EVs Late Summer 2022

By John Benson

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1. Introduction

The last "EV…" paper was posted in mid-July, and is described and linked below.

EVs Mid-Summer, 2022: *This has been a challenging but good year for road-going electric vehicles (EVs) so far. These continue to increase their volume and diversity.*

In this post I will describe the ramping of EV production and diversity and look to the future: what 2023 (and later) should bring us.

https://energycentral.com/c/ec/evs-mid-summer-2022

This post is a mixed bag, consisting of new information on various EV manufacturers covered previously, starting and ending with a couple of "heavies" and a super-duper heavy. This post also includes information on federal government actions driving EV volume, new information on EV storage and chargers, a bit of new information on Tesla, and a raft of new reports on new and future EVs. Regarding the latter, I'm trying to stay with mid-priced personal EVs, as I have in other recent EV posts (first section and last subsection below aside).

2. News from the Heavies

This information was recently delivered to me by Forbes:

2.1. Nikola

Nikola CEO Mark Russell will retire at the end of this year and be succeeded by Michael Lohscheller, who also became its president on Wednesday. Lohscheller, an auto industry veteran who previously led German automaker Opel and was, briefly, CEO of Vinfast, a Vietnamese EV startup,[1] also joined Nikola's board. He started at the company in February and helped oversee the start of production of battery-powered Tre BEV semis earlier this year.[2]

With financial and technical backing from Bosch and European commercial vehicle maker IVECO, Nikola beat Tesla to market with its electric Tre truck that goes about 350 miles per charge. Early customers include companies hauling cargo in and out of the sprawling Ports of Los Angeles and Long Beach, and the vehicles currently qualify for generous incentives California offers for nonpolluting big rigs worth up to $120,000.

Nikola is starting with batteries but sees hydrogen as a more compelling option for longer-range routes of more than 500 miles, as hydrogen fuel cell systems can be refueled faster and are lighter than the multi-ton battery packs Tesla will likely use in its Semi. Musk is a well-known hydrogen critic...

[1] See "EVs Mid-Summer, 2022," posted in July, section 4.2, linked in the Introduction.
[2] Alan Ohnsman, Forbes, "Nikola And Tesla's Electric Truck Rivalry Heats Up," Aug 10, 2022, https://www.forbes.com/sites/alanohnsman/2022/08/10/nikola-and-teslas-electric-truck-rivalry-heats-up/

2.2. Elon's Semi

Tesla's billionaire CEO unexpectedly tweeted late Tuesday that his big rig, initially planned to arrive in 2019, is coming soon.

"Tesla 500 mile range Semi Truck starts shipping this year, Cybertruck next year," the mercurial billionaire tweeted, providing no additional details about specific timing or price.

The company has claimed that it has received thousands of pre-orders for the model, though tight battery supplies had pushed its likely launch back to 2023… Tesla didn't respond to a request for comment.

As I'm final prepping this paper for posting, some more information came in on the production Semi:

With only four months left before the end of the year, Tesla has just made another important change: it is no longer possible to reserve the Semi truck. Indeed on the website specific to the Semi truck, the order option is no longer available, noted TheStreet. This option has been replaced by "Get Updates." [3]

Basically, this suggests that the order book for this vehicle, which has already been ordered by PepsiCo, is full and that Tesla wants to satisfy these customers first…

…the truck will only have three independent motors and the battery will be able to recharge up to 70% in 30 minutes when attached to a "Tesla Semi Charger". With this level of charge, the vehicle will be able to travel 350 miles before the battery is completely discharged. Previously, Tesla said the truck would have four independent motors and that 30 minutes of battery recharging would allow the vehicle to travel 400 miles before recharging.

"With less than 2 kWh per mile of energy consumption, Semi can travel up to 500 miles on a single charge. Recover up to 70 percent of range in 30 minutes using Tesla's Semi Chargers," the carmaker said.

The name "Semi chargers" is also new because Tesla was talking about "Megachargers" before.

Author's comment: I'm guessing Elon has stockpiled enough batteries from his Kato Road, Fremont, CA pilot battery plant for a reasonable initial production run from the Pilot Semi plant near Reno, NV. Also see highlighted text in subsection 6.2 below.

3. Rivian Restructuring

I have opined previously that Rivian appears to be moving in a positive direction. However as they move to ramp production of a new SUV, they will need to make some adjustments, and thus the news below was not a big surprise.

