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CLIMATE CHANGE LEGISLATION: ALLOWANCE AND REVENUE DISTRIBUTION

HEARING

BEFORE THE

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CLIMATE CHANGE LEGISLATION: ALLOWANCE AND REVENUE DISTRIBUTION

TUESDAY, AUGUST 4, 2009

U.S. SENATE,
COMMITTEE ON FINANCE,
Washington, DC.

The hearing was convened, pursuant to notice, at 10:06 a.m., in room SD–215, Dirksen Senate Office Building, Hon. Max Baucus (chairman of the committee) presiding.

Present: Senators Bingaman, Kerry, Lincoln, Stabenow, Cantwell, Menendez, Carper, Grassley, and Hatch.

Also present: Democratic Staff: Bill Dauster, Deputy Staff Director and General Counsel; Cathy Koch, Chief Tax Counsel; Pat Bousliman, Natural Resource Advisor; and Jo-Ellen Darcy, Senior Environmental Advisor. Republican Staff: Kolan Davis, Staff Director and Chief Counsel; and Jim Lyons, Tax Counsel.

OPENING STATEMENT OF HON. MAX BAUCUS, A U.S. SENATOR FROM MONTANA, CHAIRMAN, COMMITTEE ON FINANCE

The CHAIRMAN. The hearing will come to order.

Aristotle was said to define the term "justice" as "a virtue of the soul distributing that which each person deserved."

Today we consider various methods of distributing emission allowances. We consider options for distributing revenues from a cap-and-trade program. We will see if we can find the way that has most of what Aristotle called, namely "justice."

Most major climate change bills place a limit or cap on carbon dioxide and other greenhouse gases. Companies subject to the cap must buy permits, often called allowances, to emit greenhouse gases. One key issue in such a system is: How much of these allowances should the government sell at auction and how much should the government give away for free?

Economists expect that these allowances will have a value, like cash. Thus, many argue that the government should not just give these allowances away; rather, they argue that the government should auction them and return the proceeds to consumers. Others argue that the government should allocate a portion of the allowances to regulated companies. Doing so would soften the effects of putting a price on carbon.

For example, last month the committee heard testimony regarding "trade-exposed" industries. Those are industries that could be hurt by trade with countries that did not have a carbon regime. Many argue for providing a portion of free allowances to these industries. Under the House-passed bill, at the outset, the govern-

ment would freely allocate about 85 percent of the emission allowances.

Roughly 40 percent of the overall allowance amount would go to local distribution companies that deliver power to customers. Proponents expect that the power companies would pass the benefits on to consumers. Another 15 percent or so would go to trade-exposed industries, and the balance would go to a range of stakeholders, including States, energy research entities, and refineries.

Allowances will have a significant value. In 2012, the first year of the program in the House-passed bill, the Congressional Budget Office puts their value at about $60 billion. For the period 2010 to 2019, they amount to more than $870 billion. CBO calls these allowances revenues. CBO makes no distinction between allowances that are auctioned and those that are allocated freely.

According to the Congressional Budget Office: "The creation of allowances by the government should be recorded as revenues. That logic does not hinge on whether the government sells or, instead, gives away the allowances. Allowances would have significant value even if given away because the recipients could sell them, or in the case of a covered entity, use them to avoid incurring the cost of compliance."

In other words, the Congressional Budget Office says that all allowances are revenues, and whether they are allocated to local distribution companies or auctioned for other purposes, these allowances are like cash.

There are a number of ways to use allowance revenues to mitigate the cost of climate legislation on consumers and businesses. For example, Congress could use the money from auctioning allowances to cut taxes by cutting marginal rates, by cutting capital gains rates, by cutting payroll taxes, or doing all of the above.

This approach could apply broadly to individuals as well as businesses, and we could implement this approach with a system that is already in place, that is, our current tax laws.

Alternatively, Congress could compensate consumers through rebates or fixed payments per-capita. For example, the government could give every American a fixed dividend every year. That is what happens in Alaska. Every year the Alaska Permanent Fund pays an annual share of oil earnings to every resident of the State.

We could also devote allowance proceeds to low-income Americans. We could expand the Earned Income Tax Credit. We could use the electronic benefit transfer system that States already use to provide assistance like food stamps and low-income Medicare drug benefits. The House bill provided solid relief to low-income Americans through these means. The Senate should match it, or build on it.

Still another approach would be to dedicate a share of revenues to investment in energy efficiency. Just last week, McKinsey Consulting said that America could save $1.2 trillion through 2020 by investing less than half that amount—that is $520 billion—in energy efficiency.

Whatever the approach, we need to devise a system that both meets environmental goals and passes political muster. And that will not be easy—the close vote in the House tells us that—but it is something that we can and must do.

Today we will talk about how to do it. This is the fourth climate change hearing that the Senate Finance Committee has held since April as we prepare for a markup later this year, and I am pleased to welcome yet another distinguished panel of witnesses.

So let us see if we can figure out how to distribute emission allowances in a way that one might call "just." And let us see if we can figure out how to give all Americans what they deserve. And let us see if we can figure out the way to do so that has the most of what Aristotle would call "virtue of the soul."

Senator Grassley?

OPENING STATEMENT OF HON. CHUCK GRASSLEY, A U.S. SENATOR FROM IOWA

Senator GRASSLEY. Thank you, Mr. Chairman.

This hearing deals with the allocation of emissions allowances under a proposed cap-and-trade tax system, and this is, of course, intended to address the issue of global warming.

Our committee has primary jurisdiction over all matters dealing with Federal revenue, and the Congressional Budget Office has made clear that these allowances hold value and, therefore, represent Federal revenues. This is true, regardless of whether allowances are auctioned or simply given away, which the CBO would treat the same as if they had been auctioned and the revenue given away.

Today we are going to hear a wide range of perspectives from across the political spectrum about how emissions allowances and the revenue from those allowances should be allocated.

We know where the Obama administration stands when it comes to free allowances. The President supports 100-percent auction of these allowances. Testifying before the House Budget Committee earlier this year, Treasury Secretary Geithner said, "This program should include a 100-percent auction of emissions allowances—ensuring that the biggest polluters don't profit on the basis of past pollution."

Testifying before the same committee at another time, the President's Director of the Office of Management and Budget, Dr. Peter Orszag, said, "If you didn't auction the permits, it would represent the largest corporate welfare program that has ever been enacted in the history of the United States."

The administration clearly has strong feelings on the topic, and this committee will soon have to draw its own conclusions on the same topic. To do so, it is important that this committee understand all of the implications for the American taxpayer of the various options of distributing allowance revenue.

It is also important to provide some context for this discussion based on what we have learned at other hearings about the economics of a cap-and-trade tax system. We sometimes hear such a system described as though there will be no net cost to the American people, because the Federal Government is creating a commodity that holds value and can be sold to recoup the costs or even make money.

This makes it sound as though we have stumbled upon the economic equivalent of the mythical philosopher's stone that can turn

lead into gold. Of course, there is no such thing as a free lunch, and the government cannot create wealth through regulation.

At a hearing before this committee earlier this year, CBO Director Doug Elmendorf referred to a "consensus of economic analysis" that a cap-and-trade system results in a net cost to the economy because of a "diversion of economic resources."

For instance, America currently uses coal as a cheap, domestically plentiful source of energy, but it produces a lot of carbon dioxide. So this bill would force a switch to more costly forms of energy that produce less CO_2. In short, as Director Elmendorf wrote to this committee in response to my question, "The allowances that are created under a cap-and-trade program do not add wealth to the economy. Rather, they are simultaneously a cost and a source of income."

