy is not counted toward our operational renewable electricity goals, it demonstrates the powerful collective impact of our energy ecosystem.

4,473 GWh
total rooftop solar generated

1,055 GWh
total energy stored in Powerwalls

2.8 GWh
total energy exported to the grid

We're procuring more renewables for our products and operations

In 2024, our global Supercharging network was 100% renewable again for the fourth year in a row, achieved through a combination of on-site resources and renewable electricity matching.

We are also working towards matching our operational energy usage at our facilities. We buy electricity directly from a mix of renewable energy projects through long-term PPAs with the grids on which we operate.

Since 2023, we have secured almost 1 GW of wind and solar energy across North America and Europe, ensuring a stable and clean energy supply. As we expand our operations, we plan to match remaining operational energy consumption through a combination of on-site renewables and renewable energy purchases.

100%

of our Supercharging network was powered by renewables for the fourth year in a row

100%

of Gigafactory Berlin-Brandenburg's energy usage was matched with renewable electricity for the second year in a row

Building sustainability into facility design

We continue to build each new factory to be better and more sustainable than our last. For example, at Gigafactory Texas, we chose highly efficient, insulated, low-emissivity windows to reduce building heating and cooling demand. The incorporation of waste heat recovery from compressors alone will offset over 1 MW of natural gas consumption for process heating. Our efforts are not limited to Gigafactory Texas. Gigafactory Shanghai stands as a testament to our progress, using 29% less energy per vehicle than our Fremont Factory.

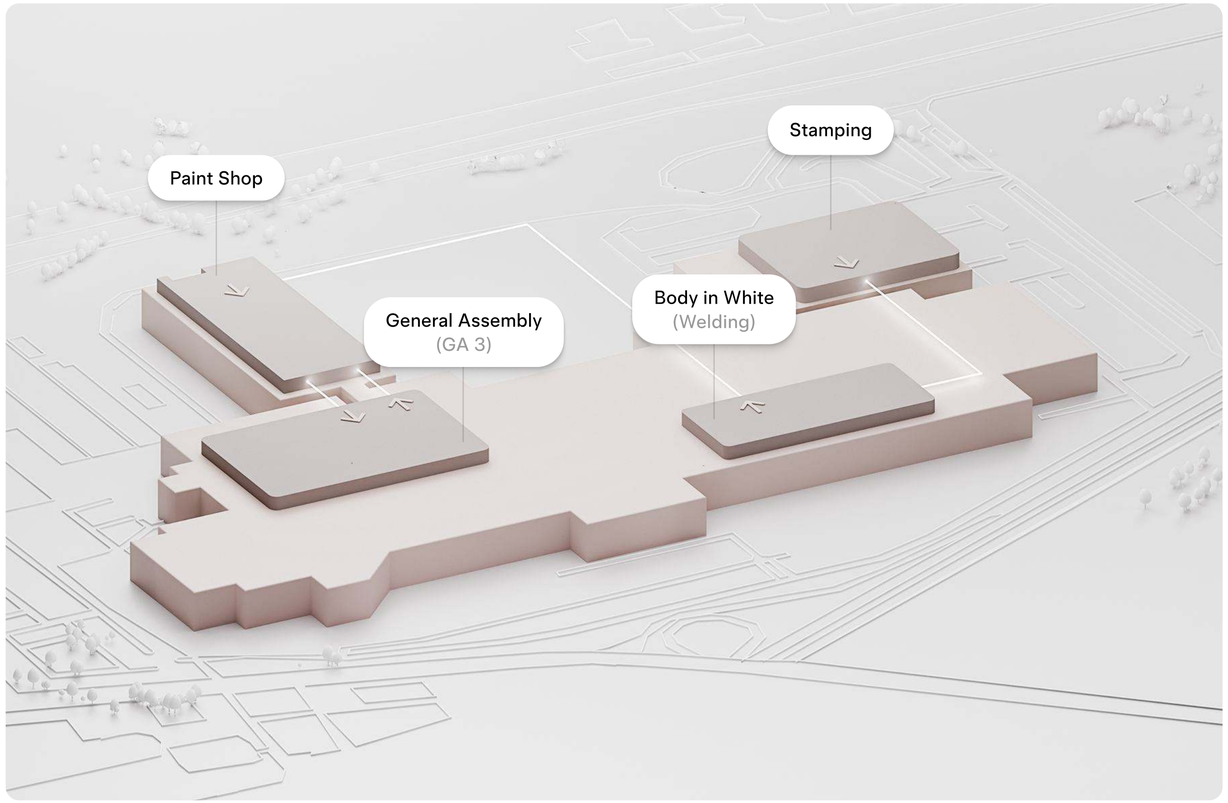
As we continue building out new manufacturing sites, places like Gigafactory Berlin-Brandenburg and Gigafactory Texas will see additional enhancements. We integrate learnings from all sites into the development of future sites, including our Megafactories in Lathrop and Shanghai.

Both of these Megafactories are setting new benchmarks in sustainable manufacturing through improved recycling and energy efficiency measures. Shanghai's infrastructure includes low-nitrogen boilers and a system that reuses 90% of treated exhaust gas in powder coating.

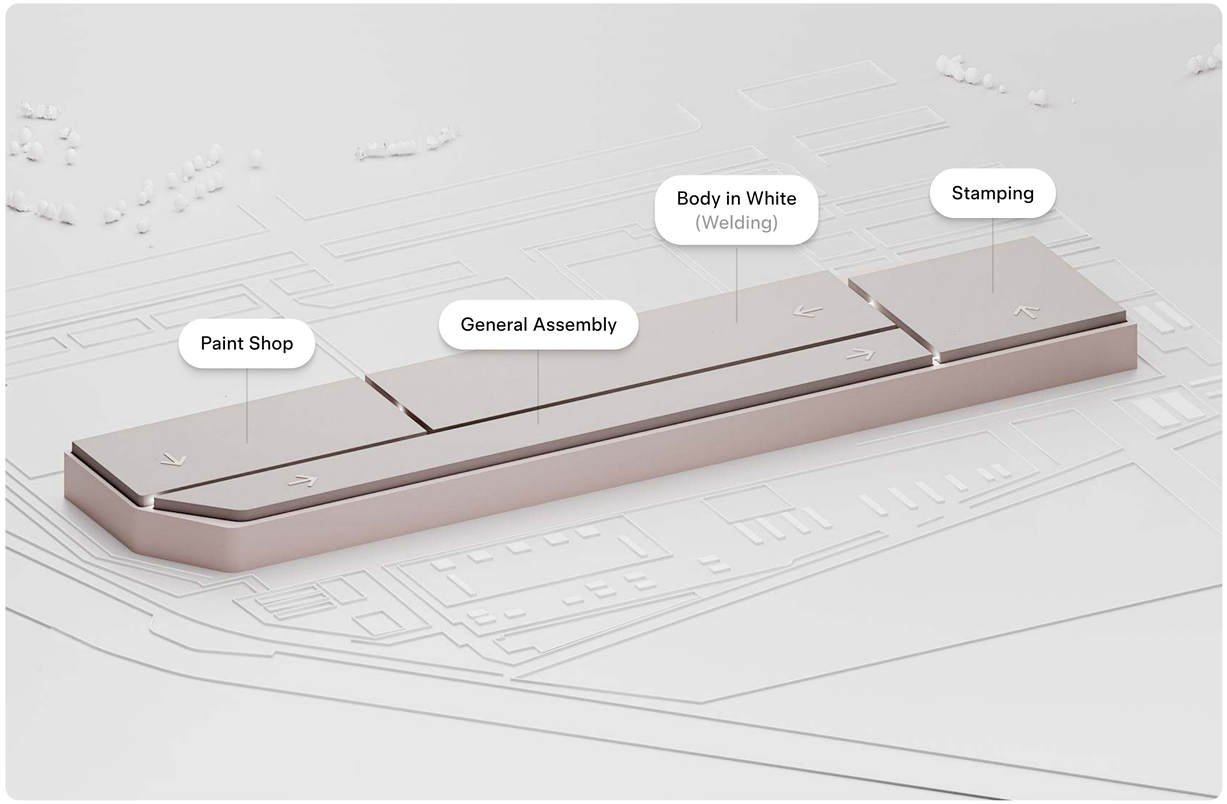
Meanwhile, Lathrop's wastewater management enabled a decrease in water usage in powder coating of about 90%, along with double-digit cuts in hazardous waste and costs—all while scaling production. These ongoing improvements underscore our commitment to sustainable facility design.

Building sustainability into facility design (cont'd)

Fremont Factory
Model 3



Gigafactory Shanghai
Model 3



We are reducing natural gas usage across operations

We also maintain an ongoing commitment to enhancing the efficiency of our manufacturing processes across existing factories with a focus on reducing natural gas consumption.

In 2023, we implemented optimization controls into our plastics and body paint shops at Gigafactory Texas aimed at increasing the efficiency of natural gas usage and thereby curbing overall consumption. Additionally, strategic adjustments to temperature, fan speed and nozzle placements in our Gigafactory Texas paint shop ovens have yielded natural gas reductions. This proactive approach extends beyond Gigafactory Texas.

The evaluation and efficiency of natural gas usage across our global operations will continue to be a priority as we work to reduce emissions from this energy source.



Decarbonization across our factories

Melt Center

Texas

Gigafactory Texas is driving circularity through closed-loop material recovery, landfill diversion and reduced supply chain emissions by melting down aluminum on site.

Up to 50% natural gas savings every year

Hygrometric Control Logic for Air Handling Units (AHUs)

Berlin

Smarter hygrometric control logic means more efficient operations, less wasted energy and a lower carbon impact for Gigafactory Berlin.

About 17,000 MWh in energy savings every year

N-Methylpyrrolidone (NMP) Refineries Efficiencies Description

Nevada

NMP refineries at Gigafactory Nevada boost year-over-year energy efficiencies while powering the sustainable extraction of critical raw materials.

Nearly 9.5 GWh of energy savings every year

Decarbonization across our factories (cont'd)

Heat Recovery Pump Control

New York

Gigafactory New York is optimizing chiller efficiency by preventing thermal short circuiting, reducing pump demand and lowering the heat recovery set point.

Almost 860 MWh of avoided electricity usage every year

Casting Equipment Operation Optimization

Shanghai

Gigafactory Shanghai is improving the performance of casting machines by fine-tuning temperature control, material flow, cycle times and energy use, leading to higher yield, better quality, less waste and lower energy consumption.

Nearly 3,000 $mtCO_2e$ avoided every year

Centralized Regenerative Thermal Oxidizers (RTO's) for Paint Shop

Fremont

The consolidation of 7 thermal oxidizers and 3 concentrator wheels into one centralized RTO system at Fremont Factory streamlines natural gas control.

Almost 46,000 MWh of natural gas savings every year

Reducing our carbon impact even further

Dynamic controls for energy efficiency

In 2023, AI Control for HVAC was expanded from Nevada and Texas to now include our Berlin-Brandenburg and Fremont factories. AI Control policy enables HVAC systems within each factory to work together to process sensor data, model factory dynamics and apply control actions that safely minimize the energy required to support production. In 2024, this system achieved two milestones: the majority of HVAC infrastructure at Gigafactory Nevada is now AI-controlled, reducing fan and thermal energy demand; and the AI algorithm was extended to manage entire chiller plants, creating a closed-loop control system that optimizes both chilled water consumption and the energy required for its generation, all while maintaining factory conditions.

AI Control is primarily deployed on systems that heat or cool critical factory production spaces and equipment. To ensure safe operations, AI Control continuously communicates with the preexisting standard control logic of each system. In the event of any AI Control error, each system seamlessly reverts to standard control. As a result, as of 2024, there have been zero safety incidents or production interruptions related to AI Control.

Optimizing battery cell manufacturing

To reduce the cost of our vehicles and batteries, we need to use less energy to produce them. Tesla has an innovative approach to manufacturing battery cells using a dry electrode process. Current electrode production processes involve mixing liquids with cathode or anode powders and using massive machinery to coat and dry the electrode. Since this process involves large ovens, conventional cell production consumes a lot of energy.

The dry electrode process allows for the direct transition from a cathode or anode powder to an electrode film, reducing energy consumption in the overall cell manufacturing phase by more than 70% based on our latest analysis. For example, Cybertruck uses our 4680 battery cell, which incorporates many of these innovations, addressing cost efficiency and energy density. In 2024, we produced over 100 million 4680 battery cells and continue to ramp up our capacity to support future vehicle programs.

We use AI to drive impact

At Tesla, we believe data centers and artificial intelligence (AI) play a pivotal role in decarbonizing our world in the long term. By utilizing AI technologies paired with hardware designed for autonomy, we are increasing the lifetime utilization and efficiency of our products, which ultimately further reduces emissions. Incremental GHG emissions from data centers today will accelerate more avoided emissions over time than it creates.

Powered by AI from our data centers, our Robotaxi network uses smart technology to optimize routes, improve driving efficiency and cut down on emissions. Our focus on practical, high-impact applications sets us apart in the AI landscape and underscores our commitment to accelerating the world's transition to sustainable energy.

What sets us apart from other AI-driven companies is how we use AI to enhance our clean energy products. While many tech companies use AI in a variety of ways, we focus on integrating it into our products.

1

Cybercab operating for eight months would avoid the equivalent emissions generated by 1 graphics processing unit (GPU) operating for a year*

*This analysis was calculated assuming 19g CO_2e/mi, 500K lifetime miles and Texas grid EF for GPU emissions.

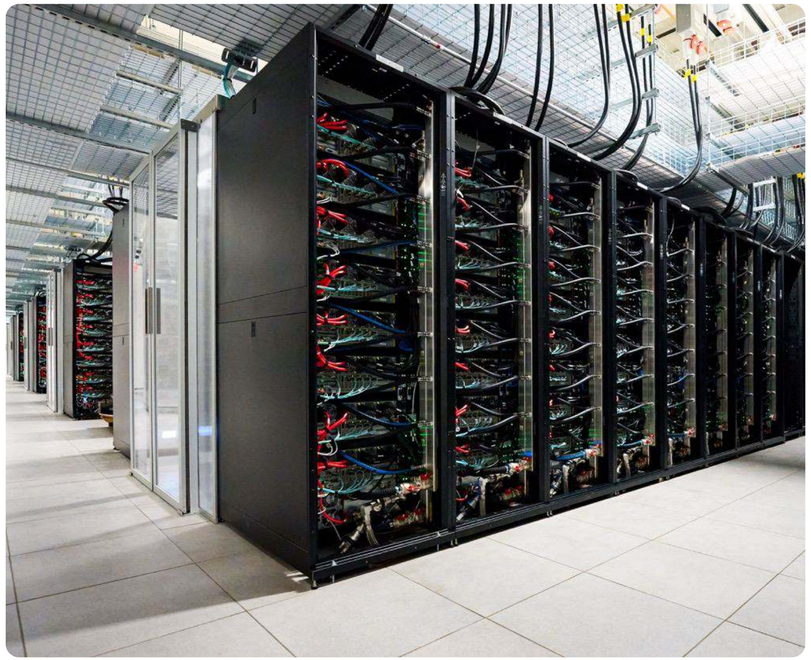
We build sustainability into our data centers

We recognize that while data centers will play a key role in reducing our long-term carbon impact, they do have a short-term environmental impact. That is why we have made it a priority to design and operate our data centers with a focus on energy efficiency and water conservation.

At Gigafactory Texas, we are planning to implement a waste heat recovery system in our data center. This system captures waste heat and repurposes it to provide process heating water to our vehicle coatings and paint shops, reducing the need for water from our chiller plants. By reusing this energy, we are not only reducing our water consumption, but also cutting down on the energy typically required for cooling systems.

We have also made significant improvements to the energy efficiency of our chillers. During colder and drier months, we reduce the condenser water temperature, helping us save energy while maintaining optimal cooling performance.

We are able to balance the short-term environmental impacts of our data centers with the long-term benefits they provide, reducing emissions and getting us closer to a sustainable future.



Increasing the sustainability of our operational fleet and product logistics

As a company that produces inherently sustainable products, we see an opportunity to deploy Tesla vehicles to help reduce our carbon impact. In 2020, EVs made up around 65% of our Mobile Service fleet. By year-end 2024, we increased this figure to 90%. We also added 300 Tesla-owned EVs to our manufacturing operational fleet in 2023, with 122 added in 2024.

We are started to expand our product use into upstream and downstream logistics as well. In 2023, we began using Semi to deliver inbound battery packs from Reno to supply our Fremont Factory. In 2024, we expanded routes to include transportation of outbound vehicles from Fremont as well as delivery operations between warehouses.

By year-end 2024, the lifetime miles of our internal Semi fleet reached over 1.7 million miles, which allowed us to avoid emitting nearly 1,500 metrics tons of CO_2e into the atmosphere—an increase of almost 130% from 2023. We aim to continue growing the integration of our Semis across even more facilities.

~90%

of Tesla's Mobile Service fleet were EVs by year-end 2024

130%

increase in avoided emissions by internal Semi fleet from 2023

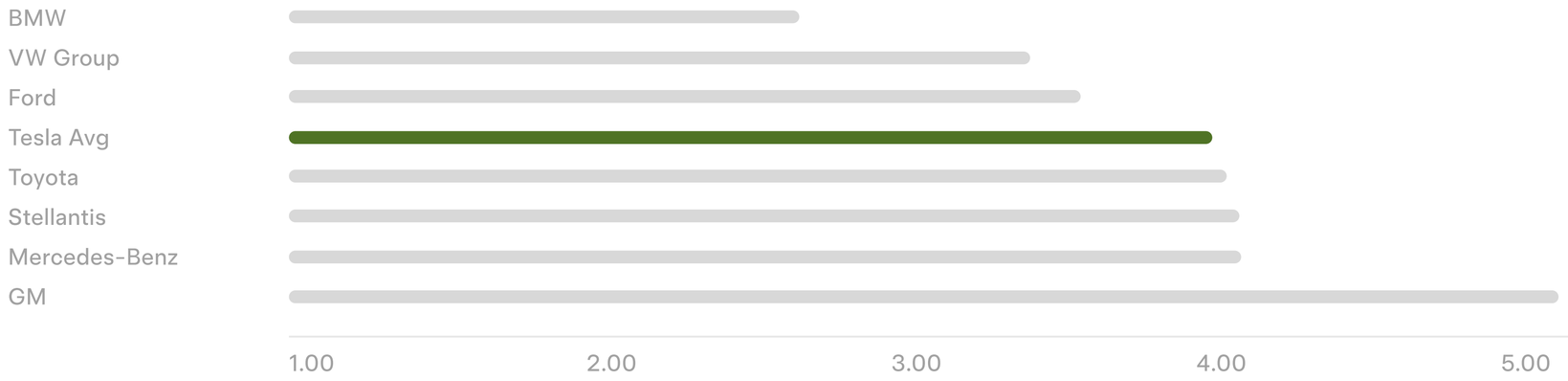
We minimize water usage throughout our operations

We are reducing our water usage throughout our operations as much as possible, prioritizing direct use in manufacturing. In the following section, we outline initiatives we are taking at Gigafactory Berlin-Brandenburg and Gigafactory Texas to reduce water consumption per vehicle (including in the production of battery cells).

Each automaker may draw their boundaries slightly differently, depending on how vertically integrated they are. According to the latest publicly available figures, Tesla withdrew less water at facilities dedicated to vehicle manufacturing per vehicle produced than the majority of established automakers. Gigafactory Berlin-Brandenburg's water intensity was 2.16 cubic meters in 2024, better than all but one other established automaker in the region.

Water Intensity Across Vehicle Manufacturers

(m3 of Water per Vehicle Produced)



Note: Tesla's water usage intensity encompasses not only vehicle manufacturing, but also the water used to cool AI training clusters and support other product lines.
For our note on continued efforts to find the best intensity metric to align with our evolving product lines, see page 192 in our appendix.

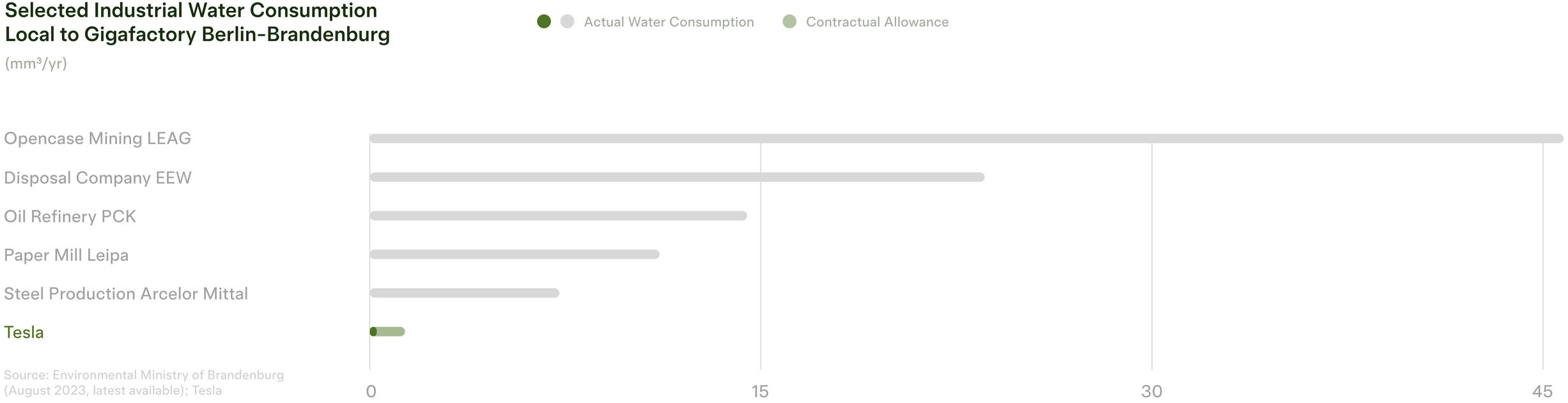
We minimize water usage throughout our operations (cont'd)

Gigafactory Berlin-Brandenburg was designed to consume as little water as possible. Compared to other industrial companies near the factory in East Brandenburg, Gigafactory Berlin-Brandenburg consumes very little water, despite producing hundreds of thousands of vehicles per year. While Tesla is permitted to consume 1.4 million cubic meters of water per year, we only consumed a fraction of that—about 0.45 million cubic meters—in 2024, consistent with our usage in 2023.

We continue to find ways to minimize our water usage, including through the launch of an industrial water recovery and recycling plant onsite that recycles up to 100% of the factory process wastewater.

Selected Industrial Water Consumption Local to Gigafactory Berlin-Brandenburg

(mm^3/yr)



Source: Environmental Ministry of Brandenburg (August 2023, latest available); Tesla

Setting a new standard for water use per vehicle

Water-intensive process optimization

We are constantly optimizing or eliminating water-intensive production processes across our operations. At Gigafactory Berlin-Brandenburg, we implemented hybrid cooling towers, eliminated quench tanks in casting and introduced cascade rinsing systems in the paint shop and battery can wash process. In 2024, we continued to implement various efficiency processes within our paint shops to reduce overall water consumption at Gigafactory Texas.

Rainwater and condensate harvesting and reuse

We plan to capture at least 25% of roof rainwater runoff in a central underground storage system at Gigafactory Texas. Rainwater will be recycled and used to cool manufacturing equipment. In an average year, this system should save an estimated 14 million gallons of potable city water. Additionally, as hot, humid outdoor air is conditioned, water condenses out of the air. Typically, this condensate is discarded as wastewater. At Gigafactory Texas, we plan to use this condensate in our cooling towers and process water systems to offset incoming site water. Based on our latest estimates, this could result in 13.6 million gallons of water conserved annually.

Reclaimed and recycled water

The cooling tower makeup is the single biggest contributor to water usage in a vehicle factory after paint operations. As water used to cool machinery evaporates, it needs to be topped up regularly. The total cooling tower makeup could be offset entirely by non-potable sources such as rainwater or wastewater. Using locally treated wastewater could result in offsetting a large fraction of annual cooling tower makeup water demand with non-drinkable uses. We started using reclaimed water for our landscape irrigation needs at Gigafactory Texas. Once fully deployed, we expect this to save just under 150 million gallons of potable city water annually.

As we make our factories more efficient, our waste per vehicle decreases

Our legacy manufacturing operations at Fremont Factory will always produce more waste per vehicle than our newly designed factories. First, because the automotive supply chain does not have a strong presence on the West Coast of the U.S., many components need to be shipped from long distances to our Fremont Factory, requiring excessive packaging and creating more waste than necessary. Second, modern factories are better designed for material flow. Trailer entry points surround the whole factory, which means that components can be offloaded precisely at the part of the factory where they are needed.

Even though Fremont, a legacy factory, generates more waste than Gigafactory Shanghai, both sites saw a reduction in waste per vehicle in 2024 compared to 2023.

Waste per Vehicle Produced at Gigafactory Shanghai vs. Fremont Factory

(kg of Waste per Vehicle Produced)

	2024	2023	Decrease
Gigafactory Shanghai	152	161	6%
Fremont Factory	289	413	30%

Circular solutions

Creating circularity in our value chain

In our commitment to circularity within our value chain, we prioritize recycling materials to minimize waste. The majority of generated waste—such as paper, plastics, metals and water—is recyclable. At Gigafactory Shanghai, for example, 100% of waste was diverted from disposal in 2024.

At Gigafactory Texas, we initiated a recycling program aimed at optimizing the reuse of scrap metals in our manufacturing processes. Particularly, we recycle aluminum scrap for use in our castings for Model Y. Tesla castings can use primary aluminum and a diversified feedstock of recycled aluminum, including scrap from our operations as well as recycled components from non-Tesla vehicles, such as aluminum wheels.

Advancing closed-loop systems with collection networks

In 2024, we continued strengthening our approach to Extended Producer Responsibility (EPR) as a key enabler of local collection and recycling systems. We collaborate with over 130 compliance schemes across EMEA, APAC and Canada, covering products such as vehicles, batteries, electronics, packaging and tires. In Europe, our dismantler network enables us to collect 100% of high-voltage batteries returned to us at end-of-life. We continue to scale our processes to meet evolving circularity enhancements toward closed-loop systems.

For more information on supplier engagement and battery recycling in our supply chain, see pages 159-162.

~90%

of manufacturing waste diverted from disposal in 2024

~100%

of all battery cell waste recycled at Gigafactory Texas in 2024

Circular solutions (cont'd)

Closing the loop and cutting costs for our batteries

Central to our circularity efforts is a strategic focus on battery recycling. We continue to enhance our measurement and tracking of minerals, from extraction to the end of life for our products.

Our new facility in Texas represents a strategic opportunity to blend sustainability with a robust business model. We aim to process all scrap materials in an efficient and cost-effective manner, ensuring each stream is handled with precision. The facility features a state-of-the-art dry shredding line, capable of processing large volumes of scrap to create an intermediate black mass, with the potential to be reintegrated into our supply chain. This process can not only make the operation economical, but also supports the circularity of materials by returning valuable resources, like lithium, nickel and cobalt, back into production.

The facility is also piloting a novel technology stack for lithium recovery that eliminates waste and captures synergies with Tesla's lithium refinery. This technology aims to achieve a closed-loop system for other critical metals and materials such as graphite and transition metals, ensuring that our recycling efforts are both business-focused and sustainable. Ultimately, from the beginning of the product lifecycle to its end, we are committed to honing a plan for circularity, closing the loop and reinforcing the sustainability of our supply chain.

We know that collaboration with external stakeholders is crucial to our circular solutions journey. We partner with stakeholders outside Tesla to increase accuracy around the carbon impact of our materials.

Reintegrating Manufacturing Scrap into Production



Primary Resources



Intermediates & Refining



Battery-Grade Raw Materials



Manufacturing Scrap



High-Grade Black Mass



Battery-Grade Raw Materials



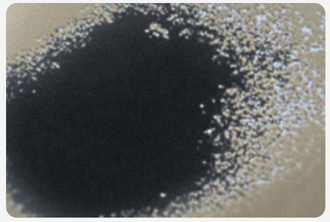
End-of-Life Products



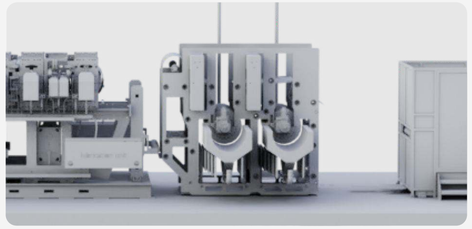
Shredded Cells



Black Mass



Battery-Grade Raw Materials



Cathode/Anode Processing



Cell Manufacturing



Energy Products

Remanufacturing helps maximize circularity for our business

At Tesla, our remanufacturing program plays a key part in driving our efforts toward creating a truly closed-loop system. This global initiative allows customers to return faulty products so we can repair or replace parts, recover valuable materials or apply new insights to improve future products. By doing this, we extend the life of our products, reduce waste and ensure a more sustainable approach to production.

One of the major advantages of this program is the way it helps reduce service costs. Rather than automatically replacing faulty components with new ones, we offer repair and refurbishment options that save both customers and Tesla valuable capital. Additionally, by reusing materials from returned products, we reduce the need for raw materials, cutting costs and minimizing the environmental impact of sourcing critical commodities.

This program plays a crucial role in improving product quality. By gathering data from returned products, we gain valuable feedback that helps refine our designs and manufacturing processes. This ongoing feedback loop allows us to address recurring issues and continuously enhance the reliability of our products.

Ultimately, this strengthens our closed-loop system by providing end-of-life support. Instead of products being discarded, we bring them back into the cycle, repairing, reusing and recycling materials to ensure they stay in circulation. This initiative is a vital part of our commitment to building products that are not only high performing but also built to last.

3 GWh

of energy capacity and over 17,000 mt of material recovered

38,000

long range battery packs worth of remanufacturing material recovered from our vehicles.

~$420M

in total Service costs avoided between major high-voltage battery and drive unit products

Biodiversity

We work to preserve the natural environments around our Gigafactories. At Gigafactories Texas, Nevada and Berlin-Brandenburg, we have taken steps to improve the surrounding ecosystems while minimizing our own impact. Initiatives have focused on reintroduction of native species in areas previously disrupted at our sites.

In Texas, for example, the land now used for our factory was previously a sand and gravel mine dating back to the 1970s. Following mining operations, the land was left with vast areas devoid of vegetation. The land required significant reclamation to restore it to a more stable and ecologically functional state.

Current initiatives at Gigafactory Texas are focused on fostering diverse plant and animal life and restoring ecological balance to allow for the natural recovery of the site.

Gigafactory Nevada partnered with a team of ecologists at the University of Nevada, Las Vegas to conduct habitat surveys to better understand and manage biodiversity on site. We reforested around 300 hectares at Gigafactory Berlin-Brandenburg, matching the area used for the factory and surrounding public infrastructure, with over 60% deciduous trees, doubling the 30% required by forestry authorities. Additionally, we enhanced 280 hectares of nearby pine forest through underplanting and plan to upgrade another 66 hectares, boosting climate resilience.

We recognize the need to continue taking action to restore, maintain and enhance our local ecosystems.

