Should we Replace gas-powered vehicles with Electric ones?

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On September 23, 2020, California governor Gavin Newsom announced a new plan stating that, “By 2035, one-hundred percent of the cars sold in California will be electric.” (Gov.CA.gov, 2020). And though it sounds wonderful, it might not change the environment as much as people think. Electric vehicles are widely praised throughout the United States, both for economic benefits, and innovative technology. Over the past decade, many advancements have been made in electric vehicles such as auto-pilot features, longer range EVs, and even one the fastest zero-to-sixty mph times in a car. All of these advancements are wonderful, but more often I hear the talk of how environmentally efficient electric cars are, along with politicians proposing plans to gradually replace all gas-powered vehicles with electric ones. In hearing all this, I can’t help but wonder if it would really help with emissions. Electric vehicles are an incredible feat of engineering, but they aren’t exactly the planet-saving miracles that they are made out to be. If we really want to consider the energy efficiency of EV’s, we would have to look at the energy required to produce them, charge them, and maintain them, not just the fact that they are “emission free.”

First of all, we would need to know whether or not our power grid could even support such a massive change. *The Institute for Energy Research* did a report in 2023, and the results were not pleasant. In their report, “Biden’s Energy Grid Not Prepared for the Onslaught of Electric Vehicles,” the IER concluded that:

The U.S. electric grid does not have the capacity to handle the increased power load required to charge the volume of new electric vehicles that the Biden team wants on the roads over the next decade. The Biden Administration’s new vehicle emissions standards would make the United States more vulnerable to blackouts unless there are massive changes to fix the grid. America’s growing power demands, coupled with the retirement of existing fossil fuel power

generation resulting from EPA's proposed rules, far outweighs the capacity of politically correct renewable sources to keep up, even with the massive subsidies they are now enjoying. (Conclusion Paragraph)

Thankfully, there are some companies such as WeaveGrid, that are working on software advancements to help EVs on the power grid; however, this is only a fix of the symptoms and not the direct problems that would face our country in the next few decades if electric vehicles were rushed into production and demanded. Despite this, for the sake of the EVs, I will be focusing on the impacts they would have if our power grid was able to support a direct replacement of gas-powered vehicles.

Gavin Newsom, in reference to his plan to make all vehicle sales in California be electric by 2035, said that "This is the most impactful step our state can take to fight climate change," (Gov.CA.gov, 2020) but is it? Electric cars do produce less carbon overall than their ICE (Internal Combustion Engine) counterparts, but they still produce a large amount in their manufacturing. Jasper Jolly (2023), in his article "Do electric cars really produce fewer carbon emissions than petrol or diesel vehicles," states that, "The grain of truth in the criticism is that EVs do indeed take significantly more energy to manufacture. Battery production requires large amounts of electricity to heat ovens to bake electrode materials, and to charge and discharge the battery to prepare it for use. While electricity can be produced with zero emissions, most countries still burn carbon-heavy fossil fuels to turn generators." Jolly (2023) confirms later on that EVs will eventually even out with their carbon production, somewhere around 5-6 years of driving. So EVs are not emission free, and in fact produce more carbon to manufacture than ICEs, but they would even out given enough time and driving.

So, what's the big issue? Why not make the switch to EVs if they reduce carbon emissions? Well, the issue still remains of charging those electric vehicles. Despite the cars being powered by electricity, most of the electricity in the US comes from carbon producing sources anyways. The U.S. Energy Information Administration (2023) in their FAQS section, "What is U.S. electricity generation by energy source?" shows that sixty percent of energy in the US is made from fossil fuels, with renewables only making up twenty-one percent. In summary, any of the energy used to manufacture and charge EV's would mostly be coming from fossil fuels as "clean" energies like wind and solar are still in low amounts across the US. Thus, despite the EVs evening out in their carbon production, they still require large carbon emissions in order to be manufactured, maintained, and charged.

Now hold on, despite all this, EV's still barely even out, right? So, wouldn't it still be slightly beneficial to replace ICEs with them? Well, that argument could be made if carbon emissions were mainly from everyday vehicles; however, they are not. In their report on the sources of greenhouse gas emissions, the U.S. Environmental Protection Agency (2022) states that, "Only twenty-eight percent of carbon emissions in the U.S. come from vehicles and transportation," and that's including ships, trains, and planes. In terms of our everyday vehicles, they make up about sixty-five percent of transportation emissions, meaning vehicles will be closer to 20% of our nation's total emissions. (U.S. EPA, 2022). At the end of the day, even if we had a power grid capable of supporting an entire replacement of ICE vehicles, the emissions in the U.S. would barely be altered, and could possibly make things more difficult.

Advocates for electric cars may point out that EVs are breaking grounds in new tech, and that is true, they have had many technological advancements over the past few years. Most Tesla's now have the autopilot feature, which drives the car almost completely autonomously.

Multiple cameras, sensors, and extra unnecessary but convenient gadgets also make electric cars to be some of the most advanced cars of our time; however, despite all these fascinating features, the average electric car is not as convenient to maintain as the average ICE (internal combustion engine) car. Gas powered cars have proven to be more refined in their production over many of the last few decades, thus why you see almost all forms of racing being powered by internal combustion engines. The internal combustion engine is also producing the least amount of pollution ever thanks to new advancements in technology. In her article, "Electric vehicles have almost 80% more problems than gas-powered ones, Consumer Reports says," Aimee Picchi (2023) states that, "Still, Consumer Reports noted that lingering concerns about reliability will likely add to the issues that give many buyers pause when considering a switch to the technology, joining concerns about higher costs, a dearth of charging stations and long charging times." Picchi (2023) goes on to explain that plug-in-hybrid vehicles (PHEVs) have an even worse reliability than electric vehicles, as their powertrain is much more complex. As you can see, despite the wonders being created with electric vehicles, the reliable ones are still fairly new technology. There are no doubts that EVs are making great progress in reliability and range as the latest Tesla model S can reach 405 miles on a single charge, but the claim to completely get rid of our most reliable and refined vehicles still sounds absurd.

Mechanic shops across the US are more accustomed to the internal combustion engine, as we have around 250 million of them, with only 130 million or-so households. And though people may claim that EVs are easier to work on due to their lack of maintenance and fewer parts, current mechanics seem to disagree. In her article "Death of the Mechanic?" Alethea Farline (2023) talks to Bilal Khan a mechanic of 14 years, who goes on to explain how a mechanic like him, and seventy-two percent of all mechanics in the UK, are not properly trained and equipped

to operate on electric vehicles. Khan talks about the necessity for insulated tools and specialized equipment to work on EVs safely. Khan further states that, “I looked into getting training back in 2018 and it cost around £8,000.” (Farline, 2023) Overall before we even consider a replacement of gas vehicles with EVs, we should make sure our infostructure is even capable of taking on such a daunting task.

So, will electric vehicles take over the sales across the U.S.? With an unprepared power grid and unequipped workforce, I’m not sure. But hopefully our politicians will make sure that we approach this subject with valid research and reasoning instead of pushing a political narrative.

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