Prominent electric vehicle startup Rivian is laying off 6% of its 14,000-person workforce as the company adjusts to a dramatically changing world. About 50 employees at the manufacturing plant in Normal, Illinois are among the more than 840 workers who've been cut as part of its restructuring. The location has approximately 6,000 employees.

[3] Luc Olinga, TheStreet, "Tesla Has Good and Bad News," Aug 20, 2022, https://www.thestreet.com/technology/tesla-has-good-and-bad-news

Most of those jobs were added when the California-based firm started producing its first electric trucks, SUVs, and Amazon delivery vans in 2020...[4]

Scaringe also pointed to inflation, rising interest rates, and increased commodity prices as factors that led the startup automaker to reduce its workforce.,,

Interestingly, Rivian only recently started production on its three initial products, namely the R1T pickup, the R1S luxury SUV, and an electric delivery van for Amazon. The pickup and SUV have been well received by critics CNN Business says, with the truck winning Motor Trend's Truck of the Year award…

The California Company's electric vehicles are currently manufactured in a former Mitsubishi factory in Illinois. But Rivian is already planning to build a second factory near Atlanta…

4. Federal Moves

This section will cover the USPS Saga, the Inflation Reduction Act of 2022, specifically its impact on the EV Market, and some federal loans for new EV battery manufacturing plants.

4.1. USPS Confusion

This has been an ever-changing story:

Postal delivery vans represent a perfect use case for electric vehicles, and it should be a no-brainer for the US Postal Service to replace its ancient fleet of delivery vehicles with EVs. However, things are never simple when the government is involved, and the long-overdue fleet upgrade has set off a war between EV advocates and the fossil fuel faction. In the latest skirmish, the former appear to have scored a partial victory.[5]

Here's the story so far: In 2021, as the USPS finally made ready to update its fleet of delivery vehicles (after about a decade of dithering), Postmaster Louis DeJoy thumbed his nose at President Biden's call to electrify the US government's vehicle fleet, and awarded a 10-year contract to Wisconsin-based Oshkosh Defense to manufacture a new generation of vehicles, most of which would use legacy fossil fuel powertrains.

Since then, Congress has tried to steer funding to the USPS to finance the purchase of EVs (the agency has cited the higher up-front cost of EVs as a reason for its policy); 16 US states, 4 environmental groups and the United Auto Workers filed lawsuits seeking to block the oily plan; EV advocates organized a letter-writing campaign; and EV pundits covered every twist and turn of the tawdry tale. In March of this year, USPS partially relented, announcing that it would include 10,019 battery-electric vehicles in its initial $2.98-billion order for 50,000 vehicles.

Now USPS has moved a bit further in the electric direction, telling Reuters that it proposes to purchase at least 25,000 EVs out of its initial order of 50,000 from Oshkosh

[4] Charlene Badasie, Tell Me Best via MSN, "Prominent Automaker Lays Off Loads Of Workers," Aug 2, 2022, https://www.msn.com/en-us/money/companies/prominent-automaker-lays-off-loads-of-workers/ar-AA10e9sZ?ocid=msedgntp&cvid=6e49dd9281274a12fd160dc2246b49e8

[5] Charles Morris, EVANNEX via Inside EVs via MSN, "US Postal Service To Increase Its Order Of Electric Vehicles," Aug 2, 2022, https://www.msn.com/en-sg/news/other/us-postal-service-to-increase-its-order-of-electric-vehicles/ar-AA10esiQ

(which has, to the best of our knowledge, never built an EV). The agency also plans to buy more than 34,500 "commercial off-the-shelf delivery vehicles" over two years, "including as many BEVs as are commercially available and consistent with our delivery profile." In total, USPS now says that at least 40% of the 84,500 vehicles it plans to buy will be EVs.

To be fair, Mr. DeJoy has always insisted that he isn't anti-EV—he just can't justify the cost of full electrification. The agency appears to be leaving the door open to buying even more EVs in the future if financial conditions improve.

Needless to say, EV advocates are welcoming this half-loaf but pushing for more. "The US Postal Service finally got the message that cleaner vehicles are a win all around," writes Britt Carmon of the National Resources Defense Council. "This change pushes the envelope in the right direction, but it's also not nearly enough. To save money and protect our health, the Postal Service should go much further and electrify most of its fleet. As time goes on and the costs of these vehicles continue to fall, we fully expect that USPS will eventually increase the number of electric vehicles it buys..."