30

native plant species were planted at Gigafactory Texas

300

native seedings were planted around Gigafactory Nevada

300

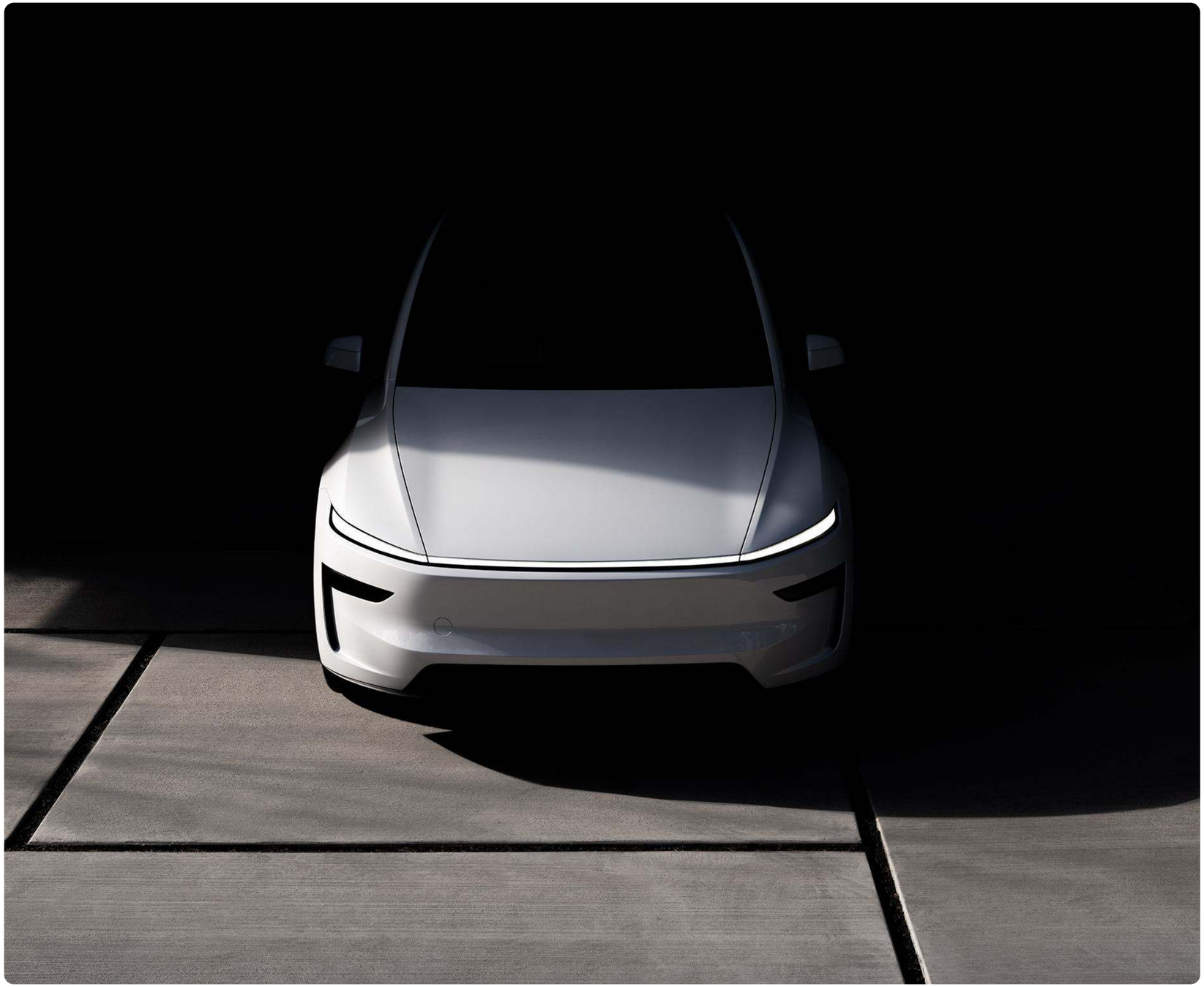
hectares of trees reforested at Gigafactory Berlin-Brandenburg



Product & Safety

03

For mass adoption, our products need to be better than their fossil fuel alternatives in every way—safer, more affordable and more fun.



We built an ecosystem of products that people love

Consumers are unlikely to buy products simply because they have a low lifetime carbon impact. They need to be better in every way: safer, more affordable and more fun. We are not just trying to build sustainable products, we are committed to building the best products—period.

Product & Safety

Our Product Ecosystem	66
Making EVs Affordable	72
Freedom to Travel	76
Maximizing Safety	80
Powering a Safe and Reliable Grid	89

Everything we do is in support of our mission

Since our founding in 2003, Tesla has been focused on having a positive impact on our world by replacing fossil fuel-powered products across the transportation and energy industries with cleaner—and safer—alternatives.

We create products that are sustainable, and we work tirelessly to integrate sustainability into each step of our value chain, from responsible sourcing and manufacturing to our products' inherent sustainability and end-of-life circularity. Our product offering has expanded from sports cars to include sedans, SUVs and trucks as well as electric vehicle charging, solar panels and energy storage for homes, businesses and the grid.

While we have delivered approximately eight million electric vehicles (EVs) and deployed nearly 74 GWh of energy storage around the world, much of the global economy continues to run on fossil fuels. Our work is not done.

Creating a safer, cleaner, more enjoyable world

Pollution emitted during the burning of fossil fuels leads to 8 million premature deaths globally each year. That accounts for one in five premature deaths worldwide. Our zero direct-emission products contribute less climate-warming carbon and less fine particulate pollution into the Earth's atmosphere.

Each year, about 1.19 million people die in traffic accidents globally, with traffic injuries being the leading cause of death for children and young adults between the ages of 5 and 29.

We believe autonomy will save lives, time and money while improving quality of life for everyone. Autonomous transportation will make our roads safer for drivers, passengers and pedestrians alike.

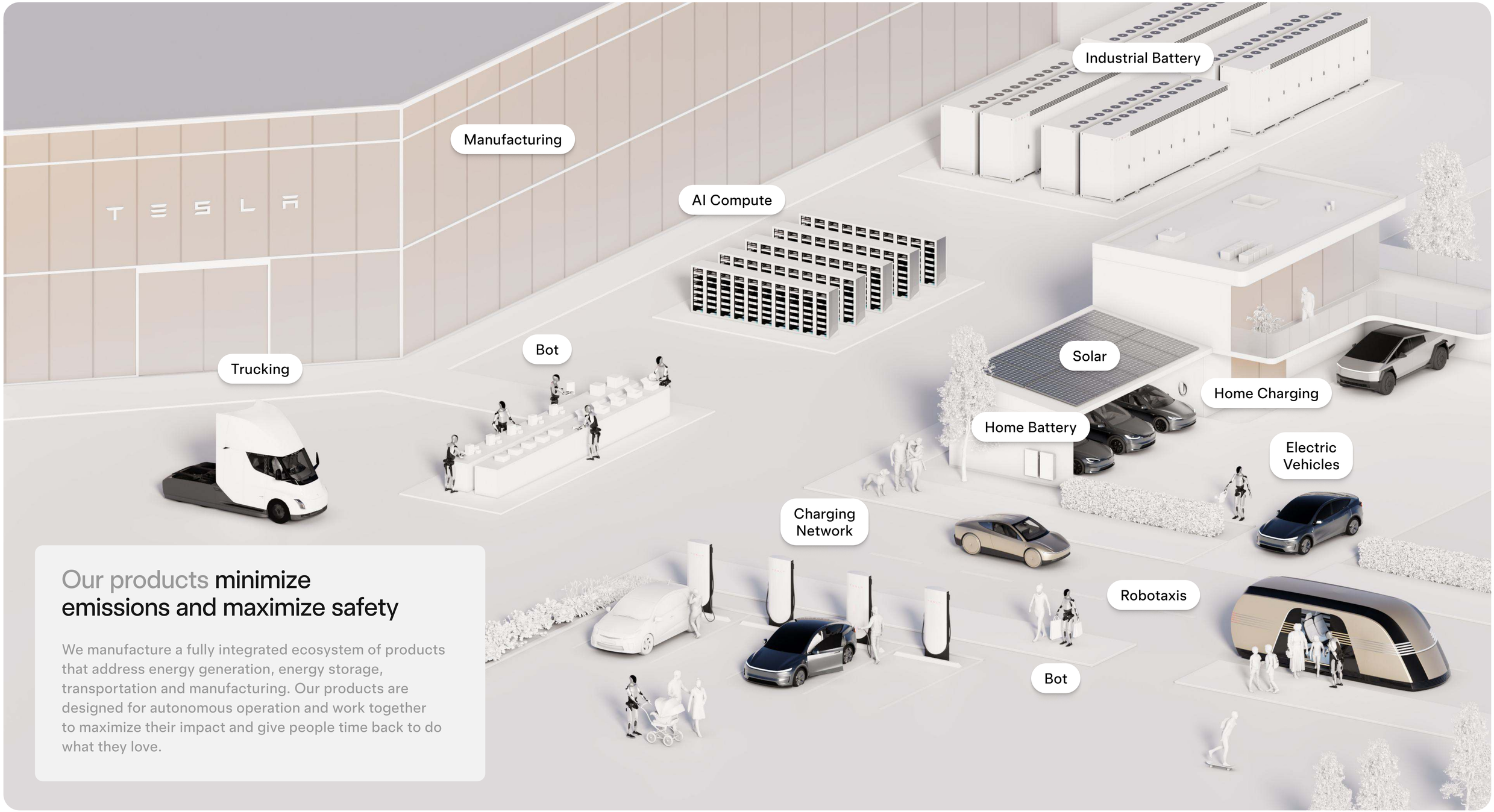
Optimus, our autonomous humanoid robot, will give people back more time to do impactful work and enjoy their lives by automating time-consuming, unsafe and repetitive tasks at work and in the home.



Our product philosophy

We are further accelerating our mission—and impact—through autonomy. As we continue to work toward a fully sustainable economy, we see an opportunity to further accelerate the world's transition to sustainable energy by investing in artificial intelligence (AI) as a way to maximize the impact of our products. Enhancing our products with AI, such as with our autonomous vehicles and robots, improves safety while making our products more efficient, accessible and affordable.

For example, our Robotaxi service will provide a safer, more affordable transportation option. Cybercab, designed for autonomy without a steering wheel or pedals, will be manufactured using a revolutionary "unboxed process" that will sharply reduce the average cost per vehicle to manufacture, and in turn, the price our customers pay for transport. With only two seats and ample cargo space, this vehicle will be the workhorse of our future Robotaxi service and will begin volume production in 2026. This work will reduce emissions and improve safety faster than relying solely on selling vehicles directly to customers.



Our products minimize emissions and maximize safety

We manufacture a fully integrated ecosystem of products that address energy generation, energy storage, transportation and manufacturing. Our products are designed for autonomous operation and work together to maximize their impact and give people time back to do what they love.

Focusing on the entire customer journey

Our goal is to ensure a positive customer experience, from demo drive through ownership, and it all starts with innovating the buying process. We sell directly to our customers with each individual step being automated (including financing and insurance), removing the need to interact with a human. Zero-contact delivery started in 2018 and has continued to be the most convenient way of getting our cars to our customers.

Thanks to our direct-delivery model, we are able to gather customer feedback at every step of the process, helping our customers find and enjoy the right vehicle. In 2024, our average customer satisfaction score was over 90% for customers who took a demo drive in our vehicles, while it was over 92% for customer delivery experience.

Our data shows financing has been a concern for would-be buyers, which we have been continuing to address through more attractive interest rates and leasing options.

As we increase our vehicle fleet, we strive to enhance the service experience for our customers, with more locations, shorter wait times and ultimately fewer visits required. Mobile Service reduces the need for many trips to Service centers, with active diagnostics for maintenance repairs and self-scheduling of repair appointments also improving the customer experience. Customer experience feedback following Service center visits has also improved, with a 93% average customer satisfaction score in 2024.

Affordability is key to mass EV adoption

The accessibility of our products is fundamental to our mission. Model Y is priced on par with equivalent ICE vehicles and we have made it even better, with new Model Y having launched in all markets in early 2025. Unfortunately, most other EVs on the market today are often priced at a premium compared to their direct ICE vehicle equivalents.

To further accelerate EV adoption, we are launching more affordable products in 2025. All of our vehicles come standard with superior equipment and software, including the capability to run Full Self-Driving (Supervised), over-the-air software updates, 5G connectivity and, in our view, the best infotainment system on the market.

Model Y

Long Range Rear-Wheel Drive

$39,990*

Reflects pricing at time of publication, June 2025

*Includes gas savings over five years and 60,000 miles using an average U.S. gas cost of $3.17 per gallon and electricity cost of $0.16 per kWh.



Average New Vehicle

ICE Equivalent

$47,462

Reflects pricing at time of publication, June 2025

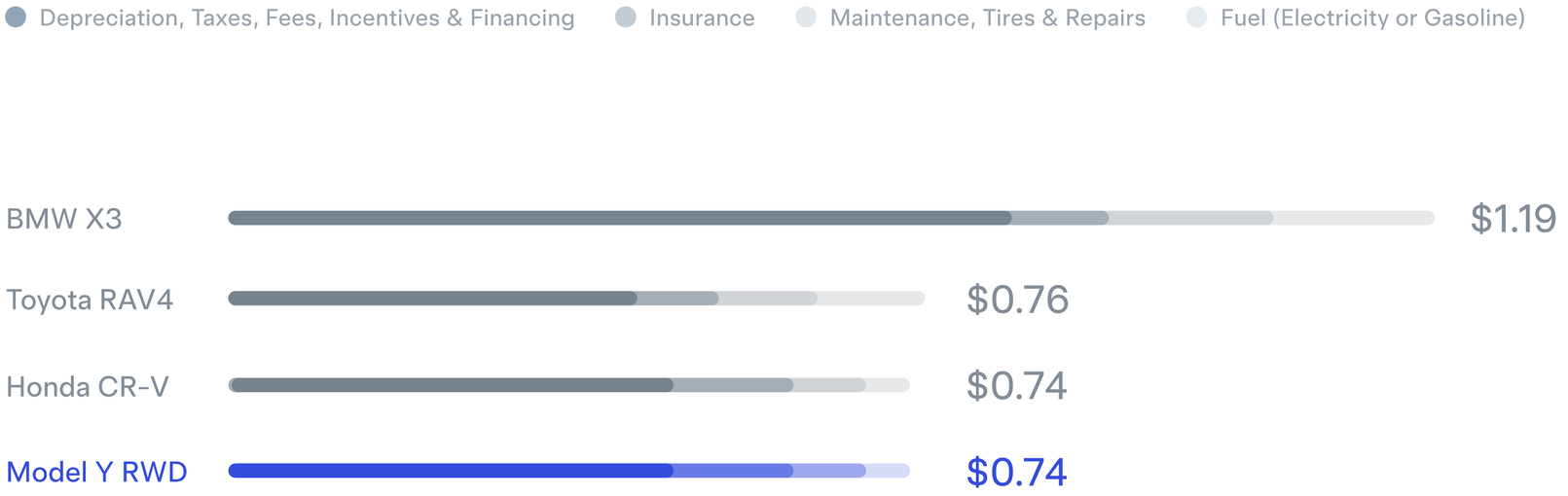
Model Y total cost of ownership per mile is similar to mass-market ICE vehicles

While the sticker price of Model Y is similar to an equivalent BMW or Audi, its lifetime operating cost is in-line with mass-market, less premium ICE vehicles.

With fewer moving parts to repair and no oil changes or emission checks needed, Tesla vehicles require minimal maintenance and can cost less to maintain. Regenerative braking also helps reduce wear, extending the brakes lifespan and improving energy efficiency.

EVs are less expensive to fuel than gas-powered vehicles, and charging at home makes the experience more convenient. The cost of electricity to power Model Y is up to three-times less than the cost of gas for a comparable ICE vehicle.

Total Cost of Ownership ($ per Mile)
(5 Years and 60,000 Miles)



Model Y RWD

$0.74

Leveraging autonomy to accelerate EV adoption

Based on the recent trajectory of EV adoption, it will still be many more years before the miles traveled by EVs fully displaces the miles driven by ICE vehicles. We view autonomy as the way to further accelerate EV adoption.

Full Self-Driving (FSD) (Supervised) continues to rapidly improve and now far exceeds human levels of safety. We aim to replicate this performance with an unsupervised FSD option for our customers and our Robotaxi service, the latter of which launched in Austin, Texas in June 2025.



Robotaxis can displace ICE vehicles even faster

With over a billion ICE vehicles on the road, the limiting factor in displacing fossil fuels is how many EVs Tesla and our peers are able to make and deliver. Robotaxis can completely change this paradigm. The average passenger vehicle is used only 10 hours per week. Conservatively, we believe we can significantly increase utilization through autonomy, with Robotaxis driving many more hours per week, with over 50,000 miles driven per year per vehicle.

Our long-term goal is to offer autonomous transport with a cost-per-mile below existing rideshare options, personal car ownership and public transit. At scale, we believe our Robotaxi business can achieve a total cost per mile far below other alternatives with Cybercab, which is designed from the ground up for autonomy.

Data shows that our owners drive their Tesla vehicles more than the average gas vehicle is driven in the U.S., suggesting that their Tesla is their primary vehicle. Still, range and charging concerns are a key reason why many people do not replace their ICE vehicle with an EV. The more confident drivers are that their EV can be used for errands, commuting and long road trips, the less they will feel the need to supplement their EV with an ICE vehicle.

Average Annual Miles Driven
(United States)

50,000
Cybercab (est.)

11,360
ICE

14,880
Model Y



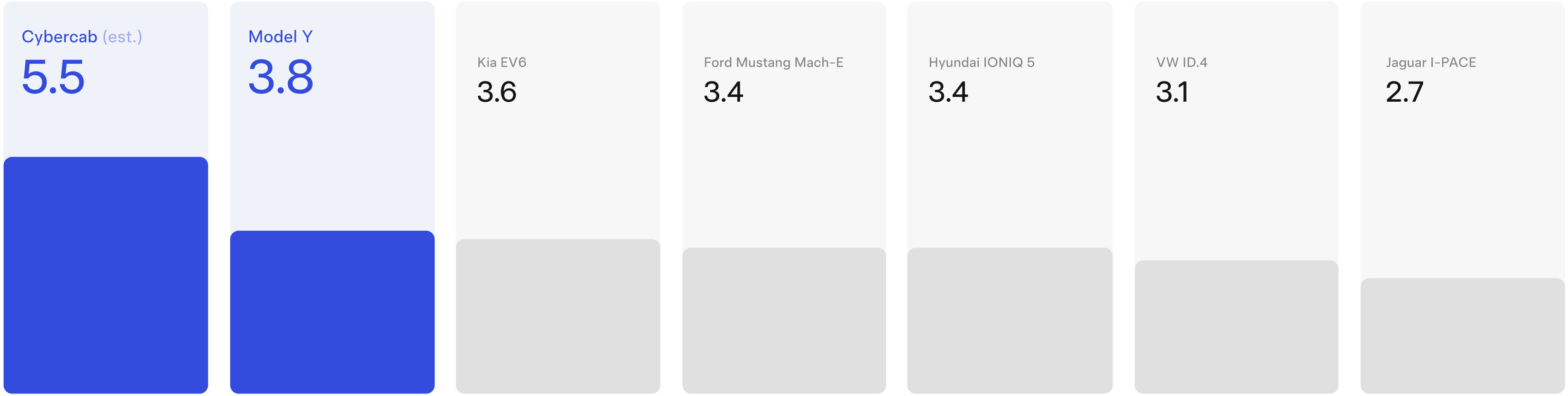
Freedom of travel is the reason people buy personal vehicles in the first place

Consumers do not buy a vehicle that meets most of their driving needs—they buy a vehicle that meets all of their driving needs. Since its introduction in 2012, we have increased the range of Model S by over 50%—from 265 miles to 410 miles of range per charge for the long-range trim.

Our focus on energy efficiency (achieving max range from the same sized battery) has allowed us to continue increasing range while keeping battery size relatively the same. Cybercab will be built on our next-generation platform, including a powertrain with 5.5 mi/kWh (est.).

EV Powertrain Efficiency

(mi/kWh)







Superchargers can recover up to 200 miles of range in 15 minutes

We continue to expand and improve our Supercharging network

In 2024, we added over 10,600 Supercharger stalls to our charging network and delivered over 5.2 TWh of energy, avoiding over 5.5 billion kilograms of direct CO_2 emissions.* We unveiled our V4 cabinet, which supports 400 V–1,000 V vehicle architectures, charges up to 500 kW for passenger vehicles and 1.2 MW for Semi and includes power electronics with three times the power density.

We launched Battery Heating at Superchargers, a feature that allows vehicles with LFP battery packs to charge up to four-times faster. We also welcomed more OEMs in North America into our Supercharging network, including the first NACS vehicles.

*CO_2 savings reflect direct internal combustion engine (ICE) exhaust emissions avoided by comparing energy delivered via Supercharging to equivalent distance driven by internal combustion engine (ICE) vehicles and excludes upstream grid emissions.



Our drivers have the freedom to go anywhere

Average Uptime of Supercharger Sites

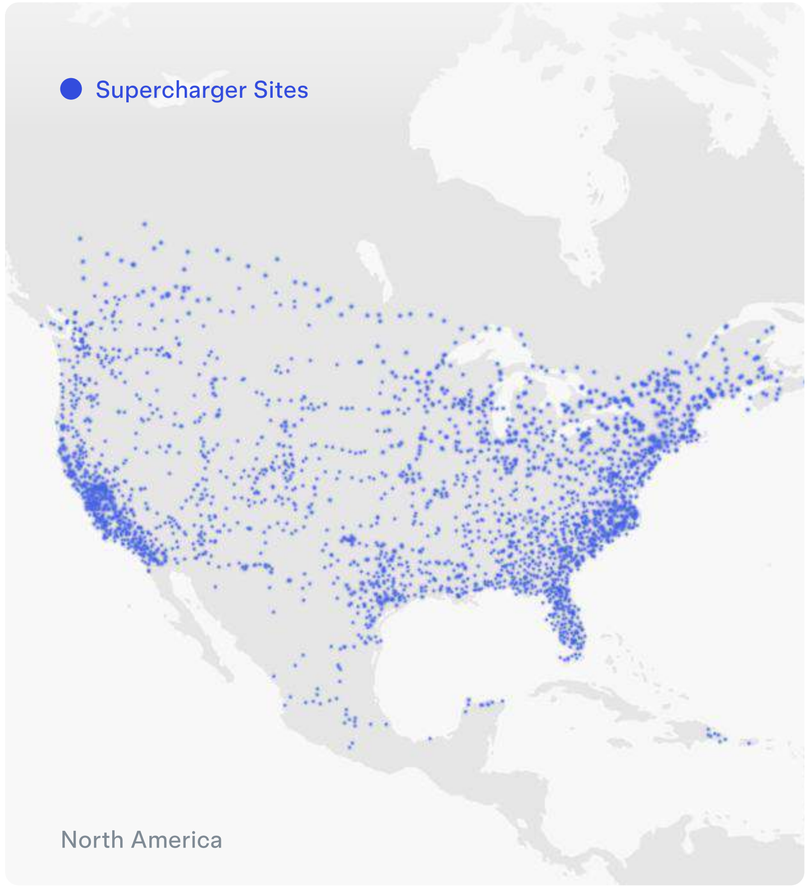
2024

99.95%

2023

99.97%

Uptime of Supercharger sites reflects the average percentage of sites globally that had at least 50% of their daily capacity functional for the year.







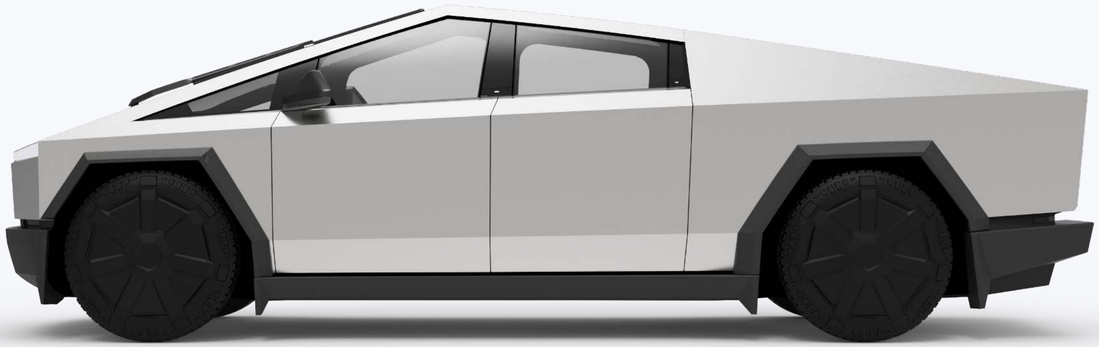
Exceeding safety standards across four continents

	NHTSA	IIHS HLDI	EURO NCAP	ANCAP SAFETY	C-IASI 中国保险汽车安全指数	TNCAP Taiwan New Car Assessment Program
Model 3	★★★★★ 2018	2022 IIHS TOP SAFETY PICK+ 2022	★★★★★ 2025	★★★★★ 2025	Top Rating Occupant Safety Active Safety 2021	★★★★★ 2025
Model Y	★★★★★ 2020	2024 IIHS TOP SAFETY PICK+ 2024	Best in Class ★★★★★ 2022	Top Performer ★★★★★ 2022	Top Rating Occupant Safety Pedestrian Safety Active Safety 2021	★★★★★ 2025
Model S	★★★★★ 2013		Best in Class ★★★★★ 2022	★★★★★ 2014		
Model X	★★★★★ 2017		Best in Class ★★★★★ 2019	Top Performer ★★★★★ 2019		
Cybertruck	★★★★★ 2024					

Exceeding safety standards across four continents (cont'd)

Cybertruck has earned a five-star overall safety rating from the National Highway Traffic Safety Administration (NHTSA), marking a significant milestone for the electric pickup. This rating applies to both 2024 and 2025 models. Cybertruck achieved five stars in the side crash tests for both front and rear seats, demonstrating exceptional protection in side-impact scenarios. Cybertruck also had the lowest probability of rollover of any pickup truck ever tested, with a rollover risk of 12.4%.

Cybertruck



Five-star safety rating from NHTSA

We design our vehicles to be as safe as possible

Tesla vehicles are engineered to be the safest in the world. They are equipped with specially designed crumple zones, airbags and pre-tensioning seatbelts, among other technologies. Beyond our five-star safety ratings, we strive to continually learn more about passive and active safety from our fleet.

All Tesla vehicles built since October 2016 come with external cameras, additional sensors and onboard computing that enable advanced safety features like Automatic Emergency Braking, Lane Departure Warning, Forward and Side Collision Warning, Obstacle-Aware Acceleration, Blind Spot Monitoring, vulnerable road-user detection and more—all of which get better over time through over-the-air software updates.

We deploy these updates remotely—no Service visit needed. Connectivity is a hallmark of Tesla ownership and software updates enhance the customer experience.

Our Safety Principles

Safety is core to our customer experience

The safest crash is no crash

Safety Optimization is fleet-data driven and deployed at scale

Not all active safety systems are created equal

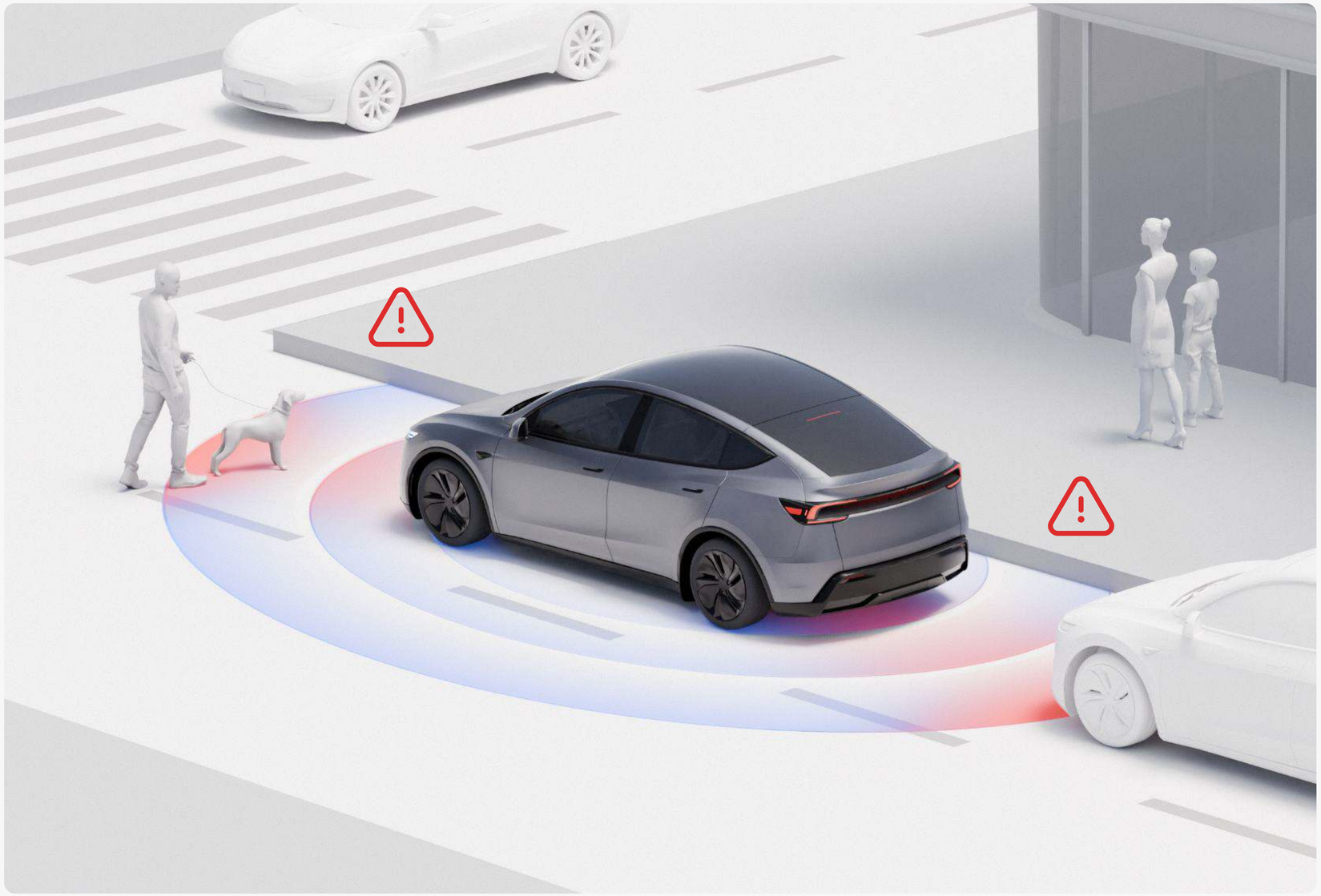


Our active safety features are powered by cameras, a neural-net computer and learnings from our fleet of nearly eight million vehicles, which have cumulatively driven billions of miles.

Built on a deep neural network, Tesla Vision deconstructs the vehicle's environment at greater levels of reliability than classic vision processing techniques can. The system also continually improves over time with accumulated fleet miles.

Autopilot technology includes the hardware and software necessary to operate active safety features, Autopilot and FSD (Supervised).

Autopilot technology makes our vehicles safer



Miles Driven Before One Accident
(2024)

Tesla Vehicles With Autopilot Technology Engaged	6.77 M
Tesla Vehicles Without Autopilot Technology Engaged	1.18 M
Total U.S. National Average*	0.70 M

*Based on the most recent data available from NHTSA and FHWA (from 2023).

Every FSD (Supervised) release is rigorously tested

Thanks to our installed base of nearly eight million vehicles and video data from accumulated fleet miles, we can identify rare and challenging scenarios and train our FSD (Supervised) neural nets to handle these situations more safely than the average human driver.

