

Comment on
“Distributional Impacts of Carbon Pricing Policies in the Electricity Sector”

by

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A cap-and-trade program for greenhouse-gas emissions would provide economy-wide incentives for households and businesses to reduce their consumption of energy and energy-intensive goods and services. Those incentives are crucial to the program’s success in minimizing the cost of achieving the desired cap on emissions. The paper “*Distributional Impacts of Carbon Pricing Policies in the Electricity Sector*” by Burtraw, Walls and Blonz offers valuable insights into the potential efficiency cost associated with allocating emission allowances in a manner that undermines households’ and businesses’ incentives to reduce their emissions. As a case study in current policy, the authors consider the implications of allowance allocations to local distribution companies (LDCs) providing electricity, natural gas, and home heating oil in 2015 under the provisions of H.R. 2454, the American Clean Energy and Security Act of 2009, which was passed by the House of Representatives on June 22, 2009.

Burtraw, Walls and Blonz assumed that those free allocations, which would account for 41 percent of all emission allowances provided under the act in 2015, would offset the price increases that the customers served by those LDCs would otherwise have faced under the cap-and-trade program. As a result, the authors found that allocations to LDCs would raise the price of allowances by \$4.38 compared with what the price would have been if policymakers had given the allowances away in a manner that did not reduce households’ and businesses’ incentives to conserve energy.

I offer three observations here that supplement the findings that Burtraw, Walls and Blonz present:

- The efficiency cost of free allocations to LDCs under H.R. 2454 may be less than Burtraw, Walls and Blonz estimated because provisions in the act that allow firms to bank allowances and to comply with the cap by using offset credits could dampen the effect that the LDCs’ allocations would otherwise have had on allowance prices. (Offset credits are generated when domestic or international entities not otherwise covered by the cap reduce their emissions in approved ways.)
- To the extent that free allocations to LDCs increase the price of allowances, they also increase the transfer of income that occurs under a cap-and-trade program – that is, the amount of income that is transferred from households through the higher prices that they pay for the goods and services that they consume to households that ultimately receive the allowance value. Thus, an understanding of the distributional implications of any increase in allowance prices that might result from free allocations to LDCs requires accounting for the value of all of the allowances..

¹These comments draw upon analyses conducted by the Congressional Budget Office (CBO). Many people contributed to those analyses, including Ed Harris, Robert Johansson, Kevin Perese, Frank Sammartino, Robert Shackleton, Natalie Tawil, and David Wiener. However, the views expressed in this comment are my own and should not be interpreted as those of CBO.

- Estimates of both the efficiency and distributional effects of allocations to LDCs depend crucially on assumptions about how LDCs would pass the allowances' value on to their customers. As a result, transferring the allowances' value to energy consumers indirectly through LDCs creates significant uncertainty about the effects of such a policy.

Provisions that Allow Banking and the Use of Offset Credits Could Dampen the Allowance Price Increase that Would Otherwise Result from Free Allocations

Under the cap-and-trade program that H.R. 2454 would establish, firms would be able to bank unused allowances in any given year to use in future periods – which would smooth their compliance costs over time. The bill would also allow firms to submit offset credits in lieu of up to 2 billion emission allowances each year.

Analyses that take allowance banking into account typically assume that such an approach will ultimately minimize the cost of meeting the cumulative cap on emissions and cause the price of allowances to rise over time at a rate that reflects the opportunity cost associated with banked allowances (which is typically assumed to be a real rate of return of between 5 percent and 7 percent). Because of banking, the availability of low-cost options for complying with the policy in future periods affects the price of allowances in early periods.

The combination of allowance banking and offset credits tends to reduce the price increases that would otherwise result from policies that dampened consumers' incentives to conserve energy. As that dampening began to push up the prices of allowances in the early years of the policy's implementation, firms would bank fewer of them—which would tend to lower allowance prices in that period, other things being equal. But in addition, to the extent that dampening the incentive to conserve energy boosted allowance prices, it would also tend to increase the supply of domestic and international offset credits. (With a relatively flat supply curve, international offset credits in particular would probably be available in very large quantities, but only after the policy had been in place long enough for international agreements to be reached and the necessary provisions for monitoring and enforcement put in place.) That additional supply of offset credits, in turn, would reduce the price of allowances, other things being equal.

