Is the day of the electric vehicle at hand? Judging by the headlines, you’d have to say yes. General Motors has announced an “aspiration” to sell only EVs by 2035. Volkswagen just held a “Power Day” to tout investments in batteries and charging stations. Competition from GM, VW and others hurt Tesla’s stock price a bit, but its market capitalization, $675 billion, still exceeds all but five other U.S. corporations.

Time for a reality check on what this means for cutting carbon emissions — starting with two numbers.

The first is 281.4 million, which is how many vehicles there are in the United States’ light-duty fleet, 99 percent of them powered by internal combustion engines. The second is 19.6, which is how many years it would take for this fleet to become 90 percent electric — assuming it stayed at around 280 million and that every new vehicle sold from now on is an EV.

What’s more, even in this implausible scenario, which is derived from the U.S. fleet’s turnover rate as estimated by MIT professor David Keith, the reduction in carbon emissions would not be as dramatic as you might think.

As of 2040, the U.S. electric grid will still run on 11 percent coal and 40 percent natural gas, according to Energy Department forecasts. That is, the fuel for our imagined 90 percent plug-in fleet would still be half fossil.

It’s hard to do an apples-to-apples comparison between the carbon emissions associated with gasoline, carried and consumed in motor vehicles, and that associated with electricity from a natural gas-coal blend, transmitted via the grid (with inevitable energy losses).

The bottom line, though, is that a 90 percent EV fleet would not reduce carbon output by 90 percent — far from it. Such are the real-world challenges of trying to transform U.S. energy consumption, one car-buying decision at a time.

To repeat: The above is a mere thought experiment. On March 10, the New York Times published a more realistic projection from IHS Markit, an economic forecasting firm, in which EVs reach 60 percent of new-vehicle sales over the next three decades. In that scenario, 20 percent of cars would be plug-ins by 2040; emissions reductions would be correspondingly modest.

Even this projection seems ambitious, given consumer preferences: Fifty-eight percent of the vehicles on the road today are pickups, SUVs or minivans, according to data compiled by Experian, and their share is growing. Seventy-six percent of the 14.5 million new vehicles sold in 2020 were either SUVs or pickups.
Today is: zero. Tesla’s Model X SUV starts at $79,990; the most practical version of its planned Cybertruck pickup is $69,900.

Volkswagen has an all-electric SUV, the ID.4. The model Car and Driver magazine tested retails for $45,190 — and in cold weather its battery ran out after just 190 miles.

Meanwhile, a consumer could have a fully loaded Toyota RAV-4 gas-powered hybrid for thousands of dollars less than the ID.4, with none of the “range anxiety” — and still feel good about a green purchase. (It gets 41 mpg on the highway.)

That American car-buyers now keep vehicles for an average of 12 years, up from 9.6 years in 2002, according to IHS Markit, is a tribute to the automotive industry’s quality improvements. (A quarter of vehicles are more than 16 years old.) It also reflects rising new-car prices, which put them out of reach for lower-income families.

Either way, vehicle electrification will produce disappointing near-term carbon emissions unless the U.S. fleet turns over far faster, and dealers sell far more new plug-ins, than would occur if consumers were left on their own.

There may be ways to change that — but probably not without spending lots of taxpayer money, perhaps through a proposal by Senate Majority Leader Charles E. Schumer (D-N.Y.) for a 10-year, $392 billion program to subsidize trade-ins of older gas-powered vehicles for plug-ins. The risk: Government could end up assisting people — many already relatively well-off — to make car purchases they planned anyway.

Another option: coercive steps, such as Britain’s ban on new internal combustion engine (ICE) vehicle sales after 2030. Achieving an all-electric fleet by 2050 could require the United States to put in a 2035 new-ICE ban, the Times reports.

If new EVs were not affordable when an ICE ban hit, of course, people might just hold on to their gas-burners even longer than 12 years.

For now, carmakers, politicians, Silicon Valley and Wall Street are pushing an upbeat EV narrative in which the U.S. automotive fleet goes clean and green painlessly, with no trade-offs or hard choices for anyone.

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