The average person may drive half a million miles in their lifetime, whereas we are training our software on billions of miles of real-world data. We are not satisfied with simply being safer than human drivers, we strive to achieve outcomes that are several orders of magnitude safer than the average human driver.

The following to the right are 16 real-world examples that we have trained FSD (Supervised) to navigate, resulting in safer outcomes for our customers and other road users.

Learn more about our FSD (Supervised) training examples.

FSD (Supervised) Training Examples

(Full Self-Driving)

- Reverse cut-in (occluded)
- Peeking (occluded)
- Left turn cut-in
- Parallel cut-in (occluded)
- Yield for oncoming traffic during overtake
- Stop sign right-of-way violator
- Door opening during overtake
- Right turn harsh braking
- Left turn across path
- Cut-out to static cone
- Dynamic debris (dropped cone)
- U-turn cut-in (occluded)
- High-speed cut-out to stationary vehicle
- High-speed harsh braking
- High-speed stationary child
- High-speed crossing child

Safety Score[Beta] incentivizes safer driving

We are seeing dramatically safer outcomes when our drivers use FSD (Supervised) and offer discounts to those who have both Tesla Insurance and FSD (Supervised) (where allowed). The more often FSD (Supervised) is enabled, the bigger the discount is on insurance premiums for certain types of coverage on Tesla Insurance policies.

Drivers who enroll in Tesla Insurance receive a Safety Score[Beta]. Instead of determining a driver's insurance premium from demographic information (gender, age, education or marital status) and financial history (credit score), our algorithm calculates a Safety Score[Beta] based on actual driving behavior, where available.

Our data shows a lower rate of collision for the cohort of drivers who have enabled Safety Score[Beta]. As a driver's Safety Score[Beta] increases, the number of collisions per mile decreases and insurance premiums reduce.

Learn more about Tesla Insurance

Safer Driving, Higher Safety Scores, Fewer Collisions

(2024)



Behaviors We Monitor

(United States)

Forward collision warnings	Forced Autopilot disengagement (driver not paying attention)
Hard braking	Late-night driving
Aggressive turning	Excessive speeding
Unsafe following (tailgating)	Unbuckled driving

Our products get better over time

Tesla pioneered the idea that vehicles can improve and become more capable over time by ensuring every Tesla vehicles produced since 2012 can receive over-the-air software updates. Over-the-air software updates have delivered improvements like increased range through battery management optimization, better thermal management in cold-weather, new features like Sentry Mode and more.

These updates have introduced new features and functionalities that make our vehicles smarter, safer and more fun to drive. We have also used over-the-air updates to ensure our vehicles are as secure as possible when they are delivered and continue to be as secure as possible over their lifetime.

In 2024 alone, we deployed over 300 new or updated features to our owners worldwide. Additionally, 99% of recalls that were reported for Tesla vehicles in 2024 were resolved using over-the-air software updates—allowing our customers to skip Service center visits, maximizing their convenience and saving them time.

250+

new or updated features deployed to owners globally

99%

of recalls reported in 2024 resolved through over-the-air updates

Leading the industry in fire safety

Vehicle Fires per Billion Miles Driven
(2023)

Tesla
6.5

United States
55.0

We design our batteries to minimize the likelihood of thermal runaway becoming a fire. This is one of the reasons why our rate of vehicle fires is about eight-times less than the average vehicle. To support a safe transition to sustainable energy, we share safety techniques with the entire industry.

We publish updated fire safety statistics in our Vehicle Safety Report as they become available. As we rely on non-digital information for some of these cases, there can be a delay between when an incident occurs, when we are notified and when it is included in our statistics. Therefore, to better reflect what we have learned about fire events involving Tesla vehicles, we now collect annual vehicle fire data for a year before publishing to ensure we have captured all known events.

For more information about our methodology, see our Vehicle Safety Report



Powering a sustainable energy future

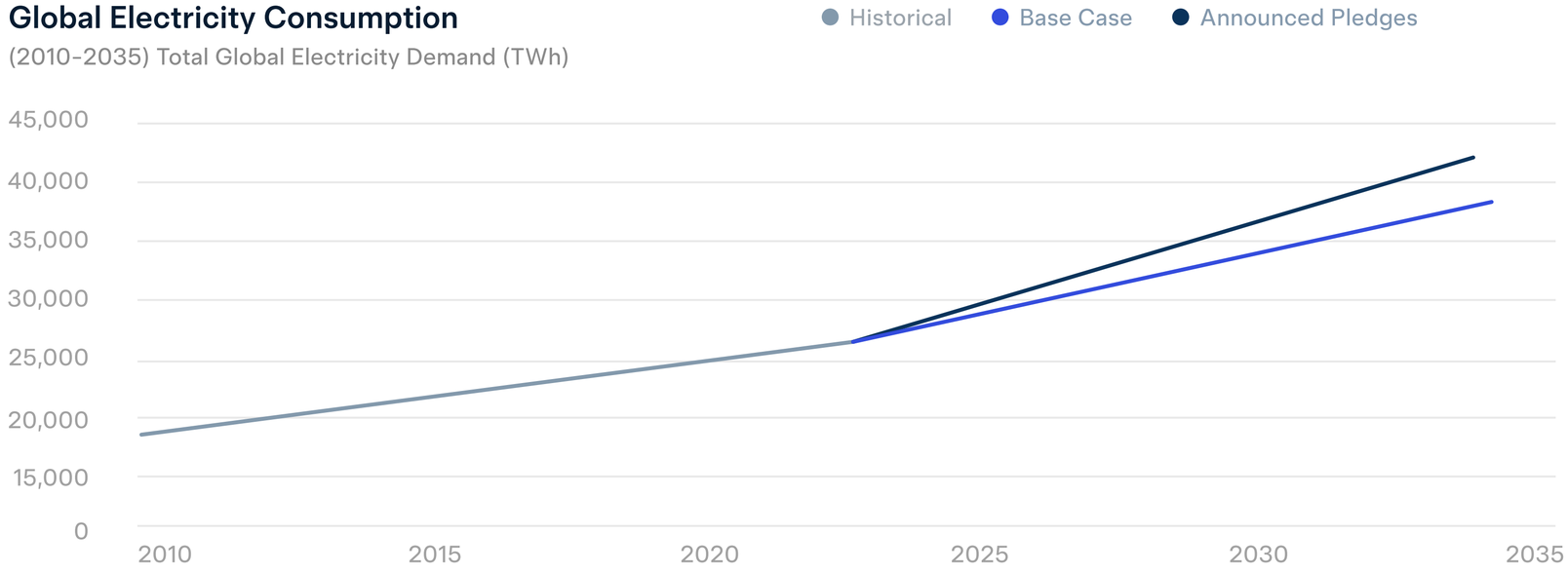
Electrifying transportation requires ensuring that the grid is simultaneously clean and resilient. Tesla's energy ecosystem is designed to scale global energy infrastructure so that clean energy is available where and when it is needed most.

Electrification and the exponential growth of AI and data centers are driving energy demand. Tesla's integrated approach enables a future of sustainable energy that is cleaner, more affordable and more reliable for everyone.

Global electricity demand rose by 4.3% in 2024 compared to 2.5% in 2023 and is projected to continue to increase by roughly 4% through 2027. Energy storage will be critical in managing this increase in demand.

Global Electricity Consumption

(2010-2035) Total Global Electricity Demand (TWh)



Source: https://www.iea.org/reports/world-energy-outlook-2024

Batteries provide critical reliability and stability to the grid

Batteries increase grid reliability and stability by storing excess renewable energy for use during periods of high demand. In California, for example, where solar generation is high, batteries charge during the day as solar energy is available and discharge in the evening when solar generation goes down and electricity demand goes up.

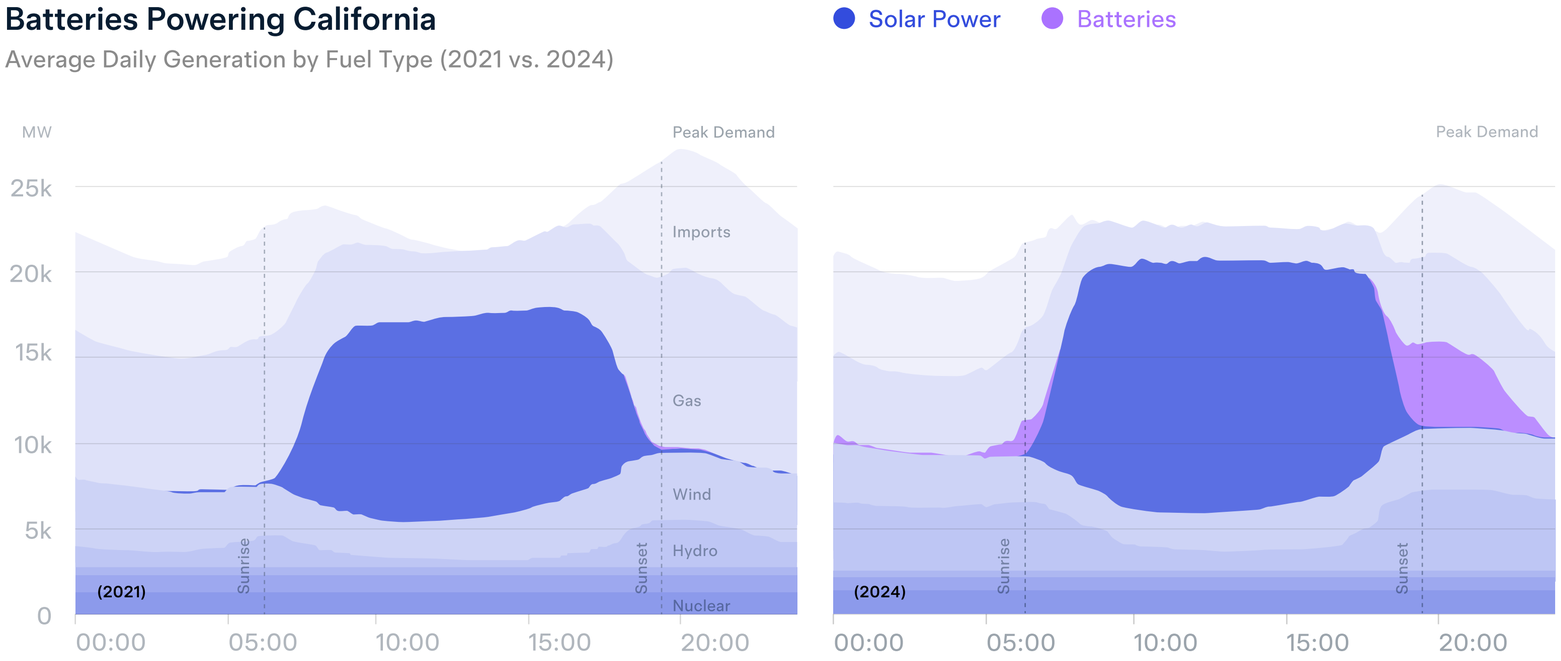
Between 7 PM and 10 PM on April 30, 2024, batteries supplied more than one-fifth of California's electricity. Tesla has 10+ GWh of industrial energy storage products deployed in California, roughly one third of the state's total battery supply.

Source: https://www.caiso.com/todays-outlook/supply

Note: Data reflects utility-scale generation and does not include "behind-the-meter" sources like solar. No adjustments were made for weather.

Batteries Powering California

Average Daily Generation by Fuel Type (2021 vs. 2024)



A complete ecosystem for reliable, cost-effective energy

We have a full ecosystem of energy products—including hardware, software and services—across generation and storage, with in-house experts available to assist throughout every step of a project, from design to deployment through end of life. This integrated energy ecosystem allows us to provide affordable and reliable products that enable greater global sustainability.

Residential energy products allow businesses and homeowners to generate, store and consume their own energy, lowering electricity costs and reducing exposure to grid outages. Megapack utility-scale storage supports the integration of grid-scale renewables, making it possible to achieve cleaner, affordable, efficient and resilient energy systems.

As the world transitions to renewable energy sources like solar and wind, batteries help balance supply and demand and offer stability services to prevent grid outages reducing our reliance on fossil fuel peaker plants and enhancing grid stability. Batteries also enable backup power and faster grid restoration when outages occur.



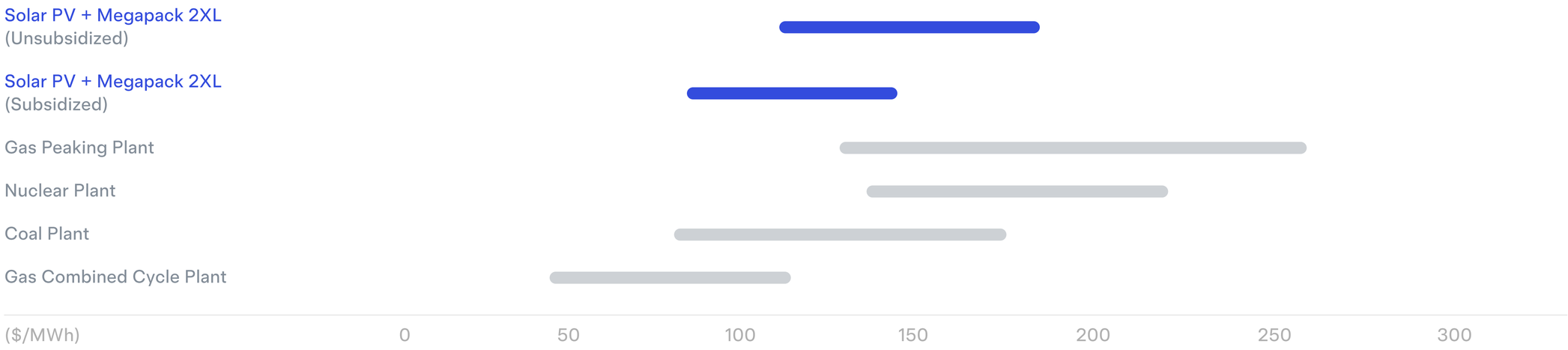
Renewable energy and storage are already cost competitive

Megapack paired with solar PV is cheaper per MWh than many fossil fuel alternatives. When considering the total cost of ownership, the long-term economics are more favorable thanks to lower maintenance costs, no fuel expenses and longer lifespans. Megapack 2 XL has almost 4 MWh of battery storage capacity and, given its scalability, can support projects of over 2 GWh.

Source: Tesla 2024 analysis. Megapack 2 XL figures include our four-hour duration product and are based on Tesla estimates. These figures include firming costs to account for Effective Load-Carrying Capability (ELCC), as well as augmentation costs. They do not include upfront costs such as interconnection. High and low ranges are based on variability in installed cost and solar capacity factors. Costs are based on the Lazard Levelized Cost of Energy (LCOE) v17 published in May 2024 and include the Revised Section 301 tariff of 25%.

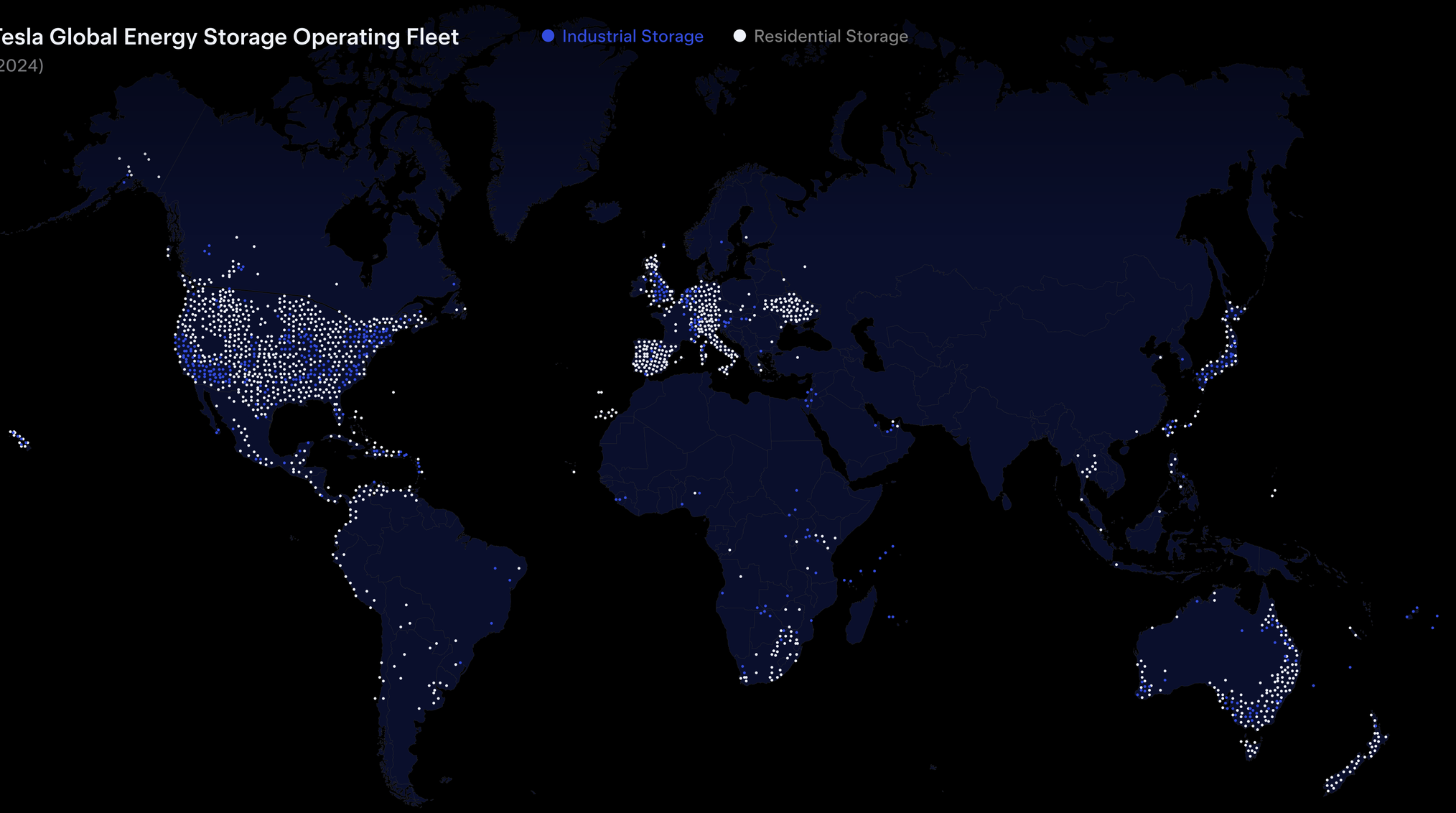
Levelized Cost of Energy Comparison for Megapack and Conventional Resources

($/MWh)



Tesla Global Energy Storage Operating Fleet

(2024)



2,000+

industrial energy projects operating globally across 60+ countries

800,000+

Powerwall units deployed globally

Growing storage deployments provide grid stability and resiliency

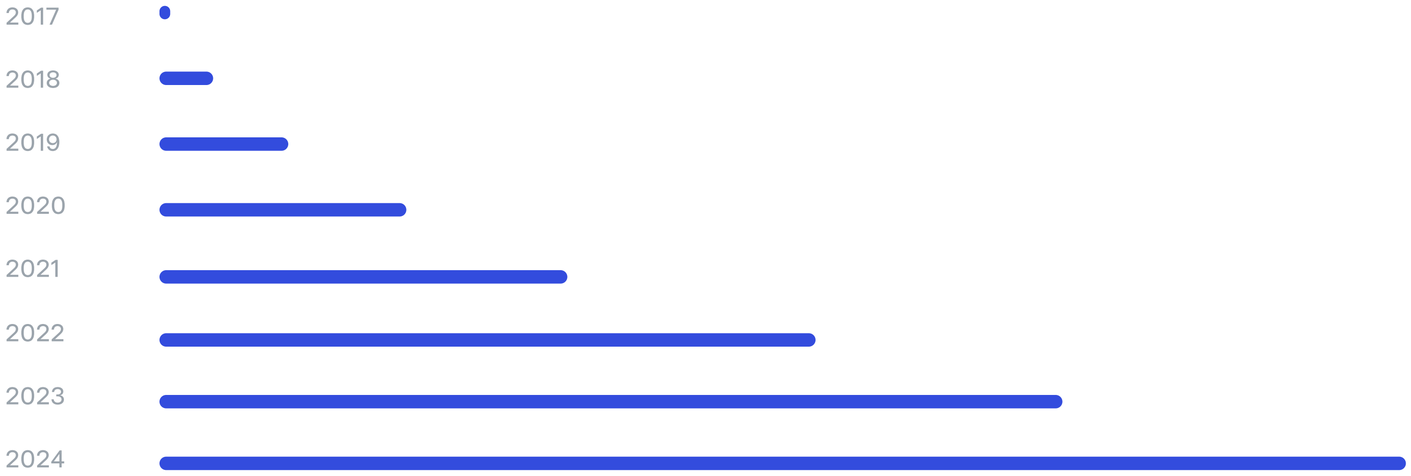
In 2024, Megapack deployments grew by more than 110% compared to the previous year. By year-end, we had deployed a total of 47 GWh of industrial energy storage systems across over 2,000 projects in more than 60 countries. Of this, over 23 GWh are already in operation. The remaining capacity is in the final stages of delivery, installation or commissioning and will come online in the near term.

Powerwall deliveries grew 41% year over year. Tesla has expanded its network of Powerwall installers by partnering with certified installation companies and expanding its training programs to ensure a larger, more accessible installation workforce.

With over 3,200 installers globally, this initiative aims to increase adoption by making the installation process faster, more reliable and available to a broader range of customers.

Cumulative Powerwall Installations

(GWh)



Megapack is designed with safety and performance in mind

Tesla's global industrial energy fleet performs with an average availability of 99.2% in almost every condition across four out of five Koppen climate zones. Tesla has a proven track record of >99% on-time delivery across projects to date, and in 2024, deployed projects up to 2 GWh in size.

Specific to Tesla's latest, sixth-generation industrial product, Megapack 2 XL, 13+ GWh or 4,000+ units are operating safely, as certified and tested, with 99.6% average annual guaranteed availability.*

*Annual guaranteed availability as defined by the average power availability percentage over the evaluation period, considering projects with contracted availability guarantee, and projects that have been operational for at least 30 days since system commissioning completion.



99.2%
average availability of Tesla global industrial energy fleet

99.6%
average availability for Megapack 2 XL

>99%
on-time delivery for industrial energy storage products

Megapack is designed with safety and performance in mind (cont'd)

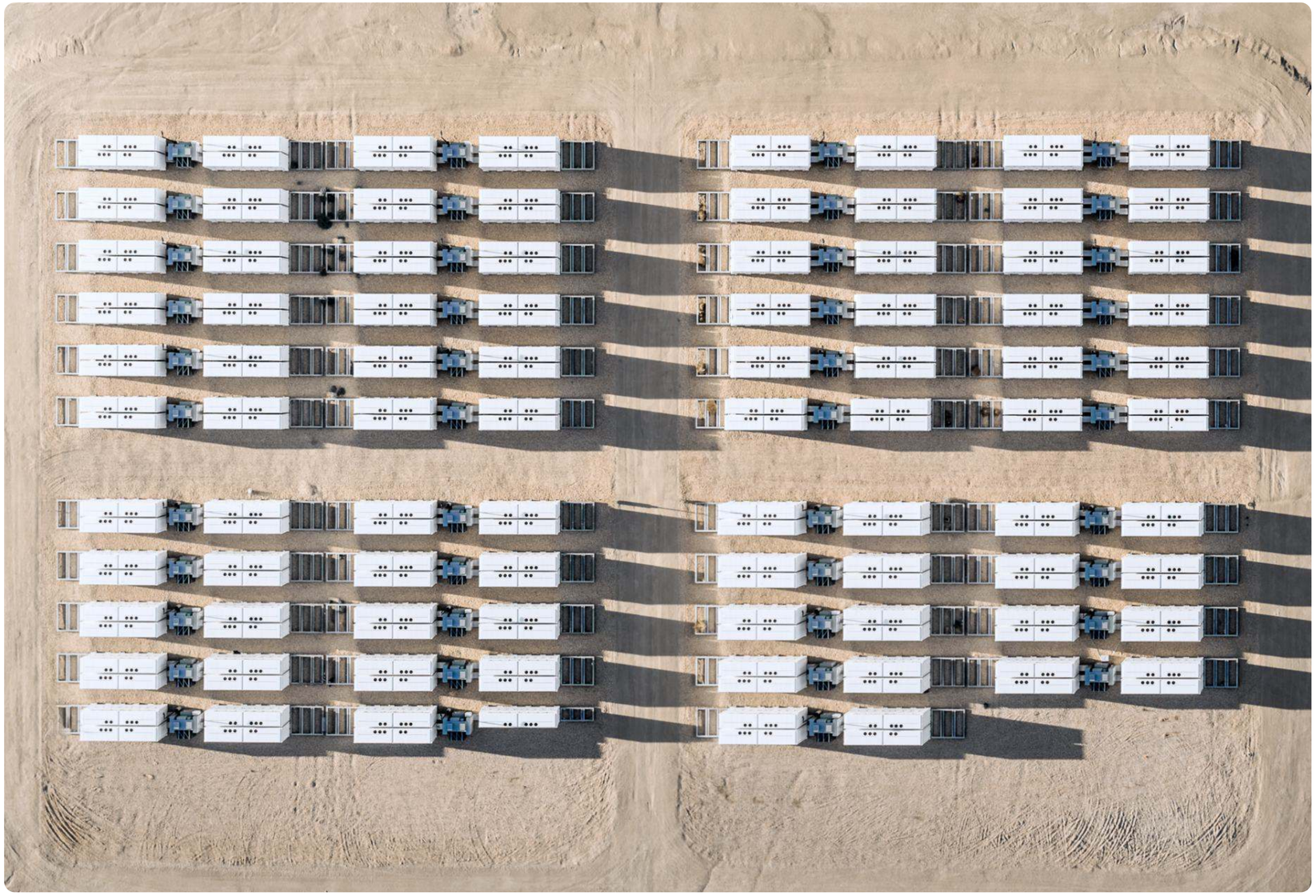
Tesla continuously improves the safety of its products through iterative development that is informed by our large deployed and operating fleet.

Proven through extensive testing, Megapack is designed as a single system with purpose-built, vertically integrated hardware and controls systems that significantly reduce the risk of injury or property damage during commissioning and operation.

Both passive and active safety approaches across electrical and mechanical sub-systems mitigate hazards associated with thermal runaway propagation, deflagration and fire.

In the rare event of a fire, Megapack is designed to prevent the spread to adjacent units and to minimize the environmental impact to communities.

To learn more, visit Tesla First Responders publicly available resources.



Expanding residential storage

We launched our Powerwall 3 expansion unit in 2024, offering an additional 13.5 kWh of storage capacity at $2,000 less than the cost of a base Powerwall 3 unit. The design cuts installation time in half (22 minutes versus 45 minutes) and allows for side-by-side and stacked configurations, making it a more efficient and cost-effective solution for homeowners expanding their energy storage systems.

Backup Switch quickly disconnects homes from the grid during outages, automatically transitioning the home's power source to Powerwall. It reduces installation time by over six hours, fitting behind the utility meter while eliminating the need for extensive rewiring or additional panels. Designed for a 21-year service life and meeting rigorous safety standards, Backup Switch provides whole-home backup with real-time energy monitoring.

Powershare launched in 2024, enabling Cybertruck owners to transform their trucks into mobile backup energy systems. The technology uses the high-capacity battery onboard Cybertruck to provide backup energy to homes and devices, offering a solution during power outages and meeting off-grid energy needs. In 2024, Powershare supported over 20,000 backup events.



Megapack supports grids globally

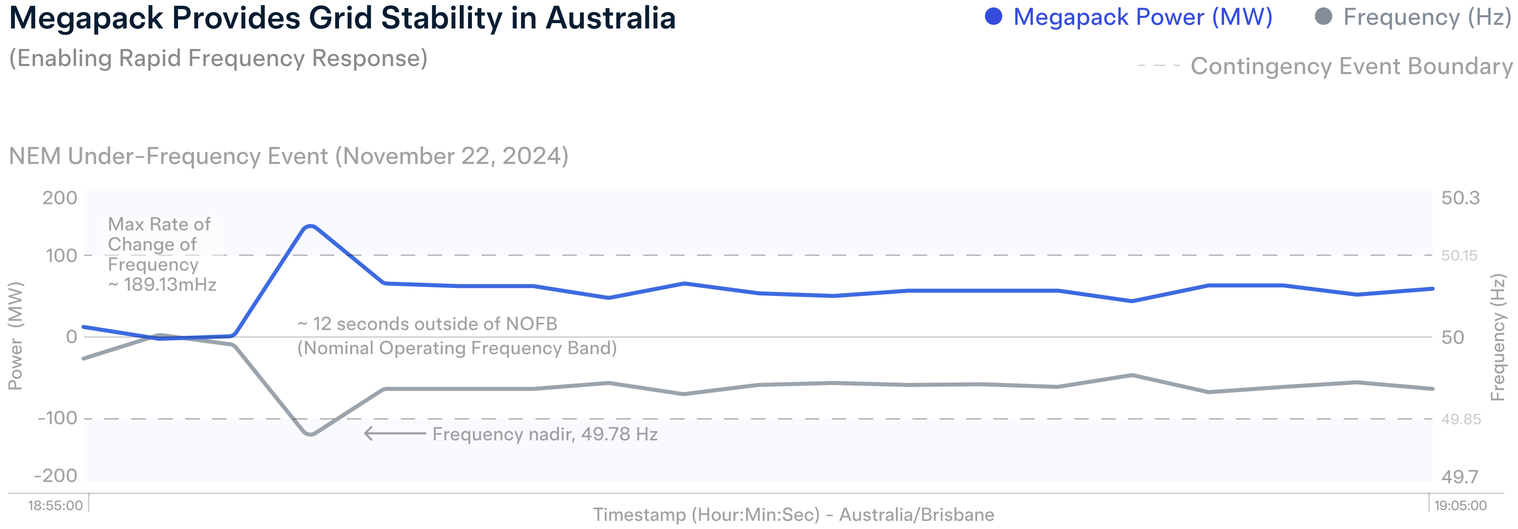
Megapack provides critical stability and reliability services, as demonstrated on Australia's power grid.

Megapack functions as a grid buffer, rapidly injecting or absorbing power to maintain frequency stability—similar to how cruise control regulates vehicle speed. This real-time balancing helps prevent disruptions and supports reliable grid operations.

In Australia's National Electricity Market (NEM), 16 Tesla industrial storage sites responded during a contingency event in Q4 2024 by providing Frequency Control Ancillary Services (FCAS) grid stability and avoiding blackouts.

Megapack Provides Grid Stability in Australia

(Enabling Rapid Frequency Response)



Illustrates Megapack Aggregate Response to a NEM under-frequency event, which is more common and typically occurs when a generator fails or there is damage to the transmission network.

