

# EVs Late Winter, 2023

*By John Benson,  
March 2023*

## 1. Introduction

I started to work on the latest paper in this series in early February and will post it on March 14<sup>th</sup>, before the Vernal Equinox (March 20 for the Continental U.S., in the afternoon), while it's technically still winter.

As far as content, I have the following:

### Supply Chain:

- GM and Ford assure their Lithium Ion Battery materials supply.
- Redwood Materials has won a major US Federal Grant to expand its production of EV Battery Components.

### Rental EVs and New EVs:

- EVs from major rental car firms
- We will review a future EV (2024) from Honda that is below \$50k
- There is an upcoming commercial vehicle from Mercedes.
- Five Reasons Having an Electric Vehicle Saves You Money

### Manufacturer's Strategy:

- Toyota EV Strategy evolves.
- VW's sub-\$25K EV

### Tesla:

- Additional information on the Ramp and Technical details on the Tesla Semi.
- Major Lithium Move?
- They're ba-a-ack.
- Investor Day announcements.
- Price Reductions for Model S and Model X

## 2. Supply Chain

The high-level trend for manufacturers that sell EVs in the U.S. is that their supply chains are rapidly shifting to supply components from within North America.

### 2.1. Ford's \$3.5 Billion Lithium Iron Phosphate Battery Plant

*Ford plans to build a \$3.5 billion factory in Marshall, Michigan, which will produce 35 gigawatt-hours of lithium iron phosphate (LFP) cells annually for electric vehicles starting in 2026. The move comes after the automaker said it would use LFP batteries in the Mustang Mach-E from mid-2023 and F-150 Lightning from early 2024.*<sup>1</sup>

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<sup>1</sup> Sam Abuelsamid, Forbes "Ford to Build \$3.5 Billion Lithium Iron Phosphate Battery Plant," Feb 13, 2023, <https://www.forbes.com/sites/samabuelsamid/2023/02/13/ford-to-build-35-billion-lithium-iron-phosphate-battery-plant-in-michigan-using-catl-technology/>

*However, those batteries will be sourced from CATL in China, the leading cell manufacturer in the world and one of the leaders in LFP production. Ford will license CATL technology but it will own the new factory and operate it, rather than creating a joint venture.*

*While Ford will start using CATL LFP batteries later this year, shipping them from China won't help the company reach its sustainability goals. Those vehicles also will not qualify for any clean vehicle tax credits.*

*This is why Ford and other OEMs are moving so aggressively to localize battery production to wherever vehicles are built and sold. Ford previously announced a joint venture with Korea's SK ON for three cell plants in Kentucky and Tennessee that are already well under construction. Those plants will produce nickel manganese cobalt (NMC) cells.*

*Despite LFP having a lower energy density than nickel-rich cells, much of that can be offset by adopting cell-to-pack or structural battery pack designs rather than the modular designs that are typical today...*

*The added stability of LFP cells means they can better withstand charging to 100% without degrading. Nickel-rich cells typically have to leave unused buffers to prevent overcharging. Thus some of LFP's energy density disadvantages can be recovered.*

## **2.2. Lithium Americas: \$650 Million Investment from GM**

*Lithium Americas Corp. today announced the closing of the initial tranche, an investment of \$320 million, of its previously announced \$650 million investment by General Motors Co. Proceeds from GM's investment are to be used to accelerate the development of the Company's Thacker Pass lithium project located in Humboldt County, Nevada, the largest known lithium resource in the U.S., that is fully permitted to begin construction.<sup>2</sup>*

*"The beginning of construction at Thacker Pass is imminent following last week's favorable ruling on the Record of Decision and the closing of GM's initial investment," said Jonathan Evans, President and CEO of Lithium Americas...*

*GM is now Lithium Americas largest shareholder and offtake partner. Lithium Americas continues to pursue a commitment from the U.S. Department of Energy's Advanced Technology Vehicle Manufacturing Program, which will help scale lithium production at Thacker Pass to support production of nearly one million EVs annually.*

## **2.3. Redwood Wins \$2 Billion Federal Loan**

*Redwood Materials, the battery recycling and components maker created by Tesla cofounder JB Straubel, has been awarded a \$2 billion federal loan to help build up a U.S. supply base for essential components needed to make batteries for electric vehicles that are currently imported almost entirely from Asia.<sup>3</sup>*