It is in this light that I approach the question of what to do with the allowance value. It is not free money. Rather, it is, in effect, a national energy tax on all Americans, one which will exacerbate the negative impact of other taxes on economic growth and jobs. This means that, above all, we have a responsibility to mitigate, as much as possible, those painful effects on the American taxpayer.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

We now turn to our witnesses. First is John Stephenson, Director of Natural Resources and Environment Issues for the Government Accountability Office. Thank you, Mr. Stephenson. Second is Dr. Dallas Burtraw, senior fellow at Resources for the Future. Next is Dr. Alan Viard, resident scholar from American Enterprise Institute, and Dr. Nathaniel Keohane, director of economic policy and analysis for the Environmental Defense Fund.

Thank you all for coming. As usual, I urge you to speak for 5 minutes. Your prepared statements will be included in the record.

So, why don't you begin, Mr. Stephenson?

Mr. STEPHENSON. Thank you, Mr. Chairman.

The CHAIRMAN. There may be an interruption here, as a vote might occur in about 15 minutes to half an hour, but we will work our way through it.

Mr. STEPHENSON. All right. Very good.

The CHAIRMAN. Go ahead.

STATEMENT OF JOHN STEPHENSON, DIRECTOR, ENVIRONMENTAL PROTECTION ISSUES, NATURAL RESOURCES AND ENVIRONMENT TEAM, GOVERNMENT ACCOUNTABILITY OFFICE, WASHINGTON, DC

Mr. STEPHENSON. Thank you, Mr. Chairman.

I am pleased to be here today to discuss GAO's preliminary observations from our ongoing study for this committee on the potential distribution of allowances and revenues in the context of the cap-and-trade system to limit greenhouse gas emissions.

These distribution decisions are vitally important to the overall economic impacts of the cap-and-trade system because a new commodity in the form of emissions allowances or tons of carbon dioxide will be created that will be valued at billions of dollars each year.

As such, decisions about the distribution of allowances and revenue from the sale or transfer of allowances will have a substantial impact on the government, covered entities, and households. Importantly, limits on emissions would likely raise the cost of carbon-intensive energy production and use, and the system could have a disproportionate impact on low-income households that spend a larger share of their income on energy. However, the government could wholly or partially offset these impacts with its decisions about allowance and revenue distribution.

With respect to allowance distribution, the government has three main choices: auctioning or selling the allowances, allocating the allowances for free, or some combination of both.

First, auctioning would enable the government to collect substantial revenues. Auctioning is also transparent, creates incentives to lower emissions before the program starts, can level the playing field for covered entities, and decreases the chances of windfall profits among covered entities.

Many economists favor auctioning for these reasons; however, auctioning does not by itself offer compensation to covered entities that could feel the greatest economic impact of the program.

Second, the government could allocate allowances for free to covered entities or other parties, such as local distribution companies, or LDCs, and thereby transfer the value of the allowances to these parties. This could help build support for the program and ease the transition by helping offset any losses and profits among covered entities. Free allocation in the electricity sector is particularly complicated, however, and could potentially dampen incentives to decrease electricity use by businesses and households. This could force additional costs on other sectors affected by the program.

A combination of auctioning and free allowances may help compensate certain energy-intensive industries. Several studies, including one by the Congressional Budget Office, suggest that allocating between 6 and 21 percent of the allowances for free would fully compensate these industries.

With respect to distributing revenues or the economic value of allowances, we reviewed five options among many that could be considered.

First, the government could reduce the overall cost of the program by reducing existing taxes on capital or income that make the economy less efficient. A cap-and-trade system, while not a tax, could raise the price of goods and services. As a result, lowering existing taxes might help compensate households and businesses for this economic effect, but would do little to offset disproportionate impact on low-income households.

Second, the government could recycle revenues in the economy through lump-sum payments based on a variety of criteria, such as household size or income. This could help compensate lower-income households, while still preserving incentives to conserve energy and decrease emissions. The primary challenge is identifying the proper distribution mechanisms.

Third, the government could expand the Earned Income Tax Credit to help low-wage earners, but this would not reach non-tax filers and could present administrative and compliance challenges.

Fourth, the government could transfer the revenues through free allocation, the equivalent of auctioning or selling the allowances and transferring their value to other parties. However, free allocation, if not implemented carefully, could result in windfall profits for certain covered entities and may benefit their shareholders rather than households and other businesses affected by the higher cost of goods and services.

Finally, the government could direct revenues to climate-related activities, including funding the development of low-carbon technologies, domestic adaptation efforts and energy efficiency programs, or by providing aid to developing countries to help them address climate change. Each revenue allocation option involves trade-offs that are more fully described in my written statement.

This concludes the summary of my prepared statement. I will be happy to answer questions at the appropriate time.

The CHAIRMAN. Thank you, Mr. Stephenson.

[The prepared statement of Mr. Stephenson appears in the appendix.]

The CHAIRMAN. Dr. Burtraw?

STATEMENT OF DALLAS BURTRAW, Ph.D., SENIOR FELLOW, RESOURCES FOR THE FUTURE, WASHINGTON, DC

Dr. BURTRAW. Mr. Chairman, thank you for the opportunity to testify.

I am a senior fellow at Resources for the Future. RFF neither lobbies, nor takes stands on specific issues and positions, and the views I present today are my own.

I focus on the allocation of allowances to consumers through their local distribution companies under H.R. 2454. This and some other features of the proposal are designed to protect consumers from the adverse impacts of price increases and to reduce regional inequities.

However, this approach raises the overall cost of achieving emissions reductions. The important point I want to leave with you is that an incremental reform to these provisions can achieve distributional and regional goals at substantially less cost and with greater predictability.

I evaluate the allocation formulas in H.R. 2454 with three criteria in mind.

First, administrative simplicity and consistency. The allocation approach in H.R. 2454 leaves the determining role in how households are affected to State public utility commissions, not Congress, and this will be done in 50 different ways.

Second, protect consumers from adverse impacts. It is broadly accepted that free allocation to local distribution companies raises the overall cost of the program because, by reducing prices, the policy would also reduce the incentive for households and businesses to change the way they use energy. Greater emission reductions will be necessary in other parts of the economy at a higher cost. We find, on average, in almost every region and income group, households are, in fact, made worse off by the subsidy to electricity and natural gas consumption.

Third, avoid unfair regional and distributional impacts. The status quo in H.R. 2454 leads to an inverted "U" with respect to the

distribution of costs across income groups. We do a good job of protecting the bottom 20 percent of households and the top 10 percent, but the increase in cost associated with the inefficient allocation to local distribution companies falls hard on the middle range of household incomes.

A valuable reform would limit the role of local distribution companies. This would be sufficient to level the playing field across geographic regions and to protect low-income households. In addition, it would reduce overall costs and especially costs to middle-income households.

Let me explain this reform. In H.R. 2454, over the first couple decades of the program, about 56 percent of emission allowances are directed back to consumers and businesses through the allocation to electricity and natural gas local distribution companies, home heating, and directly to low-income families.

We hold this 56 percent constant and consider a limited allocation to local distribution companies on behalf of just residential customers of electricity and natural gas, totaling about 15 percent of the allowance value. The other 41 percent is delivered through dividends to households.