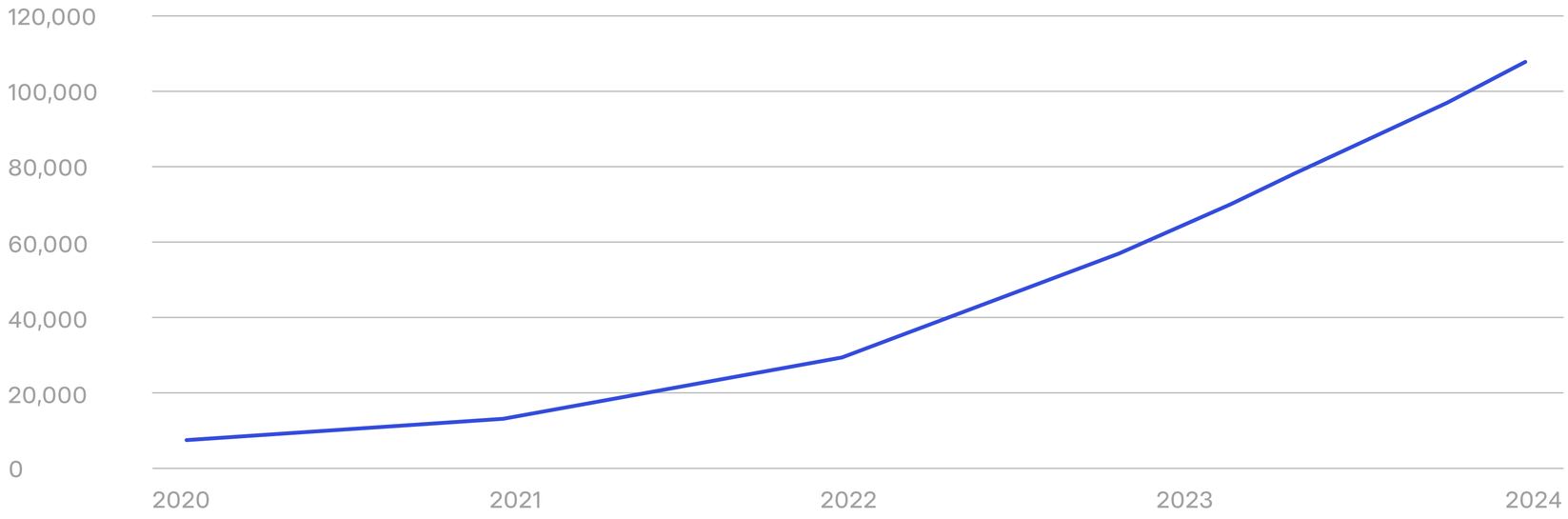
Virtual power plants provide critical services to the grid

Tesla Virtual Power Plant (VPP) programs utilize the energy stored in thousands of Powerwall units in people's homes throughout a given community to produce a network of on-demand energy that supports their local energy grid at critical times. In 2024, Tesla VPPs delivered 2.8 GWh of energy to the grid, with a total capacity of over 750 MW. Over 100,000 Powerwall units were enrolled in VPPs globally at the end of 2024.

Tesla VPPs provide three main forms of grid services to enhance reliability and flexibility. The first, critical capacity, involves emergency demand response in markets like California and Puerto Rico, addressing generation shortages with rapid deployment. The second, market integrated services, includes traditional energy services such as non-spin in ERCOT, regulation in New England, and imbalance management in the UK. The third, grid stability, features fast frequency response in Australia, offering 'stiffness' or inertia to stabilize the grid.

Powerwall Units Enrolled in VPPs

(Cumulative)



Energy storage provides communities with energy resilience

Hawai'i set a first-in-the-nation goal to eliminate fossil fuel electricity generation by 2045. In 2022, the retirement of Oahu's last coal plant marked a major milestone, driving the deployment of a standalone industrial battery system.

Plus Power's 185 MW/565 MWh Megapack 2 XL facility is one of the largest standalone industrial battery systems in the world providing critical grid-forming services. The facility helps regulate grid frequency, supplies inertial response and has the ability to restart and restore electricity to the grid after a total power outage.

The Kapolei Energy Storage facility has the capacity to support roughly 17% of the electrical peak load on Oahu and will reduce renewable energy curtailment on the island by 69% over the next five years.



Megapack Grid-Forming Inverters Enable the Retirement of Hawai'i's Last Coal Plant

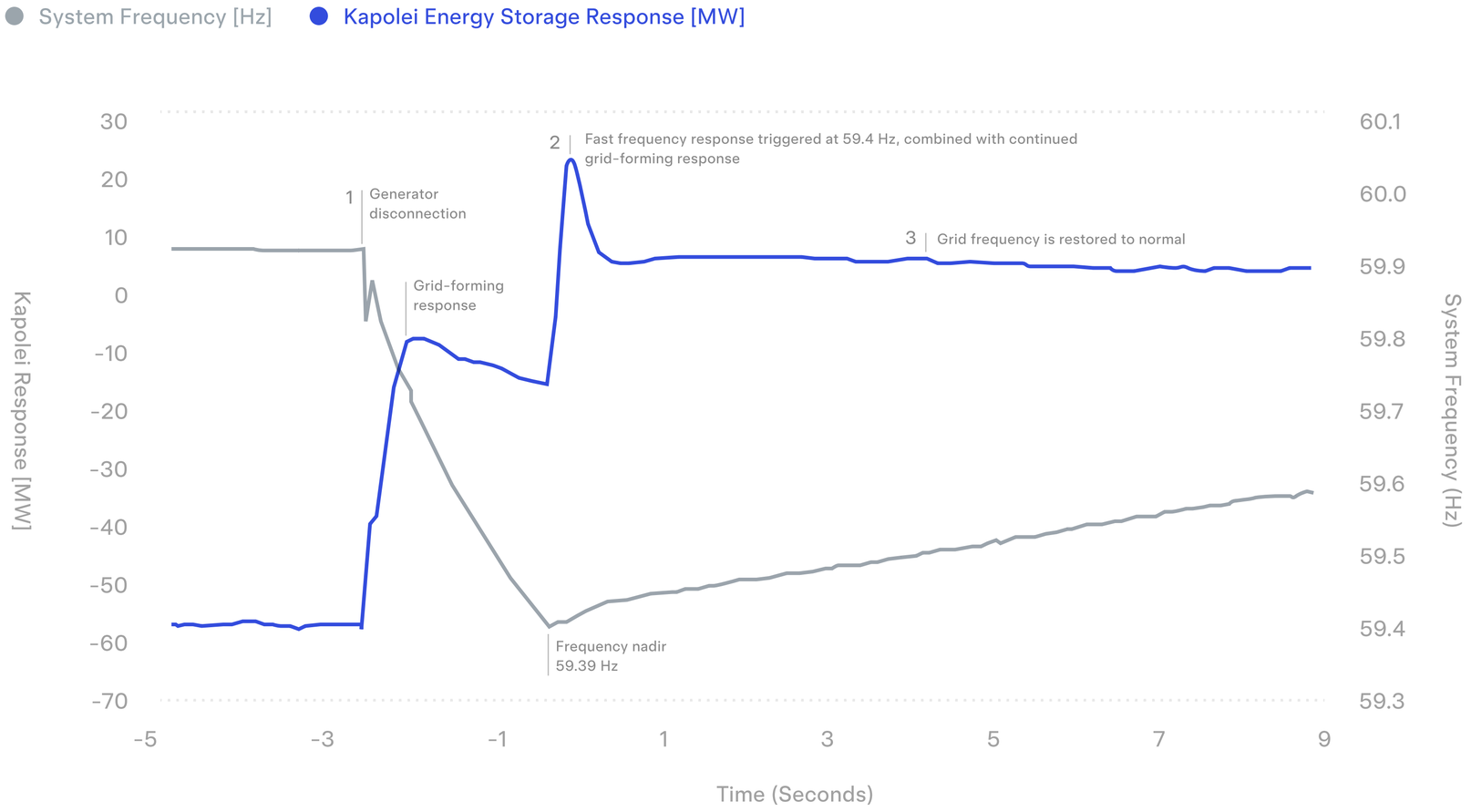


Figure 1: Real power output of the Kapolei facility in response to a frequency deviation in February 2024. (1) Following an unplanned disconnection of one of the generators on Oahu, the frequency of the grid starts falling. The Kapolei facility's virtual inertia reacts to the rate-of-change-of-frequency slowing the rate of the change of frequency. (2) Grid frequency drops below 59.4 Hz, which is the threshold set to trigger a fast frequency response at the site, resulting in the facility's injection of additional power and the arrest in the decline in system frequency. (3) Having provided a net 70 MW over the four second event, the battery quickly settles at steady state power as the grid frequency is restored back to nominal.

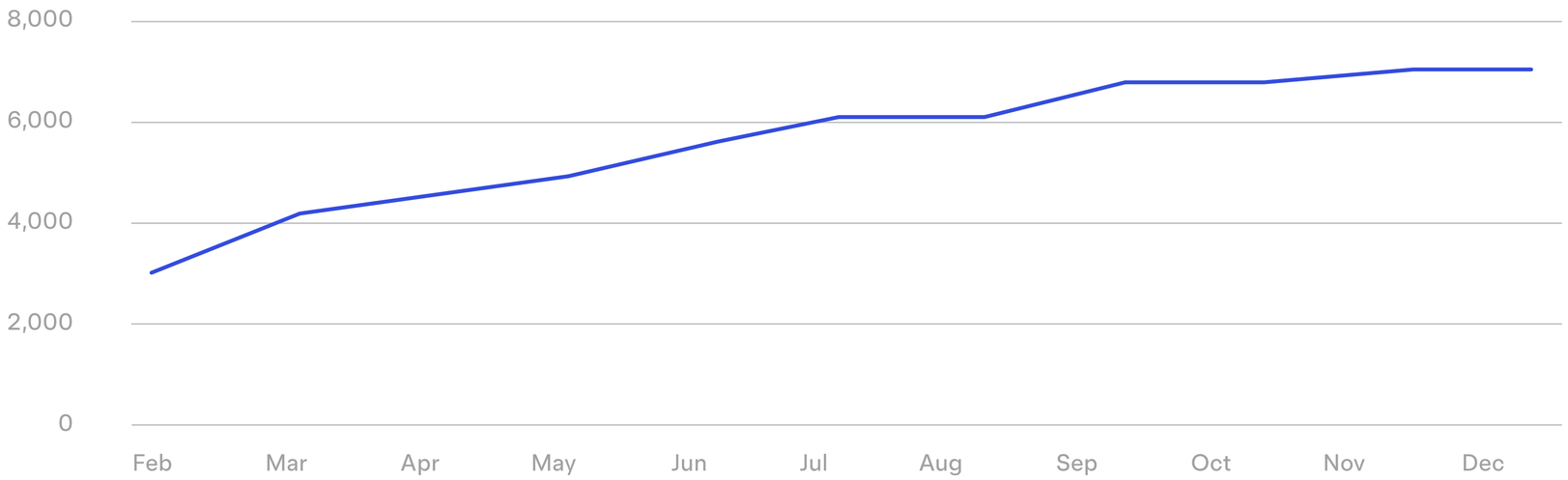
Source: April 8, 2024. Marc Asano, Hawaiian Electric, "An Innovative Clean-Energy Integrated Grid Plan for Hawai'i"

Powerwall provides critical grid support in Puerto Rico

Puerto Rico's energy infrastructure faces regular disruptions. In 2024, Tesla's VPP project supported 7,112 Powerwall-enabled homes, contributing 444 MWh of energy to the grid capable of offsetting 38 MW of peak demand during summer heat waves, which represents a 1.2% reduction in Puerto Rico's peak electricity demand. In addition to providing grid services, customers earned $1/kWh for their contributions during these critical events.

Powerwall Units Enrolled in VPPs

(Puerto Rico, 2024)



Ramping energy manufacturing to meet demand

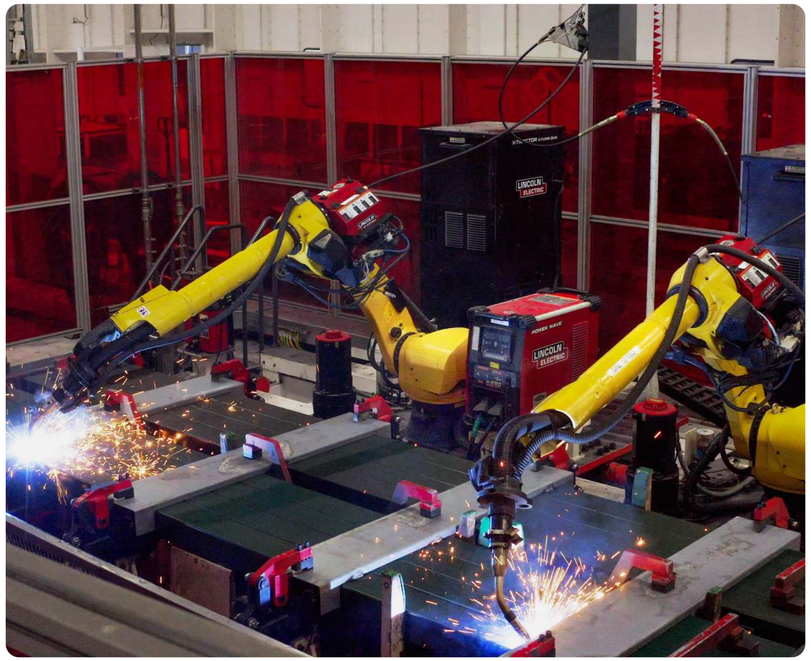
There is near limitless demand for energy storage with an accelerated transition to renewable energy sources. Tesla is committed to investing in manufacturing to meet this demand.

Our Megafactory in Lathrop, CA is the largest utility-scale battery facility in North America with an annual manufacturing capacity of 40+ GWh.

Megafactory Shanghai went from design to operation in nine months, with operations beginning in Q1 2025 for a combined total manufacturing capacity of 80 GWh annually. We also announced plans for our third Megafactory in Texas.

Tesla is expanding its manufacturing capacity at Gigafactory Nevada to support the production of over 700,000 Powerwall units annually, the equivalent of 10 GWh of backup storage. This includes scaling battery pack assembly lines and optimizing production efficiencies to meet growing demand for residential energy storage.

In 2024, the Tesla Manufacturing Team at Gigafactory Nevada set a record by producing over 1,500 Powerwall units in 24 hours.



Autobidder was ranked the top energy storage optimization software

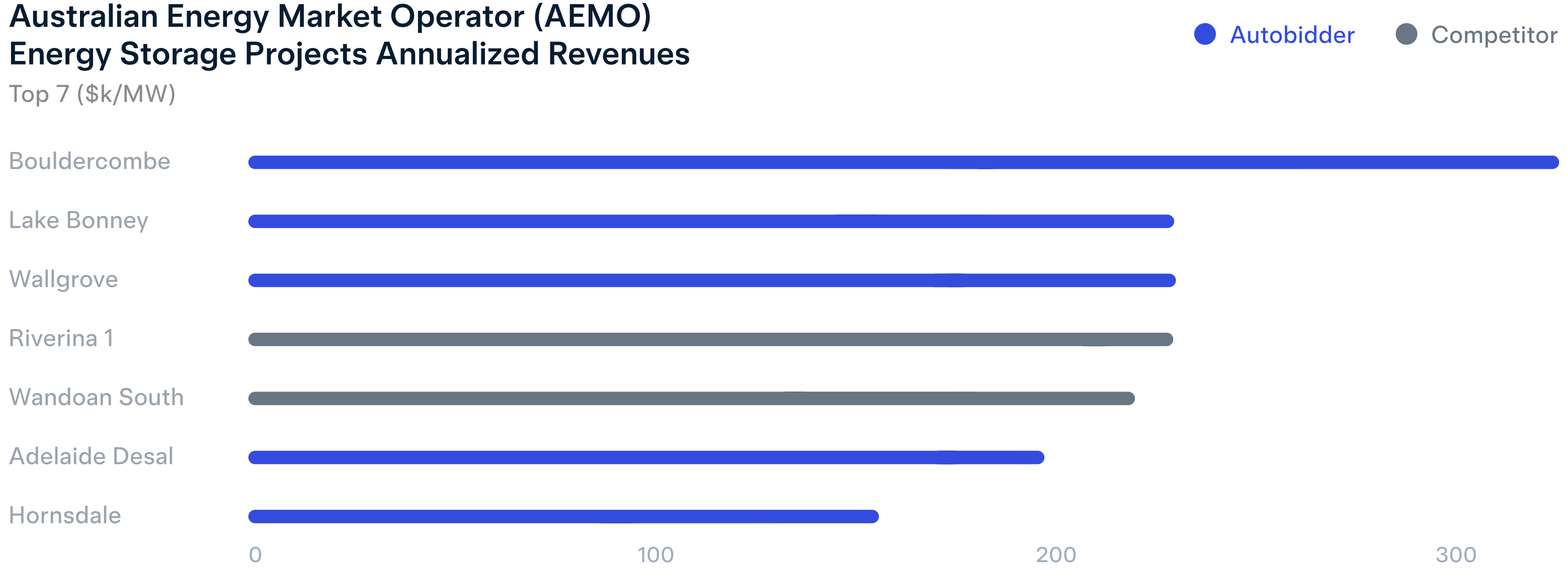
Autobidder—our real-time trading platform for grid-scale battery storage—has been operating since 2017 with over 7 GWh of energy storage managed globally.

In 2022, 2023 and 2024, **Autobidder was ranked the top energy storage optimization software** in the U.K. by Lane Clark & Peacock (LCP) with the top three performing sites in 2024 all operated by Autobidder. Bouldercombe, Lake Bonney and Wallgrove ranked in the top three for performing storage sites in Australia in 2024 by Modo Energy. Gambit ranked number one in the Houston Load Zone, demonstrating consistent high performance in 2022, 2023 and 2024.

Source: https://modoenergy.com/research/australia-nem-battery-energy-storage-revenues-2024

Australian Energy Market Operator (AEMO) Energy Storage Projects Annualized Revenues

Top 7 ($k/MW)



Modo Energy NEM BESS Index. Batteries 5 MW or greater that operated for the full year of 2024. Merchant revenues only.



People & Community

04

We are committed to attracting, developing and investing in exceptional talent and supporting their growth, regardless of their background.



Building a future powered by sustainable energy

To sustain our pace of innovation, we must attract, develop and retain a talented workforce. As of 2024, Tesla has created over 125,000 clean energy-related jobs globally. Our programs are designed to support students in the development of their skills, bringing the best candidates to Tesla and creating a workplace where all of our employees feel valued and can thrive.

People & Community

Preparing the Workforce	106
Centering Safety and Engagement	116
Elevating the Employee Experience	129
Social Impact	135

Inspiring the next generation of Tesla leaders

Our outreach programs aim to inspire young people to pursue careers in STEM (science, technology, engineering and mathematics). Our events spark curiosity and foster creativity.

By providing learning opportunities in underserved communities, we are preparing more people for the careers of the future.



Inspiring the next generation of Tesla leaders

We build our talent pipeline by supporting and inspiring the next generation of Tesla leaders.



Developing pathways to careers in sustainability

We develop programs to attract the best talent and create new pathways for candidates to join Tesla.



Creating a workplace where talent can thrive

We create a workplace where our colleagues can thrive and grow professionally.

Investments in education

Our investments in education aim to equip students with the skills necessary to be successful in school and at work. We support our education partners by providing the resources to deliver STEM curricula and training. By supporting those who live near our factories, we are investing in the long-term health of our communities.

At Gigafactory Texas, we continued to support Robotics and Workforce Development Programs in the Del Valle Independent School District (DVISD). We developed the first Gigafactory Texas High School Robotics Lab to support DVISD's Pathways in Technology Manufacturing Program. In 2024, Tesla invested over $1M to support community organizations.

In New York, we invested $250,000 in workforce development through our partnership with Northland Workforce Training Center (NWTC). Together, we launched a new cohort of Tesla's Manufacturing Development Program and we supported NWTC in delivering its manufacturing development curriculum.



We support programs that inspire the next generation

Introduce a Girl to Engineering Day

In February, Tesla celebrates Introduce a Girl to Engineering Day, a national movement during Engineering Week that is focused on encouraging girls to learn about engineering as an impactful career path.

Tesla first became involved in 2018 at Gigafactory Nevada and now holds an annual event across many Tesla sites with the goal of creating a fun, engaging learning experience for middle school girls.

During the day, students receive a behind-the-scenes tour of a Tesla facility, meet women working at Tesla and participate in hands-on STEM activities with employee volunteers. After our 2024 event, over 90% of participants wanted to come back to Tesla and over 70% wanted to pursue a career in engineering.

Engineering Development Program

In 2024, we launched our Engineering Development Program to train recent college and university graduates in specialized engineering fields.

In partnership with local education partners, the program educates early-career engineers in controls engineering, enhancing their knowledge of high-demand technologies for manufacturing.

Robotics Program

Tesla's support of robotics programs creates a dynamic platform that fosters innovation and equips students with essential STEM skills for the future.

Through robotics, students are empowered to work together while exploring creative ways to solve problems. Tesla supports schools with funding and by hosting events, with Tesla employees serving as in-classroom volunteers. In 2024, we continued to invest in programs in California, Nevada and Texas.

Creating pathways to careers in sustainability

Our workforce development programming is crucial to bringing in the best talent. It is essential that Tesla create pathways for future employees to cultivate the skills to fill the roles that are essential to building a sustainable future.

A core principle of our recruiting strategy is that the best talent does not always come through established recruiting channels. We are focused on attracting talent from all life paths and supporting their growth into leadership roles. Our recruiting efforts focus on providing opportunities for the strongest candidates, regardless of their age, gender identity, sexual orientation, country of origin or other immutable characteristics.

To develop a pipeline of the best candidates from different backgrounds, we partner with top-talent universities and other organizations to run a variety of programs. Tesla continues to be an attractive employer with 4.65 M job applications received in 2024.

4.65 M

job applications received in 2024

Professional internships

Our internship program is an important channel for discovering talented individuals who are passionate about sustainability.

Every year, Tesla hires close to 4,000 university and community college students globally for internships across all business groups. We partner with campuses and student organizations to build a high-quality pipeline of talent.

From day one, our interns contribute to meaningful projects, often leading to full-time positions upon completion of their internships.



Additional professional programs

Military Fellowship Program

Our Military Fellowship Program, in partnership with the U.S. Chamber of Commerce Foundation's Hire Our Heroes program, offers corporate industry experience to military service members. The program aims to convert high-performing individuals into full-time roles and create a veteran-talent pipeline.

Apprenticeships

Tesla Apprenticeships is a multi-year program combining academic and on-the-job training to prepare specialists for skilled trades around the world. Apprentices complete between 2,000 and 8,000 hours of on-the-job training alongside courses hosted by local education partners throughout our manufacturing and service locations. The program ensures that graduates are well-qualified for technician roles across several disciplines.

START (Manufacturing and Service)

Tesla START is an intensive training program that equips individuals with the skills needed to have a successful career as a technician at Tesla. We partner with colleges around the U.S. to integrate Tesla START into automotive and manufacturing classes. In 2024, the program was at 14 campuses and hired nearly 400 technicians.

Technician Trainee Program (Service)

The Tesla Technician Trainee Program provides on-the-job automotive maintenance training at Tesla's Service Centers. The program focuses on individuals currently enrolled in a school automotive or collision program and recent graduates with limited industry experience. The program prepares trainees for employment as entry-level service or collision technicians. In 2024, Tesla hired trainees across NA, EMEA and APAC.

Manufacturing Development Program

Our global Manufacturing Development Programs are designed to provide graduating high school seniors and early-career individuals with the financial resources, coursework and experience they need to start a successful manufacturing career at Tesla. In 2024, we expanded the program to more campuses and hired over 700 graduates. In 2025, Tesla plans to hire over 1,000 participants across our factories.

Future Talent Program

Future Talent is a flagship entry-level program we launched in the United Kingdom and Ireland. During the 12-month program, trainees have the opportunity to experience all key aspects of service, sales and delivery roles before making an informed decision about which career path they would like to specialize in full time upon completion of the program. The program is ideal for exploring careers within Tesla's Service team.

We continue to invest in our employees' development

We offer internal career development to our employees with a chance to make a meaningful contribution to a sustainable future. Our education and development programs empower our colleagues to continue learning and take their career at Tesla to the next level.

In 2024, over 13,000 of our employees worldwide took advantage of opportunities to advance their career within the company. As of this report, more than two-thirds of our managers have been promoted from internal, non-managerial positions, and 24% of our management team has been with Tesla for over five years. As part of our 2024 Pulse Survey, 76% of our colleagues told us they see a path of career growth at Tesla.

76%

of our managers assigned from internal promotions

We continue to invest in our employees' development (cont'd)

Education Assistance Program

Tesla's Education Assistance Program offers employees tuition-free and partially funded learning opportunities, including degrees, short-form certificates and programs for high-school completion or English-language learning.

Launched in February 2024, the program has provided funding to 4,515 actively enrolled learners and 1,334 graduates acquiring valuable skills in manufacturing, engineering, artificial intelligence, supply chain management and leadership.

The program partners with top-ranked online institutions and local colleges, offering both flexible self-paced learning options and in-person applied training.

FlexLearn and Dual Study Program

The FlexLearn and Dual Study Program provides employees opportunities to pursue their education goals across Europe. FlexLearn allows our employees to further develop with tailored training that aligns with the needs of our factories.

The Dual Study Program combines theoretical knowledge with practical experience. Graduates of the program receive industry-related degrees.

Leadership growth and development training

We launched an Upward Feedback program to engage leadership across the company as part of performance management and as a way of gauging employee sentiment. Our programmatic approach to leadership development includes a robust training series with new leader onboarding fundamentals and continued learning, which focuses on:

- Leadership essentials
- Driving development
- Emotional intelligence
- Growth mindset
- Communication
- Feedback
- Leading through transitions
- Leading peers
- Servant leadership
- Cross-functional teams
- Coaching
- Recognition
- Interviewing with intention

We continue to invest in our employees' development (cont'd)

Performance management

Tesla's comprehensive performance management framework is designed to enhance performance evaluation, formal feedback, goal setting and support mechanisms. It encompasses crucial components such as personal and professional goal setting, self-assessment, performance evaluation and bi-annual review conversations. These elements align employee development with organizational objectives, resulting in heightened performance and overall success. In 2024, Tesla saw:

- 100% completion rate for bi-annual evaluation cycles
- 61% completion rate for employee self-assessments in the first year of launch
- 30,000+ goals developed between employees and their manager

Engagement: Shout Outs

We continue to see tremendous growth in the utilization of our Shout Outs tool, with usage up 60% in 2024. This enables employees to recognize the achievements, contributions or impact of their colleagues.

We also introduced a new tool: Appreciation Cards, where employees can express gratitude for their fellow employees. In just five weeks, over 24,000 Appreciation Cards were sent. Bringing visibility to excellent work gives direct feedback to employees and their managers, enabling leaders to see the impact teams are having. We also highlight engagement in key programs such as safety improvements or vehicle delivery volunteering and track career milestones.

Employee Story: Learning to code through Tesla's Employee Assistance Program

A people leader at one of our Gigafactories saw an opportunity to increase efficiency and support their team in new ways. But to put those ideas into action, they first needed to expand their own skillset and learn to code.

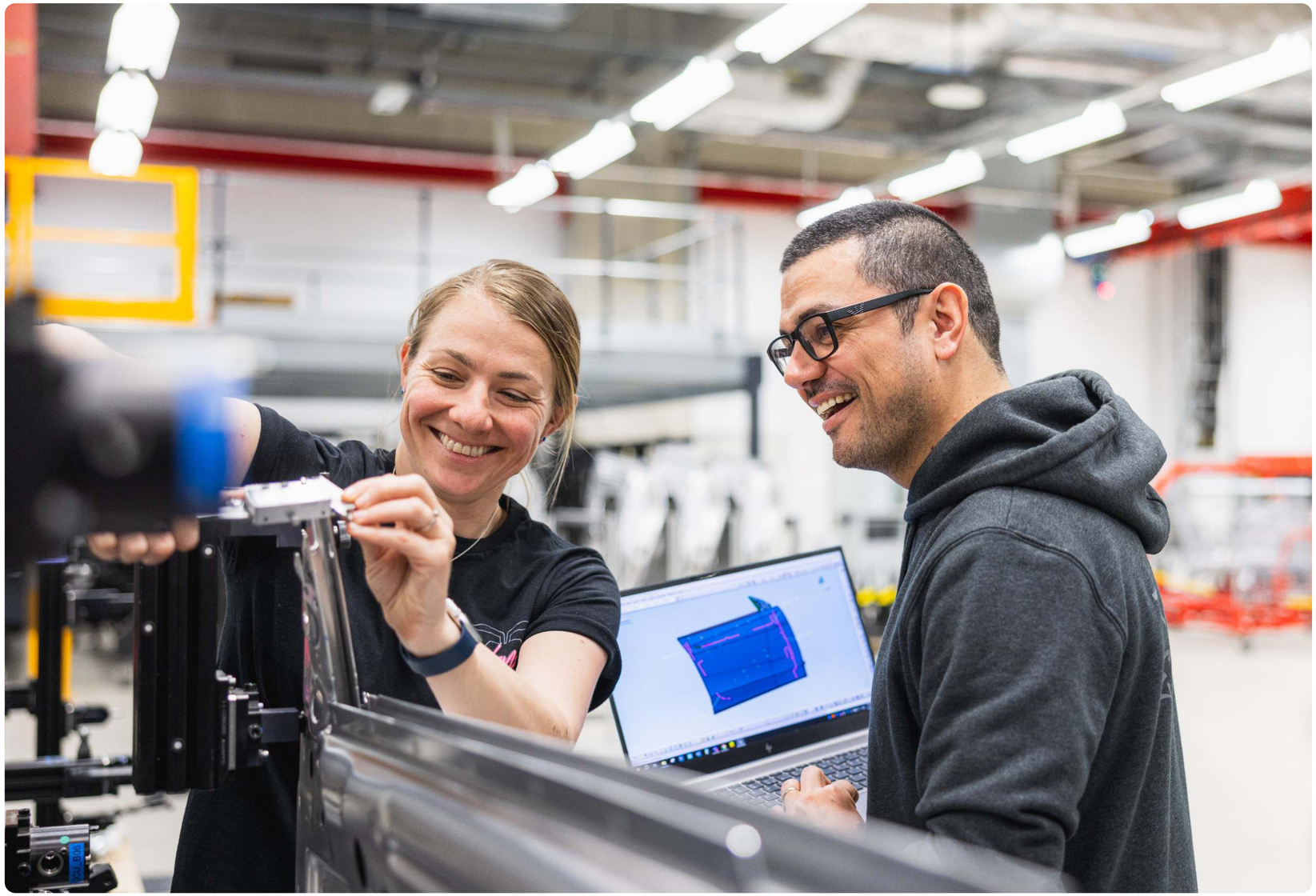
Through Tesla's Education Assistance Program, they completed a Python Computer Programming certificate that helped them help their team increase their overall impact. Now they are using their new skills to solve problems, support their team and drive Tesla forward.

Promoting fairness and equal opportunity for everyone

We are committed to creating a workplace where our employees are safe at all times and where they feel respected, satisfied and appreciated. Our policies are designed to do just this. We hire, evaluate and promote employees based on their skills and performance, and we give everyone the tools to thrive and progress in their career at Tesla.

In recognition of our efforts, Tesla was ranked among the Top 100 Employers of Choice in the 2024 American Opportunity Index.*

*Tesla ranked among the Top 100 Employers of Choice in the 2024 American Opportunity Index.



We strive to ensure the safest operations for our employees

Everyone at Tesla works together to ensure a healthy and safe workplace. We take a systems-thinking approach and focus on training, collaboration and direct engagements with the people doing the work to build our products.

