



Testimony before the Senate Committee on Finance on
“Climate Change Legislation: Allowance and Revenue Distribution”

Alan D. Viard

Resident Scholar

American Enterprise Institute

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Chairman Baucus, Ranking Member Grassley, and Members of the Committee: It is an honor to appear before you to discuss “Climate Change Legislation: Allowance and Revenue Distribution.”

In my testimony, I make the following major points.

- Free allocation of cap-and-trade allowances to firms in unregulated markets is equivalent to imposing a carbon tax while using the revenue to make transfer payments to stockholders.
- This policy harms economic efficiency, because cap and trade increases work and investment disincentives, an effect which cannot be offset under free allocation. This policy also leads to a more unequal income distribution because low and middle-income consumers pay higher prices for carbon-intensive products while wealthy stockholders benefit from the free allocation.
- Auctioning the allowances can address both the efficiency and distributional concerns, if the auction proceeds are properly used. Marginal tax rates can be reduced and compensation can be provided to vulnerable consumers.
- The free allocation of allowances to price-regulated electric utilities is also unwise. If the benefits are flowed through as reductions in the fixed component of electricity rates, the allocation provides consumer relief, but less effectively than could be done through the proper use of auction proceeds. If the benefits are flowed through as reductions in variable electricity rates, as is likely, free allocation increases the nationwide cost of reducing carbon dioxide emissions and consumer relief in the regulated sector is accompanied by increased consumer burdens elsewhere in the economy.
- Adopting a carbon tax in place of cap and trade would avoid the pressure for free allowance allocation and offer a number of other advantages.

I elaborate upon these points below.¹ I begin by considering the case in which prices are unregulated.

CAP AND TRADE WITH FREE ALLOCATION OF ALLOWANCES

The environmental effects of cap and trade with free allocation are similar to those of a carbon tax or a cap-and-trade program with auction of allowances. Unfortunately, the economic consequences are much less benign.

If the market price of allowances under cap and trade is \$20 per ton, every firm has an incentive to take any step that can reduce emissions at a cost of less than \$20 per ton, but no incentive to

¹ This testimony draws heavily upon my recent article, “Don’t Give Away the Cap-and-Trade Permits!” *Tax Notes*, May 4, 2009, pp. 613-621.

take any step that reduces emissions at greater cost. The incentive is clear-cut for a firm that has no allocated allowance to cover the emission and must therefore pay \$20 to buy an allowance from someone else. Although it may be less obvious, a firm that was allocated more allowances than it needs faces the same incentive. If such a firm emits an additional ton, it must use an allowance that it otherwise would have sold to another firm for \$20. Emitting an additional ton still imposes a \$20 cost that economists refer to as an “opportunity cost” because it takes the form of a forgone opportunity.

That is precisely the incentive that each firm would face if it were subject to a carbon tax of \$20 per ton or if it were subject to a cap-and-trade program (with the same \$20 allowance price) in which all allowances were auctioned. All of these programs are market-based mechanisms for reducing carbon emissions because they put a price on carbon. Incentives to reduce emissions are equalized across firms, allowing the aggregate reduction in emissions to be achieved in a manner that minimizes the aggregate cost.

Because it leads to the same production and emission decisions, cap and trade with free allocation has the same impact on prices and wages as a carbon tax or a cap-and-trade program with auctioned allowances. Suppose that, in the no-tax world, the production of a good costs \$100 and requires one ton of emissions. Putting a \$20 price on carbon under any of the above methods increases the price of the good to \$120 if the production costs remain unchanged. In that case, consumers bear the burden of the tax.

Consumers bear less than the full burden, though, if the tax reduces producers’ incomes. When the price of the good rises, consumers buy a smaller quantity. At the lower production level, the industry hires fewer of the specialized producers required to produce the good, driving down their incomes. For example, if the price of coal-powered electricity rises and consumers buy less of it, the resulting reduction in demand for coal miners drives down their wages; if the plant and equipment used in the industry cannot be readily transferred to other industries, the tax reduces the profits of the stockholder who own the plant and equipment. If specialized producers’ incomes fall by \$2, then the good sells at a tax-inclusive price of \$118 and consumers bear an \$18 burden.