Under this approach, hard-hit regions, such as States surrounding the Ohio Valley, do at least as well as under the status quo approach in H.R. 2454. Also, this proposal is more equitable across the income distribution. Direct dividends to households lower the overall cost of the program and allocate the value of allowances in a way that does not disadvantage the middle class. It also continues to fully protect households in the bottom two deciles of the population.

Furthermore, in a profound way, the simple approach of direct dividends avoids the appearance of favoritism, by distributing to households an equal share of the value of a new property right that is created under a cap-and-trade program.

To the benefit of middle-class households and to lower overall costs, the reform I propose could disadvantage three groups. First, it would remove the subsidy of the local distribution companies for industrial customers, but it would even tax trade protections through the generous 15-percent allocation for trade-exposed industries.

Second, it would also remove the subsidy for commercial customers, but these customers are not exposed to international competition and would be expected to pass through costs to households who, indeed, bear the ultimate real cost of the program.

Third, it could affect electricity industry profits. Free allocation to local distribution companies in H.R. 2454 is made on behalf of consumers, but an unappreciated result is that annual electricity industry profits increase by $2.5 billion a year as a consequence.

The electricity industry is already well-represented by the 5-percent allocation to unregulated electricity plants that appears in a separate part of the legislation. A greater reliance on dividends would direct this additional unintended profit back to middle-income households.

In sum, reform of H.R. 2454 could lead to lower costs and a more equitable distribution of costs across regions and income distributions.

Thank you for the opportunity to testify.

The CHAIRMAN. Thank you, very much.

[The prepared statement of Dr. Burtraw appears in the appendix.]

The CHAIRMAN. Dr. Viard, you are next.

STATEMENT OF ALAN D. VIARD, Ph.D., RESIDENT SCHOLAR, AMERICAN ENTERPRISE INSTITUTE FOR PUBLIC POLICY RESEARCH, WASHINGTON, DC

Dr. VIARD. Chairman Baucus, Ranking Member Grassley, members of the committee, it is an honor to testify today about allowance and revenue distribution under cap and trade. The views I express are solely my own.

I would like to make the following major points this morning. Free allowance allocation to unregulated firms is equivalent to imposing a carbon tax and giving the revenue to stockholders, which is inefficient and inequitable. In contrast, auction revenue could be used to lower marginal tax rates and help consumers.

Free allocation to regulated utilities is also unwise. By reducing incentives for electricity conservation, such allocation increases the overall cost of cap and trade. Consumers bear a smaller burden in the regulated sector, but larger burdens everywhere else in the economy.

There is a rock-solid economic consensus on the consequences of free allocation in unregulated markets. Regardless of where the allowances come from, firms still have the same incentives to reduce emissions and still face the same increases in production costs, leading to the same increase in consumer prices. Even with free allocation, cap and trade is a market-based mechanism for reducing carbon emissions.

The troubling aspect of free allocation, however, is the use of the implicit revenue, the point that the ranking member mentioned in his opening statement.

As I have said, cap and trade with free allocation is equivalent to imposing a carbon tax or auctioning the proceeds and then giving the revenue to stockholders. The payment to stockholders is not a tax cut that improves incentives for current or future economic activity. It is a transfer payment or gift based on past activity. This has harmful implications for both equity and efficiency.

First, on efficiency. Because households work in order to buy goods and services, a tax on goods and services or on their carbon content reduces the return to work. Putting a price on carbon does not tax pollution rather than work, it taxes pollution and work. Putting a price on carbon also penalizes investment by taxing the carbon content of capital goods.

These disincentives can be undone if the cap-and-trade revenue is used to reduce other marginal tax rates, but that is infeasible if the allowances are given away. Of course, free allocation also increases inequality by aiding wealthy stockholders. It cannot be justified as compensation to stockholders because most of the cap-and-trade burden is shifted to consumers.

In any case, we have never compensated stockholders for burdens imposed by excise taxes. Phillip Morris stockholders receive no compensation for the burdens of the tobacco excise tax. Econo-

mists across the political spectrum have denounced free allocation, as in the March 2009 cap-and-trade economist statement that was signed by 600 economists of every political viewpoint.

If the allowances are auctioned, the revenue can be used to cut tax rates and also provide consumer relief. There can be a trade-off between the goals of promoting economic efficiency and helping those consumers who are in need, but with the allowances being auctioned, there is ample revenue to fashion a package that will advance both goals.

A package could include transfer payments or rebates that give relief to low-income households, individual income tax reductions that promote efficiency and provide relief to middle-income households, and corporate income tax rate cuts that promote efficiency.

Corporate income tax rate cuts would offer large efficiency gains in today's global economy, and, in the long run, much of the gains from those rate cuts would ultimately go to workers.

Other ideas could be explored, such as deficit reduction. Payroll tax cuts would promote efficiency and aid workers, although they would complicate Social Security financing.

Let me briefly discuss problems posed in the regulated utility sector. If the free allowances are flowed through as variable rate reductions, the outcome may be even worse than if the benefits had remained with shareholders.

Electricity consumption would not fall, diminishing the reduction of carbon emissions in that sector, but cap and trade requires a fixed national reduction, so the price of allowances would have to rise to force deeper reductions elsewhere. The higher allowance price would mean larger consumer burdens in the rest of the economy and bigger stockholder windfalls at any firms that also receive free allowances.

In short, holding down electricity prices in this way would mean steeper rises in gasoline prices and other items. Meanwhile, the national cost of reducing emissions would increase because cost-effective reductions are not made in electricity consumption.

In principle, these problems could be sidestepped by flowing the free permits through to fixed rates. I believe, for reasons I can elaborate upon if desired, that that is not a feasible option.

Let me make one point before concluding, Mr. Chairman.

Under a carbon tax, there would be no support for explicit transfer payments to stockholders, which would alleviate these problems. A carbon tax would also have a number of other advantages over cap and trade with respect to administration and responding to cost fluctuations and allocating emission reductions across years. Cap and trade could be modified to duplicate some of these advantages, but the best way to replicate a carbon tax is to adopt a carbon tax.

In summary, Mr. Chairman, carbon control should take the form either of a carbon tax or cap and trade with full auction, and a large portion of the revenues should be used to reduce marginal tax rates.

I would be pleased to address your questions.

The CHAIRMAN. Thank you, Dr. Viard, very much.

[The prepared statement of Dr. Viard appears in the appendix.]

The CHAIRMAN. Dr. Keohane? You are next.

Thank you, Dr. Keohane. You were notified fairly late to come here. We deeply appreciate your changing your schedule so you could be here.

STATEMENT OF NATHANIEL KEOHANE, Ph.D., DIRECTOR OF ECONOMIC POLICY AND ANALYSIS, ENVIRONMENTAL DEFENSE FUND, NEW YORK, NY

Dr. KEOHANE. Well, thank you, Chairman Baucus, Ranking Member Grassley, and distinguished members of the committee. I am honored to be here today.

Congress has an unprecedented opportunity right now in these next few months to put the American economy on a strong footing for the 21st century. A cap on carbon dioxide and other greenhouse gases will harness the efforts of entrepreneurs and innovators throughout our economy, ensuring that America will lead the world in making the next generation of clean energy technologies, and the investment unleashed by a carbon cap will help jump-start our economy today, while paying rich dividends later in the form of cleaner air, enhanced energy security, and, most of all, a livable planet to pass on to our children and grandchildren.

In the process, a carbon cap will transform a portion of the public commons into a valuable asset. That asset is a public trust, and allocating its value wisely and equitably is a crucial test of any climate bill.