We want to measure the most critical incidents. While we still report and track regulatory-driven metrics, our global focus continues to utilize the international standard on American Society for Testing and Materials 2920-19 (ASTM) to track and manage safety incidents over time. Since 2021, our ASTM injury and illness rates have continued to decline 10% year over year.

	ASTM Rate	Hours
2024	2.28	352,593,552
2023	2.51	368,650,973
2022	2.86	255,950,012
2021	3.57	175,807,810

Our employees take charge

We empower our employees to identify improvements and solve problems. Take Charge—our internal improvement suggestion tool—allows employees to submit improvement suggestions related to environment, health, safety, security, people and more. Promoting a company-wide culture of improvement, Take Charge is used across all departments and regions where Tesla operates. Executive leaders have adopted and been trained in Take Charge. Submissions can be made anonymously and are owned at a cross-functional level.

Take Charge works as a leading indicator for safety and engages those closest to the work—as well as their supervisors—in order to establish processes that address issues proactively. Since its launch in 2021, we have seen a 36% reduction in our global injury rate. To ensure integration across our operations, submissions are categorized into Safety, People, Accuracy, Rates and Cost (SPARC).

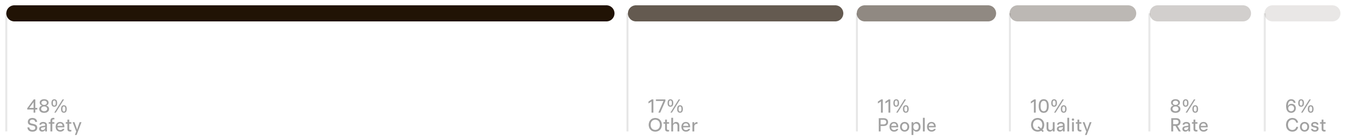
Take Charge

Submissions (January 2021–January 2025)

1,772,516	105,993	1,950	44
Total Submissions	Total Submitters	Locations	Countries

Breakdown by Category

Submissions (January 2021–January 2025)



We empower our employees to help us build the safest operations possible

We actively engage our employees to help identify risks before incidents occur and base our programming on three pillars: do the basics right, engage and empower stakeholders and reduce risk. As we have increased employee engagement, we have seen our work-related injury rate come down over the same period.

	ASTM Rate	Take Charge Count
2024	↓ 2.28	↑ 731,518
2023	2.51	659,164
2022	2.86	332,939
2021	3.57	48,895

Human and Organizational Performance principles shape our safety journey

The Human and Organizational Performance (HOP) mission is to accelerate progress through operational learning, increased capacity and systems thinking. HOP enables Tesla to learn quickly and develop robust systems that can tolerate errors and fail safely. It prioritizes making it easy for workers to do the right thing. We develop tools and programs to integrate HOP principles into our daily work.

The Essential Safeguards Program focuses our efforts on preventing fatality and serious injury with preventative and mitigative safeguards. We conduct systematic safeguard analyses to help us learn from incidents and continuously improve our measures and processes.

5,000

HOP trainings completed

641,000

improvement actions suggested by our employees and experts, with 97% closed

169

near-miss events prevented thanks to the Essential Safeguards Program

The safety of our contractors is as important as the safety of our employees

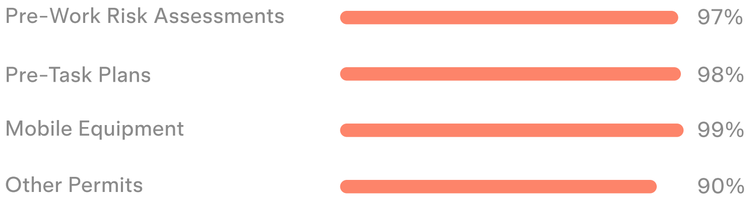
Our safety focus not only applies to our employees but also to those we contract with. To enhance visibility and management of production operations with contractors, we have deployed a global contractor onboarding and management system called Workforce Management. This enables coordination of work, identification of critical impacts, assessments of risk and communication of essential safeguards to elevate the environmental, health and safety performance of our onsite contractors and suppliers. We have integrated the core HOP principles along with access to event reporting tools including Take Charge.

In 2024, we integrated a global EHS Survey as a pre-qualification tool into our supplier management portal to receive information about our contractors' work practices and programs. The survey focuses on high-impact information from the contracting firm, like historical environmental violations, safety and health citations and recent workplace fatalities.

We want to make sure we are partnering and collaborating with our contractors to increase safety and environmental performance at our locations and projects.

At Tesla, safety is a core value that protects lives, safeguards the environment and builds trust with our workforce and partners. Our Contractor Safety Program is central to maintaining our operational integrity. We regularly inspect pre-task plans and pre-work risk assessments—critical tools for identifying hazards and ensuring safeguards—along with mobile equipment and permitting. In 2024, we completed over 4,000 inspections worldwide, demonstrating our ongoing commitment to contractor safety and continuous improvement.

Field Inspections



We track employee sentiment annually



In 2024, we continued to gather employee sentiment around work, culture, the leadership team, job satisfaction and career growth opportunities through our Employee Engagement Survey.

In the company-wide engagement feedback, we had a record participation rate of 86% of employees, with 80% of respondents agreeing that they are satisfied with Tesla as a place to work.

We develop our leaders and their team management skills throughout their time at Tesla by offering specific leadership training, enhancing our performance management tools and continuing to broaden employee recognition. This helps us drive a culture of accountability, collaboration and continuous improvement, which is essential for organizational growth.

Tesla is pro employee

Our approach to human capital management centers on one core principle: Tesla is pro-employee. We do this by aligning the interests of Tesla's employees with those of Tesla shareholders. As a result, we provide each full-time employee with stock through our equity compensation programs.

We further demonstrate our commitment to our employees by listening to their input to ensure we are meeting their needs across all parts of their employment experience—from pay to benefits and in the workplace.

Historically, unions were created to give employees a voice when they felt they were not being heard by their employer. At Tesla, our employee needs are met directly without the need for an intermediary, which has led to not only more opportunities for employees but also a more positive employee experience.

The results of this approach speak for themselves.

In Sweden, where it is tradition for workforces to unionize, our employees resoundingly told us that they do not want to unionize despite aggressive public campaigning by the union touting its benefits. The majority of our employees in Sweden have elected not to pursue a union CBA.

In Germany, this sentiment was also expressed during the last Works Council election at Gigafactory Berlin-Brandenburg, where the union representative slate was rejected by the employees.

Tesla employees have made it clear that they are happy with their current relationship with Tesla and see no need to unionize.

For more information on our approach, view our Global Human Rights Policy.

Integrity is everyone's responsibility

Tesla cultivates a culture where employees feel heard, respected and empowered. This ultimately enhances workplace cohesion and productivity.

Our commitment to having a robust system for reporting employee complaints fosters a culture of trust, openness and accountability, which in turn strengthens organizational learning and boosts employee morale.

We once again have demonstrated our commitment to our employees by continuing to invest in increasing the visibility of reporting mechanisms such as our Integrity Line, which allows employees to provide anonymous feedback to ensure that our employees are heard as frequently as possible and have a safe avenue to report any and all of their concerns without hesitation.

Our data proves that employees are increasingly comfortable raising all types of concerns, and that our culture is working even as an increasing employee base is responsible for handling complex and diverse tasks among a myriad of sophisticated businesses across the globe.

The number of cases reported in recent years has demonstrated that our employees are both aware of different avenues of reporting their concerns and that Tesla has created a safe environment for employees to share their thoughts.

Following thorough investigations, we have found that the majority of concerns are not substantiated and the rate of substantiated claims has been declining over recent years.

We investigate employee allegations

An employee can raise concerns or complaints to any member of management, Human Resources (HR) or Employee Relations (ER). If they prefer to report another way, the Integrity Line is available 24 hours a day, seven days a week and allows employees to report concerns anonymously and without fear of retaliation.

Concerns are investigated promptly and impartially in a manner appropriate to the circumstances. The ER team engages in feedback loops with leaders and HR to provide guidance on any appropriate follow-up actions, which range from additional communication and training to corrective action and discipline up to termination of employment.

Numbers are rounded and may not add up to 100%

Types of Allegations

(2024)

66%
Human Resources and Employee Relations

28%
Business Integrity

4%
Environment, Health and Safety

1%
Misuse of Corporate Assets

Process for investigating allegations received through our Integrity Line



Allegation is Reported to Hotline

Allegations can be made anonymously

Allegation is Routed to Appropriate Team

Compliance
Legal
Infosec
HR/ER
EHS&S
Other

Allegation Undergoes Investigation

Substantiated or Unsubstantiated

Appropriate Action is Taken

Actions Include:
Employee training
Process, policy or program updates
Disciplinary action, up to and including termination
Other appropriate actions

We do not tolerate harassment or discrimination

Nearly 100% of Tesla employees completed COBE training in 2024

Our policies are designed to promote fairness and respect for everyone. We hire, evaluate and promote employees based on their skills and performance. As we grow, we continue to address challenges head on.

From day one in New Hire Orientation, employees learn about Tesla's policies. As part of prevention, we set clear expectations with annual Code of Business Ethics and Anti-Harassment (COBE) trainings globally.

View Tesla's Code of Business Ethics

These trainings are not only included in the onboarding process but are repeated throughout the duration of an employee's work with Tesla. Management regularly checks completion rates and follows up to ensure each employee completes all required trainings. In 2024, 98% of Tesla employees completed COBE training.

Innovation through constructive conflict



At Tesla, our employees are passionate about making a difference in the world and for each other. We remain unwavering in our demand that our factories, offices, sales locations and Service centers are places where our employees feel respected, appreciated and empowered to contribute ideas.

Tesla employees are expected to be trustworthy, demonstrate excellence in their performance and collaborate with others. Innovation and excellence go together, and innovation is achieved when employees feel confident that the ideas they raise will be objectively considered. We have created an environment where employees feel comfortable challenging convention and raising new ideas through constructive conflict in pursuit of our mission.

Our programs support employee wellbeing holistically

Our health programs are designed to support the wellbeing of our colleagues holistically, addressing physical, mental and emotional health. We provide a range of support initiatives tailored to local needs and varying by country.

This includes, for example, no-cost paycheck contributions for medical, dental and vision plans for employees and their family members, employer-paid life insurance, short- and long-term disability, confidential counseling for employees and their families, employee assistance programs and voluntary benefit programs.

Employees can also access student loan and debt consolidation services, transportation subsidies and no-cost shuttles, back-up childcare, discount programs and tools and resources to support growing families. We have student loan refinancing options and pension contribution matching.

We offer competitive pay and benefits

We continue to attract the best and brightest with our competitive pay and benefits package. We offer employees the opportunity to receive equity during their employment and share in the success of Tesla.

Shared ownership of the company is one of the most essential attributes of working at Tesla.

Examples of employee benefits across our global operations*

Medical Insurance & Health Check-Up

Medical coverage and regular health check-up benefits to protect the physical health and wellbeing of our colleagues

Employee Assistance Program

Access to 24/7 confidential assistance to support the physical, mental and emotional wellbeing of employees and their dependents

Employee Perks

Preferred pricing on gym memberships, financial services, childcare and travel, free EV charging, as well as savings on Tesla products

Paid Maternity and Paternity Leave

Employees spending time with their family after the birth or adoption of a child

Family Services

Fertility services, adoption and third-party reproduction services

Back-Up Care

Days of back-up daycare, tutoring and distance learning assistance

Risk Insurance

Financial protection and support to safeguard employees in the event of unforeseen circumstances

Safety Net

Limited financial assistance for employees experiencing temporary hardship

Rethink

No-cost resources and tools for families, including those with developmental and learning challenges

Long Service Award

We appreciate each employee's contributions to our company's mission by celebrating their Teslaversary with special surprise gifts

Tesla Babies

A curated gift box for employees expecting a newborn or celebrating the arrival of their new family member (employee location dependent)

*Dependent on employee location

Our mental health is just as important as our physical health

At Tesla, we are dedicated to supporting our employees by promoting mental health awareness and reducing stigma. We achieve this not only by providing valuable resources through our Employee Assistance Program, but also by equipping our support staff with specialized training to foster a healthier workplace.

Our staff across Human Resources, Security, Health & Safety and Medical are provided with the opportunity to complete accredited Mental Health First Aid Training to ensure that our frontline-facing support staff are equipped to give empathetic and effective care.

In early 2025, Tesla launched a new Employee Assistance Program, which increased the number of languages and annual support sessions available to our colleagues. This has led to nearly 11,000 global website sessions within the first two months of launching, or approximately 3.5x more interest in mental wellbeing across our global workforce.

We know that one in five adults would benefit from mental health support each year, and we want our colleagues to get access to all the resources they need.

Employee Stock Purchase Plan

Our employees can purchase Tesla stock at a discount through our Employee Stock Purchase Plan (ESPP). Enrollment in ESPP is easy with a dedicated internal site, stock administration team and support through its administrator.

We continue educating our employees on how to use this benefit to ensure that increased financial health and literacy is something everyone at Tesla can benefit from, regardless of their role or seniority.

Changing lives with Tesla stock

At Tesla, we support our employees by helping them build meaningful careers with competitive pay and great benefits, including through our equity programs. Equity is a core part of our benefits and pay packages, and has a meaningful impact on the lives of our employees.

Their hard work and dedication to our mission provides the financial freedom to reach personal achievements such as buying their first home, paying for higher education and taking memorable family vacations.

Share Price (USD)



Pay Equity Program

Our Pay Equity Program is designed to assess whether similarly situated employees are paid in a similar manner after accounting for variables.

HR also offers a Pay Equity and Pay Transparency educational course to everyone in the People Organization, with a focus on HR partners and recruiters.

- Geographic Zone
- Tenure
- Average Performance Score
- Job Function
- Management Level and Role



Supporting the communities we work in

Strengthening our communities

We are committed to positively impacting and strengthening the communities in which we live and work. We have created programs and partnerships in the regions where we operate to ensure communities benefit from our presence.

Tesla impact

Our colleagues are passionate about making a positive impact within and outside of Tesla. Since 2020, the Tesla Employee Volunteer Program has created opportunities to engage with our local communities. We facilitate volunteer engagement and donations for major initiatives like Earth Day or Introduce a Girl to Engineering Day, as well as various volunteer events. In 2024, our colleagues volunteered over 2,050 hours.

Disaster relief

With an unrivalled portfolio of innovative products, Tesla can play a strategic role in assisting communities affected by disasters. Our energy products have powered critical facilities and emergency response centers during grid outages, while our vehicles have provided first responders with off-road capability and clean-air shelters. Tesla partners with government agencies and nonprofits to support disaster relief efforts across communities in need.

2,000+

hours volunteered in 2024

Tesla helped restore 2.28 MWh of clean energy in communities around the world in 2024

In 2024 and early 2025, we were able to help communities around the world restore their power during crises by deploying Mobile Powerwall Units (MPUs). Our manufacturing forecast now includes additional MPUs that can be immediately deployed in times of crisis.

Each kit we deploy includes a photovoltaic inverter, Gateway and two Powerwall units, which are wired to standard outlets so the power is available quickly. These are built and installed by Tesla volunteers who help source parts, build and wire the MPUs, configure and test them and ship the units to the disaster site.

Total Mobile Powerwall Units Deployed

(2024)

Ukraine	Tesla used 6 MPUs to power mobile field hospitals.
North Carolina	Tesla deployed 14 MPUs to power distribution centers after Hurricane Helene. Tesla and SpaceX outfitted 24 Cybertrucks with Starlink. The trucks were used to distribute SpaceX terminals to response agencies. SpaceX supplied over 1,300 Starlink terminals and provided free service to all accounts in the affected area, facilitating over 300,000 SMS messages via direct-to-cellular (DTC) service.
Los Angeles	In early 2025, we deployed 10 MPUs to power fire stations and command center facilities, including the Zuma Beach command center, which powered the Los Angeles Police Department and the Los Angeles Fire Department.
Florida	Tesla deployed 5 MPUs in support of relief operations after Hurricane Milton. In parallel, SpaceX supplied more than 20,000 terminals to support efforts by Federal agencies, non-governmental organizations and individuals. An additional 2,000 terminals were donated to these same groups. SpaceX also activated its direct-to-cellular (DTC) service free of charge, enabling tens of thousands of people to receive wireless emergency alerts and send text messages.

Tesla supported Los Angeles wildfire relief efforts

Tesla provided support to employees and Los Angeles residents affected by the wildfires in January 2025.

In collaboration with government agencies, we used Megapack Chargers and MPUs to create a high-capacity energy storage hub at the Rose Bowl Stadium, which served as a basecamp for first responders. Megapack Chargers powered multiple emergency response trailers, replacing diesel generators that typically cause noise and health issues for first responders.

With help from third-party nonprofits and Tesla employee volunteers, we deployed 10 MPUs to power fire stations and command center facilities. The power helped them run their operations, including air conditioning, fridges for food and laptop chargers.

We also deployed 35 Cybertrucks with Starlink access to fire stations and nonprofits across the Los Angeles area. The trucks were used in support of multiple relief operations, including offering command posts with critical power and connectivity, providing clean-air shelters and connectivity to firefighters, as well as supporting animal search-and-rescue efforts.

35

Cybertrucks with Starlink access were deployed to fire stations and nonprofits across Los Angeles



Supply Chain

05

Tesla has positive impact on the world not only through the sustainability of our products, but also by making our supply chain more sustainable.



We use our purchasing power to ensure that our supply chain supports a sustainable future

Tesla is one of the largest EV and energy storage system (ESS) material buyers in the world. Operations used to produce these materials can cause, contribute to and be linked to adverse social and environmental impacts.

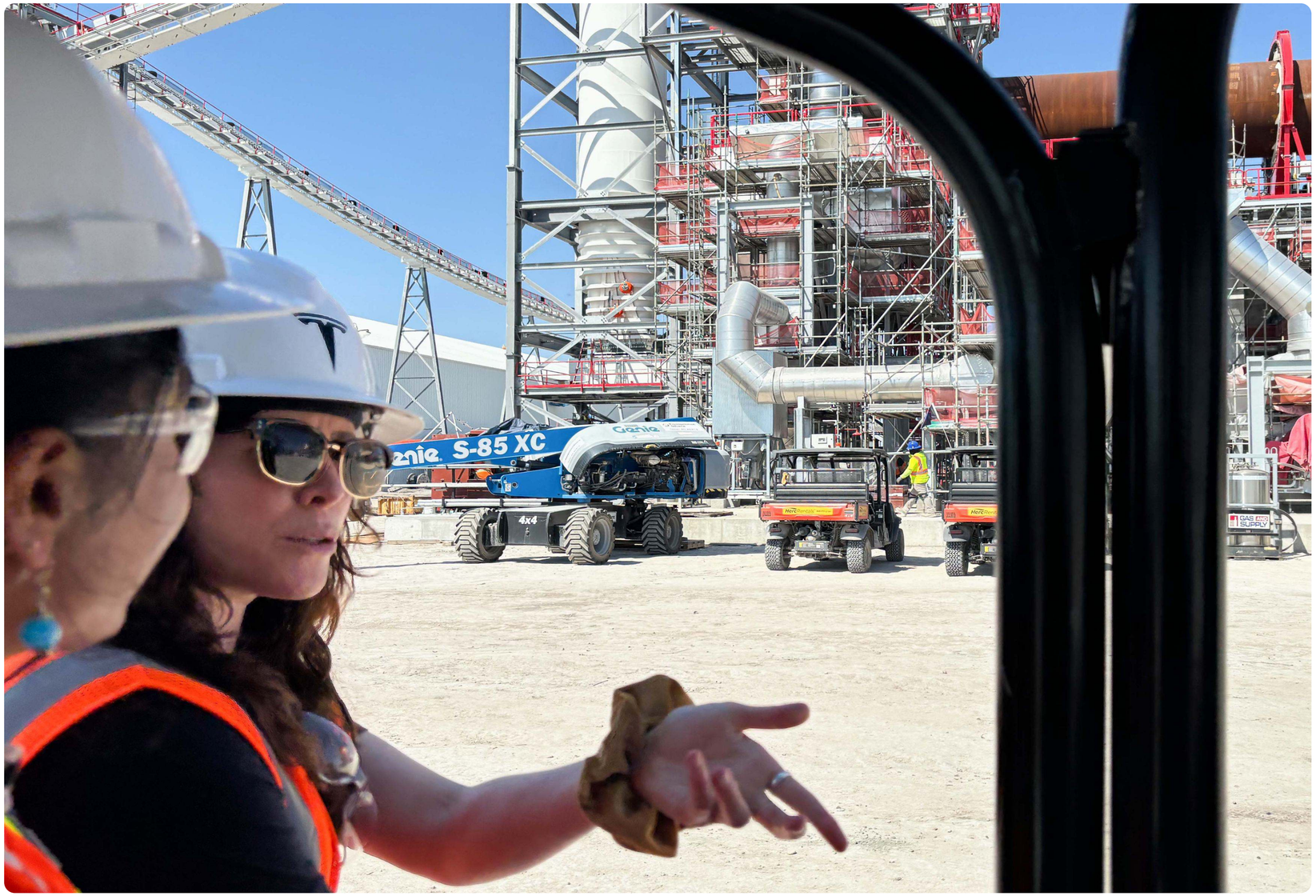
Our goal is to use our purchasing power and work with suppliers to avoid, prevent or mitigate any adverse impacts from our supply chain so that our sourcing supports our mission of accelerating the world's transition to sustainable energy.

Supply Chain

Our Approach to Responsible Sourcing	139
Supply Chain Decarbonization	151
Battery Circularity	156
Responsible Sourcing of Materials	162
Tools	182

We manage supply chain risks through responsible sourcing

Our efforts are guided by our commitment to sustainability and the requirements included in our Responsible Sourcing Policy, Global Human Rights Policy, Supplier Code of Conduct and international frameworks like the Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises, OECD Due Diligence Guidance for Responsible Business Conduct, OECD Due Diligence Guidance for Responsible Minerals and the United Nations Guiding Principles on Business and Human Rights. Additional information on our responsible sourcing efforts can be found in our Modern Slavery and Child Labor Statement and Conflict Minerals Report.



We manage supply chain risks through responsible sourcing (cont'd)

1. Identifying Risk

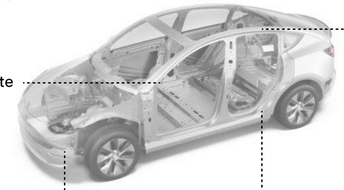
We identify risks and violations against our policies using specific tools and information sources.

- Corporate Social Responsibility (CSR) Audit Program
- Third-Party Audit Programs
- Supplier Assessment Questionnaire (SAQ)
- Greenhouse Gas (GHG) Survey
- Lifecycle Assessments (LCAs)
- Integrity Line
- Impacted community and non-governmental organization (NGO) engagement
- Various External Reports & Assessments
- External Business Intelligence Screening Tools

2. Prioritizing Risks and Efforts

We prioritize specific materials and areas for risk identification.

Priority Raw Materials



Aluminum
Body structure, chassis, some components of the battery system

Lithium, Nickel, Cobalt, Graphite
Batteries, particularly in the cathode and anode

Tin, Tantalum, Tungsten, Gold (3TG)
Various electronic components within the vehicle, including sensors, circuitry and connectors

Ferrous Metals (Steel & Iron)
Frame, body panels and motor casings

Priority Engagement Areas

- Combating Forced Labor
- Decarbonizing Materials
- Lifecycle Assessments
- Preventing Child Labor
- Respecting Human Rights
- Improving Water Quality
- Protecting Forests & Biodiversity

3. Mitigating Prioritized Risks and Remediating Harm

We implement strategies targeting priority areas and materials to address adverse impacts.

- Require suppliers to acknowledge our Supplier Code of Conduct
- Include strict social and environmental, audit and traceability requirements in supplier contracts
- Include social and environmental criteria in sourcing decisions and supplier selection, including CSR audit scores, SAQ results, complaints submitted to Tesla's Integrity Line and GHG emissions
- For other Tesla-wide strategies and efforts addressing specific priority materials, see later sections

2024 highlights

Risk Identification Measures

465
responses across 40+ countries received to our Supplier Assessment Questionnaire (SAQ)

+
All-new in-house supply chain mapping tool developed

100%
increase in primary supplier GHG data, including primary GHG data from 71% of our battery suppliers

40
LCAs reviewed in our battery supply chain, including 67% of directly contracted cell and cathode suppliers

224
audits completed through out CSR Audit Program, covering working conditions, freely chosen employment and environmental management

34
audits completed at lithium, nickel and cobalt mines and refineries, including 14 using the Initiative for Responsible Mining Assurance (IRMA)

Examples of Risk Mitigation and Improvement Measures Taken

6,821
workers reimbursed for recruitment fees

+
New "Cost of Carbon" functionality added to Tesla's purchasing system

77%
of battery suppliers set a net-zero or carbon-neutral goal

↓
Lower GHG emissions for in-house lithium, cell and cathode production

1st
EV maker to invest in a program in Indonesia to reduce the environmental impacts of nickel production

136%
increase in battery materials recovered through recycling (compared to 2023), which is enough to produce battery packs for 21,000+ Model Y RWD vehicles

100%
of mines in high-conservation ares have reforestation plans

279%
increase in volume of digitally traced tin, tantalum, tungsten and gold

10
Powerwall units delivered to clinics to support survivors of sexual violence in the Democratic Republic of Congo (DRC)

15,000+
supplier contacts informed about Tesla's human rights expectations and Integrity Line

5
supplier-facing guidance documents developed and shared, covering freely chosen employment, young workers, stakeholder engagement, lifecycle assessment, decarbonization plans and environmental due diligence

We take responsible sourcing to the next level

	Industry Standard Responsible Sourcing Efforts	Tesla in 2024
Transparency	Little supplier disclosure beyond regulatory requirement	We disclosed mines and refiners for lithium, nickel, cobalt and respective audits, decarbonization plans and LCA status and disclosed countries of origin for steel and aluminum
Traceability & Upstream Leverage	Reliance on tier 1 suppliers to cascade requirements upstream	We sourced most key battery minerals directly from mines and refiners, allowing for increased traceability and leverage
Human Rights Engagement	Reliance on tier 1 suppliers to cascade requirements upstream	We directly engaged with upstream supply chain, stakeholders and impacted communities, including in instances where Tesla did not contract directly with upstream actors
Recycling	Reliance on external recycling partners for individual steps in the circularity journey, leading to price volatility and issues keeping up with rapidly evolving technologies	We are the only OEM that has the pieces in place for a future in-house, closed-loop ecosystem covering every step from collection to reduction, recycling and cell manufacturing
Vertical Integration	Focus on product manufacturing	We vertically integrated in-house lithium refining and cell and casting house production, enabling direct control over responsible production methods
Greenhouse Gas Emissions Reduction	Reliance on secondary greenhouse gas emissions data	We used mostly primary supplier data for targeted decarbonization in the battery supply chain and increased primary supplier data use by 12% across our supplier base

For more information on circularity and decarbonization within our own operations, see pages 38-52 and 60-63.

We operate a leading responsible sourcing program

In 2024, NGOs recognized Tesla as a leading automaker for our responsible sourcing efforts. Our responsible sourcing program's primary goal is to reduce harm and have a positive impact.

Independent review and evaluation of our program provides us with the opportunity to fill gaps and understand emerging trends in supply chain risk. Our principal source for program improvement is provided through supply chain stakeholder feedback, which can be shared at ImpactReport@Tesla.com.

NGO Coalition Lead the Charge

Ranking of the world's leading automakers on their efforts to eliminate emissions, environmental harms and human rights violations from their supply chains (2024)

Tesla's #1 rank is up from #3 in 2023

Rank	All Companies
1 ↑ (3)	Tesla
2 ↓ (1)	Ford
3 ↓ (2)	Mercedes-Benz
4 = (4)	Volvo
5 ↑ (6)	Volkswagen
6 ↑ (7)	BMW

Out of a total of 18 companies ranked

NGO Amnesty International

Ranking of Human Rights Due Diligence Reporting of Electric Vehicle Makers (2024)

Tesla's #2 rank is up from #7 in 2017

Rank	All Companies
1	Mercedes-Benz
2	Tesla
3	Stellantis
4	VW Group
5	BMW
6	Ford

Out of a total of 13 companies ranked

NGO Rainforest Foundation

Assessment of Biodiversity and Due Diligence Practices in Mineral Supply Chains of Automakers and EV Battery Manufacturers (2024)

Rank	All Companies
1	Tesla
2	Mercedes-Benz
3	BMW
4	Samsung SDI
5	Volkswagen
6	General Motors

Out of a total of 19 companies ranked

We defend, protect and advance human rights for workers throughout our supply chain

Human rights are essential to Tesla's mission of accelerating the world's transition to sustainable energy. We are uniquely positioned to positively influence human rights for people in our supply chain and we take that opportunity and responsibility seriously. Read more about our commitment to human rights in the latest revision of Tesla's Global Human Rights Policy and our approaches to address salient human rights issues, including forced labor and child labor, in this report.

The examples on the following page show how Tesla demonstrated its commitment to defending, protecting and advancing human rights in 2024.



Universal Declaration of Human Rights Article	Article Number	Tesla's Impact
Defend (Safeguard and protect individuals from violations of their rights)	All, with focus on 4	More than 450 supply chain employees were trained to communicate with suppliers on the Universal Declaration of Human Rights
	27	Updated Tesla's Global Human Rights Policy and thereby committed to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)
	All	More than 15,000 supplier contacts were made aware of human rights expectations and Tesla's Integrity Line to report human rights concerns
Protect (Create systems to ensure human rights are not violated)	12, 25	Supplier in Vietnam installed a curtain partition for a previously unpartitioned mother's room based on a finding from one of Tesla's required Corporate Social Responsibility Audits
	12, 19	Supplier in Taiwan switched to an anonymous online form to gather worker feedback based on a finding from one of Tesla's required Corporate Social Responsibility Audits that found a violation in employee privacy due to a security camera being located near an employee feedback box
	23	Supplier in Mexico implemented workplace risk assessment, provided safety control measures and instituted periodic inspections based on a finding from one of Tesla's required Corporate Social Responsibility Audits, which identified that workers did not have appropriate personal protective equipment (PPE)
	23	Suppliers in Indonesia conducted investigations and updated policies and Occupational Health and Safety (OHS) reporting expectations after Tesla identified improvement needs related to industrial accidents and reports of safety incidences
Advance (Promote the recognition and realization of human rights)	23, 25	Launched an initiative to embed minimum and living wage data in sourcing tools to identify human rights and underpricing risks where suppliers are paying below benchmarks
	23, 25	Mine site in Rwanda started to directly employ previously unauthorized miners and provided PPE after the Tesla-supported Better Mining monitoring and corrective action system identified safety incidents. The successful approach was scaled to two additional mines thereafter

We work to ensure freely chosen employment

Tesla recognizes that the risk of forced labor in our global supply chain deserves our continued and unwavering commitment to combat. In 2024, we strengthened due diligence and transparency across our supply chain and worked to proactively identify and mitigate risks. The process to combat forced labor follows the procedure outlined on page 184, and includes supply chain mapping.

We follow a risk-based approach that identifies indicators requiring deeper assessment that—if left unmitigated—can contribute to an environment that could be exploited for forced labor. This process leverages and is aligned with the International Labor Organization's (ILO) risk indicators.

While these indicators represent areas requiring attention and improvement, they do not necessarily confirm the presence of forced labor. A list of these indicators and their identified prevalence as observed through our CSR audits is shown here.

