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Electric Vehicles: More Practical than We Realize

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When most people write about electric vehicles, they usually start by saying something like the following: "We need to lower our emissions because of climate change, and electric vehicles will help us do just that."

However, this paper will not even address climate change. Whether or not one believes in climate change does not matter, the fact is that as a society we are trying to lower emissions and a major factor in total emissions is the pollution from gasoline powered cars. Electric vehicles (also called EVs) would greatly reduce this pollution.

Now, my opponent would be quick to point out that the EV doesn't really reduce emissions because all the pollution that the car doesn't emit, are instead emitted at the power plant.

According to the U.S. Department of Energy the average annual emissions due to a conventional gasoline vehicle is about 13,000 lb of CO2 equivalent. However, if an electric car were to be fully charged off of an average American plug-in (49.6% of the electricity being powered by coal), then over the course of that same year, the EV would have only caused 8000 lb of CO2 equivalent to be released into the atmosphere. A reduction of 5000 lb of CO2 per year *per vehicle*.

My opponent might go on and say "well EVs are just too expensive for the average Joe who doesn't have $30,000 to spend on a new car."

All it takes is a little looking and EVs can be found that are selling for $10,000-$15,000. There are also numerous state and federal incentives to help with the purchase cost. This makes the cost right in line with gasoline powered cars.

Granted, some EVs do get expensive to purchase, but they are exceedingly cheaper to run. According to the U.S. Energy Information Administration, the average price of gasoline in the U.S. is $3.265. However, they also report that the average cost of electricity is $0.1251 per kilowatt hour. This translates to $3 for filling up a Nissan Leaf or only $2 for filling up a Chevy Volt. (Keep in mind; this is only if a full recharge is needed. Most of the time it will only be a partial charge, thereby making it cheaper.)

Take, for example, a 100 mile trip. A gasoline car with 24.4 mpg could make the trip for about $13.36 and release about 87 lb of greenhouse gas emissions. However, an EV would be able to make that exact same trip for only $3.74 and release about 54 lb of greenhouse gas emissions. The EV both cut the price by $9.64 and reduced emissions.

"Ok fine." my opponent responds. "Maybe they are both cheaper and cleaner for the environment, but hold on one moment. Their limited range and charge time make them not practical for the average consumer."

According to a study coming out of Columbia University, 95% of all trips by cars are shorter than 30 miles. All EVs on the market can handle a 30 mile trip. The majority can also handle the 30 mile trip back without needing any additional charging. However, a lot of people suffer from what has been termed as "range anxiety," or the fear of being stranded with a dead battery.

I will admit, charging times are also an issue. Some of the older EVs have charge times of 8 hours or more. They also have a quick charge that adds 60-80 miles to a car in 20 minutes. Currently, a Honda Fit charges in 3 hours from a dead battery. This is a drastic difference from being able to fill a gasoline powered vehicle in about 5 minutes. However, electric cars can charge off of any outlet, so this 3 hours could be while the owner is sleeping during the night.

However, as all developing technologies do, EVs will continue to improve. Currently Tesla is working on a charging station that will fully recharge an EV in 5 minutes. Being able to recharge this quickly also makes long trips with an electric car possible. In another development, the ARPA-E announced that there is an EV motor being created that does not us any rare earth metals. This will help to lower the price by using materials that are less expensive. The EV will continue to look better and better the more it develops.

Electric cars are becoming more practical and will even outperform our current gasoline powered cars.

Sources:

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