In my testimony today, I will offer my perspective on how that test can be met in a way that strengthens our economy. The principles are straightforward: protect consumers, preserve and strengthen American manufacturing, and invest in the transition to a new, clean energy economy.

Let me start with those broad guidelines for allowance allocation and then return later in my testimony to talk about the LDC mechanism in particular.

In my written testimony, I provide a fuller perspective on how allocations to industry can be tailored to balance concerns for fair compensation against understandable concerns about double-counting and unintended windfalls.

I will start with those broad guidelines. First, protect consumers. A substantial portion of allowance value should be directed to households. By using more than one mechanism, as I will explain, Congress can achieve multiple goals: providing targeted assistance to low-income consumers, fairly reflecting geographical differences in the generation of electricity, and at the same time providing broad coverage to American households, farmers, and small businesses.

Second, preserve and strengthen American manufacturing by preventing carbon leakage. Output-based rebates, like those in the House legislation, can help prevent emissions leakage to uncapped countries, safeguarding the environmental integrity of the cap, and keeping manufacturing emissions under the cap here in America will also keep jobs and businesses here.

Finally, invest in the transition to a growing clean energy economy. Allowance value can provide additional incentives to accelerate the deployment and development of new energy-efficient and low-carbon technologies. In sum: consumers, jobs, and the transi-

tion to a clean-energy economy. These principles are consistent, by the way, with the blueprint for legislative action put forward by the U.S. Climate Action Partnership, a coalition of businesses and environmental groups.

Note that I have not said anything about the fraction of allowances that is auctioned rather than given away. That is because, by itself, the split between auctioning allowances and freely allocating them says little about the environmental or economic performance of the legislation.

First, auctioning versus free allocation does not matter for the environmental effectiveness of the legislation. That is the job of the cap.

Second, auctioning versus free allocation does not affect the total value of allowances, which depends on how many allowances there are. As a result, that split does not affect the economic incentive to reduce pollution or, as a general rule, the cost-effectiveness of the program.

With those points in mind, let me go back briefly to the principles and discuss the House legislation very briefly.

That legislation performs quite well. In fact, contrary to what you might think from reading the media coverage of the bill, H.R. 2454 allocates nearly 80 percent of the total value of allowances to households, small businesses, and public purposes, including 43 percent that is channeled directly to American families.

One of the things that the House bill gets right is the use of multiple channels to direct value to households. That is important because households differ in a number of ways, including geography and income, and multiple channels can be designed to address those dimensions separately.

In particular, giving a portion of allowances to local electric and natural gas utilities for the benefit of consumers offers a natural way of accounting for regional variations in how electricity is generated, more from coal in some areas, more from natural gas and nuclear in others.

Of course, in giving allowances to LDCs, the legislation should be absolutely clear that allowance value must benefit consumers through lower utility bills. Other safeguards can include requirements that LDCs publish detailed plans and are audited to ensure they meet their commitments.

At the same time, care should be taken to ensure that the method of allocating allowances does not dampen the incentives to take advantage of cost-effective common-sense ways to reduce energy use. This could be done with something as simple as a monthly check made out to each rate payer.

Now, other mechanisms can channel allowance values to households as well, including a targeted tax credit for low-income consumers and a broader dividend for all households. What the House legislation does, using all three of these allocations, has been estimated by the EPA to keep households' costs down to the cost of a postage stamp a day, or about a dime a day, per person.

Working from that legislation, the Senate can move forward. The House has made an excellent start. Let us finish the job.

Thank you.

The CHAIRMAN. Thank you, sir.

[The prepared statement of Dr. Keohane appears in the appendix.]

The CHAIRMAN. There is a vote going on. I will ask questions, then Senator Grassley may be back in time. If not, we will just make adjustments here.

My first question I will ask of you, Dr. Keohane, is, why does the House bill—and you favor the House bill—why allocate half the allowances based on emissions, the other half based on generation? Why that formula?

Dr. KEOHANE. Well, that is the formula that I think was the product of a compromise among a range of stakeholders.

The CHAIRMAN. What is the public cost, with half generation and half emission?

Dr. KEOHANE. I think the task is, Mr. Chairman, to strike the right balance between reflecting historical patterns of energy generation that were put in place long before we started tackling this challenge, while also reflecting differences in population. So, I would suggest that, in determining the allocation for the initial years of the program, it is only fair to think about the starting point we are starting from.

In other words, where are we starting out? Where we are starting out is a geographic pattern of energy generation that reflects varied resources throughout the country.

Now, over time, as we make that transition to that clean energy economy, those regional disparities will be erased and the need, I think, for that channel of allocation will be diminished and can be phased out. But in the transitional period of the program, I think it is a way of reflecting existing regional disparities that reflect our starting point today.

The CHAIRMAN. How do you address the concern raised by several that the LDC allocation would provide a windfall profit for the industrial and commercial sector? What guarantee is there that the free allowances will be passed on? I know there was an attempt directed to the local public service commissions, but what guarantee is there that the industrial and commercial sectors will not get a windfall? Dr. Burtraw pointed out that there are 50 different people who were making those decisions, and it raises questions of efficiency, frankly.

I would like you to answer that, as well as Dr. Burtraw.

Dr. KEOHANE. Well, I will take a stab at it, and I will look forward to hearing Dallas's response as well.

I think this is a crucial role for the Congress to play and, frankly, where some improvement can be made on the House legislation. I think it is critical, as I said a minute ago and as I write in my written testimony, that there be very clear guidelines that the benefits be passed on to consumers.

Now, the House legislation has a couple of ways of doing that. It requires those local distribution companies to submit detailed plans specifying exactly how they will pass on the benefit to customers, and it includes strong provisions, strong safeguards for auditing those LDCs to make sure they follow through on their commitments. So, those are the kinds of things that provide a starting point.

As you say, it is crucial that, if the allowance value is allocated to the LDCs, that it go on to the benefit of their customers. I think this is an area where Congress needs to provide very clear guidance, perhaps even to the point of defining benefit of customers very clearly.

My own definition would be reductions in the total electricity payments of households, although we can talk about how to do that—what mechanism to use. But, I think Congress should be very clear about what the definition of benefit is and provide clear and stringent guidelines to make sure they get——

The CHAIRMAN. Dr. Burtraw?

Dr. BURTRAW. The instrument that the House has looked at has a distinction between the fixed and variable parts of the bill, thinking that, if we could compensate for the fixed part of the bill associated with fixed costs, such as transmission and distribution, that somehow this would be more equitable and avoid this efficiency cost of driving down electricity prices.

The idea there is that people would be hyper-rational and would really recognize, oh, at the margin it costs this much to use electricity or natural gas, but I am getting this overall savings.

Economists have come lately to this field of behavioral economics because we have come to recognize that, actually, behavior is a part of our economy, and the notion that households will sit down and separate the bill in their way—I think people go to the computer, they sit down and pay their bill, and, if they see a lower overall bill, they think electricity just got cheaper, and it is easy to consume more of it.

So, the other idea is, well, what happens with industrial and commercial cost customers? There, if the same thing is attempted and you separate the fixed and variable portions of the bill, then the rebate for the fixed part is really going right to shareholders. It is not going to go to customers who are buying goods and services provided through commercial interests and industrial interests because, if we are operating in a competitive economy, they are still up-pricing goods and services at that marginal cost of electricity that they use. We might think that industrial and commercial cost customers are sophisticated. I do not think we can think that most households are going to be able to respond to signals this way. And so it becomes quite a convoluted mess in terms of separating what kind of signals, how is the PC going to do this. And, in fact, bills are not even structured at the State level to allow this kind of information to be passed on.

