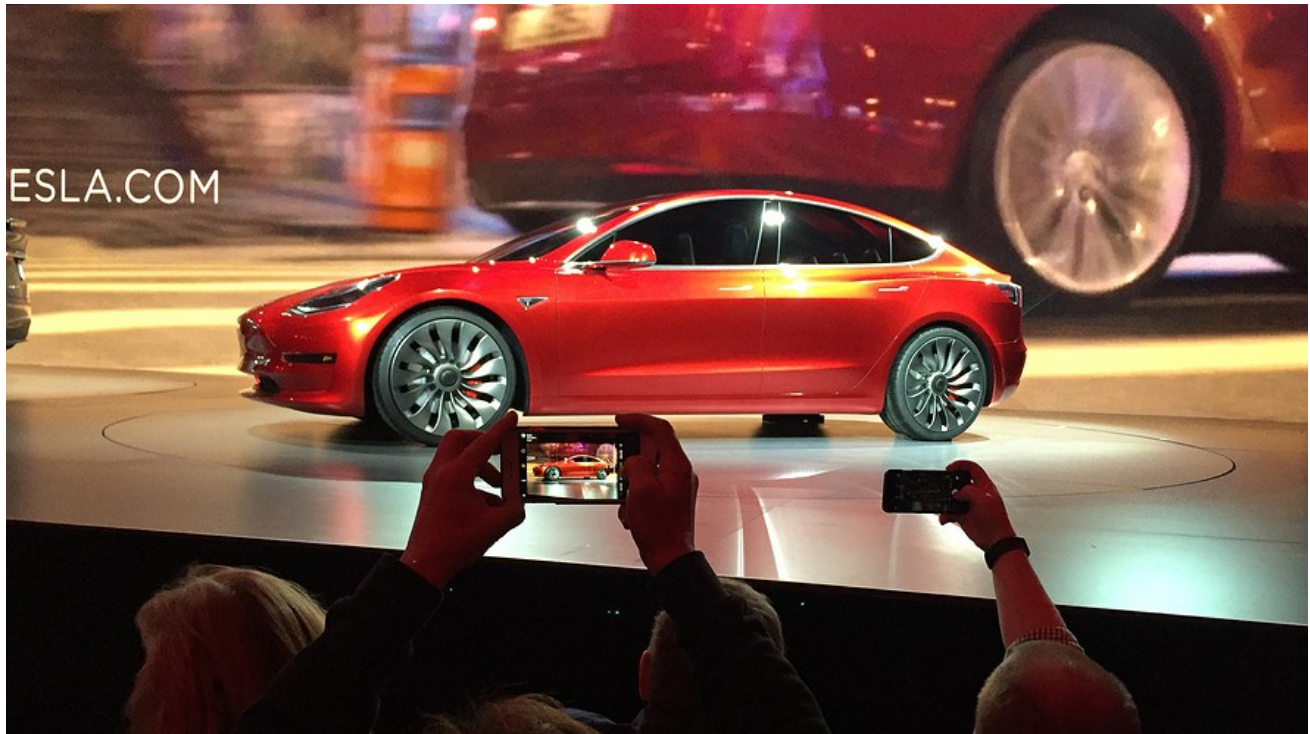


Tesla's orders are through the roof. Here's what that means for the planet.

By Chris Mooney, Washington Post on 04.12.16

Word Count **1,214**



Tesla Motors unveiled the new lower-priced Model 3 sedan at its design studio in Hawthorne, California, recently. Orders for the car hit 276,000 in just two days. AP/Justin Pritchard

It's being hailed as simply extraordinary. Since introducing the Model 3 sedan -- a far cheaper electric vehicle, aimed for broader consumption, than the Model S -- Tesla saw a stunning 276,000 orders in just two days.

Tesla aims to sell 500,000 electric vehicles per year by 2020 -- an ambitious goal but one that, based on these numbers, doesn't sound so unachievable. (That number presumably includes sales of all Tesla models, not just the new Model 3. Deliveries in 2015 were around 50,000 of all Tesla vehicles, according to Bloomberg New Energy Finance.)

