

EVs Early Winter 2023

By John Benson

January 2023

1. Introduction

It's a busy time in the electric vehicle (EV) Market. My last post on this was less than a month ago, but new and significant information has been coming in at a rapid pace, and I'm expecting more before the posting date (early January).

The last EV post is described and linked below.

EVs, Late Fall, 2022: *In this paper we will deal with manufacturing commitments, market position, significant awards, new deliveries and needed changes among six EV manufacturers. In the Technology section (3) are an explanation of EV reliability issues, and a major advance in vehicle-to-grid (V2G) technology.*

<https://energycentral.com/c/ec/evs-late-fall-2022>

In EVs Early Winter we will cover the following subjects:

- A major new award for Ford's Lightning
- The Next EV-SUV rollout for Ford?
- Latest USPS EV commitment
- New workers' skills and new needs as EV factories ramp production
- Tesla's Entry into Mexico
- As Tesla's Semi ramps, PepsiCo reports its early volume and experience.
- Tesla's Giga TX Ramp
- Fickled EV customers
- Latest USPS EV commitment
- Kia goes boxy & big (see main image).
- California leads and others follow.

2. Ford

Ford received recognition for its F-150 Lightning, teased an SUV and may benefit from a USPS move.

2.1. Lightning Strikes Again

I've covered the F-150 Lightning several time in past EV-Posts, and with its quickly ramping production, the following award doesn't surprise me.

The new F-150 Lightning electric pickup truck adds the prestigious 2023 MotorTrend Truck of the Year award to its trophy case. The win sets a precedent – the F-150 Lightning is the first electric truck to win by a unanimous vote among the judges. It's also

only the second time an electric vehicle has won unanimously in the history of MotorTrend's "...Of The Year" competitions.¹



"It's really brilliant for the team that Lightning is the first EV truck to win by unanimous vote," said Darren Palmer, vice president, electric vehicle programs. "This truck is full of firsts, and this one is really special to add to Lightning's historic launch."

The F-150 Lightning earned the title of America's best-selling electric truck in November, with sales totaling 2,062. Since the truck was introduced in May, sales have totaled 13,258. The success of Lightning has contributed to Ford being the No. 2 EV brand in the U.S. year to date.

"The F-150 Lightning and its nearly instant torque with ride and handling make it without a doubt the best truck Ford has ever made. If that feels like a bold statement, consider that amongst our judges, the F-150 Lightning won Truck of the Year by unanimous decision—the first EV truck to convince all judges across the board," said Ed Loh, MotorTrend group head of editorial. "The Ford F-150 Lightning is no less than a milestone achievement in the history of American mobility."

Ford is ramping up quickly to deliver 150,000 Lightning trucks per year by the end of next year. Ford's electric vehicle business is growing with a conquest rate of over 60%.

Author's comment: Two things: (1) note that this article was posted in 2022, so the above "...next year." Is 2023, and (2) "...conquest rate" is the rate that new vehicle sales made to customers that previously owned another brand, although I expect there is a lot of wiggle-room in this metric.

2.2. Next Ford EV SUV, but When?

Martin Sander, General Manager of Ford Model E Europe, shared the teaser image on Twitter from Ford's European Design Center. The photo showed very little of the vehicle

¹ Ford Media Center, "F-150 Lightning Wins MotorTrend Truck Of The Year For 2023, Setting Precedent with Unanimous Vote by Judges, Dec 13, 2022, <https://media.ford.com/content/fordmedia/fna/us/en/news/2022/12/13/f-150-lightning-wins-motortrend-truck-of-the-year-for-2023--sett.html>

but just enough to hit its market segment and where it could fit into the company's existing lineup.²

The teased vehicle, which will supposedly be coming to market as soon as next year, is an SUV body style...

This could be the vehicle that was mentioned earlier this year by another Ford executive. According to their comments, the upcoming vehicle would be a Ford Explorer adjacent SUV, representing a vital market segment for the company. This is evidenced by the teased vehicle's boxy edges and similar front headlight to the Ford Explorer.

The final question is if this will be a global model or if it will be region locked to Europe. Ford Europe has long had its own identity and set of models not available in the North American market. This included the Ford Mondeo, the Ford Everest, the new generation Ford Ranger, and many more. But from the information available today, it remains unclear if this will be the case for the upcoming EV.