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<sup>2</sup> Global Newswire, Feb 16, 2023, <https://www.globenewswire.com/news-release/2023/02/16/2610280/0/en/Lithium-Americas-Announces-Initial-Closing-of-650-Million-Investment-from-General-Motors.html>

<sup>3</sup> Alan Ohnsman, Forbes, "Redwood Wins \$2 Billion Federal Loan to Scale up Production of Battery Materials..." Feb 9, 2023, <https://www.forbes.com/sites/alanohnsman/2023/02/09/redwood-wins-2-billion-federal-loan-to-scale-up-production-of-battery-materials-for-electric-cars/>

*The Nevada-based company got a “conditional” commitment for the low-interest funds from the Energy Department’s Advanced Technology Vehicles Manufacturing program as it expands operations in Nevada and prepares to build a second campus near Charleston, South Carolina. Redwood started processing recovered battery materials a few years ago in Nevada, has begun making copper foil for battery anodes and plans to make battery cathodes, using recycled minerals in both...*

*The federal loan program started more than a decade ago during the Obama Administration when Straubel was at Tesla, though it was enhanced by the Inflation Reduction Act signed into law last year. (Straubel said Redwood began the loan application process in 2021, a year before IRA was enacted.) Tesla was among the first recipients of the original program and used the \$465 million loan it received in 2010 to start EV production at its Fremont, California, plant. The company repaid the loan by early 2013.*

### **3. Rental EVs and New EVs**

The Rent-a-Car Industry has discovered that EVs can be very profitable.

#### **3.1. Hertz Doubles Down on Electrification**

*Hertz is a clear leader in electrification in the car rental market, and buyers have responded accordingly. Hertz reported record earnings for 2022, despite numerous setbacks in the economy. Moving forward, Hertz made it clear that it will continue to double down on the things that made it so successful last year; electrification, expanded distribution, and excellence in execution.<sup>4</sup>*

*According to Hertz’s earnings report from this morning (Feb 7), the company earned a record \$8.7 billion in revenue during 2022, \$2 billion of which was earned in Q4 of the year. On top of that, Hertz had a record GAAP net income of \$2.1 billion in 2022, reaching \$3.36 per diluted share. Key financial contributors include a heightened EBITDA margin of 27% and increased fleet utilization globally compared to 2021...*

*But what differentiator had made the company so profitable? Hertz CEO Stephen Scherr points to “Our team delivered on renewed demand for travel, which is continuing. In 2023, we will build on our progress to grow our business across the Hertz, Dollar, and Thrifty brands. We look to our investments in electrification and technology to yield increasing operating leverage and improved returns and an even better product to our customers around the world.”*

*Hertz made shockwaves in the rental industry when it announced that it was purchasing 100,000 Tesla Model 3s at the end of 2021, and since then, the company has only increased its investment. Following the massive Tesla deal, Hertz has ordered 175,000 EVs from General Motors and 65,000 from Polestar...*

*On top of these investments, Hertz has also been unique in its efforts to make their new massive fleet of EVs as profitable as possible. Perhaps the best example is the rental agency’s partnership with Uber, allowing Uber drivers to rent an EV for a discounted weekly fee.*

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<sup>4</sup> William Johnson, Teslarati, “Hertz doubles down on electrification...,” February 7, 2023, <https://www.teslarati.com/hertz-electrification-record-earnings-2023/>

*This is to say nothing of the inherent benefits Hertz's EV fleet has brought the brand. Just last year, Hertz executives excitedly announced that interest in EV rentals had shot through the roof, all while reducing operating costs for the company...*

### **3.2. And Other Rental Car Companies?**

When I worked for Siemens and frequently travelled, I used National Rental Cars, so I started there. I wasn't encouraged. National does offer two classes of EVs: Intermediate Electric and Electric Luxury Sedan. I briefly attempted to reserve an Intermediate EV (or at least start the process) at SFO (San Francisco International Airport) and couldn't. They also didn't have a corporate statement on EVs. So I broadened my search, and found only one reasonable article, and an excerpt is below.

