

electric vehicles; **CHEAPER, FASTER, BETTER.**

This article has been reviewed and endorsed by the Barrington Resilience and Energy Committee.

By Magnus Thorsson, PhD, Barrington resident

The transition to electrified vehicles (EVs) is underway, with the demand for electric cars surging as gasoline prices continue to rise and the negative impacts of the burning of fossil fuels become clearer.

The potential benefits of EVs include lower cost of operation through less regular maintenance and lower cost of energy. According to data from the City of New York on the average cost of maintaining their municipal fleet of EVs, the cost of maintenance and energy is about 82% lower than comparable fossil fuel vehicles. The principal difference is that EVs have fewer moving parts requiring less periodic maintenance, no oil change, tune-ups, fuel, or water pumps.

When it comes to energy cost and efficient use of energy per mile traveled, EVs outperform their fossil-fueled counterparts by a large margin. Gasoline vehicles waste over 60% of the energy in the process of driving the vehicles. Fossil-fueled cars include many systems that need heating and cooling in the process of transferring energy from fuel to motion. On the other hand, electric motors can be up to 90% efficient in transferring electrons to motion. For comparison, a gasoline car capable of getting 24 miles per gallon could travel 72 to 102 miles on the same amount of energy as an EV would use to travel 300 miles. That comes down to a cost of \$0.17 per mile for gasoline cars versus \$.06 for EVs or a savings of \$2,200 per year on fuel alone.

The enhanced acceleration and general ease of driving EVs is a surprise to many experiencing them for the first time. Early on in automobile history, EVs were the pick of many discriminating drivers whose choices, in addition to horses, were between steam, gasoline, and electric-powered personal transportation.



Barrington's new Ford Mach-E is capable of reaching 60 mph in 4.8 seconds.

As Americans became more prosperous, they looked for self-propelled vehicles, and electric- and gasoline-powered vehicles held the most promise, however, each with its own faults. Most notably was the smell, noise, and unpleasant exhaust from the gasoline engine. At the same time, EVs were quiet, free of emissions, and relatively easy to drive, making them popular with urban drivers and women. The drawback of the adaptation of EVs was poor roads outside of the cities, limited batteries, and lack of charging infrastructure.

When drivers test today's electric cars, they note the thrilling acceleration enabling most EVs to far out-perform their gasoline counterparts. The new Ford Mach-E, the first police service vehicle delivered to the Barrington Police, is capable of reaching 60 mph in 4.8 seconds. The fact that the Mach-E's 77 kWh battery enables it to carry with it all the electricity needed to run the complex electronics needed for normal service work eliminates the need for idling, saving our officers from exposure to carcinogenic vehicle exhaust. The new Mach-E is estimated to save Barrington taxpayers

over \$8,000 per year in operating costs compared to the current vehicles.

Lastly, the expected lifetime of EVs is considerably longer than their fossil fuel counterparts due to the fact that gasoline-powered vehicles have over 1,500 moving parts versus the drive-train of EVs with 20. Tesla recommends that brake fluid be checked every two years and that AC be evaluated every six years in addition to normal tire wear and tear. Regenerative breaking results in less wear with equipment generally lasting 120,000 miles between brake jobs. Under normal driving conditions, an EV is likely to last almost twice that of a fossil fuel car, with the million-mile EVs not surprising anyone.

The average premium of \$10,000 for new EVs pays for itself in a couple of years. With all these benefits in mind, who wouldn't want to drive a fast, efficient, quiet EV that is better for people and the planet?



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