4.2. Potential EV Wins in Inflation Reduction Act of 2022

Commercial vehicles weighing over 14,000 pounds are eligible for a tax credit of $40,000 or 30% of the vehicle cost, whichever is less. Vehicles with a gross weight less than 14,000 pounds are eligible for a $7,500 tax credit. The $7,500 tax credit can be availed for new clean energy vehicle purchases by those whose income is under $300,000 for joint filers, $225,000 for heads of households and $150,000 for others. Used clean vehicle purchasers would get a $4,000 tax credit. All EVs bought after Dec. 31, 2022 would qualify for the EV credit. The tax credit would run through Dec. 31, 2032. To be eligible for the tax credit, the vehicle should be made in North America. There are retail price caps of $80,000 for vans, SUVs and pickup trucks; $55,000 for others, including sedans; and $25,000 for used cars. Batteries have to contain a certain level of critical minerals extracted or processed in any country the U.S. has a free trade agreement with or are recycled in North America.[6]

The bill also seeks to do away with the previous mandate that required qualified vehicles to have solely plug-in electric drive motors and the 200,000-vehicle per manufacturer cap. The $4,500 bonus credit to cars made by companies with unionized labor has also been removed. The proposed legislation is a win for non-unionized companies such as Tesla, Inc. and Toyota Motor Corporation.

The removal of the 200,000 ceiling could benefit Tesla, Toyota and General Motor Corporation (NYSE: GM), both of which have run out of their quota and were ineligible for the tax credit.

The retail price ceiling would mean that among Tesla's sedans, only the Model 3 SR+ variant and Model Y Performance and Long-Range variants would be eligible for the $7,500 credit.

[6] Shanthi Rexaline, Benzinga via MSN, "What Does The New Senate Deal Mean For Tesla, Toyota And Other Automakers?" July 28, 2022, https://www.msn.com/en-us/money/news/what-does-the-new-senate-deal-mean-for-tesla-toyota-and-other-automakers/ar-AA1042Bj?ocid=msedgntp&cvid=c6592e6e8e614448a9a475a1f16c019d

In anticipation of the thrust to indigenize battery manufacturing provisions, companies such as Ford Motor Company (NYSE: F) and GM have set up battery plants. Their Asian suppliers have also strived to move their production close to the automakers.

We can only assume that the Tesla Semi will be eligible for the tax credit ($40,000 or 30 percent of the total cost of the vehicle) if the bill passes. However, we have no way to know for sure. Moreover, it's just a waiting game at this point as we learn more about the credit...[7]

Teslarati points out that certain US states also offer enticing incentives for electric Class 8 trucks and other heavy-duty commercial vehicles. The publication adds that California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) offers as much as $120,000 related to the purchase of an electric Class 8 vehicle.[8]

4.3. DOE Loans for EV Battery Factories

Today the Department of Energy's Loan Programs Office (LPO) announced a conditional commitment to Ultium Cells LLC for a $2.5 billion loan to help finance the construction of new lithium-ion battery cell manufacturing facilities in Ohio, Tennessee, and Michigan. The three facilities are expected to create 6,000 good-paying construction jobs and 5,100 operations jobs when they are at full capacity.[9]

LPO is offering the conditional commitment through the Advanced Technology Vehicles Manufacturing (ATVM) program, which provides loans to support U.S. manufacturing of light-duty vehicles, qualifying components, and materials that improve fuel economy. This would be LPO's first loan exclusively for a battery cell manufacturing project under ATVM. Financing from the ATVM program complements the historic investments secured by the Biden-Harris Administration in the Bipartisan Infrastructure Law – $7.5 billion for EV charging infrastructure and more than $7 billion for the critical minerals supply chains necessary for batteries, components, materials, and recycling.

By manufacturing Li-ion battery cells for EV battery packs in the United States, Ultium Cells will supply GM as it works to deliver its plan to eliminate 100% of tailpipe emissions from its new light-duty vehicles by 2035. To support the goal of a zero-emissions future, GM plans to install capacity to build one million EVs in North America by the end of 2025. Construction of these three plants also supports GM's plan to make its global products and operations carbon neutral by 2040.

