Evolving Synergy Between EVs and BESS

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1. Introduction

Most readers know that that “EVs” is probably an acronym for Electric Vehicles. Ditto BESS and Battery Energy Storage Systems. However, both of these markets need the same things: really big rechargeable batteries. A typical EV needs them so it can go long distances (preferably multiple hundreds of miles) without charging. A BESS needs them so it can help power a major load (ranging from a residence to a grid-segment) through multi-hour peak demand periods. The synergy comes from using the same or similar batteries for each application.

As I recall, Tesla introduced their residential BESS (Powerwall) and commercial, industrial and utility-scale BESS (Megapack) at about the same time. I queried Bing about this (Do Tesla's Power Wall and Megapack use the same battery-technology as their electric vehicles?) in the present case (thus the response was for the current products), and it responded with a good answer (below in italics). By the way Tesla’s first EV Factory is in Fremont, CA just over the hill from Livermore (your author’s hometown, in the SF Bay Area). Their first HQ was on the SF Peninsula.

Note that Tesla’s Powerwall and Megapack both use lithium-ion battery technology, but they differ in the specific chemistry and design choices. Also, Tesla’s Powerwall and Megapack do use lithium-ion batteries, but they are not the same cells as those in Tesla’s electric vehicles (EVs).

After researching this a bit further, I found that their EVs may be evolving to newer chemistries.

1.1. Powerwall

The Powerwall is Tesla’s residential energy storage system, designed for home use.

It uses lithium ferro phosphate (LFP, a.k.a. lithium iron phosphate) cells, which Tesla has adopted for both stationary storage and certain vehicle models like the Model 3.

LFP chemistry offers lower cost, better safety, and longer cycle life, though it has lower energy density than nickel-based chemistries.

The Powerwall is built for durability and safety in home environments, with a focus on long-term reliability.

1.2. Megapack

The Megapack is a large-scale, utility-grade energy storage system for grid applications.

Tesla has shifted to prismatic LFP cells for Megapack units, especially in newer deployments...

This change was driven by cost reductions in LFP production, the absence of cobalt, and lower fire risk compared to nickel-manganese-cobalt (NMC) chemistries…

While LFP has lower energy density than NMC, the Megapack prioritizes cost efficiency, safety, and longevity for large-scale deployments.

1.3. Key differences

Chemistry: Both use LFP, but the Powerwall and Megapack may be built with slightly different cell formats and configurations to suit their respective applications.

Scale & design: The Megapack is engineered for industrial-scale deployment, with integrated safety systems, high uptime, and compatibility with utility grid management software Tesla+1.

Vehicle link: Tesla's LFP choice for stationary storage aligns with its use in some EVs (e.g., Model 3), but EVs that use NMC (like Model S/X) have different battery packs.

2. A Past Inventor

The other "past inventor" mentioned in the above title was Nikola Tesla.

Nikola Tesla (10 July 1856 – 7 January 1943) was a Serbian-American engineer, futurist, and inventor. He is known for his contributions to the design of the modern alternating current (AC) electricity supply system.

Born and raised in the Austro-Hungarian Empire, Tesla first studied engineering and physics in the 1870s without receiving a degree…

In 1884, he migrated to the United States, where he became a naturalized citizen. He worked for a short time at the Edison Machine Works in New York City before he struck out on his own. With the help of partners to finance and market his ideas, Tesla set up laboratories and companies in New York to develop a range of electrical and mechanical devices. His AC induction motor and related polyphase AC patents, licensed by Westinghouse Electric in 1888, earned him a considerable amount of money and became the cornerstone of the polyphase system, which Westinghouse marketed.