Clearly, part of the appeal of the new vehicle is not just its sleekness or new range, but rather, its environmental promise and symbolism. One key question, though, is what this surge in Tesla sales means for a critical parameter that will determine the planet's future: By electrifying transportation (and thus, powering cars not with gasoline derived from oil, but rather, with an electricity supply that itself is getting greener), how fast can we start to bring down the United States', and the planet's, emissions?

Current transportation emissions, on a global scale, were 6.7 billion tons of carbon dioxide equivalents in 2010, or about 23 percent of all global greenhouse gas emissions related to the use of energy, according to the U.N.'s Intergovernmental Panel on Climate Change. The number rises to 7 billion tons of carbon dioxide equivalents when other greenhouse gases are included. The majority of that was for road-based transportation, though the figure also includes shipping, aircraft, rail and other sources. (In the United States, transportation makes up about 25 percent of emissions.)

Decarbonizing the transportation sector has long been regarded as a fairly difficult endeavor, since these are mobile rather than stationary sources of emissions and since emissions from cars and other transportation sources are expected to grow so much in the future. Thus, the 7 billion tons in 2010 are projected to be 12 billion per year in 2050, barring major policy shifts.

Several experts this week said that booming Tesla sales don't make enough of a dent in transportation -- at least not immediately -- to shift this in a substantial way. The problem is that the global auto industry is massive, and even a half-million Tesla sales per year isn't all that much in that context.

"Even if Tesla manages to scale up and hit its very aggressive target of 500,000 vehicles a year by 2020, that would still represent only about 0.5 percent of global light-duty vehicle sales," said Colin McKerracher, head of advanced transport at Bloomberg New Energy Finance. "So it's hard to have an overall impact from them alone."

However, if what we're seeing marks a broader shift, in which Tesla ends up driving the rest of the auto industry to change and make more electric cars, that's another matter. "It's obviously important for Tesla, but I think it's going to push other automakers to match what Tesla's doing, and also get other people to think about switching to electric," said David Reichmuth, a senior engineer in the clean vehicles program at the Union of Concerned Scientists.

Margo Oge, former director of the EPA's Office of Transportation and Air Quality and author of the book "Driving the Future: Combating Climate Change with Cleaner, Smarter Cars," concurred. "What it's doing is bringing the cost down on the battery, making it affordable, putting pressure on other companies," said Oge of Tesla's success. These are important impacts, even if there still may not be enough electric vehicles on the road to cut down emissions a lot -- at least not immediately.

To see why it's so hard to quickly move the needle in this arena, just consider some numbers. Currently, light-duty vehicles sold around the world annually number (get ready to gasp) 88.5 million in 2015, according to Navigant Research. And they're expected to grow, and grow, and grow.

Out of that annual total, according to the U.S. Department of Energy, there were some 565,000 sales of plug-in light electric vehicles in 2015. So you see the small percentages that we're dealing with (even though sales are also rising quite rapidly).

Current forecasts expect electric vehicles to become more prominent in the mix, but few expect any sort of really rapid transition. Bloomberg New Energy Finance, for instance, thinks electric vehicle sales will be less than 5 percent of total vehicle sales globally until about 2022, when battery technology becomes cheap enough to really, really compete. This means that it's around 2040 that the numbers really get impressive -- in that year, 35 percent of new cars sold could be EVs, the group thinks, and they could comprise about 25 percent of the global auto fleet.

"Battery cost has come down 70 percent the last four to five years," said Oge. "Now it's \$145 per kilowatt hour, it's been reduced 70 percent, and by 2022, we're talking about \$100 or \$120 per kilowatt hour. And all the experts are telling us that at that level of battery cost, electric cars are going to be at cost parity with the combustion engine."