In general, supply and demand determines how the burden is divided. Statistical analysis indicates that a carbon tax will largely be manifested in higher prices for carbon-intensive items. A careful and widely cited study estimates that 85 percent of the burden will fall on consumers.²

It may seem counterintuitive that firms can shift to consumers (or to specialized producers) the value of allowances that they received free of charge. As the Congressional Budget Office

² A. Lans Bovenberg and Lawrence H. Goulder, “Neutralizing the Adverse Industry Impacts of CO Abatement Policies: What Does it Cost?” in *Behavioral and Distributional Effects of Environmental Policy*, ed. Carlo Carraco and Gilbert E. Metcalf (Chicago: University of Chicago Press, 2001), pp. 45-85.

(CBO) notes, however, this conclusion is supported by both economic logic and real-world experience:

“Regardless of how the allowances were distributed, most of the cost of meeting a cap on CO₂ emissions would be borne by consumers ... A common misconception is that freely distributing emission allowances to producers would prevent consumer prices from rising as a result of the cap. Although producers would not bear out-of-pocket costs for allowances that they were given, using those allowances would create an ‘opportunity cost’ for them because it would mean forgoing the income they could earn by selling the allowances. Producers would pass that opportunity costs on to their customers in the same way that they would pass along actual expenses. That result was borne out in the cap-and-trade programs for sulfur dioxide in the United States and for CO₂ in Europe, where consumer prices rose even though producers were given allowances for free.”³

Numerous other authors also note that freely allocated allowances result in higher consumer prices in the same manner as auctioned allowances or carbon taxes.⁴

The difference, of course, is that the carbon tax or the auction would raise government revenue equal to the aggregate value of the allowances. If the allowances are freely allocated, then that value instead accrues to firms. Cap and trade with free allocation is equivalent to a carbon tax with transfer payments to firms. A transfer payment to a firm increases the wealth of its residual claimants, normally its common stockholders. Part of the transfer payment is recouped, though, by federal, state, and local governments through individual and corporate income taxes on the firm’s profits.

CBO has incorporated the economic effects described above into its budgetary accounting. It generally records the market value of allowances, whether auctioned or given away, as government revenue and then records the value of any allowances that are given away as outlays. So, if allowances worth \$100 are given to a firm, CBO treats the transaction as a sale that raised

³ “Trade-Offs in Allocating Allowances for CO₂ Emissions,” CBO Economic and Budget Issue Brief, April 25, 2007, http://www.cbo.gov/ftpdocs/89xx/doc8946/04-25-Cap_Trade.pdf, pp. 1, 5.

⁴ Kevin A. Hassett, Aparna Mathur, and Gilbert E. Metcalf, “The Consumer Burden of a Cap-and-Trade System with Freely Allocated Permits,” American Enterprise Institute Working Paper No. 144, December 23, 2008, p. 5 (free allocation “will increase prices by the same amount as if the permits were auctioned. This scenario has played out in existing cap-and-trade systems and is beyond dispute in the economics profession.”); Bovenberg and Goulder, *supra* note 2, p. 58; Gilbert E. Metcalf, “Environmental Taxation: What Have We Learned in this Decade?” in *Tax Policy Lessons from the 2000s*, ed. Alan D. Viard (Washington, D.C.: American Enterprise Institute, 2009), pp. 7-34, at p. 25; Ian W.H. Parry, Hilary Sigman, Margaret Walls, and Roberton C. Williams III, “The Incidence of Pollution Control Policies,” National Bureau of Economic Research Working Paper No. 11438, June 2005, p. 7; Robert Greenstein, Executive Director of Center on Budget and Policy Priorities, “Testimony before Senate Finance Committee, April 24, 2008,” p. 6, <http://www.cbpp.org/files/4-24-08climate-testimony.pdf>

\$100 revenue, followed by a \$100 transfer payment to the firm, which precisely captures the underlying economic reality.⁵

EFFICIENCY AND DISTRIBUTIONAL IMPLICATIONS

Putting a price on carbon, either through a carbon tax or cap and trade generates a number of behavioral changes, each of which has implications for economic efficiency. Such a policy reduces the carbon intensity with which each good in the economy is produced and also shifts production from high-carbon-intensity goods to low-carbon-intensity goods. These behavioral changes are an appropriate and intended response to the environmental harms of carbon emissions.

Putting a price on carbon also affects work and investment. Because households work in order to buy goods and services, a tax on goods and services (including a tax on their carbon content) reduces the net return to work. A carbon tax or cap-and-trade program does not, as is sometimes claimed, tax pollution *rather than* work; instead, it taxes pollution *and* work. Putting a price on carbon also reduces the return to capital investment by taxing the carbon content of capital goods. To be clear, if there were no other taxes on work and investment, these effects would also be an efficient response to the environmental harms of carbon. Households would appropriately be prompted to choose greater leisure and current consumption by making them take into account the environmental costs of production and investment.

