Last week, Senate Democratic Minority Leader Chuck Schumer published an op-ed in the New York Times describing a new federal proposal for replacing all gasoline-powered vehicles in the U.S. with zero emission vehicles by 2040. This is a laudable goal and a great opportunity – comprehensive federal policy to replace all gasoline-powered vehicles with zero-emission vehicles could be a significant source of emissions reductions. But as I outline below, Schumer's obstacles to developing a more detailed plan—building on the general concept outlined in his op-ed—are numerous. This post describes some of the opportunities presented by Schumer's proposal, along with key questions to consider as it moves forward.

Schumer's policy

This is, generally, a good idea, and a necessary task if we want to make significant headway on climate mitigation goals. Until now, vehicle replacement policies have received little attention as a serious climate mitigation strategy. This is a mistake, considering transportation emissions comprise almost a third of total U.S. greenhouse gas emissions, and the vast majority of carbon is emitted from the oldest 25 percent of vehicles.

According to Schumer's plan, consumers would receive a discount when trading in a gasoline-powered vehicle for an American-made electric vehicle, with higher discounts for lower income consumers. Federal funds would provide states and cities with money to install electric vehicle battery charging infrastructure, in cities as well as rural communities.

Schumer's plan also seeks to "retool existing manufacturing plants" for gasoline-powered vehicles to build electric vehicle and battery manufacturing instead. He estimates that this plan would cost $454 billion over ten years and would result in 63 million fewer gasoline-powered vehicles by 2030, with a goal of reaching 100 percent clean vehicles on the road by 2040.

Efficacy of prior policies

This "cash for clunkers" policy isn't the first of its kind for the federal government. Congress passed a similar policy signed by President Obama in 2009. But that policy had different goals: to incentivize consumers to buy new vehicles from an ailing manufacturing industry, and, secondarily, to increase vehicle fuel economy. It provided rebates that ranged from $3,500 to $4,500, depending on the fuel economy rating of the vehicles purchased and discarded, and was only

implemented between July 1 and November 1, 2009. The trade-in conditions were also more restrictive than that of Schumer's plan: qualifying new vehicles eligible for rebates were limited to those under $45,000 in value and could qualify only by trading in vehicles that were drivable and had a fuel economy rating of no more than 18 miles per gallon.

The Obama policy was not hailed as a winning strategy for increasing net vehicle turnover. Subsequent economic study indicated that consumers who participated in the program were those who would have already bought these vehicles anyway. As a result, car sales did not actually increase, but rather were moved forward in time – auto sales decreased in the quarter after this program was completed. It's not surprising, therefore, that many are skeptical about Schumer's new cash-for-clunkers plan, citing the failed Obama policy as proof.

State programs have also attempted to speed the transition to less-emitting cars, and have been less comprehensive than Schumer's proposal. California's Voluntary Accelerated Vehicle Retirement Program (VAVR), for example, allows local air quality districts to provide cash rebates specifically to low income consumers who dismantle (or "scrap") high-polluting cars. This subsidy is available regardless of what replaces the vehicle – another gas-powered vehicle, an electric or hybrid vehicle, or no vehicle at all (for those who instead opt to use public transit options). California has separately set up a clean vehicle rebate program that provides up to $7,000 in rebates, available only to consumers under an income cap. It is unclear how effective these policies have been to improve turnover of gasoline-powered cars in California.

Contrasting the plans

Schumer's proposal looks different from these federal and state precedents in several respects. Most notably is scope and scale: this plan does not appear to limit, or even prioritize, among existing gasoline-powered cars, because the plan's goal is to eliminate internal combustion engines entirely from the U.S. fleet. All prior cash for clunkers programs restricted specific gasoline powered vehicles from participating in the program – either by economic value of the car, consumer income, the car's age, the car's fuel efficiency, or a combination of these factors.

This proposal appears to include no such restriction, nor has he explained if or how it would prioritize among cars or owners. However, Schumer notes that his plan will increase discounts for lower income consumers to incentivize their participation in

the program. This is a good move – studies show that lower income households have the oldest, and thus most polluting cars in the overall US fleet. By increasing incentives to lower income consumers to switch to electric vehicles, this plan would reduce GHG emissions, improve air quality for lower income communities, and improve environmental equity.

Anticipated policy details

While this policy mechanism could have a lot of potential, the devil of implementing it will be in the details. Here are some key questions to ask as the plan's details emerge:

- **What happens to the old vehicles?** Schumer does not make it apparent what he plans to do with the older vehicles that are replaced. California's program ensures that older cars are scrapped entirely, removing them from the market and out of use. But prior programs that failed to scrap old cars completely instead moved emissions to other jurisdictions. If old cars can be sold in a different country, we will not see a net emissions reduction, but rather emissions leakage. Further, when completed at Schumer's intended scale, these old cars could significantly disrupt the used car markets in other countries and cause unintended economic consequences in addition to environmental ones.
- **How will consumers get paid?** It's interesting that Schumer describes this as a discount, rather than rebate or tax incentive. Similar policies have all been enacted as rebates or tax incentives that are provided to consumers over time after initially paying full price for purchasing cleaner vehicles. Does this difference in verbiage mean that consumers will not need to pay the full amount at time of purchase? This detail has positive implications for how accessible this program will be to lower income consumers who may not have enough up-front capital to pay for electric vehicles.
- **What role will public transit have in this plan?** Schumer's plan does not include any discussion of replacing cars with public transit trips. It's unclear whether this was intentional or simply an oversight. If intentional, Schumer may have been aiming to get auto manufacturing workers to feel confident in the diminished impact on their jobs and industry health generally. I don't doubt the significant political benefits of getting automobile manufacturing workers to support this plan. However, incenting consumers to get rid of cars altogether provides the most climate mitigation, traffic, environmental, and public health benefits out of any other replacement option. Here's hoping that

> Schumer’s more detailed plan incentivizes the option to eliminate car use altogether.

Getting these sorts of details right may be especially challenging because there is a gap in economic and policy research on what would make this plan effective, equitable, and economically sound. There have been studies on the efficacy of the Obama cash-for-clunkers program and other state programs. However, little research is available on what effectively incentivizes consumers to trade in their gasoline powered cars for cleaner ones, or how much money is enough to incentivize consumers to switch their cars for cleaner options. Some research also indicates that consumers consider fuel economy and forgone gasoline costs when purchasing these vehicles. But little information is known on what makes consumers decide to replace or scrap their vehicles altogether.

This is a great step in the right direction for federal climate policy. As climate advocates, we need to think about transitioning our entire U.S. fleet – especially those within our low-income households – away from gasoline powered vehicles. But this policy is not low-hanging fruit. The relative failure of prior policies combined with this policy’s unprecedented scale presents some serious obstacles to designing an effective plan. If Schumer truly wants to change the game in how Americans transport themselves, he has his work cut out for him.