*"Companies that operate fleets at our size cannot just turn on a dime and next year go all EV," said Sharky Laguana, president of the American Car Rental Association. "Our industry wants to move as fast as it can, but there are some challenging constraints." The initial one, Laguana said, "is just getting your hands on the damn things."<sup>5</sup>*

*The \$56-billion U.S. rental industry typically buys about one-tenth of auto manufacturers' new cars every year, but with persistent supply-chain disruptions, especially the shortage of essential computer chips, the numbers are way down. The industry bought 2.1 million vehicles from OEMs in 2019 compared with only about 750,000 in 2021...*

*Another major speed bump for rental car companies is the scarcity of EV charging stations, at airports and other rental locations (hotels, resorts and office buildings), as well as along local roads and interstate highways. And then there's the challenge of educating and training companies' agents and mechanics on EVs, not to mention familiarizing drivers on the differences from operating ICE vehicles.*

*Hertz does not state the overall number of vehicles in its fleet, said Jeff Nieman, senior vice president, operations initiatives, so it's unknown how many Teslas are available in the more than 30 markets currently offering EVs, which now also include the first of the 65,000 (Volvo) Polestar 2s, Hertz began purchasing in a five-year deal announced in April. Nieman did say, however, he is confident that EVs will represent "more than 30% of our fleet by the end of 2024."*

*A primary target for Hertz, according to Woronka, is the corporate market. "The leisure customer might think it's cool to drive an electric car, but the longer game is on the corporate side," he said.*

*Beyond comparing costs of employees driving EVs versus ICE cars — currently skewed by the national average of around \$5 for a gallon of regular gas — companies view EVs as a quantifiable way to reduce their greenhouse gas (GHG) emissions, meet net-zero goals and burnish their environmental, social and governance (ESG) bona fides among sustainability investors and advocacy groups.*

*"The initial research has shown that corporate accounts are going to be willing to pay a premium for EVs," Woronka said, "because it helps them achieve some of ESG objectives."*

**Author's comment:** It sounds like the bottom line is, if you want to rent an EV, call Hertz. Everyone else appears to be taking a "wait and see" stance.

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<sup>5</sup> Bob Woods, CNBC, "The EV transition is starting in the car rental industry," June 18, 2022, <https://www.cnbc.com/2022/06/18/how-the-massive-ev-transition-is-starting-in-the-car-rental-industry.html>

### 3.3. 2024 Honda Prologue

There was an artist's sketch of this in an earlier issue (EVs Late Summer 2022<sup>6</sup>), I found a much better picture (below) and additional information below the image.<sup>7</sup>



*The 2024 Honda Prologue is an all-electric, 2-row midsize SUV and the automaker's first electric SUV of any sort. It will compete with the growing group of electric SUVs priced between \$40,000 and \$50,000, and likely offer a max range of beyond 300 miles when it goes on sale in 2024.*

*We expect the Honda Prologue electric vehicle to start in the mid-\$40,000 range. The Honda Prologue debuted in October 2022, and Honda says it will go on sale in 2024. Because it's also a 2024 model, we expect it will start hitting dealerships early that year.*

*The 2-row, 5-passenger Prologue is notably longer and a bit taller than presumed competitors like the Hyundai Ioniq 5 and Ford Mustang Mach-E. It's also longer than Honda's own Passport midsize SUV, but not as tall. A long wheelbase of almost 122 inches promises exceptional passenger roominess.*

- Wheelbase: 121.8 inches
- Length: 192.0 inches
- Width: 78.3 inches
- Height: 64.7 inches
- Wheel diameter: 21 inches

*While Honda has yet to release any Prologue range, charging, or battery details, we can look to the forthcoming Chevy Blazer EV for clues. Why the Blazer EV? Because the Prologue is the product of a partnership with GM and is built on its new electric vehicle platform. We expect the Prologue to be sized and priced similarly to the Blazer EV,*

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<sup>6</sup> <https://energycentral.com/c/ec/ev-late-summer-2022>

<sup>7</sup> Jason Allan, Market Watch via MSN, "The 2024 Honda Prologue: Honda's new electric SUV is attractive and spacious", Feb 23, 2023, <https://www.msn.com/en-us/lifestyle/shopping/the-2024-honda-prologue-honda-s-new-electric-suv-is-attractive-and-spacious-when-can-you-get-one/ar-AA17JX4v?cvid=0af3caf422ea4627a7b556cbfb1fb421&ei=31#image=1>

which offers about 250 miles of range on the low end, and up to 320 miles at the top end of the lineup.