Unfortunately, existing taxes already penalize work relative to leisure and investment relative to current consumption. As a result, the economy starts from a point with too little work and too little investment. Putting a price on carbon reinforces those existing inefficiencies by amplifying work and investment disincentives, which is called the tax-interaction effect.⁶

Of course, a price should still be put on carbon to address the environmental problem. But, that policy should be accompanied by reductions in other marginal tax rates. If a carbon tax or cap-and-trade program with auctioned allowances is used, the resulting revenue can be used to lower marginal tax rates. As CBO explains:

“Selling emission allowances could raise sizable revenues that lawmakers could use ... [to] lower the cap’s total cost to the economy ... the government could use the revenues to reduce existing taxes ... on labor, capital, or personal income ... Research indicates that a CO₂ cap would worsen the negative effects of those taxes: The higher prices caused by the cap would lower real (inflation-adjusted) wages and real returns on capital,

⁵ “Cost Estimate, S. 2191, America’s Climate Security Act of 2007,” April 10, 2008, p. 7, <http://www.cbo.gov/ftpdocs/91xx/doc9120/s2191.pdf>.

⁶ Metcalf, *supra* note 4, at pp. 13-17, surveys the relevant literature. For further discussion, see Joseph E. Aldy, Eduardo Ley, and Ian Parry, “A Tax-Based Approach to Slowing Global Climate Change,” *National Tax Journal*, 51(3), September 2008, pp. 493-517, at pp. 499-500, the references cited by Hassett, Mathur, and Metcalf, *supra* note 4, p. 6 n.4, and the estimates in Bovenberg and Goulder, *supra* note 5, pp. 68-69 and the studies they cite.

indirectly raising marginal tax rates on those sources of income. Using the allowance value to reduce existing taxes could help mitigate that adverse effect of the cap.”⁷

In contrast, free allocation of allowances has devastating implications for economic efficiency. Free allocation does nothing to reduce disincentives, because it does not lower marginal tax rates. Under the maintained assumption that the allowances are allocated based on past activity, the firm receives the same volume of allowances regardless of the current and future level of its investments and other economic activity and the allocation provides no incentive to increase economic activity. At the same time, the free allocation eliminates the revenue that could be used to finance reductions in other distortionary taxes.

The efficiency losses from free allowance allocation would be acceptable if the policy promoted some fairness goal. But, no coherent fairness argument can be made for free allocation. Free allocation certainly does not make the income distribution more equal, because the stockholders who benefit from free allocation are largely wealthy.

One argument holds that free allowance allocation promotes fairness by compensating stockholders for the burden that cap and trade imposes upon them. As has been seen, however, because most of the burden is shifted to consumers, a modest allocation of allowances would be sufficient to provide compensation. A. Lans Bovenberg and Lawrence H. Goulder, estimating that no more than 15 percent of the tax burden would fall on stockholders, conclude that 100 percent free allocation would “generate substantial windfalls to firms” because the gains to firms would be “many times larger than the income losses otherwise generated by the policy.”⁸

In any event, at a more fundamental level, it is hard to see why any compensation is needed. As residual claimants, stockholders are routinely exposed to the risks affecting their industries, including the risk of tax policy changes. They should not be insulated from the impact of such changes. That principle is accepted unquestioningly with respect to other excise taxes; nobody suggests that Phillip Morris stockholders should be compensated for tobacco tax burdens. The logic is no different for cap and trade.

Another argument holds that free allowance allocation makes the regional incidence of cap and trade more equitable. Because a firm’s stockholders generally do not live in the same community (or even the same country) as its customers, a transfer payment to the former does not provide any geographical match to the burden on the latter.

In July 2007, then-CBO-director Peter R. Orszag succinctly summarized the economic evaluation of free allowance allocation:

“Because giving allowances to energy producers would disproportionately benefit higher-income households and would preclude the possibility of using the allowance

⁷ “Trade-Offs,” *supra* note 3, p. 4.