The cells manufactured by Ultium Cells LLC are large format, pouch-type cells that use a state-of-the-art nickel-cobalt-manganese-aluminum (NCMA) chemistry to deliver more range at less cost. The cells can be arranged in different combinations of flexible modules and battery packs to provide the energy for every segment on the road today, from performance vehicles to work trucks…

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[7] Steven Loveday, Inside EVs, "Proposed US EV Tax Credit Will Make Tesla Semi Super Cheap," https://insideevs.com/news/601319/tesla-semi-super-cheap-if-us-ev-tax-credit-passes/

[8] See https://energycentral.com/c/ec/electric-trucks-and-buses-california

[9] Jigar Shah, U.S. Department of Energy, Loan Programs Office, "LPO Offers Conditional Commitment for Loan to Build New EV Battery Cell Manufacturing Facilities in Ohio, Tennessee, Michigan," July 25, 2022, https://www.energy.gov/lpo/articles/lpo-offers-conditional-commitment-loan-build-new-ev-battery-cell-manufacturing

4.4. Late-Breaking News on Expanding Battery Production

This came into my email the day before this article was scheduled to be posted:

Battery suppliers from South Korea are moving production to the U.S. to compete with Chinese rivals.[10]

According to a report from Korea IT News, as part of the Inflation Reduction Act's passage requiring U.S.-made batteries and battery materials in electric vehicles, South Korean companies are seizing the opportunity to compete with Chinese battery suppliers who have dominated the market. Samsung, SK, LG Chem, and more are leading the seismic shift in where battery material production and assembly occurs.

There are some key components in the production of batteries: anode material, cathode material, electrolyte, separator material, and fire safety materials (primarily graphite). Production of raw resources and assembly into lithium-ion batteries has been dominated by Chinese suppliers such as CATL. Still, many companies are opening new facilities in the U.S. and South Korea to challenge the market leader.

In producing cathode and anode materials, EcoProBM and POSCO Chemical are looking to grow production outside China, mainly in the U.S. EcoProBM is looking to expand its current raw material output from 50,000 tons to 200,000 tons by 2024 and will be looking to do so at both existing South Korean plants and a new U.S. production facility. POSCO Chemical is aiming to grow production to 220,000 tons by 2025 and 440,000 tons by 2030 via a new U.S. production facility. POSCO Chemical is also one of a few companies looking to start production of artificial graphite in the U.S. via a new production facility.

Enchem, another South Korean company, is also looking to expand production in the U.S. Their facility will focus on electrolyte and separator materials.

These companies are working to feed an ever-increasing number of battery assembly factories from Samsung, LG Chem, and SK in the U.S. that are looking to meet North American demand for EVs. It is unclear how Chinese manufacturers will respond or if companies such as CATL will consider moving production to the U.S. to compete with these new domestic suppliers…

Author's comment: Chinese saber-rattling over Taiwan may really hurt their ability to build future battery and battery material plants in the U.S. vs. the South Koreans. Also see subsection 5.1 below.

5. EV Components

Some really good news regarding EV Batteries.

5.1. 4680 Battery's Expanding Market

BMW is reportedly going to adopt Tesla's 4680 battery format with supply from EVE, a battery supplier that is also looking to supply Tesla.[11]

[10] William Johnson, Teslarati, "South Korean EV battery makers flock to U.S. after Inflation Reduction Act," Aug 23, 2024, https://www.teslarati.com/electric-vehicle-battery-makers-south-korea-united-states-inflation-reduction-act/

[11] Fred Lambert, Electrek, "BMW to reportedly adopt Tesla's 4680 battery format," Aug. 17th 2022, https://electrek.co/2022/08/17/bmw-reportedly-adopt-tesla-4680-battery-format/

In 2020, Tesla introduced a new 4680 (46mm by 80mm) cylindrical battery format, which is much bigger than any other cylindrical cell put into electric vehicles to date.

The automaker brought some technological improvements that enabled the bigger cell, which itself enables a structural battery pack architecture – a new concept that allows for some significant efficiency improvements in electric vehicles.

Tesla has been manufacturing the 4680 cell itself, and it already made its way in the Model Y produced at Gigafactory Texas. But the automaker has also been encouraging other battery manufacturers to produce the cell, as it plans to buy every viable cell it can get.

This proposal has attracted the attention of many major battery manufacturers from Panasonic to LG, which have all invested in the new battery format.

