



IMPACTS OF CARBON POLLUTION PRICING ON MASSACHUSETTS HOUSEHOLDS AT DIFFERENT INCOME LEVELS

An analysis of Massachusetts Bill H.2810, *An Act to Promote Green Infrastructure and Reduce Carbon Emissions*, filed by Representative Jennifer Benson, 2019

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SUMMARY

Massachusetts House Bill 2810, sponsored by Rep. Jennifer Benson, sets up a carbon pollution pricing system in the state. H.2810 imposes a fee on the companies that sell or burn fossil fuels, according to the carbon dioxide (CO₂) emissions released when the fuels are burned. CO₂ emissions are the main cause of climate change, and putting a price on them is intended to reduce the consumption of these fuels and incentivize cleaner alternatives. Fuels used to generate electricity are exempt because Massachusetts is part of the Regional Greenhouse Gas Initiative (RGGI), a regional system covering states from Maine to Maryland, that puts a fee on these fuels.

52.5 percent of the revenue raised by the state government from the fees will be used to provide rebates to households, with the funds shifted toward low and moderate-income residents. For low and moderate-income households, the rebates exceed the expected costs of the program, leading to net positive monetary benefits. The impact of the program on households is shown in Table 3. For the lower three-fifths of households, on average, rebates exceed fees, by \$270 per household for the bottom fifth. For the top-earning two-fifths, fees exceed rebates.

This analysis shows that it is possible to impose fees on carbon pollution, creating a substantial incentive to reduce emissions, while still financially protecting low and moderate-income households. Moreover, this leaves out the 30 percent of funds that will be used for clean energy and adaptation to climate change, providing further benefits to all state residents, along with the 17.5 percent that goes to vulnerable industries.

DESIGN OF H.2810

The bill imposes fees on the wholesalers of energy fuels, which includes distributors of gasoline, diesel motor fuel, natural gas, and heating oil. As Massachusetts does not produce any fossil fuels, this fee focuses on companies that bring energy into the state.

While these wholesalers and the retailers they sell to may absorb a portion of the fees into their budget, in this study we assume that they pass on all costs to consumers, meaning households and other employers.

Of the fee revenue taken by the state government, 70 percent goes to household and employer rebates, and 30 percent is directed to green infrastructure investment. Of the 70 percent rebated, three-quarters goes to households and one-quarter goes to employers, targeted to those industries which are considered vulnerable to the impacts of carbon pricing, mainly those which are “energy intensive and trade-exposed” (EITE).

The funds going to households are targeted toward those of low and moderate-income, as shown in the lower part of Figure 2. Initially, 10 percent of the household rebate funds goes to the bottom fifth of households by income, otherwise known as a “quintile.” Another 10 percent goes to the second-lowest quintile, and 5 percent goes to the middle (third) quintile. The remaining 75 percent of household funds are divided equally per adult, regardless of income level, with children getting half the share of adults.

FIGURE 1 Distribution of rebates to households, employers, and green infrastructure fund

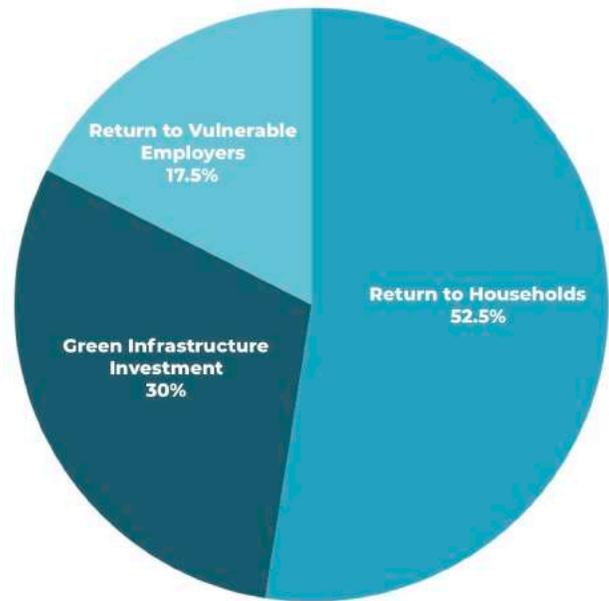
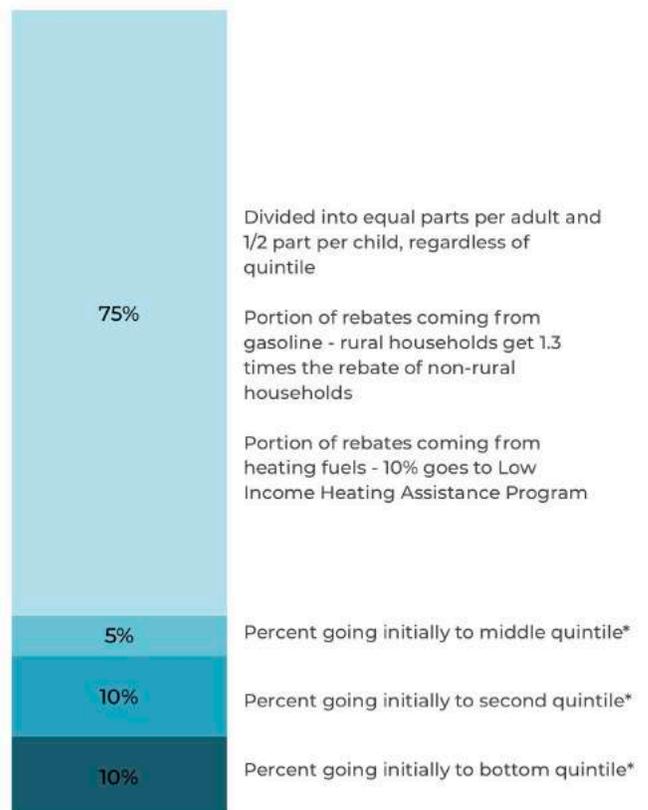