⁸ Bovenberg and Goulder, *supra* note 2, pp. 48 n.3, 70-77.

value to reduce taxes on capital and labor, such a strategy would appear to rate low from both a distributional and an efficiency perspective.”⁹

A few months earlier, CBO provided a broader summary of the issue:

“Selling the allowances and using the proceeds either to cut taxes on earnings from labor or capital or to decrease the budget deficit would strengthen the economy ... Because most or all of the cost of the cap would ultimately be borne by consumers, giving away nearly all of the allowances to affected energy producers would ... transfer income from energy consumers – among whom lower-income households would bear disproportionately large burdens – to shareholders of energy companies, who are disproportionately higher-income households.”¹⁰

A wide range of other analysts have noted the inefficiency and inequity of free allowance allocation:

- Gilbert E. Metcalf (Tufts University): “Policymakers have used the free allocation of permits for cap-and-trade programs. This practice comes at considerable distributional and efficiency costs. From an efficiency point of view, there always exists [a reduction in distortionary taxes] that is welfare-enhancing relative to a lump-sum return of the revenue. From a distributional perspective, free permits provide windfall profits to permit recipients. These windfalls show up as increases in equity value of the firms receiving permits. Since equity holdings tend to be concentrated in the upper part of the income distribution, this windfall transfer is quite regressive.”¹¹
- Robert Greenstein (Center on Budget and Policy Priorities): “Giving away a substantial fraction of emission allowances to existing energy producers would do almost nothing to compensate low- and moderate-income families for their losses. A very large percentage of the benefits of such a giveaway would go to shareholders of the energy companies, most of whom have high incomes.”¹²
- Ian W.H. Parry (Resources for the Future), Hilary Sigman (Rutgers University), Margaret Walls (Resources for the Future), and Roberton C. Williams III (University of Texas): “Freely allocated tradable emission permits may actually hurt the poor the most, as they transfer income to shareholders via scarcity rents created at the expense of higher prices. On the other hand, emissions taxes (or auctioned emission permits) offer the opportunity

⁹ Orszag letter to Rep. Jeff Bingaman (D-New York), July 9, 2007, pp. 3-4, <http://www.cbo.gov/ftpdocs/82xx/doc8286/07-09-BingamanLetter.pdf>.

¹⁰ “Trade-Offs,” *supra* note 3, p. 2.

¹¹ Metcalf, *supra* note 4, p. 25.

¹² Greenstein, *supra* note 4, p. 6.

to offset regressive effects, if revenues are recycled to finance progressive changes to the tax system.”¹³

- N. Gregory Mankiw (Harvard University): "Economists recognize that a cap-and-trade system [with free allowance allocation] is equivalent to a tax on carbon emissions with the tax revenue rebated to existing carbon emitters, such as energy companies. That is, Cap-and-trade = Carbon tax + Corporate welfare. If the public understood this theorem, the carbon tax alternative, with revenues rebated to households through lower payroll or income taxes, would attract a lot more interest.”¹⁴
- James Barrett (Redefining Progress): “Free permit distribution would represent the largest windfall distribution of wealth in this country’s history. Households, businesses, and industrial energy consumers will transfer their wealth to the owners of energy producing companies, already among the richest corporations in the world ... When the government collects revenues from permit sales, it can put those revenues to economically productive uses, such as reducing taxes on labor and capital gains that diminish the incentive to work or to invest.”¹⁵
- Joseph E. Aldy (Resources for the Future), Eduardo Ley (World Bank), and Ian Parry (Resources for the Future): “In contrast to a (revenue-neutral) CO₂ tax, a cap-and-trade program with gratis allocation incurs much higher total costs. The government foregoes collecting revenues when it transfers free allowances to firms, but the allowance price yields the same tax-interaction effect—by increasing energy costs—as if an emission tax were imposed at the same price ... Traditional cap-and-trade systems with free allowance allocation provide no mechanism for addressing concerns about the disproportionate burden of higher energy prices on lower-income households. In fact, they make the problem worse by widening the disparity in burden-to-income ratios among lower and higher income households. Giving away for free allowances with market value raises firm profits and equity values and this ultimately benefits shareholders, who tend to be concentrated in upper income groups.”¹⁶

In recent testimony before this committee, CBO director Douglas W. Elmendorf quantified the inefficiency and inequity of cap and trade with free allowance allocation, assuming a 15 percent reduction in emissions. He estimated that such a policy would impose an efficiency cost equal to 0.5 percent of GDP. Real household incomes would fall by 1.7 to 2.0 percent for each of the

¹³ “Incidence of Pollution Control Policies,” *supra* note 4, pp. 31-32.