One of them is the lesser-known battery manufacturer EVE from China. Last year, it was reported Tesla was in talks with EVE for LFP battery cells. Interestingly, Reuters now reports that EVE is going to supply 4680 cells to BMW:

"China's EVE Energy Co Ltd will supply BMW with large cylindrical batteries for its electric cars in Europe, two people with knowledge of the matter said, as the German automaker follows Tesla Inc. in adopting the new technology."

BMW refused to comment on the report, but it said to expect some battery-related news in early September.

If EVE plans to put LFP chemistry in a 4680 battery format, it could enable some cheaper electric vehicles from BMW in China…

Author's comment: LFP ($LiFePO_4$ or Lithium Iron Phosphate) is the lowest cost battery chemistry, although it doesn't have as high an energy density as other chemistries that use nickel. Tesla already uses this in its lower cost versions of Model 3 and Model Y EVs. LFP can also easily have its material sourced domestically in North America.

5.2. EV Batteries Lasting Longer

"Almost all of the [electric car] batteries we've ever made are still in cars," said Nissan executive Nic Thomas.[12]

"And we've been selling electric cars for 12 years," he added.

The worry was once what the world would do with millions of spent electric vehicle (EV) batteries after they no longer powered the cars and vans they propelled. But this glut of EV batteries has not yet materialized—Nissan has been making the electric Leaf since 2010—and automotive industry initiatives to recycle the lithium-ion cells bundled in EV batteries are slow to go mainstream in Europe and the U.S.

Electric cars have sophisticated battery management systems that guard the long-term health of their batteries. Most manufacturers offer battery warranties of seven or eight

[12] Carlton Reid, Forbes, "Electric Car Batteries Lasting Longer Than Predicted Delays Recycling Programs," Aug 1, 2022, https://www.forbes.com/sites/carltonreid/2022/08/01/electric-car-batteries-lasting-longer-than-predicted-delays-recycling-programs/?sh=637614c35332

years or around 100,000 miles of driving, but there's an industry expectation that EV batteries will last longer than that; they should outlive the cars themselves…

"It's the complete opposite of what people feared when we first launched EVs—that the batteries would only last a short time," he reflected.

It's clear that most EV batteries will outlast the vehicles they were installed in, and even then, they have a worthwhile second life before they need to be stripped down for recycling.

"At the end of the vehicle's life—15 or 20 years down the road—you take the battery out of the car, and it's still healthy, with perhaps 60 or 70% of usable charge," said Thomas.

"Taking the battery out [of an electric car] and putting a new battery in is not a viable proposition. It's more sustainable to take the battery pack out of the car after 20 years, recycle the car, and reuse the battery."

Nissan has collected only a relatively small number of Leaf batteries—from crashed vehicles or after warranty issues—and supplied some to provide backup power to the Johan Cruijff Arena in Amsterdam, home to Ajax Football Club. The arena's roof has 4,200 solar panels, with the resulting electricity stored in the equivalent of 148 Nissan Leaf batteries.

Other Leaf batteries will be dismantled and reused in consumer-level portable energy storage packs "when we've got some batteries to go into them," said Thomas…

Recycling is also set to grow in the U.S. Redwood Materials, a battery recycler created by Tesla cofounder and former tech chief JB Straubel, recently raised more than $700 million from investors to expand its Carson City, Nevada, operations and build an additional processing facility on a 100-acre site it owns.[13]

Redwood can already recapture usable quantities of metals at a cost lower than conventional mining, Straubel recently told Forbes.

The International Energy Agency (IEA) estimates that the world currently has enough capacity to recycle 180,000 metric tons of spent EV batteries annually. This is nowhere near enough: recycling experts estimate that the EVs bought in 2019 alone will eventually generate 500,000 metric tons of battery waste. By 2040, there could be 1,300-gigawatt hours' worth of spent batteries in need of recycling, warns the IEA…

6. Tesla

Tesla has be best charging network in the World. I made a deep dive into this subject in spring of last year in a post described and referenced below.

Interoperability: *The one-word title of this paper describes an extremely important function that is required to make relatively recent computer-based components play nice together, or interoperate, and it doesn't happen by magic.*

This post is about one important example of interoperability testing among the many devices and systems that are responsible for battery electric vehicle (BEV) charging.

