CNET Your guide to a better future

Cars

Why the Tesla Semi Makes So Much Sense

The biggest name in electric cars tackles the biggest thing on the road.

Brian Cooley
Dec. 3, 2022 5:00 a.m. PT

4 min read

Play Sound

06:08 / 06:09

This story is part of **Plugged In**, CNET's hub for all things EV and the future of electrified mobility. From vehicle reviews to helpful hints and the latest industry news, we've got you covered.

Forget the Cybertruck -- Tesla's most important truck is *much* bigger: the Tesla Semi. Here's what it's all about and why it matters so much as it hits the road in real use for the first time.

Tesla

Like a bullet

The Tesla Semi looks "more like a bullet than a barn wall" as the company says. Aero styling is nothing new in the big rig business, but the Semi looks more like the futuristic Shell Starship than like anything on the road today.

The Shell Starship 2.0 shares a lot of cues with the Tesla, but also imagines a radically different trailer where the Tesla Semi is optimized for existing trailers as it hits the market.

Shell

The wheels, though, are remarkably ordinary. I suspect there's a regulation at play there.

More a pilot than a driver

The driver's seat is centered, not offset as in conventional cars and trucks, giving the driver evenly good vision on both sides and a view ahead that seems almost as if one is atop the sloped hood of the truck, not behind it. Dual 15-inch screens on either side of the wheel replace the usual forest of gauges and controls, save for a couple of federally mandated safety buttons. The cab is tall enough to stand up in. No mention of a software-defined CB radio.

The centered driver seat is reminiscent of the McLaren F1; Tesla says the truck has sufficiently improved driving dynamics to warrant such a parallel.

Tesla

500 miles on a charge

Tesla has made a 500-mile run in the Semi on a single charge of its 900 kWh battery, which would represent the top version of the truck expected to sell at between $180,000 and $200,000. A key unknown is how much the Tesla Semi itself weighs, which must be subtracted from the maximum 82,000 pound gross weight of truck and trailer to get the total payload the Semi can pull. Every pound the Semi weighs more than a typical diesel rig is one less pound an operator can transport fully loaded. A presumed $150,000 model with a lighter battery might deliver only 300 miles but carry more payload; maxiumum range is viewed differently by the trucking industry than by the average EV driver. For comparison Volvo's electric VNR delivers 275 miles, Freightliner's eCascadia offers 230 miles, and the Nikola TRE boasts 330 miles of range.

Five hundred miles dovetails pretty nicely with the time at which drivers are mandated to take a 30-minute break after 8 hours of driving, creating a natural time to charge. A 70% charge is said to take 30 minutes, not far behind today's best cars, but it won't happen at your local Supercharger.

Megachargers will be laid out for trucks and deliver far more power to their huge batteries. They will also typically encompass large battery arrays to store renewable power for later use, further bringing down the operational cost of the Semi.

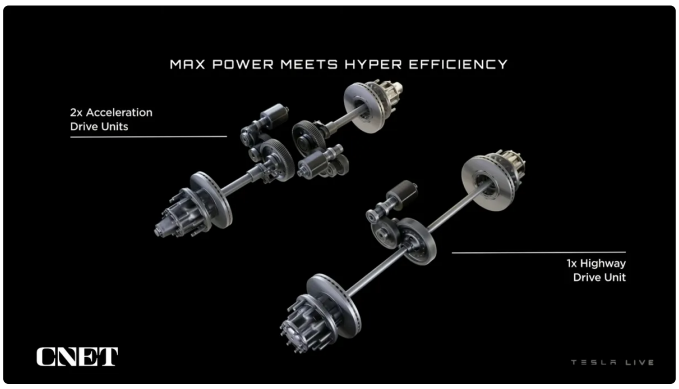
Tesla

Meet the Megacharger

Tesla Megachargers are a new kind of charging depot with more space, more voltage, and more battery storage to charge big truck batteries renewably while cushioning the load on the local power grid. Prototype Semis have been seen charging at Superchargers by connecting several charge cables to the truck at once, but that seems like a development workaround rather than a go-to market suggestion. I thought I heard wrong when Elon Musk said Megachargers would be able to deliver a *megawatt* of power, four times the power delivery of the most potent Superchargers installed today, but it makes sense given the truck's presumed battery capacity.

3 motors, but only sometimes

That juice feeds three motors, only *one* of which is used when cruising, while the other two, ganged on one of the axles, kick in only when acceleration is needed. Each motor is the same patented type as those in the Tesla Plaid models. You may laugh at 0-to-60 time of 20 seconds but that's impressive from a truck that weighs 17 times a Model S Plaid and is aimed at efficiency, not performance.



