CONGRESSIONAL TESTIMONY

March 12, 2009

Protecting Lower Income Families While Fighting Global Warming

Dallas Burtraw

Prepared for the U.S. House of Representatives Committee on Ways and Means, Subcommittee on Income Security and Family Support

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Protecting Lower-Income Families While Fighting Global Warming

Written Testimony of Dallas Burtraw

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Summary of Testimony

These comments highlight the distributional consequences of climate policy in the United States. The primary influence affecting the impact on households is the way that the value of emissions allowances is distributed in the economy. It is possible to fully compensate all low and moderate income families, leaving many households with net benefits under the policy.

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Protecting Lower-Income Families While Fighting Global Warming

Mr. Chairman, thank you for the opportunity to testify before the House Committee on Ways and Means' Subcommittee on Income Security and Family Support. My name is **Dallas Burtraw,** and I am a senior fellow at Resources for the Future (RFF), a 57-year-old research institution based in Washington, D.C., that focuses on energy, environmental, and natural resource issues. RFF is independent and nonpartisan, and shares the results of its economic and policy analyses with environmental and business advocates, academics, government agencies and legislative staff, members of the press, and interested citizens. RFF neither lobbies nor takes positions on specific legislative or regulatory proposals. I emphasize that the views I present today are my own.

I have studied the performance of emissions cap-and-trade programs from both scholarly and practical perspectives, including evaluation of the sulfur dioxide (SO_2) emissions allowance trading program created by the 1990 Clean Air Act Amendments, the nitrogen oxide (NO_X) trading program in the northeastern United States, and the European Union Emission Trading Scheme (EU ETS). I have conducted analysis and modeling to support the state and regional efforts to design trading programs, and I served on California's Market Advisory Board overseeing the state's greenhouse gas initiative. Recently, with colleagues at Resources for the Future, I have conducted economic analysis to understand the distributional impacts of climate policy on households, paying close attention to differences across regions and income groups.

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The leading proposal to reduce emissions of greenhouse gases is a cap-and-trade policy whereby the economy is subject to an overall cap on total emissions. Emissions permits, or allowances, would be distributed into the economy. Polluters

could buy, sell, or trade with one another while still maintaining the overall cap. There are many similarities between cap and trade and an emissions tax, in that both place a scarcity value on carbon dioxide (CO_2) emissions and thereby provide a price signal that is expected to encourage innovation and investment in lower-emitting technologies and also to trigger changes in consumer behavior.

In order to understand the effects of such a policy on households, it is essential to characterize the complete policy, which has two main components. One is the introduction of a price on CO_2. The way that households are affected by this aspect of the policy will depend on the CO_2 emissions embodied in their economic activities – both the emissions embodied in the direct energy use in the home and the emissions embodied in their indirect purchase of goods and services.

The second component of the policy is the way this new value associated with placing a price on CO_2 is distributed in the economy. It is a big error to evaluate this policy by focusing on the first component alone, because it implicitly assumes that the value disappears. In fact, the value is substantial, and its assignment is a central decision facing policymakers in the design of climate policy.

For example, a cap-and-trade policy in which the allowances are auctioned and the auction revenues returned to households in a lump-sum manner leads to quite different impacts on households than a policy in which the auction revenues are used to reduce income taxes or a policy in which there is no auction but rather the allowances are distributed for free to existing emitters. To assess the full impacts of carbon policy, both the impacts of the price and the impacts of the distribution scheme are of critical importance.

Before addressing several specific questions, I want to draw attention to the magnitude of the value that would be created by placing a price on CO_2 in the United States. A CO_2 cap-and-trade program would constitute the greatest creation of government-enforced property rights since the 19th century. Depending on the stringency of the cap and breadth of the program, the annual market value of these property rights will range from $100 billion to $370 billion, depending on the

coverage and stringency of the program. The means by which these rights are organized and initially distributed each year is of historic significance for the economy as well as the environment. Policymakers might frame the decision about allocating emissions allowances in the following way: Imagine we are implementing a new program that will create well over a trillion dollars in value in the next decade. Now, how do you want to allocate that value? The answer to this question will determine the answer to the main questions facing this committee, including the effect on low- and moderate-income families.