Indication Factors for Deeper Assessment Against Forced Labor

(% of CSR auditees where indicator was identified)

59%
on-site worker accommodation

58%
use of dispatch or contract workers

39%
use of third-party labor agencies

7%
use of foreign migrant workers

Note: For more information on these ILO risk indicators, see our appendix on page 201.

We enforced corrective actions to support freely chosen employment

In 2024, through our deeper assessment, we identified areas of concern. Below are examples of these areas and how we mitigated them.

For more detail on our forced labor mitigation work, see our Modern Slavery Statement.

In our 2023 report, we disclosed incidents of working hours falsification and inhumane treatment. The suppliers where these problems were identified have implemented corrective actions and no instances of these risks were identified in 2024.

Supply Chain	Areas of Concern	Examples of Tesla Implemented/Initiated Measures
Several	Excessive overtime	Suppliers created corrective action plans to reduce working hours and were re-assessed for improvement during follow-up closure audits
Several	Worker-paid recruitment fees	Since 2023, over 6,500 supplier workers have been reimbursed with nearly $500,000 by their employers (Tesla's suppliers) based on Tesla's requirement for suppliers to implement the Employer Pays Principle
Drive unit	Withholding of wages	Supplier-established procedure to no longer deduct from workers' wages costs including passport renewal fees, residential permits and labor agency monthly service fees. This impacted 102 workers in Taiwan
Battery	Retention of personal identity documents or passports	Tesla initiated an investigation for additional information, implementation of a corrective action plan and raised expectations for changes in policy
Chassis and power electronics supply chain	Deception through unclear communications	Suppliers provided translated employment contracts and pay slips based on migrant workers' nationalities, so that migrant workers can understand their employment terms, entitlements and wages calculations. This impacted 346 workers in Hungary, 142 workers in Malaysia and 40 workers in Mexico

We further enhanced our Corporate Social Responsibility Audit Program

In 2024, our Corporate Social Responsibility (CSR) Audit Program continued to allow us to assess and address risks at our direct suppliers and play a key role in our efforts to reduce and remediate harm in our supply chain. We further enhanced our efforts to improve our suppliers' capability to address non-conformances identified during our audits by embedding a Corrective Action Plan (CAP) review into the audit process requirements, regardless of whether a supplier must undergo a closure audit. We also launched newly established capacity building training sessions at supplier facilities, which engaged 147 personnel from several suppliers' production facilities. These enhancements supported our selected suppliers in addressing non-conformances identified during audits, resulting in a 72% pass rate in subsequent closure audits.

In 2024, 58% of our suppliers that underwent an audit at our request were subject to such an audit for the first time, which contributes to our program's average pass rate of below 50% at the initial audit stage. For suppliers prioritized for re-audit based on our two-year cycle, we have seen continued improvement with an overall pass rate of 63%, demonstrating the long-term positive impact our audits are having. Tesla's program has continued to push the automotive industry, and third-party audit firms, toward a greater global uptake of social audits, especially for suppliers located outside of China and the greater APAC region where these audits have traditionally been focused. These efforts will increase the respect for workers' rights and safety throughout the automotive industry.

Tesla maintains strong engagement with our selected third-party audit firms, including through on-site training and performance evaluations designed to ensure a high and consistent level of quality for the auditors Tesla uses, and continues to push for increasing the number of experienced auditors we work with globally.

We further enhanced our Corporate Social Responsibility Audit Program (cont'd)

Risk Identification Measures

22
countries included in audits

39
closure audits

187
initial audits

100,000+
workers impacted by audits

	2021	2022	2023	2024
Audits Conducted	55	170	229	226
Average Non-Conformances per Audit*	15	20	19	17
Labor	37.6%	33%	31.9%	37.2%
Health & Safety	31.3%	31.5%	33.9%	33.7%
Environment	13%	14.2%	13%	15%
Ethics	0.5%	1.8%	1.4%	6.3%
Management Systems	17.7%	19.5%	19.8%	N/A
Supply Chain Management	N/A	N/A	N/A	7.8%

*Breakdown for initial audits only. From 2024, Management Systems has been incorporated into each section and a new section of Supply Chain Management has been added.

We make better purchasing decisions with better emissions data and visibility

We set ambitious decarbonization goals

Many companies have ambitious decarbonization goals and then worry later about how and if they can achieve them. Tesla instead focuses on impact and outcomes: where do we see the highest GHG emissions and what can we do to lower them? Accurate data is at the heart of a realistic decarbonization strategy. At the end of 2024, and as part of our efforts to focus on data quality, Tesla implemented a requirement for suppliers to establish an emissions monitoring plan such as ISO 14064 and/or 14067 or undergo an independent third-party verified product LCA.

Data Collection

- +100% increase in the volume of validated primary data collected from suppliers (increased from 12% in 2023 to 30% in 2024).
- Drafted and distributed supplier-facing guidelines defining (1) how to conduct a best-practice LCA inventory and carbon footprint and (2) what a robust decarbonization strategy must entail, notably disclosure of Scope 1, 2 and 3 emissions alongside progress and actions, product-level GHG measurement, asset-specific roadmaps and prioritization of efficiency projects alongside renewable energy purchases.

In addition to engaging our suppliers to obtain their primary data, we leverage the use of location- and process-based emissions factors for aluminum and steel. The application of these emissions factors provides a strategic advantage by enabling granular visibility into the GHG emissions profiles of the aluminum and steel supply chain. This high-resolution insight not only enhances transparency but also allows us to improve our procurement strategy.

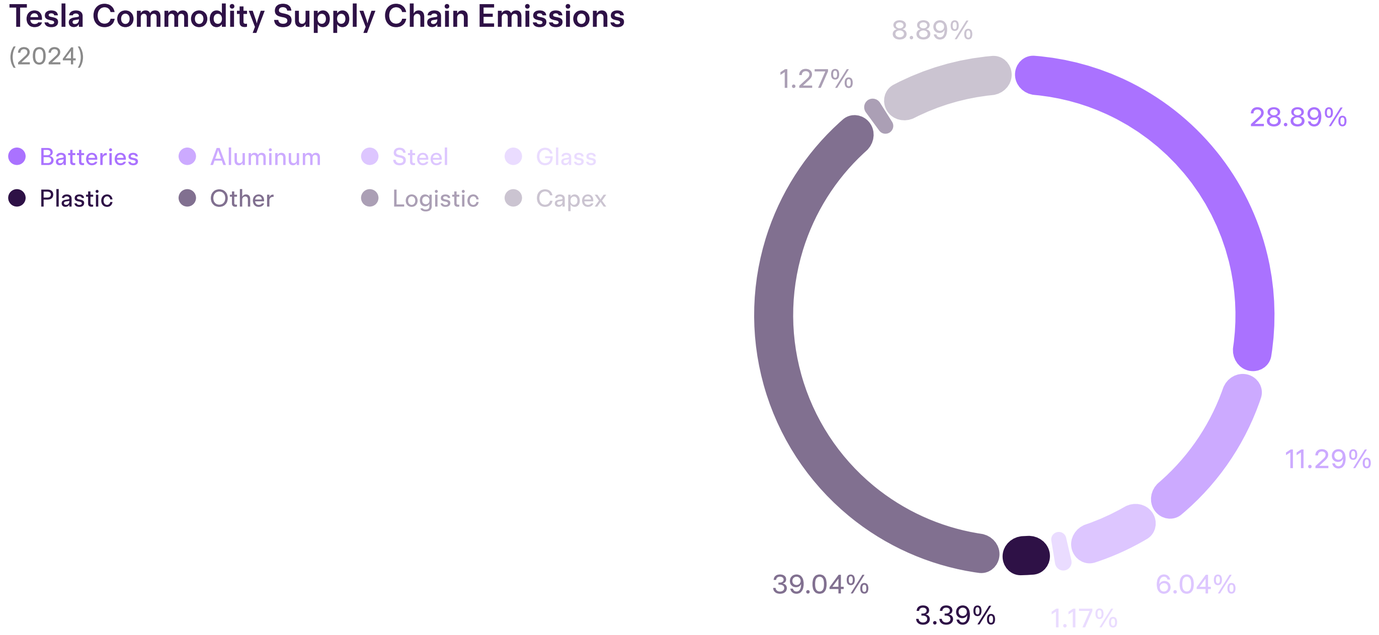
We make better purchasing decisions with better emissions data and visibility (cont'd)

We include carbon in our purchasing decisions

We built cost of carbon functionality into our sourcing systems, integrating the ability for our procurement teams to evaluate the cost of carbon emissions during their sourcing decisions. Supply chain managers can see a shadow cost of carbon based on emissions calculations as highlighted in this Impact Report, allowing Tesla to incorporate this previously externalized cost into their purchasing decisions.

Tesla Commodity Supply Chain Emissions

(2024)



We moved beyond data collection to decarbonization in our battery supply chain

Batteries contribute 28.9% of our total supply chain GHG emissions. Our battery GHG emissions are significantly impacted by where we source our materials from. In 2024, supply chain shifts due to available capacity and regulatory requirements led to more sourcing from locations with higher GHG intensity.

To address this, we continued closing important data gaps while progressing real decarbonization through the tracking and monitoring of emissions reduction goals and progress for each supplier up to the mine.

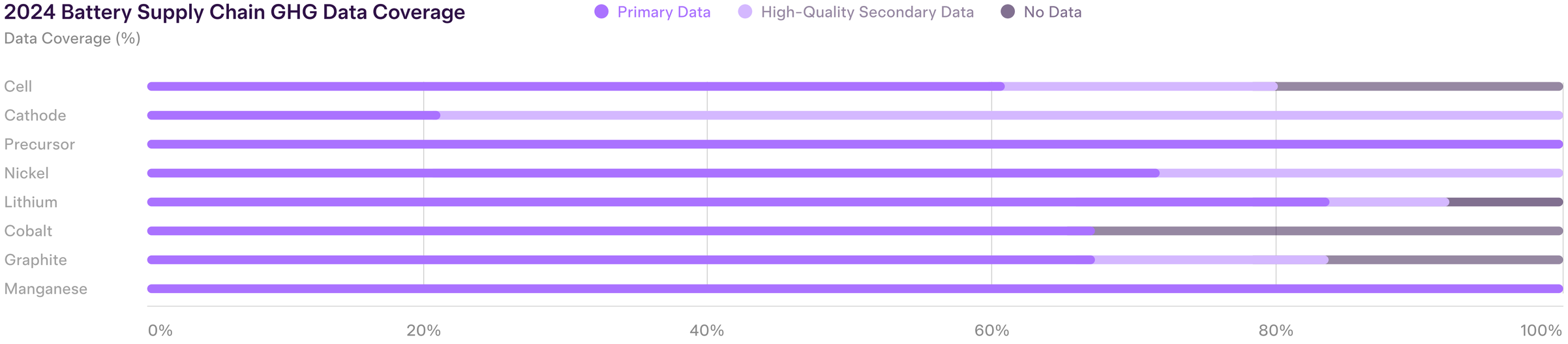
While most companies will rely on secondary estimates from outdated databases, our work is significantly based on primary data collected directly from suppliers with quality verified by our in-house experts (see figure on the next page). Based on this, we calculated GHG contributions by supply chain tier, which help prioritize our efforts in specific hotspots, notably at cell manufacturing, upstream refining and processing stages (see figure on the next page).

Improved data visibility allows us to drive tangible improvements, including the following highlights from 2024.



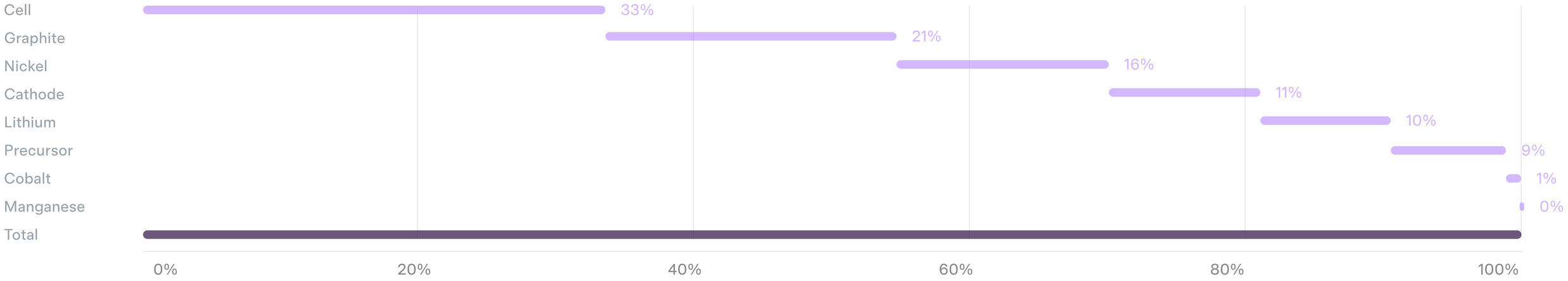
2024 Battery Supply Chain GHG Data Coverage

Data Coverage (%)



2024 Battery Supply Chain GHG Contribution

Contribution to Total Impact



Our 2024 battery supply chain decarbonization highlights

Our expectations remain that all battery cell manufacturers are working toward net-zero GHG emissions in production and will share their asset-specific roadmaps. Within raw materials and minerals, we focus on high-intensity minerals with the intention of reducing per-cell GHG emissions intensity.

See more on decarbonization within our operations starting on page 38.

Battery Supply Chain

72%
of our suppliers disclosed GHG emissions data (up 39% since 2023)

71%
of our suppliers have decarbonization plans (up from 39% in 2023)

77%
of our suppliers aim to be net zero or carbon neutral by 2050

61%
of our suppliers have interim reduction targets (avg. -40% by 2030); 35% have Scope 1 and 2 net-zero GHG emissions targets; 42% have Scope 1, 2 and 3 net-zero GHG emissions targets

Cell Suppliers

2
of Tesla's main cell suppliers purchased renewable energy certificates (RECs) for their facilities in 2024, enabling use of 100% renewable electricity within two years. Tesla is reviewing the quality and validity of these RECs

1
key supplier production facility on track to reach carbon neutrality by the end of 2025 with another currently under construction (to be completed in 2025) expected to be carbon neutral on day one

Nickel Suppliers

+
Commitment to investigating the use of alternative nickel feedstock that could reduce the GHG emissions intensity of products by 25%

+
Commitment to phase out coal for electricity generation and and study initiated to shift to natural gas as an intermediate energy source prior to completely decarbonizing electricity supply

Graphite Suppliers

100%
renewable electricity commitment using RECs at the most energy-intensive processing step of the graphite value chain. Tesla is reviewing the quality and validity of these RECs

12%
increase in renewable energy use throughout a supplier production process by the construction of solar cells on site

We're reducing our environmental impact through battery production

Our in-house programs

In 2024, GHG emissions from energy use in our cell manufacturing process were 64% lower compared to the industrial benchmark for nickel-rich cell manufacturing. This reduction is enabled by lower energy use due to dry anode production technology and lower GHG electricity at Gigafactory Texas. This reduction is based on operational data from 2024.

We estimated that the planned future use of our in-house cathode active material (CAM) production at Gigafactory Texas will lead to 74% reduction in GHG emissions compared to incumbent nickel-rich CAM production. This emissions reduction comes from lower electricity and oxygen use, and use of electricity with lower GHG emssions.

With External Cell and Cathode Suppliers

100%
of cell suppliers shared recycled content goals

100%
of direct cathode suppliers to our in-house cell program completed Tesla's Corporate Social Responsibility Audit

100%
of cell suppliers committed to or completed audits assessing working conditions and environmental management within the last two years

100%
of cell and direct cathode suppliers have GHG emissions reduction programs, including commitments to 100% renewable energy by 2030, carbon neutrality at a key production facility by end of 2025 and carbon neutrality from day one for another one currently in production.

75%
of cell and direct cathode suppliers have completed LCAs that also provide their estimated GHG impact

We're reducing our environmental impact through battery production (cont'd)



Tesla Ni-Rich Cell Manufacturing Energy 2024 GHG Emissions Impact Comparison

GHG Emissions Impact Percentage (%)



GHG calculations were done using an ISO 14067:2018-aligned approach. Primary data was collected from Tesla's operations, environmental impact reports, directly contracted suppliers and gaps were filled with academic research. Emission factors were sourced from regionally representative datasets and commercial inventory data sources.

We responsibly sourced materials for Megapack and Powerwall



Megapack is Tesla's industrial-scale energy storage solution. It stores energy to enable grid reliability and safety, eliminating the need for fossil fuel peaker plants and helping to avoid outages. Powerwall is a compact home battery that stores energy generated by solar or from the grid to provide backup power for you home. Energy storage is Tesla's fastest growing business unit, with 31.4 GWh of storage deployed in 2024.

In 2024, we increased our focus on responsibly sourcing components for Megapack and Powerwall. This included:

- Conducting in-person reviews of transport, production, inventory and financial documentation to verify supply chain maps
- Increasing Tesla-sourced lithium in the Megapack supply chain, further increasing control over upstream supply
- Conducting 19 audits at downstream (cell production) and midstream (refiners) facilities, covering the Responsible Business Alliance (RBA) Code of Conduct (at downstream facilities) and the OECD Due Diligence Guidance for Responsible Minerals Supply Chains (at midstream facilities) and specific criteria related to working conditions (at both)
- Increasing sourcing for non-cell components from lower GHG emissions locations
- Mapping cell supply chains to the mine level for critical minerals (lithium, iron phosphate and graphite)
- Implementing a supply chain decarbonization plan that includes a GHG emissions-monitoring system, a net-zero GHG emissions target and details on energy efficiency and renewables

We're laying the groundwork for true circularity of battery materials

We are committed to maximizing the sustainability of our battery supply chain through our recycling methods. Batteries and the materials they are composed of are inherently recyclable, which allows for the recovery of valuable resources and future reintegration in the production of new batteries.

In 2024, we made progress toward being able to complete many of the recycling steps at Tesla factories: After collecting old batteries from our products, we are able to shred them and recover nickel, cobalt, copper and lithium at our Nevada and Texas Gigafactories. In addition, we have made progress on constructing our own lithium refinery, which is preparing for cathode production and already producing cells.

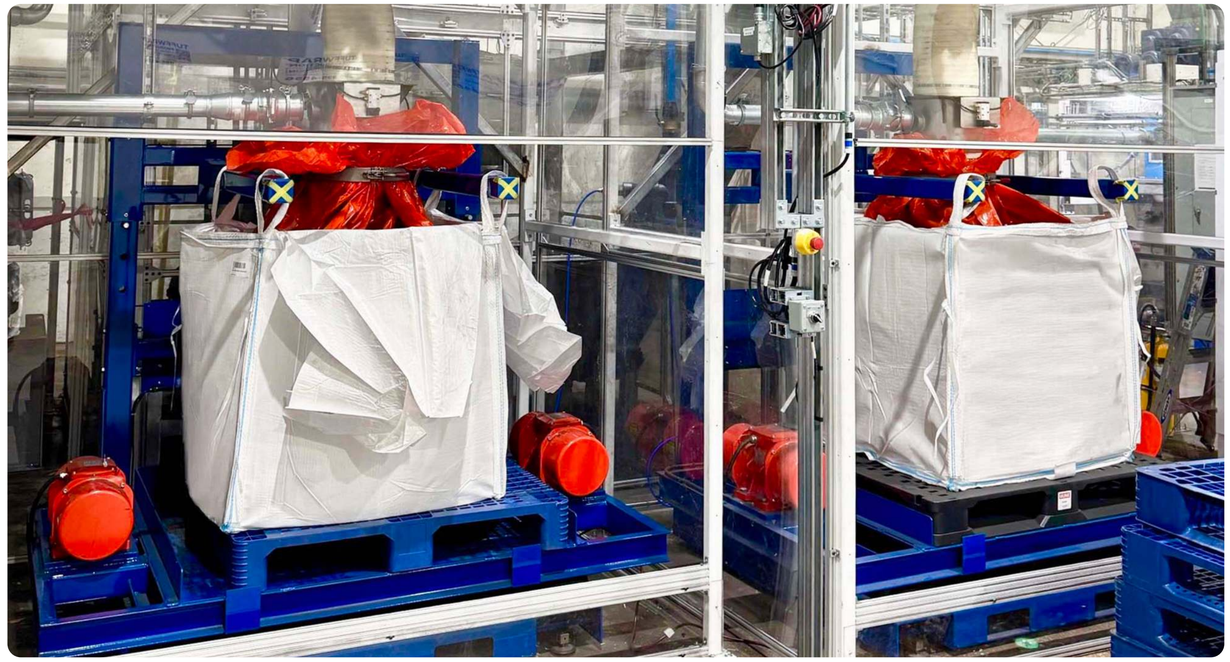
We recognize the value of strategic partnerships. We collaborate with external recycling partners to process materials eligible for traditional industry expertise. This allows us to advance core technologies and support the domestic recycling ecosystem.

While we will continue to increase the proportion of recycled materials used in our products, Tesla recognizes the continued importance of responsibly sourced primary materials and the critical role they play in supporting the livelihoods and economies of communities in mineral sourcing regions.

For more information on Tesla's circularity programming, see pages 60-63.

We're laying the groundwork for true circularity of battery materials (cont'd)

Process Step	Tesla location	Status
Collection of Old Batteries	Tesla Service Centers	Operational
Shredding	Gigafactory Nevada / Hutto	Operational
Material Recovery	Gigafactory Nevada / Hutto	In Development
Re-Integration With Refining	Corpus Christi Lithium Refinery	In Development
Re-Integration With Cathode and Cell Manufacturing	Gigafactory Texas	In Development



Our battery recycling key achievements in 2024

In 2024, we processed enough battery material through our recovery and recycling processes to manufacture the equivalent of ~21,000 Model Y RWD vehicles. As of today, these materials are diverted from landfills but are not always destined for the battery supply chain and may be downcycled into other industry applications when they do not meet the quality standards required for direct use. As recycling and refining capabilities continue to mature, consistent improvements in high-purity chemical refining are expected to minimize downcycling, enhancing the sustainability of the battery lifecycle.

Metric	2023	↑ 2024
Recovered Nickel	2,431 mt	5,312 mt
Recovered Cobalt	117 mt	599 mt
Recovered Copper	860 mt	2,407 mt
Recovered Lithium	329 mt	1,120 mt
% of material recovered from returned or end-of-life products	>90%	>90%
MT/month battery recycling throughput at Gigafactry Nevada	500+ mt	590+ mt
MWh of battery materials processed at our battery processing facility	650 MWh, enough for 9,000+ MY RWD	1.7 GWh, enough for 21,000+ MY RWD
GWh of battery materials sent to our recycling partners	3 GWh, enough for 43,000+ MY RWD	5.3 GWh, enough for 64,000+ MY RWD

Cobalt

We source cobalt for nickel-based cells from Glencore's large-scale mines (LSM) in the Democratic Republic of Congo (DRC), which are regularly audited against criteria surveying for no child labor, worker security and respect for human rights and no mixing with material from artisanal and small-scale mines (ASM), among others.
We focus on these criteria as they are related to potential risks that were identified as most salient in this context.

Kamoto Copper Company (KCC) and Mutanda Mining (MUMI) participated in the CopperMark independent assessments in Q4 2024, which spanned 5–7 days and included 200–300 worker and external stakeholder interviews. The findings provide a clear and ambitious framework for continuous improvement with actions identified across all criteria.

When a criterion is rated "partially meets," corrective actions are required by Q2 2026. When a criterion is rated "fully meets," continuous improvement commitments are made. These audit reports are available on the CopperMark website. This is the first time a mine in the DRC underwent an audit against the CopperMark 3.0 standard with significantly more stringent requirements.

Key Achievements

Four audits conducted in the past three years in alignment with the standards from the Responsible Minerals Initiative (RMI) Responsible Minerals Assurance Process (RMAP) (to verify no mixing with material from ASMs), and CopperMark (to assess responsible mining practices and community engagement). Tesla shadowed parts of these audits in-person to ensure audits are credible, legitimate, robust and comprehensive.

01

Visited community projects around Glencore's operations, including a rehabilitated school and agricultural farming projects

02

Continued commitment to completing and sharing site-level LCA in 2025, updating previous LCA results from 2022

03

Developed a shared exchange framework with Glencore and regularly met to align priorities and discuss progress, hurdles and opportunities

04

Established a publicly available, monthly updated satellite monitoring system of its Kamoto Copper Company (KCC) operation that shows the scale and type of industrial operations, providing direct visibility that this is not an ASM production



Criterion	Audit Finding	
	Kamoto Copper Company (KCC)	**Mutanda Mining (MUMI)**
No child labor	Fully meets	Fully meets
Respect human rights, create economic opportunities and contribute to the formalization and professionalization of artisanal and small-scale mining operations where it is safe and legally and/or legitimately possible	Fully meets	Fully meets
Respect communities' rights to healthy and safe living conditions through the implementation of systems to prevent health and safety risks and remedy adverse impacts	Fully meets	Fully meets
Avoid, minimize, rectify and compensate communities for adverse impacts on water balance, flow, quality and access and needs of other water users and wildlife from operational activities	Partially meets. Corrective actions will include improvements in the integration of water management with operational schedules, additional runoff controls and increased consideration for cumulative impacts from other mining operations in the water management plan	Partially meets. Corrective actions will include improvements in the integration of water management with operational schedules and increased consideration for cumulative impacts from other mining operations in the water management plan
Respect workers' rights to fair and decent employment terms, preventing and remedying adverse impacts	Partially meets. Corrective action will include clearer definitions of job classifications, career progression opportunities and improvements to living wage assessments	Partially meets. Corrective action will include clearer definitions of job classifications, career progression opportunities and improvements to living wage assessments
Business integrity	Fully meets	Fully meets
Revenue transparency	Fully meets	Fully meets
Legal compliance	Fully meets	Fully meets

We continue to support responsible ASM through the Fair Cobalt Alliance (FCA)

While all of Tesla's cobalt sources are industrial LSM, we continue to co-fund and serve on the Steering Committee of the Fair Cobalt Alliance (FCA), a multi-stakeholder action platform launched in 2020 to mobilize resources across the cobalt supply chain to deliver technical assistance and investment in support of a vision for a formal, fair and safe ASM cobalt sector.

We remain committed to staying engaged in the DRC to improve conditions in the ASM and LSM cobalt mining sector, which continues to be an important source for the livelihoods of the local population. In October 2024, Tesla visited the FCA's office and mine implementation site to witness progress and engage on next steps for the program.

Key Accomplishments in 2024:

20
children who were found working in ASMs were enrolled in a comprehensive remediation program including reintegration to education, living stipends and health and psycho-social support. Four children have successfully completed the program.

131
roofs were constructed on underground tunnels to stabilize pit entry and prevent flooding during the rainy season, significantly surpassing the installation of 5 roofs in 2023.

22
toolbox training sessions were conducted in 2024 by safety captains. These sessions, delivered by miners to fellow miners, play a crucial role in embedding a culture of safety.

Nickel

Direct Nickel Sourcing

(Tesla 2024)

49%

of the nickel in our batteries
sourced directly from miners and refiners

In 2024, Tesla sourced over **49% of the nickel in our batteries directly from miners and refiners.** For the rest, we require traceability and upstream performance improvements. All nickel used in Tesla batteries in 2024 was traced to its origin of extraction.

Risk identification activities:

- 17 audits across mines and smelters
- 10 product LCAs for nickel suppliers or facilities assessed, covering all directly contracted suppliers
- Received and reviewed decarbonization plans from long-term, directly contracted nickel suppliers
- Assessed site-specific Environmental and Social Impact Assessments (ESIAs) to understand environmental risks associated with mine sites and processing facilities entering Tesla's supply chain

GHG emissions	• Supplier committed to reduce fossil fuel power with over 60 MW solar and wind supported by battery storage • Requested direct suppliers to phase out coal as an electricity source, including committing to develop a study to phase out coal use for renewables using natural gas as an intermediate step • One supplier continued expanding the use of battery EVs (BEVs) in underground mines, using 50 BEVs for a range of activities (drilling, loading and hauling) in 2024
Water and air pollution, deforestation, Deposition of Process Tailings on and biodiversity	• Required facilities producing tailings to use more stable dry stack storage methods. One supplier is currently switching from wet tailing to dry stack tailings • One supplier published the outcome of an independent tailings review, in alignment with Global Industry Standard on Tailings Management, which included the requirement to implement a long-term recovery plan
Human Rights, Forced Labor and Indigenous Communities	• One supplier committed to supporting Indigenous communities' participation in mining projects by signing with Canada's First Nations Major Projects Coalition • One supplier increased communications about tailings management with local communities as a result of community concerns raised with regard to tailings failure • Suppliers developed improved grievance mechanisms, including by making them accessible online as well as without phone and computer to enable participation of local Indigenous groups • Communicated requirements for Free, Prior and Informed Consent (FPIC) to suppliers

Nickel

● Completed ● Committed ○ None

Supplier	Tier	Location	Audit Status	LCA Status	Decarbonization Plan Status
Sudbury (Vale Base Metals)	Mine and Refinery	Canada	● Completed (4)	● Completed	● Committed
Prony Resources	Mine	New Caledonia	● Completed (5)	○ No Commitment	● Committed
Murrin Murrin (Glencore)	Mine	Australia	● Completed (2)	● Completed	● Committed
CNGR	Refinery	Indonesia	● Completed (2)(3)	● Completed	● Committed
	Refinery	China	● Completed (2)	● Completed	● Completed
Huayou	Refinery	Indonesia	● Completed (2)	● Completed	● Committed
	Refinery	China	● Completed (2)	● Completed	● Completed

(1) Initiative for Responsible Mining Assurance (IRMA) Standard;
(2) Responsible Minerals Initiative (RMI), Responsible Minerals Assurance Process (RMAP);
(3) Responsible Minerals Initiative (RMI), Environmental Social Governance (ESG);
(4) Towards Sustainable Mining (TSM);
(5) International Finance Corporation (IFC) Performance Standard.

Nickel in Indonesia

Similar to last year, many of our responsible sourcing efforts focused on Indonesia, a significant and growing global source for nickel and other battery materials. We require that all suppliers are audited to international standards, including those in Indonesia. We formally requested all mine sites feeding into our supply chain to pursue the Initiative for Responsible Mining Assurance (IRMA) and that all smelters are RMAP-conformant.