The CHAIRMAN. Yes. But what percent is fixed that goes to the shareholders and what percent is not fixed or variable and does not go to shareholders? Just generally, would you have that?

Dr. BURTRAW. Generally, you could think about electricity bills as being—roughly 40 to 45 percent of those bills constitute fixed costs.

The CHAIRMAN. All right.

Dr. BURTRAW. But what consumers actually see usually is about 5 percent of their bill or 10 percent of their bill as a fixed cost, because all of these fixed costs stem 50 different ways in 50 different States; all these fixed costs are rolled into volumetric charges.

The CHAIRMAN. All right.

Next in order. Senator Kerry, you are next.

Senator KERRY. I have to go vote.

The CHAIRMAN. Well, we can continue when you get back. Well, somebody. [Laughter.]

Senator Stabenow, you are going to volunteer? Thank you.

Senator STABENOW. Yes, and thank you to all of you.

I think this a really important discussion, and it is unfortunate that we will have to interrupt it with a vote.

Dr. Burtraw, as we talk about the concerns about volatility as it relates to the price of emission allowances—and this is for anyone to answer—there is concern about volatility as we transition to the new economy and significantly increase the costs, of course, that we have been talking about with homeowners and businesses.

One of the things that I am looking at is something that others have been analyzing, which is a price collar that would essentially place a collar around the market price of emission allowances. It would have the environmental benefit of ensuring that the costs of the allowances do not go too low, but the predictability on the high end that you would be able to measure in terms of some kind of stability on what prices would be.

I wonder if you might elaborate on any benefits that you might see—or anyone else on the panel—from a price collar, the variations we may consider, whether or not a price collar would diminish some of the need to allocate allowances to certain sectors, because there would be less of a price variation. If we have a workable price collar, do we need to allocate as many allowances to dampen costs if the collar is already preventing excessive costs?

Now, I wonder if you might——

The CHAIRMAN. And Senator, I will let you complete, and you close when you want, but, when you finish, we will stand in recess. We only have a couple minutes left, but it is up to you. Stay as long as you want.

Senator STABENOW. Thank you.

Dr. KEOHANE. Thank you, Senator Stabenow.

Quickly, I will answer and then give others a chance.

I think the major virtue of a price collar is that environmental economists for 30 years have been saying that all we really want is a stable, smooth, increasing price signal to guide investment decisions in the economy. And that price collar helps deliver that, while removing the excess costs associated with price volatility. That type of volatility, in any kind of a market in a commodity market or whatever, it leads to a delay in new capital investments because those investments become inherently more risky. This is called real option theory, and it leads to longer waiting on the exact kind of innovative investments that we want to see happen in order to achieve a transition in the economy.

Now, in some commodity markets, it makes sense to have volatility because you really are bringing your variable supply of corn or other commodities into the market, and there are risks on both the supply and demand side. Here, it is your job to set the emissions cap, the emissions goal, and the number of emission allowances that are going to be out there, so supply is set. Price volatility does not really have a useful purpose after you have done

your job of achieving what the social goals should be with respect to our environmental outcome.

So, that price collar, what it is doing is, it is letting the market still play a role, but by limiting the volatility the market can only enhance the transition and investments we want to achieve.

Senator STABENOW. Thank you very much.

Anyone else? Yes? Dr. Keohane?

Dr. KEOHANE. Let me jump in, because I think I will have a different view, and I imagine Dr. Viard will have a similar one to Dallas.

I want to make four brief points here because I think, Senator, this is a very important question, but I am going to come at it from a very different point of view.

First of all, the integrity of the cap is fundamental to the environmental performance of the program, and the danger with any policy like a price collar, that effectively allows for unfettered emissions at some price, is that it is going to bust the cap. So, there are alternative options we can use, as the House legislation has, that provide a lot of the same cost-containment features of that price collar, but they do it under the cap. The way the House does this is through an allowance reserve, kind of like a strategic reserve for allowances that are set aside and used for this purpose.

Two more quick points.

Senator STABENOW. I apologize. I am just told we have 1 minute left on the clock, and so I am going to have to ask to follow up in a discussion with you. This is very important, and I am going to turn it over to Senator Cantwell.

Senator CANTWELL. I would just say, Madam Chair, thanks very much for staying here and having this important question on the collar. And I just want to say that I appreciate the witnesses recognizing that an auction and a 100-percent refund or percentage refund back to the consumers would be a very wise way to go. So we appreciate your testimony on that, and we look forward to submitting questions to each of you.

Thank you very much.

Senator STABENOW. With that, the committee is in recess, I believe. Is that correct?

Senator CANTWELL. Recess.

[Whereupon, at 10:47 a.m., the hearing was recessed, reconvening at 10:48 a.m.]

Senator GRASSLEY. All right. I heard all of the testimony except the last few minutes of the last witness. I apologize to him, because Senator Baucus and I trade here when we have votes.

I will ask the whole panel this question: in response to my written question from a hearing before this committee earlier, CBO Director Doug Elmendorf said, "The value of the allowances created under a cap-and-trade program would be large, but would inevitably fall short of the total economic effect of the policy—which would include the cost of the allowances themselves as well as the losses associated with the reduction in output associated with transitioning to a less carbon-intensive economy." As a result, he said, "Policymakers would inevitably face trade-offs: using the allowance revenue to help particular consumers, workers, or share-

holders will necessitate providing less compensation, or none, to other entities."

Please briefly describe the ideal proportion in which Congress should compensate the various affected segments of the American population and any groups Congress should not attempt to compensate.

Starting with Mr. Stephenson and going left to right.

Mr. STEPHENSON. Well, most of the estimates of the effect on gross domestic product are fairly modest, from 0.5 percent to maybe 2.5 percent. You are never going to offset the entire cost by the value of the revenues generated, and you do not really want to. You want there to be price controls and incentives for there to be a reduction in emissions—that is the goal here—and for all consumers to promote efficiency in everything they do. But a responsible way of allocating the revenues can go a long way towards offsetting the effects without those compensations.

So, I mean, that is what we are talking about here. This is very complicated, and you are not going to make all sectors happy. The idea is to be as equitable as possible, and that is what we are trying to decide.

Senator GRASSLEY. Dr. Burtraw?

Dr. BURTRAW. Thank you.

I think that it is imperative to achieve some kind of regional equity across the Nation with respect to the impacts of the program. We have been out front in identifying the regional differences, but also, in many forms, those regional differences have been greatly exaggerated.

I think that my testimony indicated that free allocation of local distribution companies for residential-class customers actually achieves that regional balance and overcomes the differences in costs that households will face. Beyond that, I think it is not so much a question of compensation as that economists want to view this carbon-constrained economy as a common pool resource. It is a resource that we are not putting a property value on, and it is not a question of an entitlement or so much a question of compensation as it is a franchise that everyone owns in common, and that is why the appeal of per-capita dividends crosses the political spectrum and is a common-sense approach to the problem.

Senator GRASSLEY. Dr. Viard?

Dr. VIARD. Thank you, Senator.

I think that a majority of the revenue should be used for some type of tax reduction that would reduce marginal tax rates. Not all of the revenue should be used for that purpose, however; there is clearly a need for an ample scope for having some type of relief for vulnerable consumers, which could take the form of things like expansion of the Earned Income Tax Credit, perhaps a modest program of per-person rebates, and so on.