I would like to make one additional point. The value of emissions allowances under a cap-and-trade program (or the tax revenue collected under an emissions tax) would be substantially greater than the cost of the resources actually used to achieve emissions reductions. For this reason, you might say the distribution of the value of emission allowances is more important to the cost on households than is the actual stringency of the program.

For example, implementation of the Lieberman-Warner level goals can be expected to result in an economywide CO_2 allowance price of $20.91 per metric ton by 2015 (2006 dollars), according to modeling from the Energy Information Administration.[1] This price is expected to accomplish a 13 percent reduction in emissions from 2006 levels, and 16.5 percent reduction from the forecast business as usual levels for 2015. A first-order estimate of the costs of achieving this reduction is $11.3 billion, but the estimated value of the allowances is $114 billion

[1] Energy Information Administration, *Energy Market and Economic Impacts of S.2191, the Lieberman-Warner Climate Security Act of 2007*, SR/OIAF/2008-01 (Washington, DC, April 2008), web site http://www.eia.doe.gov/oiaf/servicerpt/s2191/pdf/sroiaf(2008)01.pdf. See supplementary spreadsheet National Energy Modeling System run S2191.D031708A.

(2006 dollars). Thus, the real economic loss comprises just 10 percent of the cost of the program on households, and the allowance value (or tax revenue) comprises about 90 percent of the cost on households. The allowance value would be available to achieve a range of potential goals, including achieving desirable distributional outcomes. This fact highlights the important role played by the allocation of emissions allowances, or the distribution of carbon tax revenues, in determining the distributional outcome of climate policy under cap-and-trade or a carbon tax.

With this information as background, I will address questions that frame the agenda for this hearing.

1. In what ways might climate control legislation disproportionately impact low- and moderate-income households?

Climate control legislation implemented through the introduction of a price on CO_2 emissions can be expected to affect household expenditures and disposable income in several ways. One is through the change in prices for direct energy expenditures. Second is through the change in prices of other goods and services in the economy. Third is through the change in government's own expenditures associated with an increase in the price of fuels, which has implications for the tax burden of households. Fourth, there is a possibility that a household could be affected by changes in employment and income possibilities as a result of changing forces in the economy. I focus only on the effect on household expenditures.

Low-income households spend a larger share of their income on direct energy expenditures than do households at higher-income levels. This suggests that unmitigated changes in energy prices could most seriously impact low-income families. For example, my analysis shows that households in the bottom decile spend about 24 percent of their disposable income on direct energy purchases (electricity, personal transportation, home heating), while their counterparts in the top decile only spend 3.6 percent.

There are a variety of reasons that one might be most concerned about the impact on lower-income households, in addition to the fact that they bear a relatively larger burden from climate policy. These households have less discretionary income that can be directed to investments that might soften the blow from changing energy prices. Hence, they may be less able to adapt to a changing economy. Moreover, lower-income households may be subject to greater effects from a changing climate because of the location and condition of the neighborhoods and housing in which they live.

This does not mean that lower-income households necessarily will be made worse off from climate policy. In fact, lower-income households can easily benefit relative to richer households depending on how carbon revenue is allocated. That is because the absolute value of the change in costs is less for lower-income households than for others, so it takes relatively less to compensate them.

2. What factors should the Committee consider when attempting to mitigate any costs for low- and moderate-income consumers that may result from climate control legislation?

First, the introduction of a price on CO_2 would be fairly regressive, meaning that it would disproportionately affect lower-income households, which spend a larger portion of their income on energy expenditures. Second, the assignment of the value from the CO_2 price—either the value of emissions allowances, if allocated for free or the government revenue collected under an allowance auction—has a major influence on how the burden is ultimately shared.