¹⁴ “The Fundamental Theorem of Carbon Taxation,” <http://gregmankiw.blogspot.com/2007/08/fundamental-theorem-of-carbon-taxation.html>.

¹⁵ “The True Cost of Free Pollution Permits: A Redefining Progress Issue Brief,” February 2008, p. 2, <http://www.rprogress.org/publications/2008/True%20Cost%20Issue%20Brief%2002-08.pdf>.

¹⁶ “A Tax-Based Approach,” *supra* note 6, pp. 500-501.

bottom four quintiles, but would rise by 1.4 percent for the top quintile.¹⁷ It is not easy to design a policy that produces significant efficiency losses while redistributing income upward, but proponents of free allowance allocation have managed to do so.

The breadth of the economic consensus against free allowance allocation was demonstrated in March 2009, when the Southern Alliance for Clean Energy unveiled a Cap-and-Trade Economist Statement signed by 600 economists across the political spectrum, including myself. Calling for immediate 100-percent-auction if cap-and-trade is adopted, the statement noted that free allocation would “do little or nothing to protect families and businesses from higher energy costs,” would “represent a significant and undeserved windfall to utilities and other greenhouse gas producers,” and would “deny the government the necessary resources to reduce the economic costs of combating climate change, and will thus generate needlessly higher costs of achieving any reduction target.”¹⁸

REDUCING MARGINAL TAX RATES AND PROVIDING CONSUMER RELIEF

Fortunately, auctioning the allowances and making proper use of the auction proceeds can address these efficiency and equity problems. A number of approaches are possible.

As the CBO director noted in his recent testimony, a tradeoff may exist between uses of revenue that provide assistance to those in need and those that provide efficiency gains by reducing marginal tax rates. As discussed above, he estimated that cap-and-trade with free allowance allocation would create an efficiency loss of 0.5 percent of GDP while redistributing resources from the bottom four quintiles to the top quintile. His analysis identified two alternative policies, one of which would provide a distributional improvement and one of which would provide efficiency gains.

If the allowances were auctioned and the proceeds distributed as equal rebates to all households, the efficiency loss would remain at 0.5 percent of GDP. However, the distributional effects would be reversed, with the bottom two quintiles experiencing an increase in income and the top two quintiles experiencing a net loss of income, with little impact on the middle quintile. If the allowances were auctioned and the proceeds used to reduce corporate income taxes, the distributional impact would remain unfavorable to the bottom four quintiles. However, the efficiency loss would be more than cut in half, to 0.2 percent of GDP.¹⁹

By mixing the different approaches, both the efficiency and the distributional concerns could be alleviated. A package could include rebates or transfer payments that provide relief to low-

¹⁷ Douglas W. Elmendorf, director of the Congressional Budget Office, testimony before the Committee on Finance, United States Senate, *The Distribution of Revenues from a Cap-and-Trade Program for CO₂ Emissions*, May 7, 2009, p. 15, http://www.cbo.gov/ftpdocs/101xx/doc10115/05-07-Cap_and_Trade_Testimony.pdf.

¹⁸ See http://www.cleanenergy.org/images/position_statements/SACE_EconStatement_FullList.pdf.

¹⁹ Elmendorf, *supra* note 17, pp. 14-16.

income households, individual income tax reductions that promote efficiency and provide relief to middle-income households, and corporate income tax reductions that promote efficiency.

Given the high efficiency costs of the corporate income tax, a corporate tax rate reduction should be included in the final package. Governments around the world, both right-wing and left-wing, are slashing corporate income tax rates. The revenue raised by a cap-and-trade auction could allow the United States to join this trend. Moreover, the long-run distributional impact of corporate income tax reductions would likely be more favorable than the above analysis assumes. By inducing more of the world supply of saving to be invested inside the United States, corporate income tax cuts would boost productivity and workers' real wages, providing gains throughout the income distribution.

A variety of other measures could also be considered. Payroll tax reductions would provide efficiency gains and relief for low and middle income workers, but would pose complications for Social Security and Medicare. To avoid general-revenue transfers that would undermine the principle of these programs' dedicated funding, it would be necessary to coordinate any payroll tax reductions with future benefit reductions. Deficit reduction would also spur capital formation and avoid future tax increases, but it might be difficult to ensure that the auction proceeds would actually result in a lower deficit.