I think there would be ample revenue available to fulfill both the goals of protecting those who are in need and also reducing marginal tax rates to dampen the tax interaction effect that cap and trade would otherwise have.

Senator GRASSLEY. Dr. Keohane? Have I pronounced it right?

Dr. KEOHANE. That is fine, yes. Pretty close. Thank you, Senator.

To go back to the principles I guess I started with, I would say it is really crucial that we protect consumers, preserve and strengthen manufacturing, and invest in a clean energy economy, and what the right proportion is, specifically, I think, is one of the key tasks for Congress rather than for the economic analysts on the panel.

I also want to echo what Dallas said with respect to households. In particular, I think taking account of regional variation and taking account of income, in particular, taking care of low-income households, I think those are critical aspects of allocation.

Finally, I want to pick up on a point that Mr. Stephenson raised, which is the low cost of the overall program. It is important to remember that, when EPA looked at the House bill, they found the cost to households to be $80 to $111 a year, and, as I said, that is about a postage stamp per day, per household, or about a dime a day per person. So that is also something important to keep in mind as we consider these issues.

Thank you.

Senator GRASSLEY. Another question for the panel.

We have been hearing that the Commodity Futures Trading Commission is now blaming speculators for the historic run-up in oil prices. Under cap and trade, like the Waxman-Markey bill, would hedge funds be permitted to speculate in carbon allowances? And a second part of that question: are the Wall Street investment banks supporting cap and trade because they know that they will have a new trillion-dollar market from which to feed?

Mr. STEPHENSON. My understanding of Waxman-Markey is that derivatives are allowed, but not over the counter. I am not a derivatives expert, but I think a certain amount of that should be allowable, but it is going to create new oversight challenges depending upon the types of derivatives that are authorized.

Senator GRASSLEY. Dr. Burtraw?

Dr. BURTRAW. I think that, when it comes to market oversight, the Commodities Futures Trading Commission is the best agency positioned to be able to do this, given their expertise.

But, your question is really a deep one. I ask also, what is the role of a secondary market here for CO_2? How constructive is it? How important is it in order to really have the program work? And proposals such as Senator Cantwell's to restrict trading in a secondary market and just directly distribute to compliance entities has that going for it and would seem to accomplish what we are trying to accomplish if it was done through frequent auctions or something like that.

Senator GRASSLEY. All right.

Dr. Viard?

Dr. VIARD. I think this is an important issue, Senator. And I think the real underlying concern is the price volatility, and this goes back to an answer that Dr. Burtraw gave earlier to Senator Stabenow.

The price volatility under cap and trade really is not serving a useful purpose, and so then you face a difficult dilemma, the extent to which you allow the secondary market, and the hedging activity, and so on.

Really, a more direct solution is to go ideally to a carbon tax, or at least to put a price collar on the cap-and-trade program, along with borrowing and banking of allowances to try to replicate a carbon tax, to really eliminate this price volatility and thereby remove any need or demand for that type of hedging activity.

Senator GRASSLEY. Dr. Keohane?

Dr. KEOHANE. Well, I think this is a crucial issue and one that is really important, and one where Congress has a crucial role.

I want to point out, the role of the market is very important here, though. The market is what is going to seek out the lowest-cost emissions reductions opportunities. That is what makes this program tick.

Now, the role of the government is to provide very clear guidelines and stringent rules of the game to make sure that people stay within bounds. In particular, you can do things such as the House bill would have done or other people have proposed, like preventing over-the-counter trading, and there should be very strong penalties and enforcement guidelines for anybody who violates the rules of the game. But we need the market as the engine of driving costs down and making this work over the long run.

Senator GRASSLEY. Senator Carper, you are the next one, even though you are way down on the bottom of the list. You are the only one here.

Senator CARPER. The first shall be last and the last shall be first.

Senator GRASSLEY. All right. [Laughter.]

Senator CARPER. Every dog has his day.

Earlier in the hearing I was in an out, but I heard some discussion, I think maybe a question asked by Senator Baucus on a provision of the House bill dealing with the allocation of allowances to the utility sector, whether it be based on input or output.

As some of you know, that has been a roaring debate for years, and we have seen efforts to try to move forward scuttled because the utility industry could not come to any kind of consensus among themselves, much less with the environmental community, much less with the rest of us, and the compromise that was worked out, I think, was a really key aspect for the successful passage of the climate bill because it not only helped to smooth the transition to a low-carbon economy in terms of consumer price increases, but also recognized the clean energy investments that have already been made.

As someone who has been involved in some of those battles over the years on the allocation system, I realize that the compromise that was struck was no mean feat, difficult to do. I would have maybe a question, if I could, Mr. Stephenson, maybe Dr. Burtraw, as a follow-up. But given our concerns about consumers bearing the cost of a climate program, are there better ways to ensure the deployment of energy efficiency programs other than having consumers, especially low-income consumers, see an immediate price increase, which may result in an auction?

Mr. STEPHENSON. Well, there are advantages to giving tax relief, either in the form of a rebate check or reduced taxes to consumers. One of the challenges in providing the free allowances to the LDCs is that you are trusting them to do the right thing with their residential and their corporate customers, and that is going to require

a lot of oversight in 50 different ways, as Dr. Burtraw pointed out, to ensure that that happens.

So the language in the Waxman bill is fairly generic. It says, "for the benefit of the rate payers," but it is not clear exactly how that will happen.

Dr. BURTRAW. I, too, appreciate that the compromise that is in the House bill is miraculous, that it really came through, and it is an amazing thing to behold, but that compromise was served up to maintain sort of an industry coalition, and it includes allocation to all customer classes. The type of reform I was suggesting—if that was more limited, then it could be coupled with a change in that allocation formula which could give greater weight to the emissions intensity of production.

That would disadvantage States in the Northeast or in California, but their States might very well go along with this because, if there is a greater share as per-capita dividends, households in those States would actually benefit from that reform. But, as you said, what this compromise is doing now is recognizing historic investments in energy efficiency in those regions of the country.

The second part of your question was about energy efficiency, and the evidence is overwhelming that there are huge opportunities to squeeze out energy savings in our economy, and our modeling indicates the same. The question really is the institutions that are going to allow us to provide incentives or direct involvement of investments that will allow us to achieve that. And I think LDCs can, and have, played a role in that historically, so that allocation on behalf of residential-cost customers could be in part directed towards that end.

Senator CARPER. Thank you.

Let me sort of stay with this for a little bit. I think it is fairly clear from the debate on climate change that a cap-and-trade program will affect various regions of our country differently. We just talked about that, and I think Senator Baucus alluded to that in his earlier question.

Is there an allocation mechanism that could help ensure that one region does not suffer a disproportionate burden at the expense of another?

Dr. Keohane, go ahead, please.

Dr. KEOHANE. I will just say only briefly, Senator, that I think this is one of the potential roles. If we step back and look at the big picture, this is one of the potential roles that the LDC channel, in fact, can play. And so, as I mentioned in my testimony, I think this is why it is so important to have multiple channels for allocating value to households, because households do vary among a number of different dimensions and, in particular, I think the LDC allocation is a good means of addressing those regional disparities. We can talk about some of the details of that, but I think that allocation plays a crucial role in this legislation.

Senator CARPER. Good. Thank you.

Please?