Similarly, the economic costs will not be uniform across different regions. Different parts of the country have both different levels and patterns of energy expenditures. In the Northeast and the Mid-Atlantic area, home heating contributes importantly to expenditures, but not so in the South. In contrast, on average electricity and gasoline expenditures are substantially greater as a percentage of income in the South than for other regions. Moreover, the CO_2 emissions associated

with electricity use varies greatly in different parts of the country because the fuel used to generate electricity varies.

Most existing research on the distributional ramifications of climate policy examines only the effects of putting a price on CO_2. We have analyzed 10 climate policy scenarios that vary in the manner that they assign the allowance value that is created under the program. Five scenarios we have considered address the use of revenue directly, including returning the revenue directly to households as taxable income on a per capita (or per adult) basis, returning the revenue as nontaxable income, or using the revenue to reduce the income tax, the payroll tax, or to expand the Earned Income Tax Credit (EITC). Five other scenarios examine options for the electricity sector including free allocation to local distribution companies and expenditure of allowance value on energy efficiency, exemption of particular sectors—specifically home heating and personal transportation—and finally, free allocation to incumbent emitters.

"Cap-and-dividend" options

- Per-capita (taxable) dividend of allowance revenues to households (e.g. income taxes would be paid on those dividends)
- Per-capita (nontaxable) dividend of allowance revenues to households

Adjustments to preexisting taxes

- Reduction in income taxes
- Reduction in payroll taxes
- Expansion of the Earned Income Tax Credit

Energy and fuel sector options

- Free allocation of allowances to consumers in the electricity sector (accomplished by allocation to local distribution companies, namely retail utilities)

- Exemption of the transportation sector from the cap-and-trade program
- Exemption of the home heating sector from the cap-and-trade program
- Investment in end-use energy efficiency

Free allocation to emitters

- Grandfathering to incumbent emitters.

(Note that several of these policies would not use all of the allowance value. The ultimate distributional consequence of the policy will depend on how all the value is distributed. We consider the incremental effect of each type of allocation.)

We find expansion of the EITC, and the cap-and-dividend programs that directly return revenue to households are strongly progressive. In contrast, three policies appear severely regressive, even more so than before accounting for the use of the revenue. These include free allocation to incumbent emitters (grandfathering), reducing income taxes, and reducing payroll taxes. Free allocation to emitters directs about 10 percent of the allowance value overseas to foreign owners of shareholder equity and therefore not available to any income group in the United States. Additionally, this option is decidedly regressive because the value of the free allowances accrues primarily to higher-income households which own a relatively higher portion of shareholder equity.

While the case for equity across income groups is straightforward, interregional equity is more complicated due to differences in preexisting policies and incurred costs, energy prices, resources, and lifestyle choices. Some regions have already enacted policies to reduce their carbon footprint, with California being the prime example.

Nonetheless, important differences emerge and the biggest regional differences affect poor households. Low-income households in the bottom quintile of the income distribution in Texas, California, and the Northwest are the least

vulnerable, while low-income households in the Northeast, Ohio Valley, followed by the Mid-Atlantic and Plains states are the most vulnerable.

We examined five policies in detail that use revenue to return allowance value directly to households or to reduce the income tax, the payroll tax, or to expand the EITC. (We assume that 14 percent of allowance value accrues to government to pay for its own increase in expenditures.) We examined the effects on households in 2015, from a policy equivalent in stringency to the Lieberman-Warner proposal. This would yield a CO_2 allowance price of $20.91 (2006 dollars) and emission reductions of 16.5 percent from a business-as-usual baseline for 2015, or 13 percent from 2006, according to the Energy Information Administration.

Under this policy, we estimate that households would feel an average impact of $928 from changes in energy prices and indirect changes in the costs of other goods and services. We estimate the real economic cost on an average household basis would be $86. The difference is the value of emissions allowances, equal to about $843 per household (2006 dollars). Consequently, the actual effect on household well being will depend crucially on the distribution of that allowance value.