As for charging, the Prologue's platform-mate has an 11.5 kW onboard AC charger for plugging in at home, and DC public fast-charging capability of up to 190 kW...

### **3.4. 2024 Mercedes-Benz eSprinter**

Around a year ago, I covered the Ford E-Transit (link for that post is below). Since Mercedes has a model that competes directly against it, and the E-Transit sold around 6,500 vans in 2022, I guess that they should bring out a competitive model sooner rather than later.

#### **Electric Trucks & Buses, Early 2022:**

<https://energycentral.com/c/ec/electric-trucks-buses-early-2022>

Also: *The production ramp of Ford EVs began last week with year-end goals for the Mustang Mach E of an annual run rate of 210,000 vehicles. The F-150 Lightning aims for an annual run rate of 150,000 vehicles, by the end of the year. The E-Transit is aiming for an annual run rate of 38,000 vehicles.*<sup>8</sup>

*Mercedes-Benz will start selling its battery-powered cargo van in the 2nd half of 2023.*<sup>9</sup>

*Underneath, Mercedes has designed an all-new architecture that's home to a 113-kWh battery located in the eSprinter's belly and an electric motor in the rear driving the rear wheels. Mercedes estimates a driving range of about 250 miles, but that's on the European WLTP fuel-economy test cycle, which is far less stringent than the EPA's testing. Expect the official U.S. range figure to be much lower. But it will still be more than enough for Amazon, DHL, and the like to get the goods to your door—much more quietly, of course.*

*Base pricing is expected to be in the low to mid \$50K range. Standard features include active brake assist, a heated driver seat, two USB-C ports, a trailer hitch prep wiring package, and a load-adaptive electronic stability control system. Aside from the high output powertrain, available options will include an all-wheel drive configuration and a lightweight plastic floor.*

*The eSprinter is propelled by an electric powertrain that Mercedes refers to as eATS. A rear module houses a permanent-magnet synchronous motor that can dole out up to about 295 pound-feet of torque and drives the rear wheels. Two power levels are offered: 134 and 201 horsepower. Power is supplied by a 113-kWh LFP battery located in the eSprinter's underside between the front and rear axles...*

*The eSprinter will offer 488 cubic feet of cargo space, a bit shy of the gas Sprinter's the 533-cu-ft cargo capacity. Max payload for the eSprinter is 2,624 pounds, which is less than half the capacity of the gas-powered Sprinter, but still amounts to a whole lot of*

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<sup>8</sup> William Johnson, Teslarati, "Ford leverages EV production head start..." March 4, 2023, <https://www.teslarati.com/ford-ev-production-ramp-2023/>

<sup>9</sup> Frankie Cruz, Car and Driver, "2024 Mercedes-Benz eSprinter," <https://www.caranddriver.com/mercedes-benz/esprinter>

cargo. While the automaker has yet to release an exact figure for towing capacity, we expect it to be significantly less than what the gas-powered Sprinter is capable of.

Mercedes says the battery can be charged from 10 percent to 80 percent in as little as 42 minutes using a DC fast charger. Total charge time for a completely depleted battery will be over 12-hours using a conventional 240-volt outlet.

### **3.5. 5 Ways Having an EV Will Save Money**

Some of these money-saving methods I've covered before, and some are no-brainers.

*Zippping around in a whisper-quiet electric-powered car, emitting nothing from your tailpipe (you don't even have one), and only stopping to fuel at home while you sleep — there are plenty of reasons to enjoy the EV life these days. Your city might even give you special access to the HOV lane...*<sup>10</sup>

#### **3.5.1. Federal Tax Credits**

Thanks to the federal Inflation Reduction Act, a new round of tax credit incentives up to \$7,500 will be available on EVs in 2023 — though not all EVs will qualify.