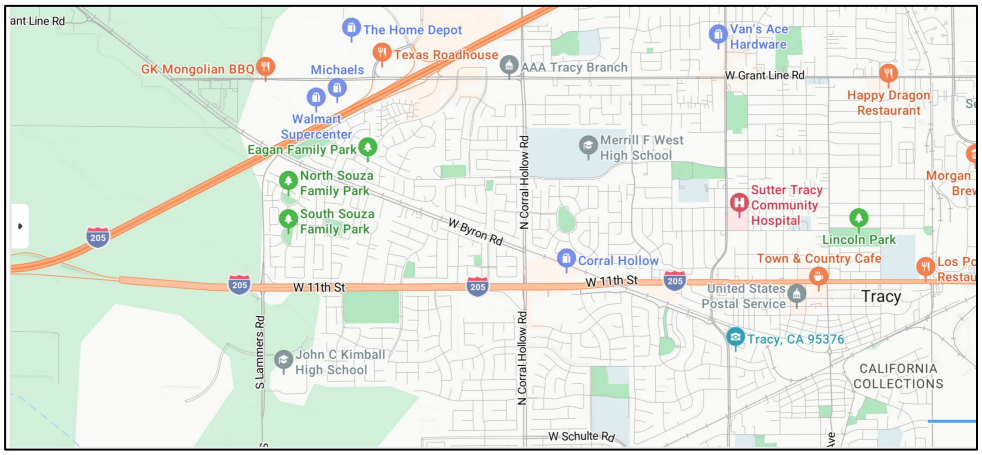
2.1. The Town of Tesla

Back to California. the town of "Tesla, California" also has an interesting story." "*In 1846, Captain Charles Imus and his party of emigrants, who parted from the Donner party at Fort Bridger, made a winter camp in the mouth of Corral Hollow.* [1]

Corral Hollow would later be the site of the village of "Tesla, California." It is just east of my home-town (Livermore).

Author's comment & map: See the map below. Note that Corral Hollow is now a road in western Tracy, California, in San Joaquin County. The circular icon named "Corral Hollow" is a shopping center in Tracy. If you continue west on I-205 (off the map), you will cross the Altamont Pass and then into Livermore, Alameda County. The first major facility encountered in Livermore is Lawrence Livermore National Labs (LLNL), a couple of miles south on the first Livermore exit (Greenville Road). A couple of more miles past LLNL and you will encounter Tesla Road, coming in from the east.

[1] Dan L. Mosier, Brief History of the Tesla Area, https://www.acgov.org/board/bos_calendar/documents/CDAMeetings_04_04_24/Item%20H3b_TeslaHistory.pdf



The discovery of coal in 1855 at Tesla changed the face of the canyon from a ranch setting to an industrial complex. The first commercial coal mine in California started here by selling 60 tons of the lignite in Stockton in 1856. This culminated in a coal rush to Corral Hollow in the 1860s.

At the Ladd mine (near Tesla)*, Aurelius Ladd mined manganese in 1863. This mine was operated on and off up through World War II.*

In 1889, John Treadwell arrived and opened the Tesla coal mines. He formed the San Francisco and San Joaquin Coal Company and built a modern company-town with blocks of family homes, five boardinghouses, a hotel, store, school, hall, and many shops. The Tesla coal mines, ***named for Nikola Tesla****, became the largest coal producer in California from 1896 to 1906. Tesla briquettes was a nationally known product, when Tesla was the first to produce it in the U.S.*

Treadwell built a railroad to Stockton (in San Joaquin County) and then extended it to Oakland, which became part of the transcontinental Western Pacific Railway Company of 1902. Tesla grew to a population of over 1200 during the late 1890s. Rich clay seams were discovered in the coal mine, and in 1902 was born the Carnegie Brick and Pottery Company, built four miles east of Tesla, to make brick and terra cotta. Two years later, the Pottery sewer-pipe plant was built between Carnegie and Tesla. Carnegie itself became a town of its own with a population of about 300 of mostly Italian artisans.

3. Energy Storage Products

Tesla introduced the Powerwall in April of 2015 and introduced the Megapack in 2016, so the latter has been on the market for 10 years. Ford Energy just introduced their Ford Energy DC block and there are two variants, described below.