Sadly, there is good reason for the new EV to be, at the very least, introduced to Europe before coming to Ford's home market. Due to the more aggressive regulatory policies in Europe, the Blue Oval is highly incentivized to electrify its lineup in the EU before doing the same in the United States.

Luckily, we likely won't need to wait too long for more details on the new vehicle, considering 2023 is now just around the corner. And at the very least, it is yet another indication that Ford is on the right track to electrify its offerings faster than most. Perhaps this new model will be the motivation to get long-time competitors, GM/Dodge/Toyota, to electrify their offerings faster to keep up with the legacy brand. Either way, the new product is an exciting prospect going into the new year.

2.3. Could there be a Ford in USPS's Future?

According to USPS, it anticipates at least 60,000 Next Generation Delivery Vehicles (NGDV), of which at least 75% (45,000) will be battery electric. As part of this plan, a total of 21,000 additional commercial off-the-shelf (COTS) vehicles are also expected to be battery electric, depending on market availability and operational feasibility. The Postal Service also noted that it anticipates including internal combustion vehicles necessary to meet immediate vehicle replacement needs.³

Regarding the above "... 21,000 additional commercial off-the-shelf (COTS) vehicles..." Ford makes a highly successful line of EV Vans called the E-Transit. I expect that these could fulfill a number of roles for USPS. For further information on these see the post linked below from early 2022, section 2.3.

Electric Trucks & Buses, Early 2022:

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

² ByWilliam Johnson, Teslarati, "Ford teases upcoming EV SUV," Dec 17, 2022, <https://www.teslarati.com/ford-upcoming-ev-suv/>

³ Stephen Garner, Footwear News, "USPS Commits to Adding 66,000 Electric Delivery Vehicles," December 27, 2022, <https://footwearnews.com/2022/business/retail/usps-adding-electric-delivery-vehicles-1203384725/>

Also Ford appears to have a much better selection and production capability than other manufactures of these vehicles.

*A total of 404 Ford E-Transit were sold in August, while year-to-date it's 3,938. According to Ford, the E-Transit completely dominated the US electric van market with over 90% share of the segment.*⁴

3. EV Workers

*An ongoing battery supply crunch could inhibit the auto industry's transition to all-electric vehicle lineups. But equally as pressing as getting the materials necessary for EVs is the talent crisis the business is facing. That could be good news for workers hoping to tap into today's opportunities.*⁵

Auto- and battery-makers are desperate for new kinds of workers — and they're willing to pay for it. But a sense of urgency and willingness to invest doesn't mean any type of talent will do.

The industry has very specific needs as billions of dollars of investment flow to EV powertrains. That means workers with skills in construction, manufacturing, and engineering, especially those willing to be flexible, could see plenty of opportunities, experts say.

What's in demand?

Engineers, chemists, and supply chain experts are at the top of the list. After all, mining raw materials, processing them, and eventually getting them into batteries is pretty new for the auto world.

But first, the industry needs factories to build those batteries — and workers to construct them.

With every new announcement comes job opportunities, though they may require workers to be flexible location-wise, according to Andreas Breiter, an automotive-focused partner at McKinsey.

"What the industry is doing here is putting measures in place to attract more talent — either more talent to enter into that field of construction or just moving crews across the country from areas where more talent is available to areas where the bottleneck is," Breiter said."

"That just needs some planning, so ahead of time, starting to work in the local communities to build up the infrastructure, to build up the labor pool," Breiter added. "For some large factories, that will also mean that probably, people will just move to that area."

⁴ Mark Kane, Inside EVs, "US: Ford BEV Sales Quadrupled In August 2022," Aug 2, 2022, <https://insideevs.com/news/608060/us-ford-bev-sales-august2022/>

⁵ Alexa St. John, Business Insider, "Automakers desperately need new workers - with new skills - to build electric cars," Dec 16, 2022, <https://www.businessinsider.com/automakers-jobs-desperate-workers-fuel-electric-vehicle-transition-batteries-2022-12>

Electric vehicles are notably less complex to build and maintain than gas-powered cars. As a result, questions about the current automotive workforce and whether today's skills will become obsolete come into play...