Dr. VIARD. Senator, I think you have certainly highlighted an important concern there about the regional impact. The LDC distribution is certainly not necessary, however, in order to deal with that. I mean, Congress has obviously adopted a large number of govern-

ment programs that make transfer payments and grants, and a number of those do have allocations among States where a decision is made by Congress as to where the needs are greatest. And so it is possible to allocate money to vulnerable regions without having to go through the cumbersome mechanism of distributing to LDCs and engaging in intrusive Federal oversight of State utility regulation and so on.

So, I think it is certainly a very worthy goal, but there are better ways, I think, to do it than the LDC allocation.

Senator CARPER. Please?

Dr. BURTRAW. I think that the LDC allocation, if it worked in a text book way, the way it is envisioned to potentially work—I think I have raised the question about that already—would overcome the regional disparity and achieve the compromise you are looking for.

Our research indicates that the same outcome could be achieved even better if it was just limited to residential-cost customers, that it is totally sufficient to achieve that very same regional equity and it lowers the overall cost of the program dramatically for average households across the Nation.

Senator CARPER. Good. I suspect my time has expired.

Senator LINCOLN. I think I am chairing, but it is Senator Kerry's turn. There you go. [Laughter.]

Senator KERRY. I am sorry I missed whatever took place in between the testimonies and the questions, because I think it is helpful to have the continuity. But, at any rate, let me just begin in one place, Dr. Viard, just very quickly, because you sort of reinsert a carbon tax into this thing.

It strikes me that a carbon tax is probably the most-felt entity by the general population because that is just going to get passed on one way or the other in everything that they do without any allowance or rebate or adjustment. It is just a tax.

And, second, the carbon tax does absolutely nothing to reduce emissions, per se, except to the degree that someone voluntarily chooses to say, well, we have this tax here, maybe we will mitigate a little bit, we would do this or that, but there is no target, there is no goal, there is no mandate reduction. Correct?

Dr. VIARD. I think I would have to disagree with that a little bit, Senator. First of all——

Senator KERRY. Is there a mandated reduction in a carbon tax?

Dr. VIARD. Any carbon tax is equivalent to a cap-and-trade system, where the permit price or allowance price under cap and trade is the same as the carbon tax. So, for example, a $20-per-ton carbon tax will give you the same reduction as a cap-and-trade system in which the price of allowances is $20.

Senator KERRY. Why? A company could say, I am under no obligation to reduce emissions, this is the cost of doing business. I am perfectly happy to pay the tax, pass it on in the cost of doing business, and not reduce.

Dr. VIARD. But that is exactly the same situation that they are in under a cap-and-trade system. No particular firm is mandated to achieve any given reduction under cap-and-trade either. In fact, that is what makes cap-and-trade so efficient. What makes it a market-based mechanism like the carbon tax is the fact that the

firm makes the choice. It decides, can I achieve this reduction at a cost of less than, say, $20 per ton? When they can, they do.

Senator KERRY. But they have a goal and a target, which everybody is moving towards, which is part of what helps set the price.

Dr. VIARD. Well, the one difference is how the emissions are determined each year, which is that, under a cap-and-trade system, you are locking in the quantity of emission reductions each year, while under a carbon tax you are locking in the price or the cost of making that last ton's worth of reduction in emissions.

That is actually an advantage for the carbon tax which you can replicate to some extent with banking, borrowing of allowances, and price collars under cap and trade, because it says, if it is costly to make reductions in emissions in a particular year, let us not make as many reductions that year. If it is particularly cheap in a given year, let us make more reductions in that year. It is the stock of carbon dioxide in the atmosphere that we are ultimately concerned about.

Senator KERRY. I do not want to spend the whole time on that debate. I think most people would argue that it is much less efficient and much more problematic in terms of the impact of the average taxpayer.

But let me come back, Dr. Burtraw and Mr. Stephenson. You both talked about the mixture of the two here. I have always been a 100-percent auction person, because I believe that it is the cleanest, et cetera, et cetera, et cetera. But I also recognize the process the House had to go through to pass a bill, and I know we are just not going to have that, and I acknowledge that. We are going to have to find some mix here, and you alluded to that mix.

It seems to me that that mix was the key to being able to put together the kind of political fabric that you also have to deal with here in order to pass a piece of legislation.

Now, the mix that the House arrived at, would you make any adjustments to that mix, either of you, Mr. Stephenson or Dr. Burtraw, particularly with respect to the consumer protection, which we want to maximize?

Mr. STEPHENSON. Well, we are not specifically evaluating Waxman, but we do note that the percent of auction increases significantly over the years.

Senator KERRY. Because it does the transition, correct?

Mr. STEPHENSON. Because of the transition.

We think that, if you are going to give a free allowance, that is, in essence, the same as auctioning, creating a value and giving it back to that entity. The problem is that auctioning is just more transparent.

Senator KERRY. Agreed. Except there is a difference, it seems to me. If you are a company and you are sitting there and you are giving this allowance back, you get a breather.

Mr. STEPHENSON. Right.

Senator KERRY. You get an opportunity to say, all right, now we can adjust to the new way we are going to do business here in order to reduce our emissions and pass on the cost savings to the consumer. If you just do the auction, it is slam, bang right up front and there is no mitigation for that cost unless you give an allowance.

Mr. STEPHENSON. Right. But, at the same time, you have to trust the distribution company to do what is intended with that free allowance——

Senator KERRY. I agree completely with your judgments, all of you. I think you have all made the point very pointedly, and it is one that we have already, in fact, responded to, which is, there has to be a clear mechanism that is transparent and accountable that guarantees that you are going to give that back to the consumer.

Mr. STEPHENSON. Right. You are trusting the LDCs to do the revenue allocation instead of the government.

The CHAIRMAN. Senator Lincoln?

Senator LINCOLN. Thank you, Mr. Chairman.

I appreciate you and Senator Grassley holding the hearing. It is a huge issue for so many of us, and without a doubt these are critical issues in the creation and implementation of this cap-and-trade legislation that is going to have a big impact on our families and our businesses all across the country.

I want to appreciate, again, the chairman asserting the jurisdiction of the issue of climate change here in this committee, and I am certainly proud of the bipartisan way that we always attack these issues, both pragmatically and looking very carefully at how we formulate long-term solutions. And I think we will have that opportunity in health care, and certainly here, and I appreciate the fact that we are exerting that jurisdiction.

With all that said, it is indeed a very difficult issue, maybe even more difficult in the current economic environment, I think. The average family in my State these days sits down at their kitchen table and, quite frankly, they talk through their worries about their retirement plan losing its value, their kids' college savings account losing its value, their neighbors have just received a notice about being laid off, perhaps, and they are all scared, quite frankly.

And our businesses. They are making tough choices right now, whether to cut benefits, or cut hours, or cut workers, or close their doors altogether. And I would say the vast majority of Arkansans do indeed believe efforts need to be made to reverse the detrimental effects of climate change. But they are apprehensive, and rightly so, about what a massive policy change such as cap and trade will mean for them in a time when they are working day-to-day just to make ends meet.

And to be frank, the legislation we have seen come out of the House has done nothing to ease those apprehensions whatsoever. The Waxman-Markey bill picks winners and losers and places a disproportionate share of the economic burden on families and businesses, particularly in rural America, in my opinion.

I think it is a deeply flawed bill, and I hope that we will work hard to come up with something that makes better sense. The bill out of the House would significantly increase the cost of fuel for consumers. Some have gone as far as to say that the oil industry and its consumers were singled out by the House of Representatives to bear the cost of cap and trade.

