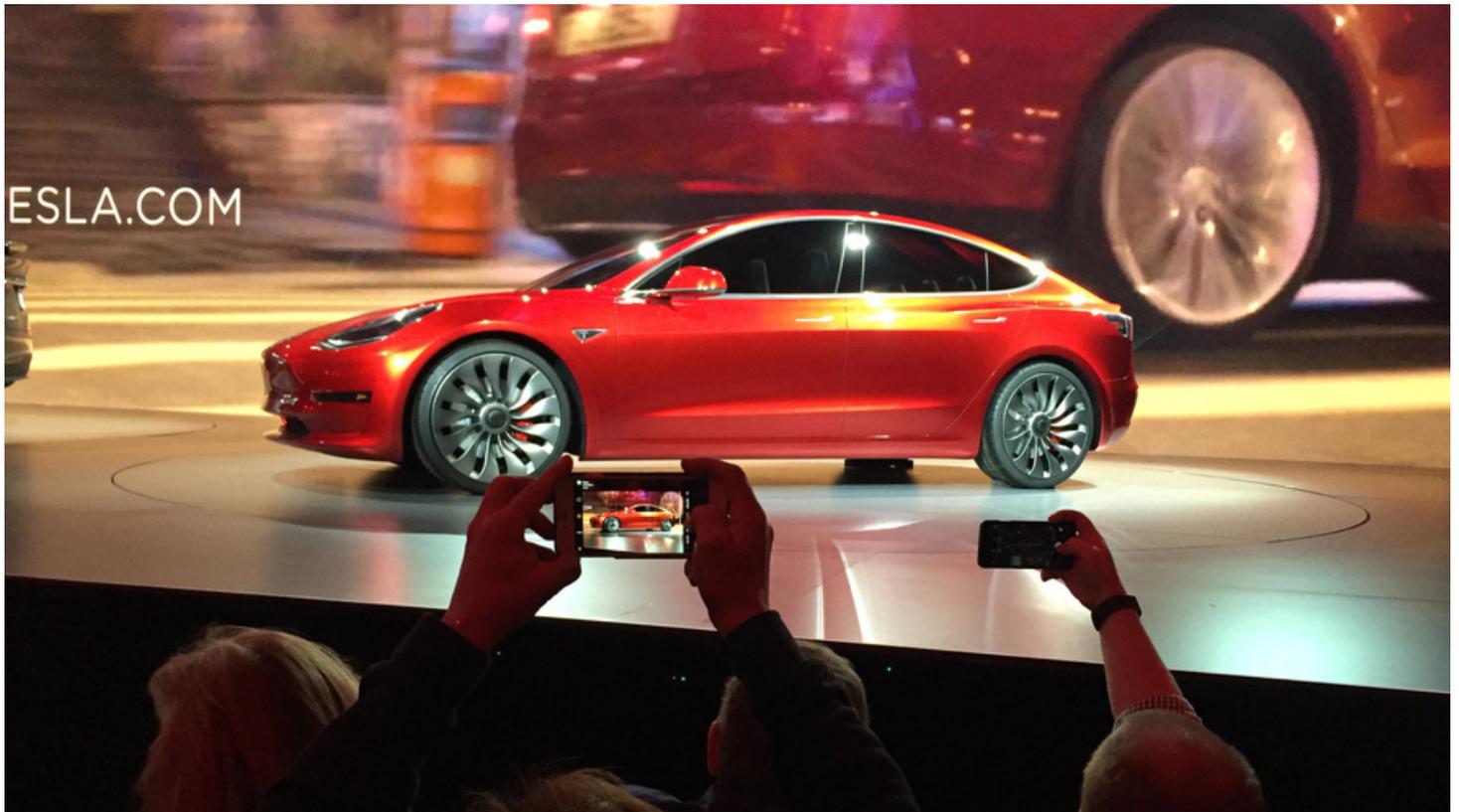


# Will hot sales of hot car help us cool down the planet? Tesla betting on it

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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

The Tesla Model 3 sedan is being hailed as simply extraordinary. Since introducing the new car -- a far cheaper electric vehicle than the Model S -- Tesla received a stunning 276,000 orders in just two days.

Tesla aims to sell 500,000 electric vehicles (EV) each year by 2020, an ambitious goal but one that sounds achievable. Tesla powers its cars not with gasoline, but rather with electricity. In 2015, Tesla sold 50,000 vehicles, according to Bloomberg New Energy Finance.

Clearly part of the appeal of the new vehicle is not just its looks or price, but also what it means for the environment. One key question, though, is what this surge in Tesla sales means for the planet's future: By electrifying transportation, how fast can we start to bring down the United States' -- and the planet's -- emissions of greenhouse gasses and curb global warming?

Around the world, emissions from transportation totaled 7 billion tons in 2010, according to the United Nations' Intergovernmental Panel on Climate Change. The majority of that was for road-

based transportation, like cars and trucks, but also includes shipping, aircraft, rail and other sources. In the United States, transportation makes up about 25 percent of emissions.

### **A Tough Problem To Solve**

Reducing emissions from transportation has long been seen as fairly difficult to accomplish. Emissions from cars and other transportation sources are expected to grow in the future, and if nothing changes, they are expected to total 12 billion tons in 2050.

Several experts this week said that booming Tesla sales don't make enough of a dent to reduce emissions in a substantial way. The problem is that the global auto industry is so huge that even a half-million Tesla sales per year isn't all that much.

Even selling 500,000 vehicles a year by 2020 still represents only about a half of a percent of car and light truck sales around the world, said Colin McKerracher, the head of advanced transport at Bloomberg New Energy Finance. "So it's hard to have an overall impact from them alone."

However, if 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," said David Reichmuth, a senior engineer in the clean vehicles program at the Union of Concerned Scientists. "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."

### **Driving Down Battery Costs, Driving Up Pressure**

Margo Oge is a former director of the U.S. Environmental Protection Agency's Office of Transportation and Air Quality and author of the book "Driving the Future: Combating Climate Change with Cleaner, Smarter Cars."

"What it's doing is bringing the cost down on the battery, making it affordable, putting pressure on other companies," said Oge. These factors are important, even if there are not enough electric vehicles on the road to cut down emissions a lot.

Currently lightweight vehicles sold around the world annually number 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, about 565,000 light electric cars and trucks were sold in 2015. So you see the small percentages that we're dealing with, even though sales are also rising quite rapidly.

### **Still Not A Significant Percentage Of Sales**

Current forecasts expect electric vehicles to become more popular, but few expect any sort of really rapid change. Bloomberg New Energy Finance, for instance, thinks electric vehicle sales will be less than 5 percent of total vehicle sales globally until about 2022. Then battery technology is expected to become 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 make up about 25 percent of the global auto fleet.

"Battery cost has come down 70 percent the last four to five years," said Oge. By 2022, it could be down by nearly another third. And all the experts are telling us that at that level of battery cost,

electric cars are going to cost about the same as gas-powered cars.

EVs are also, according to the Department of Energy, already a lot cheaper to operate in most places, even with the low gas prices 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.

### **Watch For A Boom In EV Sales**

"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."

The upshot therefore remains that given the huge emissions problem in the transportation sector alone, Tesla can't change the world fast or by itself. 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 world total. They can therefore enjoy very rapid growth, but that's not the same as rapidly fixing global warming.