Regardless of how the distributional and efficiency concerns are balanced, it is clear that Congress has ample room to use the auction revenue in ways that are more sensible than transfer payments to stockholders.

Before concluding, I wish to address the distinctive issues raised by free allowance allocation to price-regulated utilities.

PRICE-REGULATED UTILITIES

The above analysis must be modified when allowances are allocated to price-regulated local distribution companies. In that case, regulators can require that the benefits of free allocation flow through to ratepayers. Even so, free allocation remains undesirable, relative to the alternatives that are available under auction. The effects depend upon whether ratepayers receive the savings as reductions in the fixed monthly components of their electricity bills or as reductions in variable usage charges.

Free allocation is least unattractive when the savings are flowed through as reductions in the fixed monthly component of electricity charges, an outcome envisioned (but not guaranteed) by H.R. 2454, as passed by the House of Representatives on June 26, 2009. Even then, the most that can be claimed is that many, but not all, of the disadvantages of free allocation are removed. Free allocation still has no advantages over an appropriately designed auction system. In any event, as discussed below, it is unlikely that all of the savings from free allowance allocation will be flowed through as reductions in fixed charges.

If only fixed charges are reduced and ratepayers understand this to be the case, then free allocation is transformed from a transfer payment to stockholders into a transfer payment to ratepayers. Because the opportunity cost of the allowances is fully reflected in the *variable* costs of electricity, ratepayers make all cost-effective reductions in electricity consumption. Cap-and-trade then remains a market-based mechanism that achieves carbon emission reductions at a minimum aggregate cost.

Under this arrangement, free allocation effectively functions as a consumer rebate system, undoubtedly a better outcome than the stockholder windfall that occurs in unregulated markets. This achievement is underwhelming, however, given that similar consumer relief could easily have been provided with the revenue from auctioned allowances. In fact, the consumer rebates provided through free allocation have serious limitations, relative to household assistance that could be provided through auctioned revenue.

First, the rebates are provided only to consumers in states with price-regulated utilities. In contrast, consumer relief financed by auction proceeds can be provided nationwide.

Second, this approach requires intrusive oversight of state utility regulation. For example, H.R. 2454 would require each regulatory body to adopt a rulemaking to implement the requirements of the bill and to issue a public report explaining the manner of implementation; the rulemaking and the report would each have to be updated every five years. Each local distribution company would be required to file a report every five years with the Environmental Protection Agency describing its plans for the use of the free allowances, and an annual report describing its actual disposition of the allowances. The Environmental Protection Agency would be required to audit a sample of local distribution companies each year.²⁰

Third, in the presence of imperfect consumer information, a reduction in fixed charges may still stimulate electricity consumption. Because consumers may not be able to distinguish fixed and variable charges, a consumer who receives a lower electricity bill may be prompted to consume more, even if the reduction is actually in the fixed charge. In that case, the problems associated with variable rate reductions, which are discussed below, would occur. The danger of such confusion is averted if consumer relief is provided through a separate transfer payment or tax cut unassociated with the electricity bill.

In view of these limitations, free allocation is clearly inferior to auction. Yet, the above analysis is optimistic, because it assumes that all of the savings are flowed through as reductions in fixed charges. The feasibility of such flow-through is unclear; with a large volume of free allowances, full flow-through might require fixed charges to become negative. Strikingly, H.R. 2454 does not actually require complete flow through to fixed charges. Instead, it prohibits any rebate “that is based *solely* on the quantity of electricity delivered to such ratepayer” and provides that utilities “shall, *to the maximum extent practicable*, provide such rebates with regard to the fixed

²⁰ Proposed Clean Air Act sections 783(b)(6) through (8), as added by section 321 of H.R. 2454.

portion of ratepayers' bills or as a fixed credit or rebate on electricity bills" (emphasis added).²¹ This is not a hard-and-fast requirement that only fixed charges be reduced.

It is therefore necessary to consider the situation in which at least part of the savings flow through to variable costs. That scenario is much more harmful, as it increases the nationwide costs of reducing carbon emissions and need not reduce the aggregate burden on consumers.

The problem is that ratepayers do not pay the opportunity cost of the freely allocated allowances, unlike consumers in the rest of the economy. Because the ratepayers are shielded from an increase in the marginal cost of electricity, they do not reduce electricity consumption, blocking a significant source of carbon emission reduction.