As noted already, three of these policies would be progressive in that the costs would not fall heavily on low-income households. These include cap-and-dividend policies (either taxable or nontaxable dividends) and an expansion of the EITC. In fact, in these three cases low- and moderate-income households could expect to benefit from the policy. One way to consider this is to ask what percentage of households, when measured along the income distribution would benefit. For all three policies we find that half of all households in the nation would benefit – that is, after returning revenues either as a lump-sum payment or as an expansion of the EITC, about half of households come out ahead under these climate policies. The crossover point where households would begin to be worse off is in the sixth income decile. Measured in this way, a slightly larger share of households benefit from cap

and dividend than from expansion of the EITC because the credit removes some dividend from all households and concentrates it in households that qualify for it.

In contrast, reducing income tax is regressive. Households in the bottom 8 deciles of the income distribution are made worse off, even after accounting for the revenue. Households in the top two income deciles are made better off. The reduction in the payroll tax is somewhat less dramatic. Households in the bottom seven deciles are made worse off. I hasten to add, however, that the policy we modeled is not the same as the sketch reflected in the Obama administration's budget proposal, because we assume all households benefit from the reduction in their payments to the payroll tax while the administration's proposal would provide a lump-sum payment to offset payroll taxes and would phase that payment out at higher-income levels.

As noted already, there can be important differences across regions. One way to consider this is to ask: what is the break-even point in different regions of the country? We examined this for the cap-and-taxable dividend case. On a national basis, slightly more than half of households would benefit but that varies across regions. In the most vulnerable regions, the Mid-Atlantic and Ohio Valley, roughly 30 percent of households would benefit from this climate policy. In the Northeast and Plains states, only about 35 percent of households would benefit.

3. What methods or policies might both mitigate costs for lower-income populations and increase economic efficiency?

An important consideration is how the use of allowance value could contribute to economic growth. Public finance economists have emphasized that using the value to reduce pre-existing taxes would spur economic growth and reduce the hidden costs associated with the policy. Those hidden costs stem from the introduction of a new regulatory burden in the economy that acts much like the introduction of a new tax. It may provide a disincentive to work to the extent it reduces the real wage. If revenue is used to reduce pre-existing taxes then it can mitigate most of this effect. Much of the economics literature suggests the efficiency

gains from using emissions allowance value in this way can be very significant. As we have indicated with respect to policies to reduce the income tax, however, the effect can be very regressive because most of the benefits would accrue to those who earn the most income. We obtain similar, but less strong results for a reduction in the payroll tax. Each of these approaches can be adjusted to alter this affect, as the administration's budget proposal appears to attempt to do. Nonetheless, our results highlight the tensions that may exist between efficiency and equity in climate policy.

Expansion of the EITC does not suffer from the same tradeoff. It may promote employment for lower-income households and may help insulate those households from changes in energy prices.

One option that also might have the potential to be equitable and potentially also economically efficient is investment in energy efficiency. However, whether this actually is efficient or simply constitutes a subsidy to the consumption energy services hinges on the effectiveness of energy efficiency programs that reduce the cost of meeting the cap. Implementation of energy efficiency programs has proven uneven in the past.

Finally, it is important to note that exclusion of personal transportation or home heating fuels leads to higher allowance prices because greater emissions reductions would have to be achieved in other sectors. The same is true if allowances are used to compensate electricity consumers, and the ramifications are even greater. The protection of any of these sectors from changing prices leads to less consumer response. Consequently, greater emissions reductions have to be achieved in other sectors. In the case of free distribution to electricity consumers (through distribution to local distribution companies), our research indicates this could cause the allowance price to rise by 15 percent.[2] This raises the cost of using

[2] A. Paul, D. Burtraw and K. Palmer. 2008. "Free Allocation to Electricity Consumers under a U.S. CO2 Emissions Cap," Resources for the Future Discussion Paper 08-25.

other fuels even further, and it is not obvious whether this will diminish or amplify differences in the impact of the program across regions.

