

ECONOMIC OPPORTUNITY STUDIES

400 NORTH CAPITOL STREET, SUITE G-80, WASHINGTON, D.C. 20001
Tel. (202) 628 4900 Fax (202) 393 1831 E-mail info@opportunitystudies.org

Carbon Emission Auction Rebates for Working Families and Retirees:

Research Shows Uniform Payments Would Be Unfair

Lynn Schneider and Meg Power, PhD.

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Proposed cap-and-trade policies could harm America's working families and retirees because their purchasing power drops as the cost of energy rises. The lower a household's income, the more its capacity to afford basic necessities will be impacted. Most major climate change bills filed in the 110th Congress in some way acknowledges the regressive impact of emission caps or taxes and proposed mechanisms to alleviate the impact, as does the Obama Administration's policy outline.

New proposals for "recycling" revenues or "rebates" from the Treasury's auction revenues to consumers generally involve remitting cash transfers or tax reductions that vary by income. In other words, all households with a given income would receive the same rebate, perhaps varied for household size. Very little research has been conducted on the incidence of the consumer costs that will result from an auction system, but all of that analysis suggests a "flat" rebate is simple, but unfair. If the goal of a rebate or "dividend" mechanism is to mitigate the loss of purchasing power of the most vulnerable households, one size does not fit all.

A rebate, even varied by family size, will significantly overcompensate some and under-compensate others because of their location and the fuels their utilities use. The key factors which were found to cause significant variation in the costs of climate policy to low-income households are: *rural vs. non-rural residency and geographic region*. Further research is needed in this area in order to ensure proposed revenue "recycling" is fair and progressive.

Study #1: Oak Ridge National Laboratory¹

The Oak Ridge National Laboratory (ORNL) conducted a study on the impact that the Climate Change Stewardship and Innovation Act of 2007 (S.280)² would have on LIHEAP-eligible households' direct expenditures on gasoline and residential energy across rural and non-rural residencies, and across geographic regions.³ This remains the only published analysis based on data that includes the fuels used in homes. Of course, limits on CO₂ emissions will raise the price of fuel oil, propane, and coal-based electricity more than the cost of other fuels. The bill analyzed, S.280, exempted natural gas from caps and had longer-range horizons on reductions than subsequent proposals; therefore, the costs to households seem low by contrast to the later proposals.

The important figures are the differences between groups of households rather than the level of allocation values. Rural residence may entail substantial price increases for delivered consumer goods and food as well, but these prices are probably reflected in the base period prices, which are higher in many rural areas. ORNL looked only at the two types of direct household energy

purchases: household fuels and gasoline because variability was the subject under study and inflation as an indirect result of energy price increases is not thought to vary greatly.

Variation between Rural and Urban Area Households

Rural areas’ residents in all regions drive far longer distances than do others. Table 1 displays ORNL’s findings that there will be significant *variation between rural and non-rural consumers’ increased gasoline expenditures and therefore in the percent of income they must spend on transportation. Rural low-income households spend 45% more on average per year on gasoline than other low-income households.*

Table 1. Increase in Annual Gasoline Expenditures above Baseline by 2030

National Average	\$323
Rural	\$424
Non-rural	\$291

Source: ORNL. p. 6-8.

Variation Among Regions

The carbon intensity of heating fuel and electricity generation will lead to very different cost increases in different residential fuels. As seen in Table 2, ORNL’s findings reveal *dramatic variation in impacts across regions by 2030*, with vulnerable consumers in the South and Midwest incurring price increases more than double those of lower-income consumers in the Northeast and West. This disparity appears to be mainly due to the reliance of the South and Midwest on coal for electricity, as well as the high use of coal-fired electric heating in the South.

Table 2. Percent Increase in Annual Electricity Expenditures above Baseline by 2030

National Average	20%
West	14%
Midwest	28%
South	21%
Northeast	12%

Source: ORNL. P.4-6.

Study #2: Resources for the Future⁴

Resources for the Future (RFF) evaluated a variety of climate policy mechanisms and their impacts on the 20% of households with the lowest incomes. The analysis shows what happens first when a flat rebate is provided (the “dividend” approach, which provides a uniform rebate to all individuals) and then when other uses of auction revenues are added to a flat rebate. The results are stated in terms of percentage of annual income lost or added. No data on the type of fuel used by the households was included.

Variation among Regions under Different Policy Scenarios

Table 3 shows the impact of five policies on households in the lowest 20% of income and the range of impacts in percent of annual income lost/gained for those households by state or grouping of states.⁵ The percentages shown here are not comparable to the ORNL results. However, these results compare the fairness of various rebate proposals.

**Table 3. Impact of Selected Policies on Annual Income in 2015
Loss or Gain on Percent of Annual Income for Bottom One-fifth of Households**

	Cap-and-Dividend (taxable)	Plus Free Allocation to Emitters	Plus Invest in Efficiency	Plus Exclude Transportation Fuel	Plus Exclude Home Heating
National Average	1.97%	-6.15%	1.81%	0.03%	1.59%
Range of Impact on Regions	-1.23% (NE) to 3.80% (TX)	-9.04% (NE) to -5.12% (NW)	-1.17% (NE) to 3.50 (TX)	-2.74% (NE) to 1.72% (TX)	-1.52% (FL) to 2.81% (TX)

Source: RFF. 2008. *The Incidence of U.S. Climate Policy: Where You Stand Depends on Where You Sit*.
Note: NE=New England

RFF found that Texas, the Northwest, California, and Nevada are the only areas whose lower-income households incur net income gains under all policies except free allocations to polluters. Under that scenario all low-income consumers incur dramatic losses.

Low-income households in New England incur higher losses than those in any other region under most policies, except the exclusion of home heating fuels. If heating fuels are excluded, Floridians incur the greatest real income losses. However, the losses in New England (not shown) are only a little lower.