Risk identification activities in Indonesia in 2024:

- 2 due diligence trips were taken by Tesla responsible sourcing staff to supply chain sites in September and November 2024
- 7 audits were completed at upstream nickel mines and smelters
- 100% of identified mines have completed self-assessments and are in the process of engaging IRMA to complete an audit in the next two years
- 5 LCAs were collected for nickel-producing facilities
- Facility-specific GHG emissions inventories used to create our most accurate product carbon footprint (PCF) LCA of nickel-based cells to date
- Ongoing engagement with NGOs, industry associations and expert consultants, including as an active member of the RMI Nickel Working Group



Nickel in Indonesia (cont'd)

Focus Area	Actions
GHG emissions	• Re-communicated zero tolerance for tailings disposal into oceans • Required suppliers to prepare and enact decarbonization plans at each Indonesian facility, such as developing cogeneration and waste heat recovery processes to produce 30% lower GHG emissions high-grade nickel matte • Facilitated roadmaps with suppliers on renewable energy production, starting with ISO 50001 energy management systems for carbon inventory development, installation of up to 200 MW of rooftop and ground-mount solar in 2025, EV dump truck adoption and exploration of lower-emission alternatives with captive coal operators, including hydropower and biomass generation, with goals of 16-35% renewable energy by 2029 • Increased sourcing from lower carbon processing options like High-Pressure Acid Leaching (HPAL), which uses on-site exothermic sulfuric acid production to reduce external energy demand by up to 85%
Water and air pollution, deforestation and biodiversity	• Requested Environmental Impact Assessments (EIA) • Supplying mines provided evidence of revegetation, including maps of opened, planned and restored terrain; mining permits; and mine closure plans (progress validated via on-site visits) • Supplying mines provided evidence of water management through erosion control, sedimentation ponds and onsite and downstream pH and turbidity monitoring • Supplying mines provided evidence of biodiversity management, including baseline flora and fauna studies, endemic species protection, local plant nurseries and detailed monitoring of operations and post-mining restoration • Communicated expectation to all Indonesian suppliers to pursue green PROPER ratings, a national standard for environmental performance that requires entities to exceed legal standards
Indigenous and community rights	• Continued to engage with NGOs, the government of Indonesia and mining companies to identify how and where a no-go zone for mining could be implemented to protect Indigenous communities • Suppliers provided evidence for improved community engagement through regular town halls, development of local waste and water treatment plants and invitation of NGOs to industrial sites for monitoring and feedback
Worker health and safety and freedom of movement	• Engaged directly with suppliers to prohibit the practice of worker passport retention and recruitment fees to ensure worker freedom of movement • Requested all suppliers to complete reviews of their OHS practices in response to industrial accidents, which led to additional safety trainings (including ILO training modules), installing sprinklers for fire safety, posting safety signs in three languages, appropriately labelling safety materials and ensuring easier access to first aid kits • Ensured all active suppliers are certified against ISO45001 (new facilities are expected to achieve this certification within six months of operation)

We launched the Nickel Efforts for a Sustainable Transition (NEST) program in Indonesia



It was important that Tesla invest resources into mitigating some of the impacts associated with nickel mining in Indonesia. In April 2024, together with two international companies that operate Indonesian smelters, we launched the Nickel Efforts for a Sustainable Transition (NEST) program, which aims to implement biodiversity conservation, reforestation and community engagement efforts in the regions affected by Indonesian nickel mining. Initially focused on the Morowali area on the island of Sulawesi, the program is implemented by an in-country managing partner with support from the High-Conservation Value Network (HCVN).

Key Achievements

7
geographic areas covering 17 mining permits and 150+ hectares were screened using the High-Conservation Value (HCV) screening approach, which combines public external research and stakeholder input with remote sensing technology to identify areas of high value for biodiversity, critical habitats, carbon storage, cultural sites, traditional lands and more (results publicly available).

31
workshops with 150 local stakeholders carried out to enable a wide-ranging engagement process, including government (local, regional and national), civil society (Indonesian and international), local communities and the private sector. This process is iterative and ongoing.

4
preliminary pilot sites have been identified and confirmed for the program to implement measures that will likely include flora and fauna monitoring, mining reclamation and habitat avoidance and rehabilitation.

+
Identified key sites and applied the Mitigation Hierarchy (Avoid, Minimize, Restore, Offset) to evaluate the probability of threat and potential actions.

Lithium

In 2024, Tesla sourced more than 73% of the lithium used in our batteries directly from mines and refiners.

Risk identification activities in 2024:

- 6 assets in Tesla's lithium supply chain have completed or are committed to Tesla's preferred IRMA audit standard, which is a 3x increase compared to last year
- Tesla's responsible sourcing team participated in site visits for existing and future supplying facilities in Australia, China and the United States
- Received and reviewed LCA datapoints for 100% directly contracted lithium suppliers
- Collected and evaluated decarbonization plans for directly contracted lithium suppliers and lithium extraction sources supplying our suppliers
- Reviewed ESIAs for existing and new lithium suppliers to understand emissions and waste

Focus Area	Actions
Waste Generation	• Where possible, we sourced lithium from underground mines, meaning mining can be more selective and have less waste rock to deposit • Monitored strip ratio and mining-related waste rock removal and storage at supplier sites
GHG Emissions	• Increased sourcing of low GHG emissions brine validated using ISO 14067:2018 product carbon emissions studies • Reduced exposure to hard rock lithium facilities using coal during refining • One supplier replaced fossil fuel powered boilers with electric ones for steam production essential to lithium refining
Water Use in Regions of High Water Stress	• Participated in the International Lithium Association's (ILiA) product water impact discussion to drive transparent communication of water risks • Commitment from lithium producers in water-stressed areas to evaluate the use of Direct Lithium Extraction (DLE), desalinization technologies to minimize fresh water use and direct use of sea water in the production process
Adverse Community Impacts	• Suppliers initiated additional community engagement efforts, including presentations to the community through permanent round tables and visits to local communities to ensure that relevant information arrives to the communities with the ability to record grievances where appropriate • One supplier developed an extended grievance mechanism to enable individual grievances from employees to be shared, rather than predominantly community grievances. This is being done by implementing physical mailboxes, enabling anonymity, if desired, and by doing informative talks on this anonymous grievance mechanism format • Supporting water security in dry areas by one lithium supplier through provision of wells, installation of a water treatment plant and improvement of water efficiency in agriculture by the local communities • Continued to have ongoing conversations with NGOs to receive unfiltered information from Indigenous communities

Lithium

● Completed ● Committed ○ None

	Tier	Location	Audit Status	LCA Status	Decarbonization Plan Status
Albemarle	Mine	Chile	● Completed (1)	● Completed	● Committed
	Refinery	Chile	● Completed (2)	● Completed	● Committed
	Mine	Australia	● Completed (1)	● Completed	● Committed
	Refinery	China	● Completed (2)	● Completed	● Committed
Rio Tinto Lithium (formerly Arcadium Lithium)	Mine	Argentina	● Completed (1)(2)(3)	● Completed	● Committed
	Refinery	USA	● Completed (2)(3)	● Completed	● Committed
	Refinery	China	● Completed (2)(3)	● Completed	● Committed
Yahua	Refinery	China	● Completed (2)(3)	● Completed	● Completed
Ganfeng	Refinery	China	● Completed (2)	● Completed	○ None
SQM	Mine	Chile	● Completed (1)	● Completed	● Committed
	Refinery	Chile	● Committed (2)	● Completed	● Committed
Piedmont	Mine	Canada	● Committed (4)	● Completed	○ None

(1) Initiative for Responsible Mining Assurance (IRMA) Standard;
(2) Responsible Minerals Initiative (RMI), Responsible Minerals Assurance Process (RMAP);
(3) Responsible Minerals Initiative (RMI), Environmental Social Governance (ESG);
(4) Towards Sustainable Mining (TSM).

We're targeting low environmental impact lithium refining

In 2024, we started feeding lithium raw material into our in-house lithium refinery in Corpus Christi, Texas. To understand and improve the GHG emissions value proposition of the refinery, which is expected to be fully ramped in the future, Tesla completed a third party-reviewed ISO 14067:2018 Product Carbon Footprint (PCF) study based on engineering data assuming steady-state production.

Tesla was the first company in the world to do this following the ILiA PCF guidance. This study showed that Tesla's lithium refinery has a 34% lower carbon impact than incumbent acid roast technology used by most incumbent hard rock lithium refineries. This is primarily due to our novel processing technology, which uses alkaline leach technology that requires fewer processing steps, resulting in lower energy consumption and chemical use. The refinery has also been designed to—in the future—take in lithium feed from recycled end-of-life batteries, providing a pathway toward supply chain circularity.



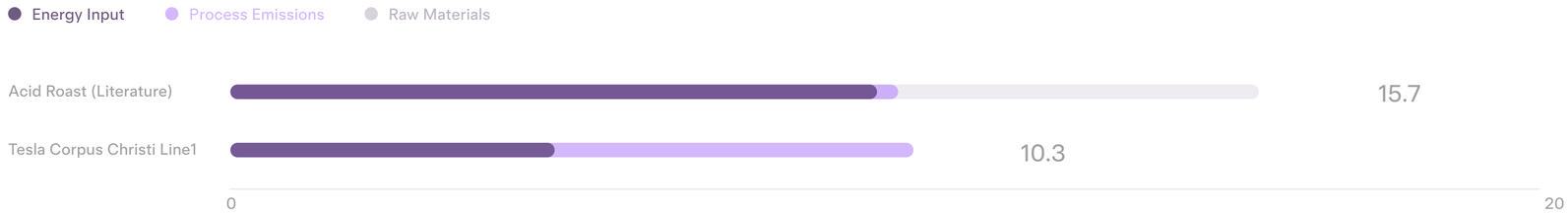
We're targeting low environmental impact lithium refining (cont'd)

Another advantage of this technology is that water use is nearly 50% lower than incumbent acid roast technology. Our refinery is estimated to use around 375,000 gallons of water per day, whereas incumbent technology is estimated to use 690,000 gallons of water per day. This calculation is based on steady-state production. Additionally, Tesla's lithium refinery produces minimal hazardous solid waste and instead produces a byproduct usable in the construction industry. To understand the relative impact of extracting water from the ecosystem in Texas, we compared water use against other common resource industries in Texas. This review showed that Tesla's lithium refinery only uses 4% of the water used by other common natural resource industries in Texas.

With regard to community engagement, in 2024, we continued to invest in our Powering Communities Program, which—together with local NGOs, foundations and academic institutions—supports educational and workforce development in the Gulf Coast area. Examples of these efforts include scholarships for financial assistance, recruitment from local communities and opening our doors to showcase our lithium refining facility.

Tesla's Lithium Refinery Compared GHG Emissions

(kg CO_2 eq.per kg LHM)



Water Use Across Lithium Refining & Texas Industry

(Gallons, 2024)



Graphite

Graphite is a key material in the composition of battery anodes. In 2024, Tesla collaborated with existing and potential suppliers to gain an understanding of environmental and social risks related to suppliers in our graphite supply chain.

Risk identification activities in 2024:

- 4 graphite mines and refineries visited
- 4 commitments for Tesla-approved third-party audits at mines and refineries in addition to second-party audits at graphite intermediate suppliers
- 5 LCAs for production of flake graphite and anode-grade graphite received and reviewed
- 3 decarbonization plans for graphite facilities assessed
- Tesla continues to be an active member of RMI Graphite working group

Focus Area	Actions
Tailings dam risk	• Consideration of reprocessing wet tailings using the dry stacking method to overcome insufficient sizing
GHG emissions	• Compared to the cathode, an anode is made up of fewer components enabling a more targeted decarbonization approach. Tesla is already using a dry electrode process for anode • Tesla's main graphite supplier is deploying photovoltaic cells to produce up to 12% of its total required electricity, with the remainder to come from 100% renewable energy sources in the form of RECs (to be reviewed and validated by Tesla) • Sourced graphite concentrates from lower GHG-production pathways that utilize on-site renewable energy generation (more than one-third of total electricity consumption), such as photovoltaic combined with battery storage systems
Adverse community impacts	• Suppliers strengthened internal grievance mechanisms for employees by having a standalone procedure to providing training to employees, and by making the complaints submission procedure more accessible for remote and vulnerable stakeholders with community liaison officers • Suppliers mapped out affected communities and their vulnerabilities and implemented warning systems and developed signage indicating flood areas in the case of a tailings storage facility failure

Tin, tantalum, tungsten and gold (3TG)

Tin, tantalum, tungsten and gold (3TG) minerals appear in small amounts in many of the parts used in Tesla products. Mining communities in the DRC and other upstream 3TG sourcing regions are therefore essential to the production of Tesla products. In light of the escalating military conflict in the Eastern DRC, which is a key 3TG production region, we reaffirm our commitment to avoid contributing to human rights abuses, conflict and instability through our sourcing and support the improvement of on-the-ground conditions in and around mining communities. These efforts are also a reflection of the recognition that paper-based traceability systems alone still have not been shown to be effective at reducing armed conflict.

We expanded the focus of our program beyond compliance. Our strategy includes a mix of efforts related to fulfilling our reporting obligations, scaling local impact and responsible sourcing and enforcing transformational change. Practicing risk mitigation is our preferred path to an embargo or termination of sourcing due to the importance of material production to livelihoods. We have and continue to invite others to follow this approach.

Focus Area	Actions
Export volumes of responsibly mined materials	Funding the expansion of Better Mining's 3T supply chain due diligence monitoring, corrective action and minerals traceability program at ASM mines in the DRC and Rwanda. Since 2023, this has enabled: • 279% growth in the total volume of assured materials in 2024 • 2 additional 3T mine sites onboarded • 98% growth in the number of workers positively impacted by the project from September 2023 to December 2024 • First exports sent from a new DRC mine and stable volumes of responsible materials sent from Rwanda • Identification of risks and closure through corrective actions, including community meetings involving local leaders to discuss unauthorized mining and community development as a result of identified unauthorized mining risks on page 179 and safety and health teams completed first aid training as a result of identified occupational safety risks • 87% average corrective action implementation rate, as of the last quarter of 2024, with a goal of 100%
Smelters participating in responsible sourcing programs	Formal request to all eligible global 3TG smelters and refiners to: 1. Increase efforts to responsibly source ASM materials by supporting and sourcing from sources that utilize recognized upstream mechanisms such as Better Mining and 2. Be audited by the Responsible Minerals Initiative (RMI) to validate mineral sourcing practices
Smelters participating in responsible sourcing programs	Direct engagement with smelters and refiners on the above request and to discuss opportunities for potential collaboration
Engagement with local stakeholders	Installation of Powerwall units in pilot program of Tesla Tech for Good on page 176
Transparency in relationships between Tesla and smelters and refiners	Surveyed over 500 suppliers to request Tesla-specific Conflict Minerals Reporting Templates (CMRTs) and require the removal of high-risk smelters and refiners from Tesla's supply chain
Visibility of risks and the impacts within our procurement organization	Conducted monthly escalations and office hours for Supply Chain Managers of non-compliant suppliers
Opportunities for smelters to conform to RMAP	Funded 4 3TG RMAP audits, 7 total since 2022
Opacity of supply chain relationships	Supported a case study on aggregator audits with the Responsible Minerals Initiative

Tesla Tech for Good

We are using Tesla technology to remedy harm associated with supply chain activities

In our 2023 Impact Report, we announced our Tesla Tech for Good product donation initiative aimed at mitigating the adverse human rights impacts that occur in mining communities while simultaneously supporting GHG emissions reductions. In collaboration with the Panzi Hospital & Foundation in the DRC, GivePower Foundation and Nuru, Tesla donated ten Powerwall units and hardware accessories that were installed at one of Panzi's clinics in the DRC, along with maintenance funding for ten years to sustain impact.

Panzi's clinics focus on serving survivors of sexual violence, including those who live and work near conflict and mining. Powerwall units were successfully delivered from Gigafactory Nevada to one of Panzi's clinics in the DRC in December 2024. Powerwall will help maintain power at Panzi's clinics located in electricity-insecure areas, helping them carry out their critical work while contributing to their goal of increasing the use of renewable energy.

We are proud to have hosted Panzi teams from Bukavu, DRC and Washington, D.C., at Tesla's Palo Alto office in May 2024. This collaboration has facilitated in-depth discussions between our Responsible Sourcing and Supply Chain Teams and Panzi's experts, focusing on 3TG mineral sourcing and our company's engagement with Congolese stakeholders. Amid the escalating conflict, we have consistently sought Panzi's insights to understand the resulting on-the-ground impacts and to identify how Tesla can contribute to necessary industry shifts, promoting responsible sourcing and prioritizing the inclusion and welfare of Congolese mining communities.

We believe everyone should have access to sustainable, modern and clean energy to meet their decarbonization goals and address energy insecurity—especially those who are providing life-saving healthcare.

For more information on our social impact programming, see pages 135-137.

Phlogopite mica

Phlogopite mica is used as a thermal barrier for various applications in our vehicle and energy products. It is relatively abundant, but the industry is opaque and has associated human rights risks that are often a consequence of systemic challenges.

Downstream purchasers such as Tesla do not have direct commercial relationships with the mica mines and processors. To address opacity challenges, we are working with our tier 1 suppliers to map our upstream supply chains and the communities they impact. This increased visibility allows us to better communicate our requirements to the upstream supply chain. Through this new approach, we and our tier 1 suppliers apply leverage upstream to assess and improve conditions. Our strategy combats opacity by mandating that tier 1 suppliers source from select mica processors. We also implemented programs for mapping the upstream supply chain, conducting third-party assessments and engaging with global stakeholders like development agencies and NGOs.

Tesla has multiple supply chains that provide mica materials for our products and we have worked to understand the origin of these supply chains for raw mica. In 2024, we dug deeper into a prioritized mica supply chain and uncovered broad, contextual challenges including poverty, impacts of climate change, limited access to quality education, weak child protection systems and lack of alternative livelihoods, which compound to exacerbate supply chain vulnerabilities. In line with the UN Guiding Principles, we remain engaged in driving traceability, formalization and systemic improvements, while recognizing that these efforts take time and are not a complete solution. We are committed to embedding responsible sourcing practices as we scale and are working to address root causes, not just symptoms.



Phlogopite mica (cont'd)

Supply Chain Tier	2024 Assessment Conducted	Tesla Employees Shadowed?	Findings	Mitigation Actions
Tier 1 (located in Asia)	1. Corporate Social Responsibility Audit against Tesla's Supplier Code of Conduct	Yes	Non-conformance related to Labor and Health and Safety, including working hours, days of rest, fire systems, emergency exits and worker-paid health exams fees	Supplier developed corrective action plans, including the repayment of employment fees to workers as verified by the audit firm
Tier 2 Exporter/Processing Facility (located in Africa)	1. Audit against Responsible Mica Initiative's Global Mica Processor Standard and OECD Due Diligence Guidance, including management and worker interviews 2. Child Labor and Child Rights Light Assessment, including community consultation	Yes	Weak management systems related to Labor and Health and Safety leading to lack of formal labor structure, lack of supply chain due diligence and lack of traceability	Audit firm developed corrective action plan. Tesla and a supplier commissioned an external capacity building program for a tier 2 supplier, with module one consisting of on-site training and reviews to strengthen management systems, with module two to be implemented in 2025
ASM Mines (located in Africa)	1. Audit against OECD Due Diligence Guidance, including worker interviews 2. Child Labor and Child Rights Light Assessment, including community consultation 3. Rapid Assessment against CRAFT Code	Yes	Current pay structure in mica supply chain does not address needs of individuals who have few or no alternatives to mica mining, particularly amidst poverty exacerbated by climate impacts, leading to lack of organizational structure, weak labor practices and inadequate safety conditions	SLR (formerly RCS Global) evaluated the feasibility of implementing Better Mining's monitoring, corrective action a traceability program, working to identify the mine sites in our supply chain and digitally trace materials to Tesla's tier 1 supplier. With support from tier 1 and tier 2 suppliers, implementation will continue in 2025 and beyond to enable improved conditions and traceability

We're increasing visibility around aluminum sourcing risks and impacts

Aluminum has been and will continue to be a critical material for Tesla, as it is used throughout our vehicles and energy products. We prioritize aluminum because of the high prevalence of human rights and environmental impacts across its supply chain—including bauxite mining and the carbon emissions linked to aluminum refining and smelting. The rising total demand for aluminum suggests that increased recycling is not enough to reach a truly sustainable aluminum sector. In addition, we recognize the important role bauxite mining plays in the lives of those in mining communities. Therefore, we engage with producers of both recycled and primary material and assess and address impacts across these supply chains.

As a condition for being awarded new business, Tesla continues to require suppliers to audit according to the Aluminium Stewardship Initiative's (ASI) Performance Standard. The ASI is one of the key industry organizations developing standards for the aluminum industry, including a focus on credible decarbonization roadmaps. Additionally, we appreciate that no single certification program replaces due diligence, and that responsible sourcing will not be achieved through certifications alone. Our work with organizations such as ASI includes broader efforts with suppliers and stakeholders to address and reduce risks in our aluminum supply chain in recognition of its outsized impact.

ASI Performance Standard Certification*

*Suppliers that are currently certified or actively working through certification process.

95%

Cybertruck
(3% YoY increase)

87%

All relevant suppliers
(9% YoY increase)

We're increasing visibility around aluminum sourcing risks and impacts (cont'd)

In 2024, Tesla entered into an agreement with one of the largest aluminum companies in the world to purchase low-carbon aluminum below 2 kg of CO_2e per kg of aluminum, which is the lowest commercially available aluminum in North America. This is achieved through usage of post-consumer recycled scrap content. Tesla is the first automotive OEM in North America to use this material, which will be used on crash components in our Model 3 vehicle. Tesla is continuing to engage with the aluminum industry globally to expand our use of low-carbon aluminum across all products.

Tesla's Supply Chain and Engineering Teams collaborate to promote more sustainable material design across our products. Together, we developed technical specifications for alloys that enable the use of over 90% of post-consumer recycled content in our castings, allowing a shift to secondary material supply chains and a substantial reduction in related emissions.

We continue to prioritize mapping our aluminum supply chain, with more suppliers providing upstream information in 2024 than in years before.

Aluminum	Material
Supply Chain Tiers	**Countries of Origin Identified**
Stampers	Canada, China, Czech Republic, Germany, Italy, Mexico, Poland, Slovakia, South Korea, Spain, UK, U.S.
Processors and Service Centers	China, Mexico, Poland, Slovakia, UK, U.S.
Mills	Austria, Belgium, Canada, China, Germany, Switzerland, U.S.
Ingot and Primary Aluminum	India, Indonesia, U.S., Canada, UAE
Bauxite	Australia, Brazil, China, Guinea, Iceland, Indonesia, Solomon Islands

We're mapping our steel and iron supply chains

We prioritize identifying and addressing risks in our ferrous materials supply chain because of the high prevalence of environmental impacts—steel especially is a significant contributor to Tesla's supply chain GHG emissions. For more information on our efforts to understand and reduce our supply chain emissions, refer to the decarbonization section.

We buy ferrous materials in sheets and forgings. Steel is a primary component of many systems in a vehicle, but shows up prominently in the body, chassis and powertrain, as well as in the structure of our energy products. Most of our ferrous materials are alloyed, meaning iron is mixed with other elements to optimize their engineering properties.

The rising total demand for iron and steel globally means that increased recycling is not enough to create a truly sustainable steel sector. Therefore, we engage with producers of both recycled and primary material. Tesla engages regionally to maximize use of Electric Arc Furnace mills on lower steel grade and at the same time we are working with mainstream steel mills for a mid-term transition away from blast furnace production and toward direct reduction without coal that will systematically reduce emissions.

We source much of the steel used in our vehicles directly from mills, sending the material to Tesla plants or to our tier 1 suppliers. This direct sourcing strategy, combined with our efforts of mapping upstream material sources where we do not directly source the raw material, enables increased visibility, the ability to conduct due diligence and the opportunity to further decarbonize our supply chain.

Steel	Material
Supply Chain Tiers	**Countries of Origin Identified**
Stampers	Canada, China, Italy, Japan, Mexico, Poland, South Korea, Taiwan, U.S.
Processors and Service Centers	Canada, China, Italy, Mexico, Japan, Poland, South Korea, Taiwan, U.S.
Mills	Austria, Belgium, Canada, China, Japan, Mexico, South Korea, Taiwan, U.S.
Slabs	Austria, Belgium, Brazil, Canada, China, Japan, Mexico, South Korea, Taiwan, U.S.
Ore	Australia, Austria, Belgium, Brazil, Canada, China, Japan, Mexico, South Korea, Taiwan, U.S.

We continue to scale our Supplier Self-Assessment Questionnaire

Launched in 2022, the Supplier Self-Assessment Questionnaire (SAQ) is a tool used to identify and assess potential adverse impacts of our supply chain operations on people, the planet and society. By having suppliers affirm that they have policies, processes and controls in place at the manufacturing-site level consistent with Tesla's Supplier Code of Conduct requirements—including labor, health and safety, environment, ethics and supply chain responsibility—we identify potential risk areas. This systematic process enables us to identify risks at scale based on actual supplier practices, which allows Tesla teams to proactively prioritize more extensive due diligence for high-risk suppliers based on the extent of the potential impact on workers' health, safety or fundamental human rights and the number of workers and employees impacted at the supplier site.

The SAQ pushes Tesla's responsible sourcing due diligence beyond generalized, inherent risk associated with certain commodities and countries toward the identification of concrete risks by requiring each unique location providing production parts, materials or services to Tesla to submit their respective responses. Tesla leverages this approach for all direct supplier categories, including batteries, aluminum, chemicals and indirect materials and services, including service centers, construction and on-site contractors.

How we leverage SAQ data

In 2024, we increased the total number of supplier site responses by 44% for a total of over 1,400 total submissions. Submissions reflect facilities across 40+ countries that impact over two million supply chain workers. As many suppliers have never been asked to develop policies on issues such as limits to overtime, overtime pay, freely chosen employment, etc., the SAQ provides Tesla with the ability to identify those suppliers and ensure consistency of their policies with the requirements of our Supplier Code of Conduct.

Focus Areas	Actions
Insufficient risk prioritization due to reliance on abstract risk assessment only	Used SAQ results to inform corporate social responsibility audit prioritization
Organizational visibility to identified risks	• Built analytics to inform supply chain managers of potential risks identified for their suppliers • Communicated results to supply chain stakeholders at all levels
Supplier policies and implementation on freely chosen employment and child labor	Developed and communicated Tesla's Freely Chosen Employment and Young Workers Guidelines to suppliers with guidance on expectations and requirements

We launched an integrated supply chain mapping tool

Supply chain mapping of our supply lines from tier 1 suppliers that Tesla directly sources products from all the way upstream to the material's source is a foundational part of identifying and mitigating upstream risk. We define supply chain mapping as visibility on the suppliers within our supply chain and the relationships between them.

In 2024, we integrated supply chain mapping capabilities into our internal data systems to capture relevant current, future and former supply chains. This allows a consistent approach and format for the collection of supply chain data, regardless of the tier, and will help facilitate supplier-driven data collection, enabling greater scalability. It also enables colleagues to make decisions that consider entire upstream supply chains, rather than solely focusing our evaluation and responsible sourcing efforts on the direct tier 1 supplier.

Supply chain mapping needs to be an ongoing exercise, requiring continued re-engagement with suppliers to keep information up to date, enabling high-quality due diligence. Our primary goal is to identify and mitigate the potential risk of unknown and unapproved sources of materials. This increased visibility also supports our goal of building a more efficient supply chain, addressing implied tariffs and duties and detecting inefficient logistics corridors.

We conduct due diligence on our upstream supply chains, leveraging internal information such as the maps we have collected and our firsthand supplier and industry knowledge against third-party tools and software that help us expand our forced labor assessments of our supply chains. The respective findings contribute to more comprehensive risk analyses of new business awards and ongoing supply relationships, upstream supply chain partners, build locations, localization efforts and overall sourcing strategies.

We view our mapping efforts as a first step toward supply chain traceability, which we define as the identification of all suppliers in a supply chain used to produce our parts, including those providing transportation services and the development of systems to collect and maintain documentation to verify the movement of goods throughout the supply chain, from raw materials to finished goods.

Tesla has taken steps toward greater traceability by implementing systems that allow critical minerals and materials suppliers to demonstrate chain of custody and batch-level traceability of materials. This ensures Tesla's compliance with global regulations and further deepens our understanding of our global supply chain.

We take supply chain concerns and complaints seriously

Concerns Related to Responsible Sourcing

(2024)

1
Integrity Line

2
Compliance (Direct Email)

We receive concerns related to responsible sourcing through a variety of channels, including formalized grievance mechanisms like our Integrity Line and informal channels like email. Our Integrity Line is available 24 hours a day, seven days a week and allows employees, contractors and third parties, including suppliers, their employees, community members and other stakeholders, to report concerns anonymously and without fear of retaliation. Concerns are investigated promptly and impartially in a manner appropriate to the circumstances, and remedial action is taken when necessary.

See the process for investigating allegations received through Integrity Line detailed in the People & Community section of this report on page 126.

Supply Chain Scope	Categories of Concern	Process to Investigate Concern	Outcome
Thermal	Wrongful Termination Excessive Overtime	Priotized on-site CSR-Audit	Supplier contacted and an audit scheduled within one month of complaint
Interiors	Excessive Overtime	Priotized on-site CSR-Audit	Corrective action plan implemented to address overtime hours that were identified as high but not excessive during audit
Construction	Recruitment Fees	Conducted interview with business partner and obtained historical background	No additional evidence was obtained to substantiate the claim



Appendix

06



Supporting materials for increased clarification and transparency

This appendix provides supporting information that expands upon the content presented in the earlier sections of this impact report. It includes additional data, explanations and references useful for further clarification or in-depth analysis.

Appendix

TCFD, SASB and United Nations SDG Alignment	188
Key Metrics	192
Awards, Certifications and Additional Disclosures	199
Management Assertion	202

TCFD

Topic	Accounting Metric	Response
Governance	Describe the Board's oversight of climate-related risks and opportunities.	Please see "Governance: Overview" and "Managing Climate Risk" on pages 6 and 11 of this report.
	Describe management's role in assessing and managing climate-related risks and opportunities.	Risks: Please see "TCFD: Physical Climate Risk Assessment" on page 12 of this report. Please see "Sustainability Assessment" on pages 8-9 of this report. Opportunities: Please see "Our Mission" on page 4 of this report. Please see "Sustainability Assessment" on pages 8-9 of this report.
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Opportunity: Please see "Our Mission" on page 4 of this report. Transition Risk: Please see "Governance: Managing Climate Risk" on page 11 of this report for climate-related procurement risks. Please see "Governance: Managing Climate Risk" on page 11 of this report for other climate-related transition risks. Please see "Sustainability Assessment" on pages 8-9 of this report. Physical Risk: Please see "TCFD: Physical Climate Risk Assessment" on page 12 of this report.
	Describe management's role in assessing and managing climate-related risks and opportunities.	Analysis of financial-related impacts from climate-related risks is ongoing. Opportunities: Please see "Our Mission" on page 4 of this report.
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Please see "TCFD: Physical Climate Risk Assessment" on page 12 of this report. Additionally, Tesla's Responsible Sourcing Team works closely with critical suppliers to ensure they are hardening their operations against future climate risk. For future discussion of these efforts, see pages 162-181 of this report.
Risk Management	Describe the organization's processes for identifying and assessing climate-related risks.	Please see "Governance: Overview" and "Managing Climate Risk" on pages 6 and 11 of this report, and "TCFD: Physical Climate Risk Assessment" on page 12 of this report.
	Describe the organization's processes for managing climate-related risks.	Tesla's Responsible Sourcing Team works closely with our suppliers to ensure they are operating in a way that mitigates future climate risk. For further discussion of these efforts, please see pages 162-181 of this report.
	Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.	Please see "Governance: Managing Climate Risk" on page 11 of this report.
Metrics & Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Please see more information on our GHG emissions on pages 192-194. Please see more on our Decarbonization Strategy on pages 38-55. Please see more on our climate-related risks and opportunities on pages 8-9 and 12 of this report.
	Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Please see "Key Metrics: GHG Emissions" on pages 192-194 of this report.
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Please see more on our Decarbonization Strategy on pages 38-55 of this report. Please see more on our climate-related risks and opportunities on pages 8-9 and 12 of this report. Please see our Supply Chain Decarbonization efforts on pages 151-157 of this report.