You're not going to necessarily take somebody that's working on an assembly line and now you need software production experts," McCarthy said. "That's not realistic. So what are those bridges going to be?"

"A lot of the discussion that we've heard is around the reskilling and upskilling," Diana Páez, energy & mobility senior director at non-profit research organization, the William Davidson Institute, said. "But also thinking about the talent pipeline and how fast you can get people with the right skills to the factory floors or manufacturing plant..."

4. Tesla

Tesla is clearly the EV Leader, and clearly they are losing market-share. The latter is clearly inevitable. If one firm owns virtually all of a new market, there is a high probability that they will lose share. But you can also fight back, and Tesla appears to be doing this. This section will highlight three methods that Tesla is using to keep market share: (1) building a less expensive vehicle, (2) further diversifying their products, and (3) ramping their production faster than anyone else.

4.1. Lower Cost EVs

There were a number of ways that Tesla could do this, and I believe they will use at least two of these.

Model 3 has been on the market for five years now without any significant redesign. It has sold well and keeps selling in many markets, but it is being overtaken by Model Y globally.⁶

Now Reuters reports that Tesla is working on a redesign of the Model 3 codenamed "Highland":

One focus of the redesign codenamed "Highland" is to reduce the number of components and complexity in the interior of the Model 3 while focusing on features that Tesla buyers value, including the display, according to the people, who asked not to be named because the revamp has not been announced.

Author's comment: One method to reduce complexity is to use methods Tesla developed for the Model Y, like structural batteries and mega castings.

The report doesn't go into the details of the redesign, beyond that it will focus on cost reduction and that the vehicle should go into production at Gigafactory Shanghai and Fremont factory during the third quarter of 2023.

It's extremely likely that Tesla is working on a Model 3 redesign at this point. That I can easily believe, but I'd take everything else in the Reuters report with a grain of salt – not that there's much in there about the actual redesign beyond that it will focus on cost.

⁶ Fred Lambert, Electrek, Tesla Model 3 redesign is codenamed 'Project Highland,' report says," Nov 28, 2022, <https://electrek.co/2022/11/28/tesla-model-3-redesign-codenamed-project-highland-report/>

The second method is to lower labor cost, and one way of doing this would be to do this by importing model 3s from China, but I don't believe they are doing this for a number of reasons: mainly due to the fragility of that import supply-line, and U.S. incentive provisions. Thus:

Tesla Gigafactory Mexico is expected to be announced in the coming days as more details about the deal are coming to light.⁷

Earlier this year, people crossing the border between Texas and Nuevo Leon were surprised to see not just the usual marked lanes for cars and trucks, but also one marked "Tesla" (pictured below).



We ended up finding out that Tesla had struck a deal with the state of Nuevo Leon to have its own lane at the border crossing in order to reduce wait times for cargo going through the border – or at least that was the explanation of Ivan Rivas, the economy minister of Nuevo Leon.

While it's true that Tesla has several suppliers in the state, as we reported at the time, we suspected that the move might have more to do with Tesla potentially investing in a factory in the state.

Earlier this year, we reported on CEO Elon Musk confirming that Tesla is considering sites for a new factory in Canada, Mexico, and the United States when discussing its next plant in North America.

In October, rumors of a Tesla factory in Mexico ramped up as Tesla CEO Elon Musk visited the state and met with the governor. Local media reported that Tesla was

⁷ Fred Lambert, Electrek, "Tesla Gigafactory Mexico expected to be announced in the coming days," Dec 19, 2022, <https://electrek.co/2022/12/19/tesla-gigafactory-mexico-to-be-announced-coming-days/>

particularly interested in a location in Santa Catarina, a municipality just outside of Monterrey.

Following the visit, the government confirmed discussions of a possible investment in the state.

Last week (week of Dec 11), a deal to bring a Tesla factory to Mexico was reportedly achieved with an announcement expected within the next month...

According to the report, Tesla plans to first invest \$800 million to \$1 billion into the factory outside of Monterrey, with the goal first of producing parts to supply other factories and then eventually producing full vehicles at the factory.

Over time, Tesla could invest several billion dollars into what is likely to be known as Tesla Gigafactory Mexico.