*The law says the vehicle must be manufactured in North America, and additional requirements around battery component manufacturing, which are still being determined, will go into effect in March. To get ahead of the further limitations, it may be best to purchase an EV early in the year.*

*Other exclusions include MSRP price caps, depending on the type of vehicle — \$55,000 for cars and \$80,000 for trucks, vans and SUVs. Buyers in upper-income brackets — \$300,000 for married couples or \$150,000 for individuals — won't qualify for the credits either.*

*You can check the IRS' current list of qualified manufacturers and models through the link below:*

<https://www.irs.gov/credits-deductions/manufacturers-and-models-for-new-qualified-clean-vehicles-purchased-in-2023-or-after>

*For the first time, used EVs now also qualify for tax credits — up to \$4,000 on qualified vehicles. Leased vehicles also apply, but the credit is given to the dealership, who may or may not pass the savings on to the buyer — a bit of knowledge that might come in handy if you're negotiating a lease price.*

*On top of the federal tax credits, many states also offer additional credits and rebates, often between \$2,000 and \$4,000, that can knock even more off the sticker price. Some local utilities have their own incentives too, so be sure to check with your local provider.*

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<sup>10</sup> Cody Bay, Go Banking Rates via MSN, "5 Ways Having an Electric Vehicle Will Save You Money," Feb 10, 2023, <https://www.msn.com/en-us/money/personalfinance/5-ways-having-an-electric-vehicle-will-save-you-money/ar-AA16y9l0>

### 3.5.2. Charging Stations

*In order to avoid the hassle and higher fees of public charging stations, it's well worth it to invest in a home charging station. What you pay for the unit can vary quite a bit, depending on factors like the voltage and how fast you want to be able to charge.*

*A Level 1 charger, which can be found on Amazon for less than \$200, can plug into a normal 120V outlet, but charges at a rate of only 2 to 5 mph. Level 2 chargers, which charge at a faster rate of 10 to 50 mph, require a 240V outlet. They typically cost between \$300 and \$1,000 and should be installed by an electrician, which can add another \$300 to \$1,000 to your costs.*

**Author's comment:** You may find “mph” a bit confusing. Ironically “miles per hour” is the same metric commonly used for any vehicle's velocity, and an EV's charging speed. It avoids all discussion involving electric power, etc.

*Fear not, though — there are plenty of ways to lower the price tag of a Level 2 charger. The federal tax credit for EV chargers that recently expired was renewed by the Inflation Reduction Act for the next 10 years, offering taxpayers up to \$1,000 off their hardware and installation. You can combine these savings with other rebates offered by states, local utilities and vehicle manufacturers that could knock another few hundred dollars off your price.*

### 3.5.3. Electricity vs. Gas

*There's nothing like the liberated feeling of driving by a gas station and not caring what the price sign says. Even if you pay more to drive an EV off the dealer's lot than you would spend on a traditional car, you'll likely recoup your cost in fuel savings...*

*How much you'll save depends on various factors, including where you live, your utility's electricity rates and ever-fluctuating gasoline prices. But EV drivers generally pay about half as much in fuel costs as drivers of similar gas vehicles, according to the U.S. Department of Energy. Based on national averages, EV drivers pay \$1.22 to travel the same distance as a conventional car goes on a gallon of gasoline, which typically costs anywhere from \$1.50 to more than \$5.*

### 3.5.4. Charging at Night

*Some local utilities also offer rebates or lower rates to incentivize EV owners to charge during off-peak hours, when demand on the grid is lower.*

*In Oregon, for example, in addition to a \$2,500 state-sponsored EV purchase rebate, residents may be eligible for a \$500 rebate on a Level 2 charging station, plus a reduction from 22 cents per kWh (kilowatt hour) for peak energy hours to just 4 cents per kWh for off-peak usage. New York residents can receive up to \$1,000 annually from the Con Edison utility for charging off-peak and installing a device that helps you monitor your charging and driving data.*

### 3.5.5. Maintenance

*Forget about all of those oil changes. EVs don't have oil and transmission fluid, and fewer moving parts in general, so your regular maintenance schedule typically only requires a tire rotation, systems inspections and the periodic replacement of cabin filters, brakes and tires. (Though brakes can last longer on EV models, thanks to regenerative braking technology).*

*According to one study by Consumer Reports, maintaining an EV compared to a traditional car over the life of the vehicle costs about half as much.*

## 4. Manufacturer Strategies

### 4.1. Toyota EV Strategy Evolves

In the recent post from late 2022, "EVs, Late Fall, 2022," I commented that Toyota was having some serious issues with their current strategy. They appear to have settled on a new CEO, and he, on a new strategy.

