



## Vehicle Scrappage Policies for Transportation Decarbonization

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### Incentivizing early retirement of gasoline vehicles could accelerate the transition to zero emission transportation

The U.S. aims to reduce economy-wide greenhouse gas emissions by 50% (from 2005 levels) by 2030, and to net zero by 2050, in line with international climate agreements. **Decarbonizing** transportation—the highest emitting sector in the U.S. economy—is essential to meeting these goals.

**Electric vehicles** have significantly lower emissions than gasoline vehicles and are crucial to decarbonizing transportation. However, the current rate of **fleet turnover** is not fast enough to meet climate goals. Furthermore, without thoughtful policy and planning, the transition to electric vehicles could increase inequities in transportation accessibility.

**Vehicle scrappage programs**, like Cash for Clunkers, provide a monetary incentive to retire an old vehicle and replace it with a more sustainable alternative. Since 2000, 19 countries have had national programs, and there are currently state-wide programs in California, Colorado, and Vermont. If designed appropriately, a vehicle scrappage program could accelerate fleet turnover and speed up emissions reductions, while supporting **transportation justice**.

### Policy design priorities for scrappage programs

To achieve a significant reduction in greenhouse gas emissions, a scrappage program should carefully balance the following priorities:

#### *Avoid replacing vehicles that are already near retirement*

- Establish an age limit or mileage cap for scrapped vehicles

#### *Maximize the change in emissions per vehicle*

- Retire older, larger, gas vehicles with high emissions and replace with clean electric vehicles
- Include non-vehicle replacement options, like E-bikes or transit passes

#### *Optimize program participation within a given budget*

- Allow subsidies to be applied at the time of purchase, not as a tax credit
- Make subsidies large enough to incentivize vehicle retirement, but no larger

#### *Support transportation justice*

- Scale the subsidy level with income and allow used EVs as replacement vehicles
- Reduce administrative barriers and engage with underserved communities

## Key policy design priorities for successful decarbonization through vehicle scrappage programs

Goal	Strategy	Policy Design Choices	Priorities
Avoid replacing vehicles that are already near retirement	Encourage pulling forward in time vehicle replacement decisions	Scrapped vehicle eligibility	Age or mileage limits on the retired vehicle may reduce participation of old vehicles about to be scrapped anyway
	Ensure vehicles are scrapped	Scrapped vehicle eligibility	A requirement to permanently disable the engine can avoid illegal resale and export
Maximize the change in emissions per vehicle	Target high emitting vehicles for retirement	Scrapped vehicle eligibility	Older vehicles tend to be higher emitting, thus, age limits may miss some good vehicles to replace
			Limiting scrapped vehicle eligibility to gasoline vehicles raises emissions reductions per vehicle
	Target low emitting vehicles for replacement	Replacement vehicle eligibility	Scaling the subsidy level with replacement vehicle efficiency may be cost-effective
			Limiting replacement vehicle eligibility to EVs raises emissions reductions per vehicle
			Prioritizing EV deployment in regions with low-carbon electric grids raises emissions reductions per vehicle
	Encourage other modes of transportation	Subsidy level	Providing subsidies for other modes—e.g., e-bikes or transit passes—may induce especially impactful scrappage
Complementary policies		Scrappage programs could be combined with other policies that support different modes	
Optimize program participation within a given budget	Optimize subsidy design	Subsidy level per vehicle	Higher subsidy levels may increase participation, but if the policy's total budget is binding, smaller subsidy levels may be more efficient
		Subsidy structure	Making the subsidy available at the point of sale increases participation by providing liquidity
Support transportation justice	Consider distributive and procedural fairness in policy design	Subsidy level	Scaling the subsidy level to be higher at lower incomes could increase participation at lower incomes
		Replacement vehicle eligibility	Making used EVs eligible as replacement vehicles could increase participation at lower income levels
		Participant eligibility	Giving priority to lower-income or higher pollution areas supports distributive justice
		Program Administration	Reducing administrative barriers and investing in community engagement promotes procedural justice and access to program benefits

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