

To: House Select Committee on the Climate Crisis
From: James K. Boyce, University of Massachusetts Amherst
Date: November 15, 2019
Re: Response to Request for Information

This memorandum responds to the question on carbon pricing* posed by the House Select Committee on the Climate Crisis in its *Request for Information*. I am a senior fellow at the Political Economy Research Institute at the University of Massachusetts Amherst, and the author of the book [The Case for Carbon Dividends](#) published in July 2019. The embedded links provide analytical support for the points made in my response.

Effective carbon pricing

Carbon pricing is the policy [most widely recommended by economists](#) to spur greater investment in renewables and energy efficiency. But it is not enough simply to set a price and hope for the best.

The litmus test for effective climate policy is whether it keeps enough fossil fuel in the ground to prevent global temperatures from rising more than 1.5-2 °C above their pre-industrial level. Many policies can contribute to this objective, but the only way to be certain that we achieve it is to put a hard ceiling on the amount of fossil carbon we allow to enter our economy and then ratchet it down steadily over time.

The most straightforward way to do this is to issue carbon permits up to the level set by the ceiling. If the target is to cut emissions by 85% in 30 years, for example, this would mean cutting the number of permits by 6% each year. The precise target needed to meet the net-zero goal stated in the Committee's question will depend on the scope for negative emissions through sequestration.

At every tanker port, pipeline terminal, and coal mine head, fossil fuel corporations would be required to surrender one permit for each ton of carbon they bring into the economy. When these permits are auctioned – as now happens quarterly under the Regional Greenhouse Gas Initiative for power plants in the northeastern states – firms will bid what they expect to recoup from higher prices paid by consumers. The carbon price is the result of this limit on supply.

An effective carbon pricing policy can be implemented by means of a cap, or a tax that is indexed to emission-reduction targets, or a combination of the two. For example, the tax could set the floor price for permits, and permits auctioned if demand at this price exceeds the supply

* Question 4.a: What role should carbon pricing play in any national climate action plan to meet or exceed net zero by mid-century, while also minimizing impacts to low- and middle-income families, creating family-sustaining jobs, and advancing environmental justice?

established by the cap – a hybrid policy that combines certainty in meeting the emissions target with a predictable minimum carbon price in future years.

How high the price will go cannot be known in advance. It will depend among other things on how quickly and how far renewable energy costs continue to fall and on how much governments invest in alternative transportation. Extrapolating from past experience, however, we would expect a 6% per year reduction in the supply of fossil fuels to translate into roughly a 10% per year increase in their price. If so, the price of gasoline and other fossil fuels would double in about seven years and quadruple in fifteen.

If other climate policies, such as fuel economy standards for automobiles or public investment in the clean energy transition, dramatically reduce demand for fossil fuels, the price increase will be smaller. Indeed, if these other policies are so successful that they achieve the targeted emissions reduction on their own, the supply limit will be redundant and the permit price will fall to zero. Like fire insurance, in this case a carbon price would turn out to be unnecessary – but optimism is not a good reason to forego insurance.

To guarantee that we meet the target, it is crucial that the climate policy mix includes a hard trajectory for reducing emissions. Just setting a carbon price and hoping it will do the job is not enough: it must be anchored to the trajectory. Likewise, just investing in mass transit and hoping for the best, or passing fuel economy standards and hoping for the best, is not enough. We know these things will help, but we cannot know exactly how much.

Today we are past the stage where just hoping for the best is good enough. We need to make absolutely certain that we cut emissions decisively in the coming years. And we need to face up to the reality that comes with this objective: higher prices on fossil fuels.

Equity impacts of carbon pricing

On its own, carbon pricing would pose real financial hardships on low-income and middle-income consumers, especially if the price were steep enough to make a difference. Moreover, a robust carbon price could spark a backlash against the policy, as seen in the “yellow vest” movement that has roiled France since the Macron government announced an increase in fuel taxes last November. “Macron worries about the end of the world,” [explained one protester](#). “We worry about the end of the month.” Many American households share the same worry, for good reasons.

But there is a way to make carbon pricing compatible with the goal of protecting and increasing the real incomes of the majority of Americans, including low- and middle-income households: return the money to the people as equal dividends for all. Economically, [carbon dividends](#) would reduce inequality, and at the same time provide everyone with an incentive to reduce their own carbon footprint. Politically, they would help to win broad and durable public support for a robust climate policy. Ethically, they would give concrete expression to the principle that

the gifts of nature – in this case, the atmosphere’s limited capacity to absorb carbon safely – belong to each person in common and equal measure.