*...Koji Sato, 53, who will take the helm at the automotive giant on April 1, on Feb. 13 spoke for the first time since his promotion last month.<sup>11</sup>*

*Sato's position on electric vehicles is particularly eagerly awaited. Toyota has pursued a strategy that runs against the tide of other car manufacturers -- legacy companies as well as upstarts -- which are mostly betting on battery-powered vehicles...*

*The company's argument has often been that there isn't enough supporting infrastructure -- not enough charging stations -- to support widespread adoption of electric vehicles...*

*Sato wants to break with this approach. He wants to accelerate the group's development in the electrical segment. According to him, Toyota has had a "communication problem" about its EV strategy so far, something he wants to correct and change...*

*This big change in strategy will rely on Lexus, Toyota's premium brand, of which Sato was the boss before being promoted to CEO of the entire group. The next generation of Lexus electric cars will be developed by 2026, "optimizing everything from the battery to the platform to how a car is produced, while expanding our current lineup," explained the future CEO.*

*He promised to detail his EV strategy, including information on the group's future electric platform, after taking office in April...*

### 4.2. Volkswagen ID.2 to rival Tesla's expected \$25K EV

*Volkswagen is preparing to enter the same segment as Tesla's upcoming affordable car with the ID.2 electric vehicle.<sup>12</sup>*

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<sup>11</sup> Luc Olinga, The Street via MSN, "Toyota Makes a Big Change on EVs," Feb 13, 2023, <https://www.msn.com/en-us/money/companies/toyota-makes-a-big-change-on-evs/ar-AA17rpTo?ocid=msedgntp&cvid=398b34182ead4351a81b8edeba0e0ae0>

<sup>12</sup> Maria Merano, Teslarati, "Volkswagen ID.2 to rival Tesla's expected \$25,000 vehicle," Feb 16, 2023, <https://www.teslarati.com/volkswagen-id-2-vs-tesla-model-2/>

*Sales of the all-electric Volkswagen ID.2 are expected to start in 2023. The VW ID.2 will use the German automaker's upgraded MEB-Plus platform, an enhanced version of VW's modular electric drive matrix featured in the ID-Family lineup. Volkswagen's ID.2 will also be equipped with lithium iron phosphate prismatic battery cells for improved charging capabilities. The ID.2 design might be capable of charging speeds up to 200 kW.*

*The Volkswagen ID.2 might be the electric equivalent of the German automaker's popular compact five-seater, the VW Golf.*

*The ID.2 is expected to be sold for a starting price of €22,500 (\$23,938.69)—as of today's exchange rate, potentially making it a formidable challenger against affordable EVs, including Tesla's widely-speculated compact car, in Europe.*

## **5. Tesla**

Quite a few items from this pioneering EV maker below.

### **5.1. Semi**

As Tesla ramps up production of the Semi at its pilot production facility near Reno, and more are released to customers, additional details are starting to come out. Also, see the last paragraph of this paper regarding the Semi's ultimate assembly site.

*Fortunately, sightings from the EV community suggest that the Tesla Semi's initial production is going relatively smoothly. Tesla enthusiast @HinrichsZane, who has been observing Tesla's pilot production facility for the Semi, recently shared on Twitter that he has now observed about 38 of the all-electric trucks from the facility (as of 2/13).<sup>13</sup>*

*The Tesla Semi is a beast of an electric vehicle, with photos taken of the Class 8 all-electric truck's pilot production line showing that the truck utilizes a 1000-volt battery pack. Based on previous comments from company executives, Tesla Semi units today do not use the company's 4680 battery cells yet, though with the buildout of Gigafactory Nevada's expansion, the vehicle would likely be transitioned to the new battery form factor.*

*Back in 2017, before stagflation, the COVID-19 pandemic and supply chain issues, Elon Musk said the Tesla Semi will have a starting price of \$150,000 for the 300-mile range and \$180,000 for the Semi with a 500-mile range. Needless to say that prices for vehicles have skyrocketed in the past six years, so experts forecast that the Semi might come with a price tag of \$400,000.<sup>14</sup>*

*A couple of years ago, Tesla announced that the Semi operates on an energy use of less than 2 kWh/mi. However, following a customer delivery event, Musk mentioned on Twitter, that the actual figures are even more impressive.*