[13] See "Destructive Restoration Part 4 – Renewables," https://energycentral.com/c/cp/destructive-restoration-part-4-renewables

These systems are also collectively known as electric vehicle supply equipment (EVSE). Although interoperability testing has been ongoing by manufacturers and industry organization since the first (modern) charger was plugged into the first (modern) BEV, this will be an important milestone in the testing because:

- *The California Energy Commission is sponsoring (& paying for) these tests.*
- *The CEC proposes to segment these tests into different types of BEVs (light, heavy, buses, etc.)*
- *The CEC proposes to look at advanced vehicle-to-grid interoperability functions.*

https://energycentral.com/c/cp/interoperability

If you wish to follow this deep-dive, you might start with section 2.3.

6.1. Supercharging for All?

Now, if Elon has the best charging network in the World, why would he possibly want to open it up to all of his competitors? Although he has occasionally been accused of being crazy, in most cases, Elon has been proven to be crazy like a fox. Rumors have been floating around about Tesla opening up Superchargers. The big question is why? Now I believe we know. *Tesla has reportedly started applying for more public grants to expand its Supercharger network with the requirement that it can be used by non-Tesla electric vehicle owners.*[14]

The company already announced plans to open its Supercharger network to all-electric vehicles globally, but the rollout of the initiative has been slow and is currently limited to Europe. The move makes sense considering Tesla has adopted the CCS standards in Europe like all other automakers, and its Supercharger stations are already equipped with CCS connectors.

Therefore, opening the Supercharger network there only requires opening up its software compatibility.

In North America, Tesla uses its own proprietary connector on both its vehicles and its Supercharger stations. This approach prevents non-Tesla EV owners from using the Supercharger network and limits Tesla owners to the Supercharger network for fast-charging unless they can get their hands on a CHAdeMO or CCS adapter.

It hasn't been clear how Tesla plans to implement its plan to open the Supercharger network in the United States, but CEO Elon Musk previously talked about having an adapter at the stations for non-Tesla EV owners to use.

Earlier this year, Musk hinted that Tesla will be adding the CCS connectors directly at the stations.

As for the timing of this happening in North America, everything points to something happening by the end of the year (2022). Even the White House recently announced it on its website.

Why would the White House get involved in that? The US federal government recently opened up billions in funding for EV charging infrastructure, but to get access to the funding, the charging stations need to be open to EVs from more than one manufacturer.

[14] Fred Lambert, Electrek, "Tesla starts applying for funds to expand Supercharger network to non-Tesla EV owners," https://electrek.co/2022/07/25/tesla-applying-funds-expand-supercharger-network-non-tesla-ev-owners/

Therefore, another good indicator of Tesla starting to open up the network is when they start to apply for those funds on new stations…

6.2. Giga-Texas Seriously Ramping

During the second quarter earnings call, Tesla CEO Elon Musk noted that Gigafactory Texas is poised to hit the 1,000-vehicle-per-week mark hopefully in the next few months. Recent observations from drone operators who are closely monitoring the Giga Texas complex suggest that Tesla is working hard to achieve this ambitious goal.[15]

Tesla is quite unique in the way that the company allows enthusiasts to monitor and observe the progress of its upcoming factories. Giga Texas is no different, so the facility's progress is constantly being chronicled by a number of drone operators. One of these is Jeff Roberts, who has been flying over the Giga Texas site since its earliest days.

As noted by Roberts in a recently uploaded video, Giga Texas appears to be shipping out larger numbers of Model Y. This bodes well for the facility and Tesla's Model Y deliveries this third quarter, as Giga Texas' vehicles could help add to the output of the Fremont Factory. The Fremont plant, after all, still produces the majority of the Model Ys being delivered by Tesla in the United States.

"Giga Texas is definitely ramping up production and shipping of Model Ys this quarter! Additionally, we've got concrete pouring in the (battery) Cathode building, more rooftop solar expansion, North end drainage system wrapped up, 20 new v3 SuperChargers in the South end, and the East entrance has glass will soon have doors! Wow, another banner day at Giga Texas!" Roberts wrote in his recent flyover's video description.

Gigafactory Texas is Tesla's latest and most advanced plant, but it is still in its early stages. As noted by the company in its Q2 2022 earnings call, there is still a lot of work and optimizations that will be done in Giga Texas. For example, Tesla is looking to start 4680 battery cell production at the site within the next couple of months, at the end of the third quarter.

More importantly, Elon Musk also noted that Tesla is confident that Gigafactory Texas could achieve a Model Y production rate of 5,000 units per week by the end of the year. By the end of 2023, Musk noted that Giga Texas and Berlin could hit 10,000 cars per week. "I'm confident we'll get to 5,000 cars a week at — in Austin and Berlin by the end of this year or early next year and probably but not certainly, 10,000 cars a week at both locations by the end of next year," Musk said.