As we previously reported, in order for Tesla to achieve its goal to ramp up its global production to 20 million vehicles annually by the end of the decade, the company needs to have 12 Gigafactories, which means it needs to announce eight new ones within the next few years.

Author's comment: Tesla is not under any market-pressure to introduce an inexpensive EV currently, as it's selling everything it can produce. But in a few years...

4.2. Apples and Rutabagas

The quickest way to improve the robustness of your business is to diversify it. In other words, expand into a close, but distinct market (a market with different competitors). For Tesla, this is clearly the large EV truck (read: "Tesla Semi").

See section 2.2.1 in the last EV post (linked in the Intro of this post) for production details for the Semi.

So how is Tesla doing with its early ramp of the Semi?

PepsiCo is deploying 36 electric trucks from Tesla, with 15 in Modesto and 21 in Sacramento, so far.⁸

PepsiCo plans to roll out 100 of the heavy-duty Tesla Semis it reserved in 2023, when it will start making deliveries to customers like Walmart and Kroger, the soda maker's top supply chain official told Reuters on Friday.

PepsiCo is purchasing the big trucks "outright" and is upgrading its plants, including installing four 750-kilowatt Tesla charging stalls at both its Modesto and Sacramento locations, PepsiCo Vice President Mike O'Connell said in an interview. A \$15.4 million California state grant and \$40,000 federal subsidy per vehicle helps offset part of the costs.

"It's a great starting point to electrify," said O'Connell, who oversees the company's fleet of vehicles.

"Like any early technology, the incentives help us build out the program," he adding, saying "there's lots of development" and infrastructure costs.

⁸ Reuters via CNBC, "PepsiCo is using 36 Tesla Semis in its fleet and is upgrading facilities for more in 2023, exec says," Dec 16, 2022, <https://www.cnbc.com/2022/12/16/pepsico-is-using-36-tesla-semis-in-its-fleet-and-is-upgrading-facilities-for-more-in-2023-exec-says.html>

PepsiCo, which ordered the Semis in 2017, is the first company to experiment with them as a way of cutting its environmental impact.

United Parcel Service and food delivery company Sysco have also reserved the trucks, while retailer Walmart is testing alternatives.

PepsiCo's plans to use the Semis have been reported, but O'Connell provided new details on how the company is using them and its timeline for deploying them.

The company's Frito-Lay division sells lightweight food products, making it a good candidate for electric trucks whose heavy batteries could limit cargo capacity...

PepsiCo's new Semis can haul Frito-Lay products for around 425 miles, but for heavier loads of sodas, the trucks will do shorter trips of around 100 miles, O'Connell said...

All of the Semis going to PepsiCo will have a 500-mile (805-km) range. O'Connell added that he is not aware of when Tesla will start deploying 300-mile (480-km) trucks. When Tesla starts building them, PepsiCo "will rotate those up" into its fleet, he said.

PepsiCo declined to share details on the price of the trucks, a figure that Tesla has kept quiet. Competing vehicles sell for \$230,000 to \$240,000, said Mark Barrott of consulting firm Plante Moran. He added that the 500-mile range Tesla Semi could be priced higher because its 1,000-kilowatt-hour (kWh) battery pack is twice the size of many rivals.

"We keep the trucks for a million miles, seven years," O'Connell said. "The operating costs over time will pay back..."

The company is targeting rolling out the Semis in the central U.S. next, then the East Coast, O'Connell said.

4.3. Giga-Texas Ramp

Since Tesla is production-constrained, they are looking for the title factory to expand their production to fill this hole. In spite of some minor production increases lately, Fremont Mothership is pretty close to maxed out. How is Tesla's Giga-TX doing?

Tesla Inc. is building 3,000 Model Y SUVs a week at its new Austin, Texas, factory — a sign that the electric-car maker is making up for lost time at the money-losing plant.⁹

Tesla shared the new production in a tweet Thursday (12/15). The milestone comes a week after Bloomberg News reported that Chief Executive Officer Elon Musk had asked the head of the company's China division to get the Austin factory up to speed.

Extrapolated out over a year, that production rate would get Tesla to about 156,000 vehicles, which is still short of the annual target of 250,000 that the company promoted in its third-quarter letter to shareholders.