The cap-and-trade system rigidly requires, however, a specified volume of national emission reductions; if one sector makes fewer reductions, the rest of the economy must make more reductions. To force deeper reductions throughout the unregulated economy, the market price of allowances rises in equilibrium. The higher allowance price imposes larger burdens on unregulated firms' consumers who pay the opportunity cost of allocated allowances (and also increases stockholder windfalls in the rest of the economy).

In summary, free allocation to regulated utilities that are passed through as variable cost reductions reduce consumer burdens in one sector, but increase consumer burdens in the rest of the economy. There may be no net reduction in the national burden on consumers. The CBO director recently made this point in testimony before this committee:

"One option that policymakers have considered is to give allowances to local distribution companies ... using the allowance revenues to offset the increase in electricity prices that households would otherwise face would seem to decrease the burden that the cap-and-trade program would impose on low-income households, but that may or may not be the case. Muting the increase in electricity prices would increase the overall cost of the policy because it would reduce households' incentives to undertake measures to reduce their electricity consumption, such as choosing more efficient appliances or turning down their thermostats. As a result, the burden of meeting the cap would fall more heavily on other sectors, and that additional burden would be reflected in higher prices for other goods and services that households purchase. (For example, the price of gasoline would probably increase more than would otherwise be the case.) As a result, determining the distributional consequences of having the local distribution companies use the value of the allowances to offset increases in electricity prices would require accounting both for the protection that households would receive from electricity price increases and the corresponding increases in the prices of other goods and services that they purchase."²²

²¹ Proposed Clean Air Act section 783(b)(5)(C), as added by section 321 of H.R. 2454.

²² Elmendorf, *supra* note 17, pp. 17-18.

In the process, cap and trade loses its status as a market-based mechanism for reducing carbon emissions. The emissions reduction is no longer achieved in a cost-effective manner because there is too small of a reduction in the output of regulated utilities and too much reduction in the rest of the economy. Gilbert E. Metcalf of Tufts University and Sergey Paltsev, John Reilly, Henry Jacoby, and Jennifer H. Holak, all of the Massachusetts Institute of Technology, note that, if regulators do not allow utilities to charge consumers the market value of free allowances, then “consumers will face no incentive to reduce electricity consumption, thereby forcing more of the abatement elsewhere at higher cost.”²³

CONCLUSION

The support for free allowance allocation under cap and trade is an artifact of labeling. If a carbon tax were imposed, no one would suggest using the tax revenue to make transfer payments to stockholders. No previous excise taxes have been used to finance transfer payments to firms and their stockholders. When the carbon tax is relabeled as cap and trade, though, such transfer payments, relabeled as free allowance allocation, are viewed as appropriate, although their underlying economic flaws are unchanged.

The fact that transfer payments to stockholders are not considered under a carbon tax is an advantage of the carbon tax, as a number of authors have noted.²⁴ The simplest way to head off this policy may be to adopt a carbon tax rather than cap and trade.

Moreover, a carbon tax has other advantages over cap and trade. In particular, a carbon tax is likely to be superior with respect to administration, response to fluctuations in the cost of reducing emissions, and allocation of emissions reductions across different years. To be sure, it is possible to design cap and trade in a way that largely replicates the advantages of the carbon tax, by imposing price floors and ceilings and allowing banking and borrowing of allowances.²⁵ In the end, though, the best way to replicate a carbon tax is to adopt a carbon tax.

In summary, Mr. Chairman, any carbon control policy adopted in the United States should take the form of a carbon tax or cap and trade with full auction of allowances, with a large portion of the resulting revenue used to reduce marginal tax rates.

I would be pleased to address your questions.

²³ “Analysis of U.S. Greenhouse Gas Tax Proposals,” National Bureau of Economic Research Working Paper No. 13980, April 2008, p. 4.

²⁴ Kenneth P. Green, Steven F. Hayward, and Kevin A. Hassett, “Climate Change: Caps vs. Taxes,” AEI *Environmental Policy Outlook*, June 2007, p. 7; “Analysis,” *supra* note 23, p. 5; Ian W. H. Parry, “Raise \$100 Billion from a \$20 CO₂ Tax,” *Tax Notes*, April 13, 2009, pp. 243-247, at p. 245.

²⁵ See Green, Hayward, and Hassett, *supra* note 24, pp. 5-7; Metcalf, *supra* note 4, pp. 22-26; Parry, *supra* note 24, pp. 245-246; Aldy, Lay, and Parry, *supra* note 6.