The Ford Energy DC block – is a standardized 20-foot containerized battery energy storage system designed around 512 Ah LFP prismatic cells. We offer two configurations: the FE-250 (two-hour system) and the FE-450 (a four-hour system). Both

integrate advanced LFP prismatic battery technology, liquid-cooled thermal management and battery management system.[2]

However, Ford does not duplicate the battery technology used in their EVs in the new BESS. In order to fully clarify this, I queried Microsoft Bing twice, the first query resulted in the first sentence in this paragraph, further: *Ford's new Ford Energy DC Block does not use the same lithium-ion battery technology as its current EVs — it uses lithium iron phosphate (LFP) prismatic cells, while Ford's EVs are moving toward lithium manganese rich (LMR) chemistry.*

The second query of Bing: "Does Ford use the same lithium-ion battery technology in its new Ford Energy DC block, as they do in their EVs?" The answer returned was: "*The DC Block is a grid-scale battery energy storage system built around 512 Ah LFP prismatic cells produced in the U.S. at Ford's Kentucky and Michigan facilities.*

In contrast, Ford's current EV lineup (including the F-150 Lightning and other models) uses both LFP and nickel-cobalt-manganese (NCM) chemistries, and the company is developing a new Lithium Manganese Rich (LMR) battery chemistry for future EVs. LMR offers higher energy density than high-nickel NCM batteries, better safety than NCM, and lower cost than mid-nickel chemistries, to improve range and reduce EV costs."

4. Henries' Company

It's time for your daily spelling lesson. Note that the first word in the above title is both plural and possessive. Thus, there are multiple Henries and they own (or owned) the (singular) company. Your final clue is that said company is one of the largest automobile manufacturers in the world. If you don't know what this company is, are you from this planet? Yes, it's Ford. Furthermore, Ford has decided to emulate another auto manufacturer named for another famous past inventor that is mentioned above, by taking advantage of the paper's-title synergy.

4.1. Ford Energy

Since my readers know nothing about Ford Energy, I will let this company tell their story.

For the better part of a year, we have operated quietly to build a foundation for this business. We haven't just been planning; we have been executing — securing supply chains, readying our manufacturing sites and aligning our technology with the massive demand for domestic energy storage.

Ford Energy is a wholly owned subsidiary of Ford Motor Company. We will provide United States-assembled battery energy storage systems (BESS) for utilities, data centers and large industrial and commercial customers in the United States.

By leveraging more than a century of manufacturing expertise, Ford Energy plans to deploy at least 20 GWh annually, with first customer deliveries planned for late 2027.

[2] Ford From the Road Website, May 11, 2026, https://www.fromtheroad.ford.com/us/en/articles/2026/introducing-ford-energy

4.1.1. What We Deliver:

Ford Energy's operations span full battery cell manufacturing – including production of electrode coils – and assembly of modules and containers, plus sales/service support.

We designed the DC block for the metrics that matter most to customers: predictable lifetime performance, ease of service and thermal stability — designed for 20-year performance, from a 122-year-old company.

4.1.2. Where we assemble it

Speed and scale require infrastructure. We are repurposing existing U.S. battery manufacturing capacity in Glendale, Kentucky, to serve the rapidly growing BESS market.

Our manufacturing and supply chain strategy is designed to support a changing regulatory environment for battery energy storage. It aligns with Investment Tax Credit requirements. It also meets material assistance and domestic content standards relevant to grid-scale storage.

4.1.3. Why now

U.S. demand for dispatchable, bankable energy storage is accelerating. The convergence of data center growth, renewable energy integration, and grid resilience requirements has created a gap in the market.

Utilities and developers need storage systems they can finance, insure and depend on for decades. They need suppliers who will be there in year 10 to honor a warranty claim.

That is the gap Ford Energy is built to fill. Ford Motor Company has manufactured at industrial scale for more than a century, and we're excited to bring this immense capability to energy storage.

4.1.4. What comes next

Ford previously announced plans to invest roughly $2 billion to stand up this business. Now we are in full execution mode, providing solutions for our customers and readying our manufacturing capacity to start deliveries in late 2027.