But it's a long way from the slow start Tesla experienced in Austin, which was due in part to the company pivoting at the last minute to using older battery cells after it found a new design wasn't ready for volume production.

⁹ Sean O'Kane, Bloomberg via Chron, "Tesla Says New Texas Factory Is Making 3,000 SUVs a Week," Dec 15, 2022, <https://www.bloomberg.com/news/articles/2022-12-15/tesla-says-production-in-texas-is-up-to-3-000-suvs-per-week#>

4.4. Fourth Quarter and Yearly 2022 Deliveries

Widely reported on 1/3: Tesla's fourth-quarter deliveries rose 18% to 405,000, missing consensus forecasts of 418,000. This brought Tesla's 2022 total deliveries to 1.3 million units, up 40% year over year but below the company's guidance for 50%.

For comparison, fourth quarter 2021 deliveries: 308,600. Total 2021 deliveries: 936,000

5. Kia & Hyundai

Although a number of Pre-EV Manufacturers are making major inroads into the EV Market, Kia (and their parent, Hyundai) appear to have impressive designs. Now, Kia has a real EV-SUV (read, 3-row) that it plans to release shortly.

5.1. EV9

Kia is teasing its first electric SUV, the EV9, ahead of its 2023 debut (See Main Image). The three-row electric SUV first appeared as a concept at the 2021 Los Angeles Auto Show, but as it nears production, Kia is giving us a closer look at what we can expect.¹⁰



As the electric SUV market heats up, with demand climbing for EVs like the Rivian R1S and Tesla Model X, Kia is introducing its own “flagship” EV SUV, the EV9.

2022 has been a hit for Kia with its first dedicated electric vehicle, the EV6 making its presence known in the EV market. After achieving record sales in November, Kia looks to keep the momentum rolling as it expands its zero-emission offerings.¹¹

¹⁰ Peter Johnson, Electrek, “Kia gives us a closer look at the EV9, its first electric SUV,” Dec 27, 2022, <https://electrek.co/2022/12/27/kia-gives-us-a-closer-look-at-the-ev9-its-first-electric-suv/>

¹¹ Kia sold 641 EV6 vehicles in November, and 19,256 EV6 vehicles in 2022 to date, see <https://carfigures.com/us-market-brand/kia/ev6#>

The Kia EV9 will be Kia's second dedicated electric vehicle sitting atop The Hyundai Motor Group's E-GMP platform, the same one used for Hyundai's award-winning IONIQ 5 and Kia's EV6.

Like its parent company Hyundai, Kia has embraced fully electric technology, even infusing EV-inspired design elements into its entire KONA lineup as it winds down gas-powered car sales.

The EV9 is expected to be a game changer for both Kia and the electric SUV market. The concept was first revealed at the LA Auto Show in 2021, and then in March, Kia released additional details, including a 0 to 100km/h time of 5 seconds and 540 km range (336 miles) on a full charge.

Kia's flagship EV9 SUV is expected to play an integral role as the automaker strives for 1.2 million EV sales annually by 2030...

The Kia EV9 concept included advanced features such as a panoramic sunroof, a pop-up steering wheel, and even a solar panel built into the hood.

Kia's electric SUV is expected to officially debut in the first quarter of 2023 (right around the corner). Meanwhile, we have yet to hear what the EV9's starting price will be. Check back for more updates as Kia's new flagship SUV nears production.

5.2. Brand-Loyalty is not Part of the EV Lexicon

Although the text below is not specific to Kia / Hyundai, both manufacturers are benefiting mightily, as are any other EV-builder that can deliver state-of-the-art and good-quality EVs in large quantities.

Electric vehicles are poised to disrupt customer loyalty in the car business, long one of the mainstays of vehicle brand identities.¹²

According to a new study from car-shopping site Edmunds, electric vehicles are convincing buyers to change brands at much higher rates than historically seen in automotive retail. This particular sales metric, known as customer conquests, has historically been a difficult thing to achieve.

Carmakers have spent decades using wave after wave of focus groups, spending billions in marketing dollars, and internalizing customer feedback to drive loyalty among their buyer bases.