FIGURE 2 Division of rebates among households at different income levels



ABOUT CLIMATE XCHANGE

Climate XChange was founded in 2013 to develop and promote effective and viable policy solutions to reduce carbon emissions. We built and promoted winning climate policies in our home state of Massachusetts and have since brought our expertise, resources and guidance to state-level carbon pricing campaigns around the country. Our mission is to provide research, education, and advocacy tools to enhance climate action through effective policy at the state level. Our extensive expertise in building campaigns enables us to share our knowledge and convene several networks for cross-pollination of strategies.

Learn more at Climate-XChange.org

METHODOLOGY OF THE STUDY

The study is based on a random sample of households in Massachusetts conducted by the U.S. Bureau of the Census on behalf of the Bureau of Labor Statistics, called the Consumer Expenditure Survey, or CES.¹ The Census Bureau asks how much money each household spends on a variety of consumer goods, including major energy expenses – gasoline, electricity, natural gas, fuel oil, and propane.

Each major energy expense (omitting electricity, since it is not charged fees in H.2810) is converted into energy units, based on the cost per unit of energy. This gives us gallons of gasoline, fuel oil, and propane, and therms of natural gas. Since each of these fuels releases different amounts of CO₂ when burned, we then convert the energy units into metric tons of CO₂. Added together this gives the CO₂ that each household will be paying fees on (assuming that

fuel wholesalers pay their increased costs entirely through increased prices for households).

We then divide all households into fifths (quintiles) based on income. Using the formulas in H.2810, as shown in Figure 4, we allocate the rebates to each household. This includes the extra rebates going to rural households from fees on gasoline, and the extra rebates going to low-income households that participate in the Low Income Heating Assistance Program.

Within each fifth (quintile), we calculate the impact on each household by subtracting its carbon fees from its rebates. We then take an average per quintile, which produces the results shown in Figures 3, 4 and 5.

¹ | The random sample consisted of about 675 households

IMPACTS ON LOW, MODERATE, AND HIGH-INCOME HOUSEHOLDS

This study looks at the net impacts on households at different income levels from the combination of fees and rebates. Because higher-income households use more energy to heat their homes and drive their cars than do lower-income households, and because H.2810 directs more of the rebates to go to low and moderate-income households, the bottom three-fifths (quintiles) of households come out ahead on average from adding together the fees and rebates, while the top two-fifths come out behind.

The present study does not examine the benefits to households from the investments in clean energy and transportation, which requires a deeper level of analysis.

As shown in Figure 3, the lowest quintile of households come out, on average, about \$270 ahead. The figure also shows that the second and third quintiles come out ahead, again on average, by \$200 and \$40 respectively; while the highest income fifths come out behind by \$340 and \$410.