The subsidy to offset allowance costs associated with consumption of any one fuel leads to a violation of the "law of one price" that is necessary to achieve economic efficiency. As with the allocation of any scarce resource, efficiency requires that one price consistently reflects the scarcity value of emission allowances. A lower electricity price means that electricity consumers would have less incentive to purchase energy-efficient air conditioners and refrigerators. In practical terms, if you drive a car, or use natural gas to heat your home or run your industrial facility, you might be concerned that a subsidy to electricity consumers comes at the cost of higher prices for other uses of energy.

In sum, the idea of softening any sudden change in electricity prices is compelling but it has an efficiency cost. One may acknowledge that, in the short run, consumers have an existing capital stock of refrigerators and air conditioners and are constrained in their ability to reduce energy use. To achieve emissions reductions, it is important to establish the expectation that future prices will rise to reflect the scarcity value of CO_2 emissions because this would provide an incentive for consumers to purchase new appliances, etc.

The imposition of sudden price changes may be disruptive to the economy and perceived as unfair. However, if legislation goes down this road, from the standpoint of efficiency it is important to acknowledge that allocation to electricity consumers through their local distribution companies should be phased out as soon as possible. I would suggest a phase out of four years would be appropriate to ease the transition. Coupled with two or three years of preparation before the program takes effect, this represents close to half the useful life of many household appliances.

4. Is it reasonable to presume that a policy can be designed to compensate the large majority of low- and middle-income Americans for the increased costs related to climate control?

There is one additional consideration I wish to mention. The introduction of a price on CO_2 in the U.S. economy represents the introduction of a long-term institution. The way that compensation to low- and moderate-income households is delivered, or any group for that matter, may be subject to changes in political priorities and may not be any more permanent than the tax cuts of the last administration.[3] My concern is that these changes and the political struggles that might ensue can undermine the transparency of climate policy and the sense that we pursue it for a common purpose. To the extent possible, policy should be transparent and simple. Economists would view the atmosphere as a common pooled resource. This philosophical perspective suggests equal franchise in the resource and equal sharing of its value. An equal dividend approach would be consistent with this perspective and may solidify the sense of common purpose, and the permanence of the way that value is assigned under climate policy. As I see it, this is an added strength of the cap and dividend approach. More broadly, however, I think it is critical that the goals of transparency and simplicity be front and center in the design of climate policy.

The decision about allocating emissions allowances involves a familiar trade-off between efficiency and distributional outcomes. Federal climate policy would impose potentially significant costs on households that would vary depending on the policy enacted. Taken just by itself, the introduction of a price on CO_2 would be regressive, meaning that it would disproportionately affect lower-income households because they spend a larger portion of their income on energy expenditures. But this is just one-half of the equation. The ultimate impact of the policy would also depend on how the policy distributes the value from the CO_2

[3] The Jobs and Growth Tax Relief Reconciliation Act of 2003 and the Economic Growth and Tax Relief Reconciliation Act of 2001.

price—both the value of emissions allowances, if allocated for free, and the government revenue collected under an allowance auction. If done carefully, the distribution of allowance value can safeguard the majority of low- and moderate-income households in this country.

Thank you for the opportunity to testify today.

Dr. Burtraw is a senior fellow at Resources for the Future. He holds a Ph.D. in economics and a master's in public policy from the University of Michigan. Dr. Burtraw has conducted research in the design of incentive-based environmental policies in the electricity industry and written extensively on the performance of emissions trading programs in the United States for sulfur dioxide and nitrogen oxides and the European Union's Emission Trading System for carbon dioxide. He also has advised on the design of climate policy for U.S. state governments. He currently serves on the EPA Advisory Council on Clean Air Compliance Analysis and on the National Academies of Science Board on Environmental Studies and Toxicology.