While ORNL found that low-income households in the entire Northeast Census region, including New York and Pennsylvania, would be harmed less by the direct cost of cap-and-trade relative to other regions, RFF found that New Englanders would be most harmed under any variation of cap-and-trade policy that returns a flat dividend. Texas' low-income consumers are net winners under four of five RFF scenarios; their collective real incomes would be 2-4% higher after the flat dividend is distributed. This finding reflects that the Texas share of US families in the bottom 20% of income is much higher than New England's. These variations do not change the fact that a flat rebate creates unintended income transfers among low-income households in different locations.

Consumer Mitigation Proposals and the Distribution of "Mitigation" Resources

The best-developed blueprint for a rebate to lower-income households delivered through existing tax and income support systems was proposed by the Center on Budget and Policy Priorities.⁶ The analysis supporting the proposal does not examine how the direct cost of fuels would lead to different household impacts.

Since today's tax credits and income support systems vary only by adjusted income, family size and employment status, changes or new approaches would be required to solve the re-

distribution problem. The Center proposes a small set-aside of auction revenues to provide to states to use for offsetting household burdens in unspecified ways and proportion.

Cap-and-dividend proposals circulated by several groups give every individual in the nation the same "climate dividend." Since low-income households are smaller on average than others, the plan not only locks in, but actually exacerbates, the regressive nature of the increase in direct and indirect increases in the price of energy.

The Analysis Tools Limit Understanding: *Better Thinking Comes from Complete Information*

The analyses of consumer impacts offered by CBO, the Center on Budget and Policy Priorities, and RFF all use the Consumer Expenditure Survey (CEX) to determine what low- and moderate-income

Americans spend on energy directly and also on other products whose costs change because of the price of energy. The CEX is a snapshot of the past, but using it limits the predictive power of these analyses because it does not reflect the type of household fuel used. Those homes with the highest CO₂ content, including coal-fired electricity, will cost far more proportionately than natural gas and nuclear power. What's more, there will be a proportional shift among the consumer groups based on fuel and location. Those now using coal-based power have some of the lowest-cost electricity in the nation; it will rapidly become the most expensive. Electric bills make up the majority of low-income household expenditures today.

The 2005-2006 CEX data patterns will not be the burden distribution in a carbon-constrained future. In fact, the residential energy expenditures in those years were lower than normal so that expenditures that were below normal weather requirements are the basis for those analyses predictions about future needs.

The combination of the DOE Residential Energy Consumption Survey and the National Energy Modeling System, as used by ORNL, can offer fuels data that can be projected for different auction scenarios (and different weather forecasts). It lacks the data on all expenditures that would allow calculations of total household burden. However, those increases will be essentially the same percentage increase nationwide.

Conclusion: The analysis of what a cap-and-trade policy will cost households and what to do as a remedy is incomplete, and its tools are too limited. The 30-year framework proposed for re-distributing revenues requires imaginative and flexible policy tools; the analyses result in recommendations that are limited by today's income redistribution mechanisms and by the faulty analytic base.

A thorough investigation of the direct and indirect household impacts of the major policy alternatives is an essential first step. The second is to undertake a fresh approach to designing program tools, including, but not limited to, targeted tax "rebates" to protect all American consumers equally as well as the economy they support while a future-directed climate change policy drives up the cost of all fossil fuels.

¹ Eisenberg, J., 2008, "The Impact of Carbon Control on Electricity and Gasoline Expenditures of Low-Income Households," Oak Ridge National Laboratory, Oak Ridge, TN.

² S.280 was designed to reduce greenhouse gas emissions over time through a cap-and-trade system that would begin in 2012. The cap would be lowered drastically in 2020, 2030, and 2050. Some emission allowances would be allocated freely to emitters, and an unspecified number of allowances would be auctioned. The bill establishes that some of the proceeds of the auctions would go toward cash rebates, discounts, and subsidies for consumers to offset increasing costs of energy, climate change adaptation and mitigation programs targeting low-income populations, support of technology innovation and deployment, assistance to dislocated workers and communities, among other things.

³ ORNL developed projections of impacts on the expenditures of low-income households on gasoline and residential energy by integrating the Energy Information Administration (EIA) National Energy Modeling System's price projections for electricity and gasoline under S.280 with the EIA Residential Energy Consumption Survey and the EIA National Household Transportation Survey, both from 2001.

⁴ Burtraw, D., et al., 2008, "The Incidence of U.S. Climate Policy: Where You Stand Depends on Where You Sit," Resources for the Future, Washington, D.C.

⁵ For these projections of impacts, RFF used data on household expenditures from the U.S. Bureau of the Census Survey of Consumer Expenditure 2004-2006. To develop their sample, RFF used a national population sample from the Bureau of Labor Statistics, grouped households by income decile, and aggregated those households into 11 regions. Those samples exclude Alaska and Hawaii, and due to a small number of observations, five other states were excluded from the study (Iowa, New Mexico, North Dakota, Vermont, Wyoming). The 11 regions into which the remaining 43 states and District of Columbia were aggregated are: Ohio Valley (IL, IN, KY, MI, MS, OH, WV, WI), Northeast (CT, ME, MA, NH, RI), Mid-Atlantic (DE, MD, NJ, PA), Plains (KS, MN, NE, OK, SD), Southeast (AL, AR, DC, GA, LA, MS, NC, SC, TN, VA), Northwest (ID, MT, OR, UT, WA), Mountains (CO, AZ), California and Nevada, Florida, Texas, and New York.

⁶ Stone, C., et al., 2009, "Cap and Trade Can Fight Global Warming Effectively While Also Protecting Consumers," Center on Budget and Policy Priorities, Washington, D.C.

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