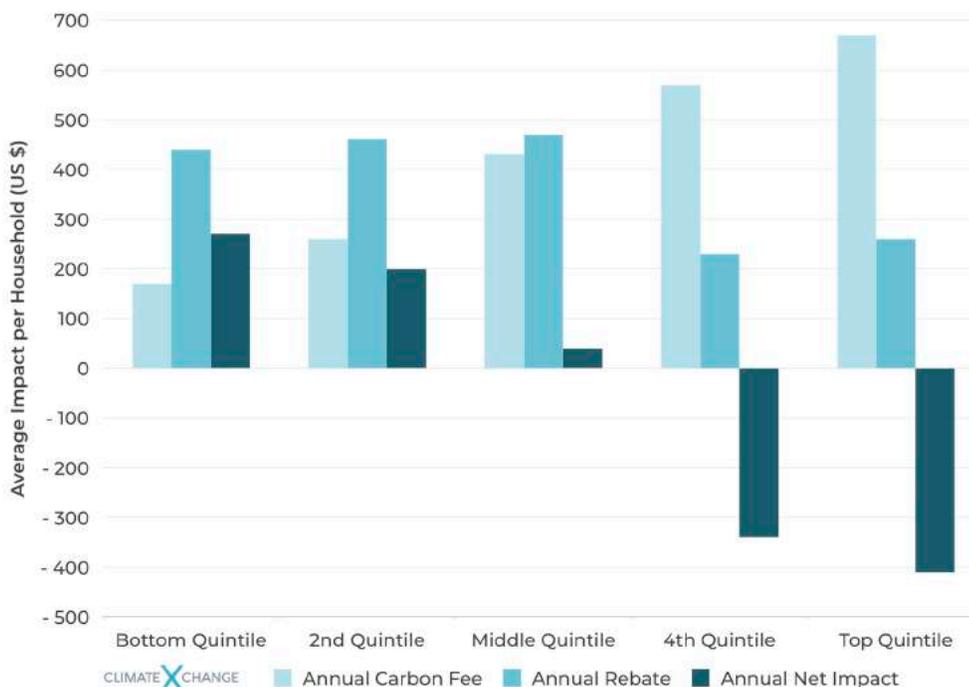


FIGURE 3
Impact of
HB 2810 on
households by
income level

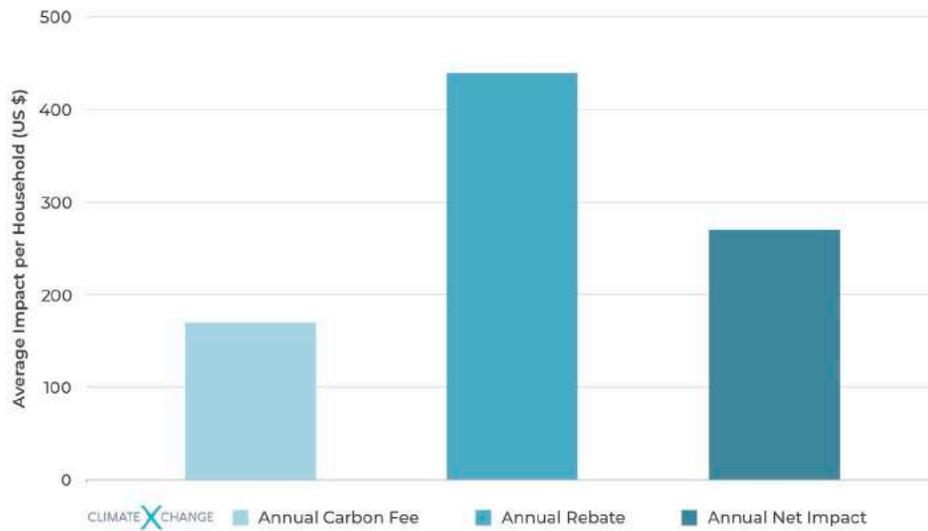


FIGURE 4
Impact of
HB 2810 on
Bottom 5th
of Households

Because energy use varies greatly by household, even at the same income level, fees can vary greatly among low-income households. As a result, the bill was designed to give average rebates for low-income households substantially above their average fees. The result is that the vast majority of low-income households wind up with positive net benefits.

Figure 5 shows the data behind Figures 1 and 2. The last column of Figure 5 shows that the positive impact on low-income households is relatively large as a percent of their average income, while relatively small for moderate and higher-income households.

FIGURE 5 Impacts of 5ths of Households by Income

	Average fee per household	Average rebate per household	Average net impact	Mean household income, Northeast U.S. 2017	Net impact as % of mean income
Bottom Quintile	\$170	\$440	\$270	\$14,350	1.90%
2nd Quintile	\$260	\$460	\$200	\$38,330	0.50%
Middle Quintile	\$430	\$470	\$40	\$66,660	0.10%
4th Quintile	\$570	\$230	-\$340	\$107,220	-0.30%
Top Quintile	\$670	\$260	-\$410	\$240,200	-0.20%

CONCLUSION

The results of this study show that it is possible to impose fees on carbon pollution, creating a substantial incentive to reduce emissions while still financially protecting low and moderate income households, and providing substantial rebates to higher-income households. Moreover, this leaves out the 30 percent

of funds that will be used for clean energy and adaptation to climate change, providing further benefits to all state residents as well as the 17.5 percent of funds that will be used to benefit vulnerable employees. Further research by Climate XChange will examine these additional benefits.