7. New EVs

I will continue to focus the low to mid-range priced EVs. These are now starting to appear from manufacturers normally known for luxury vehicles. Of course that doesn't mean that you can buy a vehicle priced near the manufacturer's suggested retail price (MSRP) in a reasonable amount of time. The first subsection below is an example of this.

[15] Simon Alvarez, Teslarati, "Tesla Model Y shipments from Giga Texas are hitting their pace," July 29, 2022, https://www.teslarati.com/tesla-model-y-shipments-giga-texas-accelerating-video/

7.1. BMW i4 eDrive35

The BMW i4 is an excellent EV, blending the best of BMW's sedan lineup with a proper electric powertrain. We already have two variants in the US, and now we're about to get a third -- and to most people's delight, it's a less expensive version, not a costlier one…[16]

See the figure below.[17]

Range is down a bit, but not a ton, with BMW estimating an EPA range of 260 miles versus the eDrive40's 301 and the M50's 270.

Like the eDrive40, the i4 eDrive35 uses a single electric motor on the rear axle. Output is estimated at 281 horsepower and 295 lb-ft of torque, deficits of 54 and 22, respectively, compared to the eDrive40. However, that lack of power only adds 0.3 seconds to the car's 0-to-60 time, going from 5.5 seconds to 5.8…

The 2023 BMW i4 eDrive35 also represents a new, lower price point for the i4 family. This new model will cost buyers $52,395, including $995 in destination charges. That's a little less than the $56,895 that a 2023 i4 eDrive40 will set you back, but if range and power aren't your reasons for considering the i4, saving a few bucks doesn't hurt. Production kicks off at the end of 2022, deliveries beginning in the first quarter of 2023.

7.2. VW

Volkswagen only offers a single EV in the U.S., the ID.4 SUV. *Starting MSRP of $37,495 for a 2023 Volkswagen ID.4 Standard with single-speed automatic transmission. Prices exclude transportation, taxes, title, other options and dealer charges. Dealer sets actual price. See image below.* [18]

[16] Andrew Krok, CNET, "2023 BMW i4 eDrive35 Introduces a Smaller Battery, Lower Price," Aug 1, 2022, https://www.cnet.com/roadshow/news/2023-bmw-i4-edrive35-debut/
[17] https://www.press.bmwgroup.com/usa/article/detail/T0402661EN_US/the-2023-bmw-i4-edrive35
[18] https://www.vw.com/en/models/id-4.html

2022 ID.4 Pro (base model) EPA estimated total range is 275 miles.

Volkswagen began production of its first electric vehicle assembled in the United States at a Tennessee plant Tuesday (July 26).[19]

In a news release, the German automaker said it plans to ramp up production in Chattanooga of the ID.4 electric compact SUV to 7,000 cars per month in the fourth quarter of this year, with a goal of increasing that rate next year.

The kickoff comes after Volkswagen announced an $800 million investment in the company's manufacturing of electric vehicles in North America at the Chattanooga plant in 2019, including facilities for vehicle and battery pack assembly. The company says it is hiring more than 1,000 production team workers there through the end of the year. Volkswagen Chattanooga currently employs more than 4,000 people…

7.3. Honda & Chevy

There is a minor trend of manufacturers partnering to design and produce electric vehicles. In the recent post linked below we described the Toyota bZ4X and Subaru Solterra, which were jointly designed by those two manufacturers.

https://energycentral.com/c/ec/evs-early-summer-2022

Now Honda and Chevrolet are partnered to develop the 2024 Honda Prologue and Chevy Blazer EV. Images of these are seen below.

[19] The Associated Press via the Federal News Network, "Volkswagen starts US electric vehicle assembly in Tennessee," July 26, 2022, https://federalnewsnetwork.com/business-news/2022/07/volkswagen-starts-us-electric-vehicle-assembly-in-tennessee/

The 2024 Prologue SUV appears to be on track and thoroughly competitive thanks to a joint development agreement with GM. Details are hazy but we can see from a design sketch and spy photos of a prototype that the Prologue is a mid-size SUV. It promises to be handsome and it will likely sport large wheels, short front and rear overhangs, and simple lighting elements. We expect the Prologue to be similar in size to the gasoline-powered Passport but with a slightly lower roofline. The Prologue will ride on a platform developed jointly with General Motors; it will use versions of the same Ultium battery packs as future GM EVs, including the Blazer EV with which the Prologue appears to share components. If the Blazer's specifications are any indication, expect a driving range of around 250–320 miles per charge depending on configuration…[20]