4.2. The Ford Energy DC block

This subsection title is the name of the new Ford Energy BESS, which is pictured below.

4.2.1. Key Specifications

Designed for demanding environments and flexible deployment, the Ford Energy DC block is engineered around a high-capacity LFP prismatic platform. The system will be housed in an industry-standard container format.

Specification	Value
Rated Energy	5.45 MWh
Cell Capacity	512 Ah
Configurations	2-hour and 4-hour DC Systems
Container Format	20 ft Standard
Voltage Range	1040-1500 VDC
Temperature Control	Liquid Cooling
Noise Generated	<75 dBA
Ingress Protection (IP) Rating	IP55
Corrosion Protection Level	C5
Operating Temperature	-35°C to +55°C
Operating Altitude	≤ 4000m, No Derating
Product Weight	~43.5 t
Unit Dimensions	2438 × 6058 × 2896 mm

4.2.2. Why Ford Energy?

As a wholly owned subsidiary of Ford, we bring proven LFP prismatic technology with Ford manufacturing capabilities. This includes U.S. assembly, quality control, and customer support. The result is a clearer path to dependable product supply, controlled manufacturing scope, and long-term operational confidence.

4.2.2.1. U.S. Assembly

We are developing a gigafactory for energy storage production in Kentucky, supported by Ford's broader U.S. operational footprint.

4.2.2.2. Cell-to-Container Scope

Our planned manufacturing breadth covers full battery cells – including production of electrode coils – assembled into modules and containers, all under one roof. This will deliver stronger quality control and traceability.

4.2.2.3. Proven Technology Base

The underlying LFP prismatic technology we use has already been deployed globally, at scale.

4.2.2.4. Cell-to-Container Scope

Our planned manufacturing breadth covers full battery cells – including production of electrode coils – assembled into modules and containers, all under one roof. This will deliver stronger quality control and traceability.

4.2.2.5. Built for Buyer Risk Reduction

Domestic assembly. Service support. Regulatory alignment. It's all designed to help reduce supply-chain, compliance, and lifecycle uncertainty.

4.2.2.6. Built With Regulatory and Incentive Readiness in Mind

The Ford Energy manufacturing and supply-chain strategy is designed to support a changing regulatory environment for battery energy storage. It aligns with Investment Tax Credit requirements. It also meets material assistance and domestic content standards relevant to grid-scale storage.

5. Late News: Trump (Inadvertently) Boosts EVs

As I'm one-day away from posting this, some late-breaking news came across my desk that is just too important (and amusing) to ignore.

Our current chief-executive really hates Electric Vehicles. So how (and why) did he boost EV Sales. Read on.

Eric Perkins is towing his shiny silver Airstream camper on what will ultimately be a nearly 6,000-mile road trip around the United States without ever burning a drop of gas or diesel.[3]

His secret: A battery-powered Rivian R1 pickup, which allows him to haul his 23-foot camper without worrying about the price of fuel. He's gone from San Diego across to Branson, Missouri, and is now headed home to California from Moab, Utah.

With the national average price of regular gas sitting at around $4.16 a gallon and diesel around $5.31, Perkins, 49, is more than a little pleased about his EV – even if many of his fellow campers consider driving a battery-powered pickup a political choice. Perkins' recharging tab so far is less than $750 for the journey, dramatically cheaper than if he'd been driving a traditional pickup.

President Donald Trump has moved to eliminate incentives for buying EVs, while encouraging manufacturers to keep building gas and diesel vehicles. But Trump, according to industry experts, might inadvertently push more Americans into EVs because of the war he started with Iran and the resulting spike in gas prices.

"I just get so much negativity from people who think that somehow burning diesel is more American," said Perkins, a legal consultant and self-described libertarian. "And I think that Trump is going to become the most pro-EV president in history."

[3] Trevor Hughes, USA TODAY, "Trump pushed Americans away from EVs. Then came the Iran war," https://www.usatoday.com/story/cars/technology/electric-vehicles/2026/06/09/electric-vehicles-and-trump/90406409007/