In estimating the price of allowances under H.R. 2454, the Congressional Budget Office (CBO) assumed that the allowances that were allocated to LDCs and passed on to residential customers in the form of fixed rebates on customers' bills would reduce households' energy consumption by half the amount that would result from an explicit decrease in the price of electricity. CBO found, however, that the lessening of households' incentive to conserve energy had only a small effect on the price of allowances (less than \$0.50 in 2020, for example), once decreases in the amount of allowance banking and increases in the use of offset credits for compliance purposes were taken into account.

Allocations That Increase the Price of Allowances Would Increase the Total Amount of Income Transferred Under a Cap-and-Trade Program

Burtraw, Walls and Blonz found that the free allocations to LDCs under H.R. 2454 would increase the price of allowances by \$4.38 in 2015. Given that the bill would allocate 5,003 million allowances in that year, the amount of income transferred as a result of the free-allocation policy would increase by roughly \$22 billion. In their distributional analysis Burtraw, Walls and Blonz accounted for 56 percent, or about \$12 billion, of that additional income. The remaining 44 percent, or \$10 billion, would be transferred from households based on the carbon content of the goods and services that they

consumed to households that benefited from the 44 percent of allowances not allocated in the Burtraw, Walls and Blonz analysis. Of the 44 percent of allowances not accounted for in their analysis, about 10 percent would be distributed via state and federal programs (to promote energy efficiency and assist workers, for example); about 23 percent would be given to businesses either directly (for example, as free allocations to trade-exposed, energy-intensive industries) or indirectly (for instance, as subsidies to electricity generators that capture and sequester carbon dioxide emissions); and 7 percent would be spent overseas (to help reduce deforestation, promote technology transfer, and assist developing countries to adapt to climate change, for example). A full accounting of the effects of the free allocations to LDCs would entail examining not only the efficiency cost associated with the higher allowance price but also the full effects of the additional income transfer that would take place as a result of the price increase.

The Distributional Results of H.R. 2454 Are Sensitive to Assumptions About Who Ultimately Benefits from the Allowances Given to LDCs

Indirectly providing allowances – through such intermediaries as LDCs – to entities (such as consumers of electricity) that policymakers might wish to compensate for the effects of a policy would create significant uncertainty about the policy’s ultimate distributional effects. That uncertainty can be illustrated by examining how a measure of the direct cost of H.R. 2454 would be distributed across households in different income brackets using alternative assumptions about the ultimate beneficiaries of the value of the allowances given to LDCs and passed on to commercial and industrial customers.

The direct cost measure used in demonstrating this point is an estimate of the loss-in-purchasing-power that households would experience as a result of the cap-and-trade program defined in H.R.2454. That loss in purchasing power equals the costs of purchasing allowances, offset credits, and reducing emissions (costs that businesses would generally pass on to consumers in the form of higher prices) minus the compensation that would be received as a result of the policy, including the free allocation of allowances, the proceeds from the sale of allowances, and the profits earned from producing offsets. Once the compensation received by U.S. households is deducted from the costs of compliance, the remaining loss in purchasing power stems from the cost of reducing emissions and producing domestic offsets, from expenditures on international offsets, and from the value of allowances that would be directed overseas. The distribution of the loss in purchasing power across households depends both on their consumption of goods and services (whose prices would increase as a result of the policy) and their share of the allowances’ value and of the profits made from producing domestic offsets.²

In a recent analysis, CBO estimated how the loss (or gain) in purchasing power, given the allocation of allowances defined by H.R. 2454 for 2020, would vary across households in different income brackets (see column 1 of Table 1). That analysis assumed that the allowances that were given to LDCs and whose value was then passed on to their commercial and industrial customers would ultimately benefit the shareholders of those businesses.