The idea can be illustrated with an analogy. Imagine that 1,000 people work in an office building whose parking lot has only 300 spaces. If everyone could park for free, the result would be chronic excess demand and congestion. To prevent this, a parking fee is charged that limits demand to fit the lot's capacity. Every month the proceeds from the fee are distributed in equal payments to everyone who works in the building. Those who take public transport or bicycle to work come out well ahead: they pay nothing and get their share of the revenue. Those who carpool to work more-or-less break even. And those who commute daily in a single-occupancy vehicle pay more into the revenue pot than they get back. Carbon dividends apply the same logic to parking fossil carbon in the atmosphere.

Everyone gets the same dividend, regardless of their own carbon footprint, so everyone has an incentive to reduce their use of fossil fuels. Those who fly often in airplanes, heat and cool bigger homes, and so on, will pay more in higher fuel prices than they receive in dividends. But the majority of households consume lower-than-average amounts of fossil fuels, because the average is pulled up by the outsized carbon footprints of the top one percent. As a result, they come out ahead in sheer pocketbook terms, without even counting the environmental benefits of reducing emissions.

A [recent study](#) that analyzed the net impact of carbon dividends in the U.S. with a price of \$50 per ton of carbon dioxide found that average incomes in the poorest tenth of the population would go up by about 5%; in the richest tenth they would go down by about 1%. Carbon dividends alone would not be enough to reverse the nation’s enormous income inequality, but they would be a step in the right direction.

To make sure that this effect is every bit as visible to consumers as hikes in the price of gasoline, carbon dividends should be distributed as stand-alone electronic transfers into individual bank accounts (or as the proverbial “check in the mail”), rather than buried in the fine print of tax returns.

In sum, the carbon dividend – returning revenue from carbon permit auctions or carbon taxes to the people – provides a way to mesh carbon pricing with the goal of building an economy that is more equitable as well as more sustainable.

Environmental justice

There are two ways to address the important objective of environmental justice in carbon pricing policies: (i) measures in response to the risk of co-pollutant hot spots; and (ii) measures to direct public investment to vulnerable communities that have been overburdened by environmental harms.

Hot spots: Carbon pollution is not emitted alone: it comes along with other deadly emissions, including particulate matter and air toxics. Most carbon pricing schemes have failed to address the fact that low-income communities of color are disproportionately exposed to these co-pollutants.

Initial evidence suggests that environmental justice advocates have good reason to worry about pollution “hot spots.” A [study of the first three years of cap-and-trade in California](#) revealed that in some neighborhoods, emissions actually went up—because polluters chose to pay rather than clean up—and that these neighborhoods had more people of color and were poorer, less educated, and more linguistically isolated. A just carbon pricing policy should include provisions that ensure emissions reductions where they matter most.

This can be done by mandating that the US Environmental Protection Agency:

- (i) identify socio-economically vulnerable communities nationwide that are disproportionately burdened by pollution caused by the production or combustion of fossil fuels;
- (ii) monitor emissions of carbon and co-pollutants (including sulfur dioxide, nitrogen oxides, and primary particulate matter) in these overburdened and vulnerable communities; and
- (iii) take steps necessary to ensure that emissions reductions in these communities at least equal those mandated by the national trajectory set in the bill.

The first two of these steps are now [mandated by law](#) in California.

Public investment in vulnerable communities: Some revenue from carbon pricing could be dedicated to public investment as well as dividends. For example, [the bill proposed by Senators Cantwell and Collins](#) in 2009 mandated that 75% of the carbon permit auction revenue be allocated to dividends, and 25% to public investment. Public investment in the clean energy transition can – and in my view, should – also be financed from other sources.

By earmarking a fair share of public investment for communities that have suffered [disproportionate environmental harm](#) from the fossil-fueled economy – from the most polluted neighborhoods in urban areas to coal-country communities coping with the environmental legacies of mountaintop mining and leaking piles of coal ash – the policy can advance the goal of a just transition to the clean energy economy of the future.

Such a policy has been enacted in the [2012 California law](#) that mandates that a share of carbon auction revenues flows to disadvantaged communities with disproportionate environmental burdens. A [2016 law](#) set this share at 25%. The California EPA's overview of this community investment program can be found [here](#), and a UCLA analysis of it can be found [here](#).

Summary

In sum, carbon pricing can be done in a manner that is both effective and equitable.

The key to effectiveness is to anchor the price to an emissions-reduction trajectory that meets the goal of net-zero emissions by mid-century.

The key to equity is to recycle most or all of the carbon revenue to the public in the form of equal per-person dividends and to include explicit provisions to secure environmental justice for communities that have borne disproportionate harm from the production and combustion of fossil fuels.