SASB

Topic	Accounting Metric	Response
Product Safety	Percentage of models rated by NCAP programs with overall 5-star safety ratings, by region.	Please see pages 82-88 for our discussion of vehicle safety. Please see pages 80-81 for specifics related to our 5-star safety ratings.
	Describe management's role in assessing and managing climate-related risks and opportunities.	Tesla reviews 100% of NHTSA VOQ complaints filed for any and all Tesla vehicles produced.
	Number of vehicles recalled (percentage conducted with OTA software update*).	Number of U.S. recalls in 2024 (how many of those were software only): 16 (50%) Number of U.S. vehicles affected in 2023 (how many of those were software only): 5,137,968 (99%) Number of Global recalls in 2024 (how many of those were software only): 22 (55%) Number of Global vehicles affected in 2024 (how many of those were software only): 9,073,645 (99%)
Labor Practices	Active workforce covered under collective bargaining agreements.	No Tesla employees in the U.S. are covered by a collective bargaining agreement. Some Tesla employees outside of the U.S. are covered by collective bargaining agreements only to the extent required by law.
	(1) Number of work stoppages and (2) total days idle.	0/0
Fuel Economy and Use-Phase Emissions	Sales-weighted average passenger fleet fuel economy, by region.	Please see pages 29-32 and 196-198 for discussion/data.
	Number of (1) zero emission vehicles (ZEV), (2) hybrid vehicles and (3) plug-in hybrid vehicles sold.	Tesla only sells zero-emission vehicles. In 2024, we delivered 1,789,226 vehicles.
	Discussion of strategy for managing fleet fuel economy and emissions risks and opportunities.	Please see page 28 for a discussion on fleet fuel economy. Please see Sustainability Assessment on pages 8-9 for a discussion on climate-related risks and opportunities.
Materials Sourcing	Description of the management of risks associated with the use of critical materials.	Please see Supply Chain section on pages 145-148 and 162-181 of this report.
Materials Efficiency and Recycling	Total amount of waste from manufacturing, percentage recycled.	Please see Key Metrics on page 195 of this report.
	Weight of end-of-life material recovered, percentage recycled.	We make the best effort to recycle every battery pack we can. Please see pages 59-63 for a discussion on our waste, circular solutions and remanufacturing programs. Please see page 42 for a discussion on our end-of-life methodology. Please see Key Metrics on page 194 for our 2022, 2023 and 2024 end of life emissions.
	Average recyclability of vehicles sold.	Please see pages 60-63 for a discussion on our circular solutions and remanufacturing programs.
Number of Vehicles Manufactured		1,773,443
Number of Vehicles Manufactured		1,789,226

United Nations SDG Alignment

The United Nations defined a blueprint of 17 sustainable development goals to meet the urgent environmental, social, political and economic challenges facing our world. We understand that companies can play a critical role in providing solutions to these challenges. Our mission to accelerate the world's transition to sustainable energy directly addresses some of these challenges—our products and services have helped to create industry demand for sustainable energy products.

In 2023, we conducted a sustainability assessment to determine strategic focus areas both material to the business and salient to the society and the environment (please see page 8 for more information). On the next page, we have mapped our focus areas to the most relevant Sustainable Development Goals (UN SDGs).

United Nations SDG Alignment Goals

UN SDGs	Focus Areas	Page Reference
No Poverty	Responsible Sourcing	Please see pages 139-150 in our Supply Chain section.
Zero Hunger	Child Labor & Forced Labor	Please see pages 145-148 in our Supply Chain section.
Good Health and Well-Being	Talent Management & Employee Wellbeing Occupational Health & Safety Product Quality & Safety Responsible Sourcing	Please see page 131 in our People & Community section. We offer competitive pay and benefits, please see page 130 in our People & Community section. We prioritize employee safety and engagement through HOP, please see page 120 in our People & Community section.
Quality Education	External Stakeholder Engagement	Please see a discussion on our next generation of Tesla leaders on pages 106-112.
Gender Equality	Equal Opportunities	We do not tolerate harassment or discrimination. Please see pages 127 and 200 for more information.
Clean Water and Sanitation	Water Use & Management	Please see pages 56-58 for more information.
Affordable and Clean Energy	Inclusive Energy Transition	Please see pages 106-115 for more information.
Decent Work and Economic Growth	1. Product Quality & Safety 2. Responsible Sourcing 3. Grievance Mechanisms & Access to Remedy 4. Responsible Data & Cybersecurity 5. Responsible AI 6. Inclusive Energy Transition 7. Occupational Health & Safety 8. Employee Engagement 9. External Stakeholder Engagement 10. Equal Opportunities	1. Please see our Product Section on pages 66-88. 2. Please see our Supply Chain Section on pages 139-185. 3. Please see pages 124-126 and 185. 4. Please see pages 14-17. 5. Please see page 18. 6. Please see pages 106-115. 7. Please see page 121. 8. Please see page 122. 9. Please see pages 135-137. 10. Please see pages 127 and 129-134.
Industry, Innovation + Infrastructure	Government Relations Policy	Please see Circular Solutions on page 60.
Reduced Inequalities	Government Relations Policy Inclusive Energy Transition	Please see pages 72-75. Please see pages 106-115.
Sustainable Cities and Communities	Inclusive Energy Transition External Stakeholder Engagement	Please see pages 106-115. Please see pages 135-137.

Key Metrics

This year, we expanded the scope of our environmental metrics to include Gigafactory Berlin-Brandenburg and Gigafactory Texas for the first time, contributing to an increase in reported emissions. As our product portfolio and business operations continue to evolve—most recently with the introduction of Cybercab and Optimus—we are committed to refining our reporting methodology to ensure our intensity metrics accurately reflect our diverse operations and products beyond a per-vehicle metric.

As we consistently monitor and refine our carbon footprint reporting, it is inevitable that we will need to update emissions data from previous years. Our methodologies have only gotten more precise as we have been able to gather more real, granular and regionalized data.

Please refer to the most recent Impact Report for accurate GHG emission figures for historical years.



Scope 1 & 2 GHG Emissions ($mtCO_2e$)

2024

	Scope 1 & Scope 2 Location Based			Scope 1 & Scope 2 Market Based	
GHG Emissions ($mtCO_2e$)	Scope 1	Scope 2	Totals	Scope 2	Totals
Manufacturing + Support	250,000	583,000			
SSD	29,000	148,000			
Other	23,000	23,000			
Totals	302,000*	754,000*	1,056,000	677,000**	979,000**
YoY Manufacturing GHG Emissions ($mtCO_2e$/vehicle)* **	47%				

*Third-party assurance provider performed an attest review engagement on the Scope 1 and Scope 2 (Location Based) GHG emission totals but did not assure GHG emissions by site type or Scope 2 (Market Based) GHG emissions totals. Please see the assurance letter at the end of this report.
**In 2024, 100% of Gigafactory Berlin-Brandenburg's electricity usage was matched with renewable electricity. For more information on our renewable energy program please see pages 43-46.
***For a discussion on our evolving intensity metrics and the impact of our new factories on our metrics, please see the introduction to our key metrics on page 192.

2023

GHG Emissions ($mtCO_2e$)	Scope 1	Scope 2	Totals
Manufacturing + Support	151,000	331,000	
SSD	29,000	98,000	
Other	31,000	37,000	
Totals	211,00	466,000	677,000
YoY Manufacturing GHG Emissions ($mtCO_2e$/vehicle)	-10%		

2022

GHG Emissions ($mtCO_2e$)	Scope 1	Scope 2	Totals
Manufacturing + Support	148,000	305,000	
SSD	27,000	74,000	
Other	27,000	29,000	
Totals	202,000	408,000	610,000
YoY Manufacturing GHG Emissions ($mtCO_2e$/vehicle)	-29%		

Scope 3 GHG Emissions ($mtCO_2e$)

Scope 3 Categories	2024	2023	2022
Category 1	40,376,000	39,020,000	30,701,000
Category 2	3,998,000	4,490,000	4,267,000
Category 3	351,000	247,000	227,000
Category 4	573,000	558,000	557,000
Category 5	296,000	255,000	478,000
Category 6	51,000	53,000	37,000
Category 7	436,000	369,000	608,000
Category 8	59,000	75,000	77,000
Category 9	569,000	314,000	389,000
Category 11	6,660,000	3,207,000	3,409,000
Category 12	1,598,000	766,000	421,000
Total Emissions	54,967,000	49,354,000	41,171,000

Key Metrics

Vehicle Safety

Number of Vehicular Accidents Per Million Miles Driven	2024	2023	2022
Autopilot Engaged	0.15	0.18	0.18
No Active Safety	0.85	0.81	0.68
Total US Vehicle Fleet*	1.42	1.49	1.53

Health & Safety

	2024	2023	2022
ASTM Level One Rate	2.28	2.51	2.86
Fatalities	1**	1	0

*Figures reflect most recent NHTSA data

**Unfortunately, Tesla experienced a contractor fatality in Texas, in 2024.

Uptime of Tesla Supercharger Sites*

	2024	2023	2022
Uptime	99.95%	99.97%	99.95%

*Uptime of Supercharger sites reflects the average percentage of sites globally that had at least 50% of their daily capacity functional for the year.

Energy Consumption (kWh)

	2024	2023
Electricity Consumption (non-renewable)	1,673,681,511	1,129,864,000
Electricity Consumption (renewable)	681,364,318	420,083,000
Fuel Consumption	1,477,221,711	1,029,221,000

Waste Generated in Manufacturing (metric tons)

	2024	2023	2022
Recycled Hazardous Waste	12,038	6,273	6,641
Recycled Non-Hazardous Waste	581,763	347,304	286,518
Disposed Hazardous Waste	7,414	4,345	20,471
Disposed Non-Hazardous Waste	72,006	29,307	38,737
Incinerated Hazardous Waste	7,755	7,567	n/a
Incinerated Non-Hazardous Waste	18,715	2,415	n/a
Total	699,691	397,211	352,366
YoY Total Waste/Vehicle*	49.7%	-6.3%	-5.42%

*For a discussion on our evolving intensity metrics and the impact of our new factories on our metrics, please see the introduction to our key metrics on page 192.

Water Withdrawal for Manufacturing (cubic meters)

Total Freshwater Withdrawal	6,757,832	3,871,927	3,363,398
YoY Total Water/Vehicle*	48.3%	-2.4%	-15%

*For a discussion on our evolving intensity metrics and the impact of our new factories on our metrics, please see the introduction to our key metrics on page 192.

Average Lifecycle Emissions

United States (gCO_2e/mi)

Model 3/Y (Long Range AWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	70	0	70
Personal Use (grid charged)	60	74	134
ICE	52	407	459

New York (gCO_2e/mi)

Model 3/Y (Long Range AWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	72	0	72
Personal Use (grid charged)	60	60	120
ICE	52	407	459

Europe (gCO_2e/mi)

Model 3/Y (Long Range AWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	111	0	111
Personal Use (grid charged)	101	43	144
ICE	69	406	475

France (gCO_2e/mi)

Model 3/Y (Long Range AWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	111	0	111
Personal Use (grid charged)	101	43	112
ICE	69	406	475

China (gCO_2e/mi)

Model 3/Y (Long Range AWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	123	0	123
Personal Use (grid charged)	113	159	272
ICE	72	412	484

Sichuan Province (gCO_2e/mi)

Model 3/Y (Long Range AWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	114	0	123
Personal Use (grid charged)	103	32	155
ICE	65	400	484

Average Lifecycle Emissions

United States (gCO_2e/mi)

Model 3/Y (Standard Range RWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	72	0	72
Personal Use (grid charged)	62	54	116
ICE	48	397	445

New York (gCO_2e/mi)

Model 3/Y (Standard Range RWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	72	0	72
Personal Use (grid charged)	62	46	108
ICE	48	397	445

Europe (gCO_2e/mi)

Model 3/Y (Standard Range RWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	114	0	114
Personal Use (grid charged)	103	37	139
ICE	64	396	459

France (gCO_2e/mi)

Model 3/Y (Standard Range RWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	114	0	114
Personal Use (grid charged)	103	11	113
ICE	64	396	459

China (gCO_2e/mi)

Model 3/Y (Standard Range RWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	114	0	114
Personal Use (grid charged)	103	129	231
ICE	65	400	466

Sichuan Province (gCO_2e/mi)

Model 3/Y (Standard Range RWD)	Manufacturing Phase & Supply Chain	Use Phase	Total
Personal Use (solar charged)	114	0	114
Personal Use (grid charged)	103	32	134
ICE	65	400	466

Average Lifecycle Emissions

United States (gCO_2e/kWh)

Megapack 2XL	Manufacturing Phase & Supply Chain	Use Phase	EOL	Total
Personal Use (solar charged)	16	0	4	19
Personal Use (grid charged)	16	7	4	26

Powerwall 3	Manufacturing Phase & Supply Chain	Use Phase	EOL	Total
Personal Use (solar charged)	53	0	13	65
Personal Use (grid charged)	51	42	12	106

Life cycle emissions for energy products are normalized by the battery's lifetime energy output. Use-phase emissions include charge-discharge cycle losses and operational energy use. End of life emissions calculation includes battery pack recycling emissions.



Awards and Certifications

EHS Awards

- Tesla Global Energy – The National Safety Council Innovation Award Runner Up for the creation and implementation of the leadership engagement tool used to verify and validate essential safeguards
- Gigafactory Texas—Austin Water Excellence in pretreatment Award
- Fremont Factory—True CBCI Gold Certified zero waste
- Gigafactory Shanghai—UL 2999 Zero Waste to Landfill Platinum Award
- Gigafactory Shanghai—China National Green Factory Award
- Fremont Factory—Certificate of Merit Award–Union Sanitary District for "exceeding USD's standards for compliance, working in a collaborative relationship with USD's Environmental Compliance team, and working with USD in protecting our communities and SF Bay"

Certifications

- Gigafactory Nevada. Gigafactory New York, Gigafactory Shanghai, Lathrop-Harlan Castings & Machining, Tesla Automation GmbH – ISO 14001 and ISO 45001 certified
- Tesla, Inc Information Security, Cybersecurity, and Privacy Protection -- ISO/IEC 27001 certified
- Australia Energy – EHS management system certification from the OFSC, Office of the Federal Safety Commission
- Tesla Automation – ISO 90001 and ISO50001 certified

Diversity EEO-1 Table

*Data only includes U.S. employees (Active/On Leave as of 12/31/2023) who identified their Gender as Male or Female, and also identified Race in their profile

Job Categories	Total								Male								Female							
	White	Hispanic or Latino	Black or African American	Native Hawaiian	Asian	American Indian	Two or More Races	Overall Totals	White	Hispanic or Latino	Black or African American	Native Hawaiian	Asian	American Indian	Two or More Races	Total Male	White	Hispanic or Latino	Black or African American	Native Hawaiian	Asian	American Indian	Two or More Races	Total Female
Service Workers	34%	28%	14%	4%	12%	2%	6%	100%	25%	17%	8%	4%	10%	1%	4%	68%	10%	11%	5%	1%	2%	1%	2%	32%
Laborers & Helpers	27%	48%	12%	2%	8%	0%	3%	100%	25%	43%	9%	1%	7%	0%	2%	87%	2%	5%	3%	1%	2%	0%	1%	13%
Operatives	18%	39%	20%	3%	14%	2%	4%	100%	14%	27%	15%	2%	10%	1%	3%	71%	5%	11%	6%	1%	4%	1%	1%	29%
Craft Workers	37%	43%	8%	1%	7%	1%	3%	100%	36%	42%	7%	1%	6%	1%	3%	97%	1%	1%	0%	0%	0%	0%	0%	3%
Administrative Support	36%	32%	11%	2%	13%	1%	5%	100%	26%	24%	8%	1%	9%	1%	3%	72%	10%	8%	3%	1%	4%	0%	1%	28%
Sales Workers	36%	27%	14%	1%	14%	1%	6%	100%	26%	19%	9%	1%	9%	0%	4%	70%	10%	8%	5%	0%	4%	0%	2%	30%
Technicians	29%	39%	9%	2%	16%	1%	4%	100%	27%	34%	8%	2%	13%	1%	3%	89%	2%	4%	1%	0%	3%	0%	1%	11%
Professionals	37%	14%	3%	0%	42%	0%	3%	100%	30%	11%	2%	0%	31%	0%	2%	76%	7%	3%	1%	0%	11%	0%	1%	24%
First/Mid Officials & Mgrs	46%	24%	8%	2%	16%	1%	3%	100%	38%	20%	6%	2%	13%	1%	3%	82%	7%	4%	2%	0%	3%	0%	1%	18%
Exec/Sr. Officials & Mgrs	56%	6%	1%	0%	33%	1%	3%	100%	44%	5%	1%	0%	25%	1%	1%	77%	13%	1%	1%	0%	7%	0%	1%	23%
Total	28%	33%	13%	2%	19%	1%	4%	100%	23%	26%	10%	1%	14%	1%	3%	78%	5%	7%	3%	1%	5%	0%	1%	22%

ILO Indicators Annex in our supply chain

Indicator	Explanation
Abuse of Vulnerability	Exploiting workers' vulnerable situations, such as their lack of education, financial hardship or legal status
Deception	Lying or misleading workers about the terms of their employment, wages or working conditions
Restriction of Movement	Preventing workers from leaving their workplace or the area where they live or work
Isolation	Separating workers from their families, friends or other support networks
Physical and Sexual Violence	Using or threatening physical or sexual violence against workers
Intimidation and Threats	Using threats or intimidation to coerce workers into staying in a forced labor situation
Retention of Identity Documents	Taking away or controlling workers' identity documents, such as passports or visas, to prevent them from leaving
Withholding of Wages	Not paying workers their wages or other promised benefits
Debt Bondage	Using debt as a means to trap workers in a forced labor situation
Abusive Working and Living Conditions	Subjecting workers to dangerous, unhealthy or inhumane working and living conditions
Excessive Overtime	Requiring workers to work excessive hours or days beyond national legal limits or collective agreements

Report of Independent Accountants

To the Board of Directors of Tesla, Inc.

We have reviewed the accompanying management assertion of Tesla, Inc. (Tesla) that the greenhouse gas (GHG) emissions metrics and the criteria for the year ended December 31, 2024 in management's assertion, are presented in accordance with the assessment criteria set forth in management's assertion. Tesla's management is responsible for its assertion and for the selection of the criteria, which management believes provide an objective basis for measuring and reporting on the GHG emissions metrics. Our responsibility is to express a conclusion on management's assertion based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA) in AT-C section 105, *Concepts Common to All Attestation Engagements*, and AT-C section 210, *Review Engagements*. Those standards require that we plan and perform the review to obtain limited assurance about whether any material modifications should be made to management's assertion in order for it to be fairly stated. The procedures performed in a review vary in nature and timing from, and are substantially less in extent than, an examination, the objective of which is to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects, in order to express an opinion. Accordingly, we do not express such an opinion. Because of the limited nature of the engagement, the level of assurance obtained in a review is substantially lower than the assurance that would have been obtained had an examination been performed. We believe that the review evidence obtained is sufficient and appropriate to provide a reasonable basis for our conclusion.

We are required to be independent and to meet our other ethical responsibilities in accordance with relevant ethical requirements related to the engagement.

The firm applies the Statements on Quality Control Standards established by the AICPA.

The procedures we performed were based on our professional judgment. In performing our review, we performed inquiries, performed tests of mathematical accuracy of computations on a sample basis, read relevant policies to understand terms related to relevant information about the GHG emissions metrics, reviewed supporting documentation in regard to the completeness and accuracy of the data in the GHG emissions metrics on a sample basis, and performed analytical procedures.

GHG emissions quantification is subject to significant inherent measurement uncertainty because of such things as GHG emissions factors that are used in mathematical models to calculate GHG emissions, and the inability of these models, due to incomplete scientific knowledge and other factors, to accurately measure under all circumstances the relationship between various inputs and the resultant GHG emissions. Environmental and energy use data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for measuring such data. The selection by management of different but acceptable measurement techniques could have resulted in materially different amounts or metrics being reported.

As discussed in management's assertion, Tesla has estimated GHG emissions for certain emissions sources for which no primary usage data is available.

Based on our review, we are not aware of any material modifications that should be made to Tesla's management assertion in order for it to be fairly stated.

PricewaterhouseCoopers LLP

San Jose, California
June 5, 2025

Management Assertion Scope 1 & 2 GHG Emissions

Overview

With respect to the greenhouse gas (GHG) emissions metrics for the year ended December 31, 2024 presented in table 2 below, which are also included in this Tesla *Impact Report 2024* as identified by the "*" symbol, management of Tesla, Inc. (Tesla) asserts that the GHG emissions metrics are presented in accordance with the assessment criteria set forth below.

Management is responsible for the selection of the criteria, which management believes provide an objective basis for measuring and reporting on the GHG emissions metrics, and for the completeness, accuracy, and validity of the GHG emissions metrics. Tesla's GHG emissions are rounded up to the nearest thousand.

Organizational Boundary

Tesla uses the operational control approach to account for and report its global Scope 1 and Scope 2 GHG emissions. This includes sites engaged in manufacturing; sales, service, and delivery; and other activities described below. Data Centers (leased locations that house Tesla computer systems and associated components), Superchargers (electric vehicle fast charging stations), and malls (leased retail storefront within shopping malls for Tesla products) are not included in our boundary as Tesla determined they do not have operational control over emissions from these sites. Data for new or acquired sites are included once the site has been operating for at least a year at the beginning of the reporting period. Conversely, sites that closed or ceased operations during the reporting period are not included in Tesla's organizational boundary.

Management Assertion
Scope 1 & 2 GHG Emissions

Table 1: Description of Tesla Sites

Site Type	Site Activities
Manufacturing	• Manufacture Tesla products, including vehicles, Superchargers, solar tiles, and energy storage products. • Support manufacturing through the design and manufacture of equipment and tools used at manufacturing sites or by storing manufacturing materials, parts, or finished products.
Sales, Service, and Delivery (SSD)	• Sell products, provide vehicle service, store parts for vehicle service, and deliver vehicles.
Other	• Conduct research & development, administration, energy product warehousing and deployment, and other mixed-use warehousing.

Table 2: Metrics – GHG Emissions

GHG Emissions and Assessment Criteria [1,2,3]	Quantity
Scope 1 GHG Emissions[4] Direct GHG emissions occurring from stationary combustion, mobile combustion, refrigerant losses, and process emissions.	302,000 Metric Tons CO_2e
Scope 2 GHG Emissions (location-based)[5] Indirect GHG emissions from the generation of electricity and district heating purchased by Tesla for site operations.	754,000 Metric Tons CO_2e

Management Assertion Scope 1 & 2 GHG Emissions

GHG Emissions Disclosure

01

Tesla considers the principles and guidance of the World Resources Institute (WRI) and the World Business Council for Sustainable Development's (WBCSD) Greenhouse Gas Protocol Initiative's *A Corporate Accounting and Reporting Standard, Revised Edition*, and *GHG Protocol Scope 2 Guidance*, *An Amendment to the GHG Protocol Corporate Standard* (together the "GHG Protocol") to guide the criteria to assess, calculate and report GHG emissions.

02

GHG emissions quantification is subject to significant inherent measurement uncertainty because of such things as GHG emissions factors that are used in mathematical models to calculate GHG emissions, and the inability of these models, due to incomplete scientific knowledge and other factors, to accurately measure under all circumstances the relationship between various inputs and the resultant GHG emissions. Environmental and energy use data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for measuring such data. The selection by management of different but acceptable measurement techniques could have resulted in materially different amounts or metrics being reported.

03

Carbon dioxide equivalent (CO_2e) emissions are inclusive of carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), and industrial gases such as hydrofluorocarbons (HFCs) and sulfur hexafluoride (SF_6). Perfluorocarbons (PFCs) and nitrogen trifluoride (NF_3) are not emitted by Tesla's sites. Emissions data by individual gas is not disclosed as a majority of CO_2e in Table 1 relates to CO_2. These carbon dioxide equivalent emissions utilize Global Warming Potentials (GWPs) defined by the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5 – 100 year), unless a different Assessment Report is already embedded in the emission factor source. Carbon dioxide equivalent emissions are calculated by multiplying actual or estimated energy and fuel usage, refrigerant gas loss or process emissions by the relevant emission factor and GWP. All emission factors are updated annually where applicable.

Management Assertion Scope 1 & 2 GHG Emissions

GHG Emissions Disclosure

04

Related to Scope 1 GHG emissions:

- Stationary combustion (natural gas):
  - Combustion from stationary equipment and machinery.
  - Global natural gas usage data was collected from monthly utility invoices obtained from third-party providers.
  - If usage data was not available, Tesla estimated the natural gas usage by determining an annual natural gas usage rate per square foot based on actual 2024 monthly natural gas usage data for sites in a similar geographic location and type of site. This rate was then multiplied by the square footage of the site building space.
  - Emission factors: United States (U.S.) Environmental Protection Agency (EPA) Emission Factors for Greenhouse Gas Inventories 2024.
- Stationary and mobile combustion (propane, diesel, and gasoline):
  - Combustion from emergency and portable generators, powered industrial vehicles (e.g., forklifts), temporary space heaters, and other portable equipment (e.g., landscaping equipment).
  - Propane, diesel, and gasoline usage data was collected from invoices and fuel reports obtained from third-party providers.
  - Emission factors: U.S. EPA Emission Factors for Greenhouse Gas Inventories 2024.
- Emissions from refrigerant loss to the atmosphere:
  - Fugitive emissions from refrigeration, air conditioning, or similar equipment resulting from leakage and service over the operational life of the equipment.
  - Loss data was collected from invoices and vendor reports for refrigerant refills purchased and/or installed.
  - Emission factors from refrigerant loss:
    - U.S. EPA Emission Factors for Greenhouse Gas Inventories 2024.
    - United Kingdom (UK): UK database published by the Department for Environment Food & Rural Affairs (DEFRA) 2024.
    - IPCC Fifth Assessment Report 2013.
- Fleet mobile combustion (diesel and gasoline):
  - Combustion from the operation of Tesla's on-road and non-road vehicles.
  - Diesel and gasoline usage (volume) was collected from fuel cards issued by Tesla's fleet management partner. Vehicle miles driven by Tesla on-road vehicles was collected from odometer readings and real time telemetrics on each vehicle.
  - Tesla classified vehicles by type: diesel medium and heavy-duty vehicles, gasoline passenger cars, gasoline light-duty trucks, gasoline heavy-duty vehicles, and non-road industrial/commercial equipment. Temporary light duty fleet additions for operational use were categorized as 'other', for which only CO_2 emissions are calculated, because Tesla does not have detailed information on what type of vehicles were rented and miles driven.
  - CO_2 emissions were calculated by multiplying the relevant emission factor by the volume of diesel and gasoline used by Tesla's on-road and non-road vehicles.

Management Assertion Scope 1 & 2 GHG Emissions

GHG Emissions Disclosure

04

- CH_4 and N_2O emissions were calculated by multiplying the relevant emission factor (depending on vehicle type and age) by the miles driven by Tesla's on-road vehicles, and by the volume of diesel and gasoline used by Tesla's non-road vehicles.
- Emission factors: U.S. EPA Emission Factors for Greenhouse Gas Inventories 2024.

- Process emissions:
  - Lithium-ion battery cell recycling:
    - Emissions from processing manufacturing scrap lithium-ion cells at the Gigafactory Nevada cell recycling site.
    - The concentration of CO_2 and CH_4 in emissions (emission rates) were measured during two emissions source tests. GHG emissions were calculated by multiplying the quantity of manufacturing scrap processed, as recorded by the recycling plant operations team, by the CO_2 and CH_4 emission rates developed based on the emissions source tests.
  - Emission of CO_2 resulting from cleaning plastic parts with liquid CO_2:
    - CO_2 emissions were assumed to equal the mass of liquid CO_2 used in the cleaning process as measured by liquid CO_2 sensors on the tank.
  - Combustion of volatile organic compounds (VOCs) emitted to thermal oxidizers at manufacturing sites:
    - The quantity of VOCs emitted to thermal oxidizers were estimated by calculating the potential to emit or by a continuous emissions monitoring system.
    - The CO_2 equivalent emissions were calculated using the number of carbon atoms in the VOCs, the molecular weight and the mass of the VOC exhausted to the thermal oxidizers and multiplied by the destruction efficiency of the thermal oxidizer.
- Estimated emissions from the sources above account for approximately 2.3% of Scope 1 GHG emissions.

- Excluded Scope 1 GHG emissions: Tesla excluded the following sources of GHG emissions, which are estimated to represent less than 1 percent of Tesla's reported Scope 1 GHG emissions:
  - GHG emissions from emergency stabilization of damaged and potentially damaged lithium-ion cells.
  - GHG emissions resulting from the chemical reaction of two-part polyurethane foam adhesives.
  - GHG emissions resulting from oxy-acetylene welding used to maintain sites and equipment.

Management Assertion Scope 1 & 2 GHG Emissions

GHG Emissions Disclosure

05

Related to Scope 2 GHG emissions (location-based):

- GHG emissions from the generation of electricity purchased by Tesla for site operations. For sites that include Superchargers, Tesla did not include electricity procured for customer use through the Supercharger stations as those emissions are included in Scope 3, Category 11 Use of Sold Products. For purchased electricity relative to Data Centers, those emissions are included in Scope 3, Category 8 Upstream Leased Assets.
- Global electricity usage data was collected from monthly utility invoices obtained from third-party providers.
- If monthly usage data was not available:
  - For sites with less than 12 months of usage data, Tesla estimated the electricity usage by extrapolating the average consumption for the available months in the reporting period.
  - Tesla estimated the electricity usage by determining an annual electricity usage rate per area based on 2024 monthly electricity usage data for sites in a similar geographic location and type of site. This rate was then multiplied by the area of the site building space.
  - If cost data was available without the associated usage, Tesla used local unit costs to calculate usage.
- District Heating usage data was collected from invoices obtained from third-party providers. If usage data was not available, Tesla estimated the usage by extrapolating the average consumption for the available months. If no data was reported, usage was based on sites in a similar geographic location and type of site.
- The WRI and WBCSD issued additional guidance for Scope 2 emissions in 2015 (in *GHG Protocol Scope 2 Guidance, An Amendment to the GHG Protocol Corporate Standard)*, which sets forth reporting under both location-based and market-based methodologies, where the prior version of the GHG Protocol only addressed a location-based methodology. The location-based method applies average emission factors that correspond to the grid where the consumption occurs, whereas the market-based method applies emission factors that correspond to energy purchased through contractual instruments. Where contractual instruments were not purchased, the market-based emission factors represent either the residual mix, where available, or the location grid-average factors. This management assertion only includes Tesla's location-based Scope 2 GHG emissions as Tesla is continuing to implement more comprehensive processes to measure and report its market-based Scope 2 GHG emissions.

Management Assertion Scope 1 & 2 GHG Emissions

GHG Emissions Disclosure

05

- Emission factors:
  - Electricity:
    - Canada: Environment Canada. 2024 National inventory report: greenhouse gas sources and sinks in Canada.
    - U.S.: U.S. EPA Emission Factors for Greenhouse Gas Inventories 2024.
    - Shanghai: Shanghai Municipal Bureau of Ecology and Environment 2022.
    - China: China Regional Power Grids 2022.
    - All other countries: International Energy Agency (IEA) Emissions Factors 2023.
  - District Heating: U.S. EPA Emission Factors for Greenhouse Gas Inventories 2024.
- Estimated emissions from the source above account for approximately 13.3% of Scope 2 GHG emissions.



Feedback on this report

Tesla aspires to do the right thing, and we are constantly looking for ways to do better. If you have suggestions about how our company can improve, send your feedback to ImpactReport@Tesla.com.