Go to the sites below for more information.

https://www.chevrolet.com/electric/blazer-ev

https://automobiles.honda.com/future-cars/prologue

[20] Drew Dorian, Car and Driver, https://www.caranddriver.com/honda/prologue

7.4. Dodge Hemi-less Muscle

Dodge has been holding out on electric technology for quite some time, and as of this moment, they still are yet to put out an EV or even a hybrid model with their double-strip badge. However, the muscle-oriented American car manufacturer is going to have to mix things up eventually, and by the looks of it, it seems like change is going to come sooner rather than later.[21]

The company has recently revealed plans to release a fully-electric car for the 2025 production year, and to the pleasure of many fans, it seems like it's going to be a high-performance muscle machine that might just be called the Dodge eMuscle. Let's get into what we know so far about the future Dodge EV muscle car.

Change doesn't always mean revolution, and several brands that have already taken the leap into the EV world have shown that it's possible to maintain their unique essence despite changing the power sources of their vehicles. Dodge plans to do just that, and it's already announced that its first EV for 2025 will be a purebred muscle car, similar to the likes of the Challengers and Hellcats before it.

Being so far away, Dodge hasn't yet revealed any specifics regarding the EV muscle car's power, but we can expect it to be more than enough, and probably the fastest Dodge ever. Several teasers already confirm that the Electric Muscle car will have all-wheel-drive and multiple electric motors. In fact, depending on the power of each propulsor, it might even make over 900 horsepower with the capability to burst from 0-60 mph in just 2.0 seconds. Dodge also says that the car will make artificial sounds to replicate the amount of power and boost in real-time, which may sound gimmicky to some and gratifying to others.

Dodge plans to price their future EV Muscle car similarly to its petrol-powered variants that are currently on sale. That means that its starting sticker price will most likely fall between $40,000 and $50,000, though the range-topping ultra-powerful 900 hp variant will surely cost far more. However, even if that ends up being the case, the entry-level and mid-range versions of Dodge's muscle EV will still have plenty of performance, proving to be more than worth their relatively accessible price tag…

7.5. Motor Trends

Anyone that reads my mobility posts will occasionally see a reference to Motortrend. I have subscribed to this periodical for many years, and lately they have had excellent EV coverage. As I was completing the initial composition of this, the September issue of this magazine came in the mail, and it had a special section of future cars, which was mainly on EVs (with a few hybrids sprinkled in). There were many cars in this issue that I have not covered. There was also some early tests of the Vinfast that I covered in the mid-summer edition linked in the Introduction, and the Hyundai Ioniq 5 vs. the Toyota bZ4X that I covered in earlier "EV" issues.

So if you want to the see the above information, look for this magazine on newsstands, or, to order it as a back issue, email them at backissues@motortrend.com, and specify the quantity of Motortrend issues and the issue(s) from September 2022.

[21] Santiago Reibakas, MSN Hot Cars, "Here's What We Know About Dodge's Plans For An Electric Muscle Car," July 30, 2022, https://www.msn.com/en-us/autos/news/heres-what-we-know-about-dodges-plans-for-an-electric-muscle-car/ar-AA108H7a

7.6. The Biggest EV

Many of the people that consider themselves “truckers” will not consider buying an EV truck, and if asked why, they might say: “real trucks don’t run on batteries.” I would reply: no matter how big you think your truck is (not to mention other assets), it’s tiny, or perhaps even microscopic. Do you want proof – look at the image and text below.

The above is an Anglo American 510 tonne[22] truck. It’s powered by electricity, generated by eight 100 kW fuel cells, fueled by hydrogen, plus a 1.2 MW battery to store energy for peak demand.[23]

[22] Tonne = a metric ton = (roughly) 2,200 lb. or 1.1 tons, thus the above 510 tonne truck can carry 561 tons.
[23] Anglo American plc, “Anglo American Unveils a Prototype of the World’s Largest Hydrogen-Powered Mine Haul Truck - a Vital Step Towards Reducing Carbon Emissions over Time,” May 6, 2022 https://www.angloamerican.com/media/press-releases/2022/06-05-2022