When it comes to how fast electric cars can drive down emissions, a key issue is exactly what kind of electricity they're getting -- which fossil fuels are being burned to power them, or, whether they'll be charged using a mix of electricity that is heavily sourced from renewables. "By and large, EVs still compare favorably in all but the most dirty grids. But the grid gets cleaner over time," said McKerracher.

Thus, the growth of clean electricity and the reduction of vehicle emissions turn out to be closely linked. EVs are also, according to the Department of Energy, already a lot cheaper to operate in most places, even with the very low gas prices out there now. As of April 2, the average price of gas in the United States was \$2.07, but an "electric eGallon" was \$1.09, the agency said.

The prices are also potentially more stable. "I would much rather make you a bet on what the electricity price will be five years from now, than what the gasoline price will be five years from now," said the Union of Concerned Scientists' Reichmuth. "And when you buy a car, that's what you're doing."

Other factors that could reduce vehicle emissions in the future include the automation of cars and more ride sharing and also global city planning -- design decisions can have a big impact on how many people opt for cars in the first place and how much they think they need to drive them.

The upshot therefore remains that given the massive scale of the emissions problem in the transportation sector alone, Tesla can't change the world fast or on its own. But then, it probably won't be alone. "Tesla also puts pressure on traditional car manufacturers to invest" in electric vehicles, said Oge, "something [it was] not doing seriously few years ago."

Thus, much like what's already happened with wind and solar, it looks like we're at the beginning of a major boom in electric vehicles. But just like with wind and solar, these vehicles are starting out as a very small percentage of the total global fleet. They can therefore enjoy very rapid growth, but that's not the same as rapidly fixing our carbon problem.

Quiz

- 1 Which answer choice provides an accurate and objective summary of the article?
 - (A) Over 6.7 billion tons of carbon dioxide are emitted into the atmosphere annually from transportation alone. By itself, Tesla stands little chance of significantly impacting the market for electric vehicle use.
 - (B) Tesla's sales of electric vehicles are growing rapidly. While sales alone are not projected to significantly have an impact on world transportation and emissions, there is hope that the company could drive the rest of the industry to also produce more electric vehicles.
 - (C) Because there are so many cars and automakers in the world, Tesla alone cannot make a significant impact on global warming. It's vital for the planet that Tesla increase its sales.
 - (D) Tesla aims to sell 500,000 electric vehicles by the year 2020. Because of Tesla's increased production of electric vehicles, battery costs have decreased 70 percent in the last four to five years, and they are expected to continue decreasing.

- 2 Which of the following selections from the article BEST develops a central idea?
 - (A) Since introducing the Model 3 sedan -- a far cheaper electric vehicle, aimed for broader consumption, than the Model S -- Tesla saw a stunning 276,000 orders in just two days.
 - (B) Clearly, part of the appeal of the new vehicle is not just its sleekness or new range, but rather, its environmental promise and symbolism.
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- 3 Read the following paragraph from the article.

"Battery cost has come down 70 percent the last four to five years," said Oge. "Now it's \$145 per kilowatt hour, it's been reduced 70 percent, and by 2022, we're talking about \$100 or \$120 per kilowatt hour. And all the experts are telling us that at that level of battery cost, electric cars are going to be at cost parity with the combustion engine."

What purpose is served by including statistics of decreasing battery costs?

- (A) They provide clues to show that Tesla might be starting a trend of more electric vehicle sales.
 - (B) They give hope that global carbon emissions will be significantly reduced.
 - (C) They explain why Tesla's sales have been so impressive in recent years.
 - (D) They provide evidence to explain why Tesla alone will not be able to influence the market.
- 4 How do the first and final paragraphs of the article relate to one another?
- (A) The final paragraph argues against the information provided in the first paragraph.
 - (B) The first and final paragraphs are in agreement with one another on the same topic.
 - (C) The first paragraph provides evidence that contradicts information in the final paragraph.
 - (D) The final paragraph provides a more complex analysis of the information in the first paragraph.

Answer Key

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