The Semi has three motors borrowed from the Model S Plaid, but needs just one of them to cruise at a steady pace.

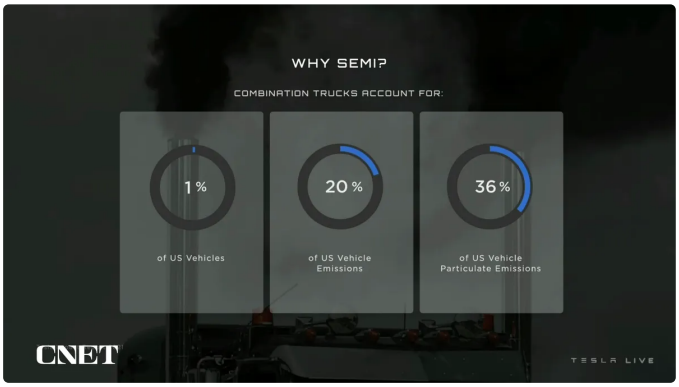
Tesla

A Tesla clip of its truck blowing by a traditional rig on an uphill grade like it's tied to a post is a far cry from the usual truck crawling up a grade in the slow lane. And Tesla says the Semi's motors develop such stout regen that the truck can get to the bottom of a long grade and still have cool brakes.

A safer rig

Tesla is known for its ambitious, if overhyped, Autopilot and Full Self Driving, but each of those overlapping driver assistance technologies will find a better home in the Semi than in personal cars because professional drivers simply pay more attention to driving and the ability of their vehicle. Commercial drivers are also subject to vastly deeper training than the rest of us who have a basic driver's license, suggesting they would learn to really exploit Tesla's driver assistance while not overtrusting it. Tesla has yet to detail the driver assistance technologies that will be available on the Semi and how they'll differ from that on their cars.

As Pepsi and FritoLay break in the first few examples of the Semi, the wins they're looking for are several:



According to Tesla, conventional big rigs are few but vastly over-index on pollution.

Tesla

- Big rigs are just 1% of the vehicles on US roads but account for 20% of vehicle **emissions** and 36% of all particulate emission, according to Tesla.
- **Range anxiety** should not be an issue since these trucks will be used on preplanned routes.
- Nearly constant vehicle **utilization** radically accelerates the fuel and maintenance savings delivered by an electric rig, but real-world experience with that is going to be closely watched.
- A less-known $40,000 federal **tax credit** is newly available for large electric trucks, with fewer strings attached than with the $7,500 light vehicle credit.

Tesla has a form of pixie dust similar to Apple's: It validates sectors by entering them, making the Semi more than just a product launch and something of a category legitimization. That won't happen immediately, however, as Tesla probably won't achieve volume manufacturing of the Semi until a new assembly line in Texas is completed and starts working at full tilt in a year or so. In the process, more technical specs, confirmed pricing and maybe even a few unpleasant surprises will become known.

Cars

Elon Musk Says Tesla Semi Finished First 500-mile Trip With Full Load

Tesla is expecting to deliver Semis next week.

Imad Khan
Nov. 27, 2022 11:59 a.m. PT

Tesla Semi completes its first 500-mile trip with a weigh-in of 81,000 lbs.
Tesla

The Tesla Semi, the company's Class 8 semi-truck, has completed a 500-mile trip with a total weigh-in of 81,000 pounds, Tesla and Twitter owner Elon Musk said in a tweet Saturday.

It marks an important milestone in electric semi-trucks as competitors from Nikola, Mercedes, Volvo and Daimler have yet to achieve similar long-range targets. The 500-mile range Tesla Semi is for the more expensive $180,000 model. The standard Tesla Semi, which sells for $150,000, has a range of 300 miles. Tesla will begin shipping the Semi in early December.

Tesla couldn't be reached for comment as Musk disbanded the company's media relations department in 2020.

The Tesla Semi was announced in 2017 with an initial 2019 release target. As is often the case with Tesla, the Semi was delayed until late 2022.

Companies such as PepsiCo and UPS have ordered a hundred or more Semis from Tesla. For companies, the lower complexity of electric vehicles and Tesla's autonomous driving features should make hauling goods across the country more efficient and safe.

Going electric also helps brands achieve emission targets. The trucking industry generated $726 billion in revenue in 2015, according to the American Trucking Association. Musk told investors that he wants to produce 100,000 trucks a year at some point, which, if achieved, would upend the trucking industry similarly to how EVs have transformed the consumer automotive industry.