²For details on the construction of this database, see Congressional Budget Office, *The Economic Effects of Legislation to Reduce Greenhouse-Gas Emissions* (September 2009).

Table 1. Average Net Loss in Purchasing Power from the Greenhouse-Gas Cap-and-Trade Program in H.R. 2454 Under Alternative Assumptions About the Distribution of Allowance Value Given to LDCs for Commercial and Industrial Customers

| | (1) | | (2) | | Net Gain or Loss in Purchasing Power Under Assumption (2) Relative to Net Gain or Loss Under Assumption (1) ^b (Ratio) |
|-----------------|--|--------|--|--------|---|
| | Net Gain or Loss in Purchasing Power if LDC Allowances for Commercial and Industrial Customers Benefit Shareholders ^a (In dollars and as a percentage of after-tax income) | | Net Gain or Loss in Purchasing Power if LDC Allowances for Commercial and Industrial Customers Benefit Consumers of Final Goods ^b (In dollars and as a percentage of after-tax income) | | |
| First Quintile | \$125 | (0.7%) | \$190 | (1.1%) | 1.5 |
| Second Quintile | -150 | (-0.4) | -70 | (-0.2) | -0.5 |
| Third Quintile | -310 | (-0.6) | -225 | (-0.4) | -0.7 |
| Fourth Quintile | -375 | (-0.5) | -315 | (-0.4) | -0.8 |
| Fifth Quintile | -165 | (-0.1) | -455 | (-0.2) | -2.8 |
| Unallocated | 10 ^c | (0) | 10 ^c | (0) | n.a. |
| All Households | -160 | (-0.2) | -160 | (-0.2) | n.a. |

Note: The figures in the table reflect the policy in 2020 measured at 2010 income levels and as a percentage of after-tax income. (The 2010 income levels are based on the 2006 distribution of income and expenditures.) Households are ranked by adjusted household income. Each quintile contains an equal number of people. Households with negative income are excluded from the bottom quintile but are included in the total. Compliance costs are distributed to households on the basis of their carbon consumption.

- a. Congressional Budget Office, *The Economic Effects of Legislation to Reduce Greenhouse-Gas Emissions* (September 2009), Table 2.
- b. Author's calculations.
- c. The government's share of compliance costs was not distributed across households. In addition, allowances for which the recipients were not specified were not distributed. On net, the value of the allowances that were not distributed across households exceeded the undistributed costs by \$10.

The distribution of the loss (or gain) in purchasing power across households from the same allocation of the same amount of allowances could look quite different under alternative assumptions. For example, column 2 of Table 1 indicates the outcome if the value of the allowances that were given to LDCs to use for the benefit of their commercial and industrial consumers was ultimately passed onto the final consumers of the goods produced by those entities. (Such an outcome could arise, for example, if LDCs issued rebates to commercial and industrial customers on the basis of the specific quantity of electricity that they purchased.) That outcome is modeled by distributing the allowance value among households in the form of lower prices for the non-direct energy related goods and services that they consume.

Variations in the assumption about how the value of the allowances that businesses indirectly receive through LDCs ultimately benefits households would significantly affect the way losses in purchasing power would be distributed among households. For example, the loss in purchasing power (measured at 2010 levels of income) experienced by households in the second quintile of the income distribution in would be roughly 50 percent less if the allowances given to LDCs, and passed on to businesses, ultimately reduced prices rather than increased profits. In contrast, the loss in purchasing power experienced by households in the highest quintile would be roughly 2.75 times as large in that case. The average household in the lowest income quintile would experience an increase in after-tax income under either assumption about the distribution of allowances to LDCs.

Uncertainty about the distributional effects of H.R. 2454 would be less in the latter years of the policy because a smaller fraction of the allowances' value would flow to households via private entities (such as LDCs). By 2050, most of the value of the allowances would flow to households directly, in the form of rebates from the federal government.