*"Current efficiency is 1.7 kWh/mile, but there is a clear path to 1.6, possibly 1.5," Tweeted Elon Musk.*

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<sup>13</sup> Simon Alvarez, Teslarati, "Tesla Semi initial production ramp is seeing some momentum," Feb 13, 2023, <https://www.teslarati.com/tesla-semi-initial-production-momentum-videos/>

<sup>14</sup> Eugenia Akhim, Hot Cars via MSN, "10 Things You Didn't Know About The Tesla Semi," <https://www.msn.com/en-us/autos/news/10-things-you-didnt-know-about-the-tesla-semi-truck/ar-AA17oTEP>

## 5.2. Tesla's potential acquisition of Sigma Lithium

*Following news that Tesla (NASDAQ: TSLA) is reportedly considering acquiring Brazilian lithium mining company Sigma Lithium (NASDAQ: SGML), Sigma's stock price has skyrocketed.<sup>15</sup>*

*Tesla and its CEO Elon Musk have made it no secret that lithium extraction and refining are vital parts of their business and may require the automaker to vertically integrate its source to keep costs down...*

*According to the report from late last week, Tesla would be purchasing Sigma Lithium for roughly \$3 billion, slightly under the company's current market cap of \$3.71 billion. No filings have been made with the SEC indicating an acquisition is imminent.*

*Currently, 46 percent of Sigma Lithium is controlled by A10 Investimentos, which, according to Mining-Technology, has been looking to divest from the business in recent months.*

*The acquisition of Sigma Lithium would fit Tesla's business practice of vertically integrating, and the Brazilian mining corporation's location is ideal for the American automaker.*

*With access to what Sigma calls "the largest hard rock lithium deposit in the Americas" and a nearby port on the Atlantic Coast, Sigma could quickly and efficiently feed Tesla's demand throughout the United States. Importantly, the facility could easily ship raw lithium to Tesla's proposed lithium refinery in Corpus Christi, Texas, before being sent to Giga factories throughout the continent...*

## 5.3. Tesla Shifts Its Engineering Headquarters to California

The image below of Elon and our Governor Newsom making nice in a new Tesla Facility in the Governor's home state is probably one you didn't expect to see.



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<sup>15</sup> William Johnson, Teslarati, "Tesla's potential acquisition of Sigma Lithium sends stock upward," Feb 21, 2023, <https://www.teslarati.com/tesla-tsla-acquisition-sigma-lithium-sgml-stock/>

*In 2021, Musk, who owns a home in the San Francisco Bay area, said he opted to move the automaker's headquarters to Texas for additional space and because of the significantly cheaper housing market in Austin, compared to San Francisco. Before he moved Tesla out of California, Musk had threatened to relocate both its headquarters and manufacturing out of the state in response to Covid-era gathering restrictions that temporarily closed the automaker's factory in Fremont...*<sup>16</sup>

*Tesla's new engineering headquarters will be located in the former headquarters of Hewlett Packard in Palo Alto, California, Musk said, although he did not specify when the move would take place.*

*Newsom called it a "point of pride" that Tesla is once again a California company, with a manufacturing plant in the Bay Area city of Fremont, California, in addition to its headquarters.*

## 5.4. Investor Day

I have reviewed several descriptions of Tesla's March 1 "Investor Day meeting, at Giga Texas. I agree with the Forbes article's title-comment on this meeting, and are using some excerpts from the article referenced here.<sup>17</sup>

### 5.4.1. Mexican Plant

*Tesla CEO Elon Musk on Wednesday said the world's biggest maker of electric cars is indeed building its next large vehicle assembly plant in Mexico, near Monterrey, confirming a Monday announcement made by Mexican President Andrés Manuel López Obrador.*

*During a question-and-answer session, Musk commented on the matter three hours into a Tesla conference with analysts and investors at its Giga Austin plant. He didn't provide specifics about the cost of the new facility and how many people it will employ, nor did he offer details about the vehicle it will make...*

**Authors comment:** For additional surmised details on the above plant see the earlier post linked below, section 4.1.

<https://energycentral.com/c/ec/evs-early-winter-2023>

*During the conference, numerous Tesla executives ticked off improved manufacturing techniques, new materials and design changes the company is implementing, all with a goal of cutting the cost of making its vehicles by 50%. There was no specific timetable for achieving that, however.*

**Author's comment:** Again, for some possible methods that Tesla might use to decrease costs, see the above linked earlier post and the referenced section.