Keeping customers within the brand has always been a top priority for car companies and dealers alike, and not just for the obvious reason that no brand wants to see a buyer go to a competitor. It's also that it's far cheaper to keep a customer than to find a new one, according to Edmunds Executive Director of Insights Jessica Caldwell.

Car companies looking to conquest buyers to a brand can end up spending billions of dollars on new ad campaigns and R&D efforts to revamp their image, only to see meager or temporary shifts in loyalty...

¹² Nora Naughton, Business Insider via MSN, "Electric cars are shredding the brand loyalty automakers have spent decades building up — and it's great news for Kia and Hyundai," Dec 2022, <https://www.msn.com/en-us/money/companies/electric-cars-are-shredding-the-brand-loyalty-automakers-have-spent-decades-building-up-and-its-great-news-for-kia-and-hyundai/ar-AA15hHG5>

This is no easy feat in the auto industry and a part of the reason why leasing was invented — to drum up repeat business," Caldwell wrote in the study. "These EVs are drawing in new buyers naturally, which is a benefit that can't be underestimated."

The vehicles attracting the most customers from other brands, according to Edmunds:

- *Ford's Mustang Mach-E, 69% conquest rate among trade-ins¹³*
- *Hyundai's Ioniq 5, with 81% conquest rate among trade-ins*
- *Kia's EV6, with 79% conquest rate among trade-ins*

Ford's early electric vehicle strategy hinged on leveraging the company's most valuable brands – with the most loyal customer bases – to strengthen its position in the EV market.

"I want us in segments and markets where we do really well without even trying that hard," Ford CEO Jim Farley told Insider earlier this year.

Author's comment: The above was why Ford led with the Mustang, F-150 and Transit brands.

6. California Leads and Others Follow

It's old news that California has been leading the pack in legislating more environmentally-friendly transportation, and I write about this frequently. Now the crowd is forming to follow my home state into new territory.

The California Air Resources Board on Aug. 25 put the internal combustion engine on notice.¹⁴

Declaring that global warming is "a significant threat," the agency, which is charged with protecting the public from the harmful effects of air pollution, banned the sale of new gasoline-powered vehicles starting in 2035.

"California experiences a wider range of the effects of climate change and suffers these effects to a greater degree than other states in the nation," the resolution said, "including extreme and prolonged drought, dwindling supplies of fresh water from loss of snowpack, more extensive and severe wildfires, and rising storm surges and sea levels."

The move followed California Gov. Gavin Newsom's 2020 executive order to shift the largest auto market in the U.S away from the internal combustion engines...

California is out ahead of other US states in banning internal combustion vehicle sales after the mid-2030s, though it is no longer alone," said Timothy Johnson, professor of the practice of energy and the environment at Duke University,

Other states are indeed following California's example. New York, Washington, Massachusetts, Oregon and Vermont are expected to adopt a similar 2035 mandate. Minnesota and Virginia may also follow suit,

¹³ "...conquest rate" is the rate that new vehicle sales made to customers that previously owned another brand, although I expect there is a lot of wiggle-room in this metric, so the above factoids "...among trade-ins" seems to narrow this definition.

¹⁴ Rob Lenihan, The Street, "Year End: California's Electric Vehicle Law Takes Nation into New Territory," Dec 24, 2022, <https://www.thestreet.com/electric-vehicles/year-end-californias-electric-vehicle-law-takes-nation-into-new-territory>

Outside of the U.S., the European Union is looking to ban the sale of new diesel and gasoline cars and vans. In October, the European Council and European Parliament came to a provisional agreement on the idea...

"So, I think it is fair to say that we are at an EV tipping point," Johnson added. "In addition to government efforts to electrify transportation, the global auto industry no longer considers electric vehicles a niche, and many manufacturers are now planning for an all-electric future. And the same applies to utilities..."

Final author's comment: The above article goes on to question the availability of raw materials to make enough batteries to meet the above goals. I don't.

First of all, there are plenty of untapped sources of lithium in the U.S. and world-wide. Second, the initial demand for EVs are largely premium vehicles, and as the market matures, there will be a shift to lower-cost vehicles. In following Tesla's lead, these will primarily use LFP chemistries, which use iron and phosphate, both of which have huge supplies. Finally, by 2035 there will be new battery-designs, which will diversify the supply-chain.