However, clearly reducing the cost of making a vehicle by 50% will require more than a bit of tweaking and optimization. On the other hand, the above goal has few details, so it's hard to gauge what the goal really is. I'm guessing the goal relates to "...ever more affordable EVs." See below.

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<sup>16</sup> Brian Bushard, Forbes, "Tesla Shifts Its Engineering Headquarters...", Feb 22, 2023,

<https://www.forbes.com/sites/brianbushard/2023/02/22/tesla-engineering-headquarters-will-open-in-california-musk-announces/>

<sup>17</sup> Alan Ohnsman, Forbes, "Tesla's Investor Day Is Long On Time, Short On Useful New Details," March 1, 2023, [https://www.forbes.com/sites/alanohnsman/2023/03/01/teslas-investor-day-is-long-on-time-short-on-useful-new-details/?sh=12b9f18265bb&utm\\_source=newsletter&utm\\_medium=email&utm\\_campaign=dailydozen&cdlclid=628673ca6e1a1d1211f1d747&section=techinnovation](https://www.forbes.com/sites/alanohnsman/2023/03/01/teslas-investor-day-is-long-on-time-short-on-useful-new-details/?sh=12b9f18265bb&utm_source=newsletter&utm_medium=email&utm_campaign=dailydozen&cdlclid=628673ca6e1a1d1211f1d747&section=techinnovation)

As part of the grueling three-and-a-half-hour event, Musk also unveiled “Master Plan 3,” his strategy to convert the world to renewable power from the sun and wind, stored on massive Tesla batteries, and to get drivers out of carbon-fueled cars and trucks and into ever more affordable EVs.

“There is a clear path to a sustainable energy earth. It doesn't require destroying natural habitats. It doesn't require us to be austere and stop using electricity and be in the cold or anything,” Musk said. “There is a clear path to a fully sustainable earth with abundance. In fact, you could support a civilization much bigger ... much more than the 8 billion humans could actually be supported sustainably on Earth.”

**Author's final references and comments:** See the link immediately below, to reinforce the above excerpt, and what “50%” might really mean. Also, at the last minute as I was finalizing this post, the article below (second link below) just came in and has added information.

<https://www.teslarati.com/tesla-next-gen-platform-teaser-engineering-hq-video/>

<https://www.teslarati.com/tesla-gigafactory-nevada-330-million-tax-break/>

Note that the above Gigafactory Nevada link also indicated that this facility will be used for the final main Semi assembly site. If memory serves me correctly, the Semi was originally intended to be assembled in Giga Texas. It's currently being assembled in a pilot plant near Giga Nevada. I'm guessing that most of the Semi's early customers will be in California, so Western Nevada (near Reno) makes sense. Also Gigafactory Nevada (with the upcoming expansion) will be making 4680 batteries for the Semi, and other models.

## 5.5. Model S, X Price Reductions

See below:<sup>18</sup>

| Tesla Model S and X Price Changes This Year |               |                      |                  |                       |                             |
|---------------------------------------------|---------------|----------------------|------------------|-----------------------|-----------------------------|
| Breaking down the changes to each model     |               |                      |                  |                       |                             |
|                                             | Latest prices | Prices as of Jan. 12 | Latest price cut | Prices before Jan. 12 | Change since before Jan. 12 |
| Model S                                     | \$89,990      | \$94,990             | -5.3%            | \$104,990             | -14%                        |
| Model S Plaid                               | \$109,990     | \$114,990            | -4.3%            | \$135,990             | -19%                        |
| Model X                                     | \$99,990      | \$109,990            | -9.1%            | \$120,990             | -17%                        |
| Model X Plaid                               | \$109,990     | \$119,990            | -8.3%            | \$138,990             | -21%                        |
| Sources: Tesla's website                    |               |                      |                  |                       |                             |

Bloomberg

<sup>18</sup> Dana Hull and Danny Lee, Bloomberg via MSN, “Tesla Slashes Model S and X Prices...” March 6, 2023, <https://www.msn.com/en-us/money/other/tesla-slashes-model-s-and-x-prices-for-the-second-time-this-year/ar-AA18gh6h>