And while that may not seem a big problem to some of my urban colleagues on the east or west coast, it is a huge concern for me. Many of my rural constituents have no choice but to drive quite a ways, whether it is through two or three different counties, to get

to work or school every day. And many of them spend their days in the fields, behind the wheel of a combine or a tractor. Gasoline and diesel are, and will continue to be for the foreseeable future, important parts of their everyday lives.

In addition, many of our businesses in my State that compete with international manufacturers or international producers tell me that protections for our energy-intensive domestic industries in Waxman-Markey are insufficient to combat unfair competition overseas from countries such as India and China.

The offsets provided for agriculture as well will not benefit many of our producers who will all undoubtedly face increased input costs if this bill were to become law.

So, I point out these concerns to certainly indicate to the chairman and others that we have much work to do over here, and I hope that we will dig in and make that happen. I think certainly several of our colleagues and I joined last year in laying out a set of principles that need to be addressed, and I think those principles are still very, very relevant.

I am certainly proud to have worked with Chairman Bingaman in the Energy Committee to come up with a good bill. I think, quite frankly, what we could do with a companion tax package to that energy bill could do a tremendous amount in moving us forward incrementally in terms of moving us away from carbon-emitting energies and incentivizing those energy productions, renewables and others, that could make a tremendous benefit, and I hope that we will work hard on creating that companion legislation.

I think I have to at least say a little bit, Mr. Chairman, about the climate change legislation, how it does not provide a fair and equitable allowance allocation for domestic oil refiners and, more importantly, their customers.

Under Waxman-Markey, refiners are held responsible for 44 percent of all covered emissions, and yet they receive a mere 2 percent of free allowances, compared to coal-producing energy and a whole host of others that are out there. It is going to result in the domestic refining industry being required to purchase over 90 percent of the allowances it would need for compliance with this legislation. Small refineries and the fuels they produce emit 10 million metric tons of CO_2 each year, but, under Waxman-Markey mandates, they would have to purchase on the open market 9 million CO_2 allowances annually. Those allowances are assumed to cost $20 per ton.

Lion Oil in Arkansas, as well as Murphy Oil, which is a great corporate citizen of our State, would have to spend $180 million annually to purchase allowances in the early years and much more in later years. Over the last 23 years, their average annual profits have been $13 million per year.

So, in testimony before the House Energy and Commerce Committee, Lion's vice president Steve Cousins explained the obvious, that under Waxman-Markey, the company will be unprofitable in year one and insolvent within a matter of months, not years.

As I mentioned, without a doubt, similar impact would be felt by other independent domestic refiners. Murphy Oil, as I said, another responsible corporate citizen in Arkansas, is doing a tremendous job.

So I guess my question, Dr. Viard, do you think the allowance allocations structured in Waxman-Markey would increase the U.S. market share supplied by foreign oil as compared to our domestic production?

We are not going to be able to do away with oil production in this country. It is certainly not in the early foreseeable future. But are we just opening the door for just all imported oil and imported oil products?

Dr. VIARD. Well, it is almost an inherent consequence, I think, Senator, of pursuing a climate control program unilaterally. It is very difficult to deal with a worldwide externality through the unilateral action of any given country. Allocating allowances based upon past activity is not really a solution to that problem. It increases the wealth of stockholders but does not reduce the marginal cost of doing new production in the United States.

Output-sensitive allocations of permits to trade-competing industries is one possible solution to the problem of carbon leakage or of international competition. Whether it is the best solution, I am not sure. I think, frankly, it is difficult to do an ambitious program of carbon control dealing with a worldwide externality until we have broad international cooperation to deal with the problem that affects the entire planet.

Dr. KEOHANE. Senator, if I may, briefly on this point, because I think it is an important point, and I certainly understand the concerns of your constituents. I was actually on the panel with Lion Oil before the House.

Senator LINCOLN. With Mr. Cousins. Yes.

Dr. KEOHANE. I want to focus in on this issue of competitiveness for domestic refineries, because I think in that area, perhaps contrary to what my colleague just said, I believe we can show—and I will be happy to share this information with you separately—that domestic refineries would be protected under the bill. In other words, for their process emissions, that is the emissions that come from the smokestack, that is what they have to pay for that foreign suppliers would not, and I think there is some good evidence to show that the House strikes the right balance. Of course, the Senate might strike another balance. I just want to say, briefly, the larger amount, the allowances that are the carbon content of the fuel, that also has to be paid for by foreign importers of oil. So, that is a level playing field. And I think the small bit that is process emissions, I think there is a balance that can be struck there.

Senator LINCOLN. Yes, but the process emissions are presumably what they would be held accountable for, not everything else that trickles down from that industry, and, without that being lumped in with those other energy-intensive industries, they are just not going to get a fair shake.

The CHAIRMAN. I am going to have to go to Senator Menendez, because we all have an obligation that begins about 11:30, promptly.

Senator LINCOLN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Menendez?

Senator MENENDEZ. Thank you, Mr. Chairman, and thanks for holding this hearing. I think the committee's jurisdiction here is important.

I saw the House made some history in its bill, and I look forward to what the Senate can do. I have a concern with the House bill. I think it fails to chart a course towards lowering emissions in the transportation sector. And transportation accounts for nearly one-third of our emissions, and yet 1 percent of the allowances goes towards mitigating emissions in that sector. So we can improve CAFE standards, we can clean our fuels to slow the growth of emissions, but if we want to truly lower emissions from transportation we need to slow the growth of vehicle miles and travel. Then that, to me, ultimately means that we need to invest in transit and more compact development strategies that can help us in that respect.

So, I look forward, as we pursue this, to see if we can be able to have a climate bill that funds clean transportation infrastructure projects and incentivizes sensible land use policies as part of that.

I would like to ask Dr. Keohane, we have heard a lot today about costs to consumers, and I think we need to be careful of how we think of those costs. If we fail to comprehensively deal with climate change, it is inevitable that this country, it seems to me, will face hardship on an enormous scale.

In New Jersey, we had a group of scientists who predicted sea-level rising, of course, along the entire coastal part of New Jersey, an incredible consequence to us in property values, in economic impact, diminished food production, more wildfires, stronger storms, deadly heat waves—they will all become par for the course if we do not act.

So, does that not mean, when we are talking about costs here, that the real cost comparison is not the cost of action or inaction, because it seems to me we have to act? The real cost is whether we want to act now and gradually wean ourselves off from fossil fuels and improve efficiency or whether we continue to delay and force ourselves into a position down the road where we will need to dramatically reduce emissions in a matter of years, rather than looking at decades.

Dr. KEOHANE. Well, thank you, Senator.

I think that is a crucial point and one I am glad you raise, because you often lose sight of that. When we start talking about issues of allocation, we lose sight of why we are here in the first place, which is simply that the cost of inaction is untenable and much, much higher than anything we are talking about in terms of a dime a day of the costs to households of doing something about this.

As you said, coastal States and inland States would suffer major consequences. It seems like it is far off, but that will happen in the lifetime of our children and their children, if not before. In fact, we are already seeing evidence of climate change. So, it is crucial to take account of that, all of the costs of these plans that are out there, including the EPA's, which say how small the cost will be to households. They only look at one side of the ledger, so they do not even account at all for those enormous costs of inaction. And as you say, delay will only drive up the costs. It will make it that

much harder to address this problem if we wait now, if we drag our feet. And by the way, that is not going to help American manufacturing if we wait, because the key to helping American manufacturing is putting the policy in place that will help us lead the world in the next clean energy revolution.

So, I think your point is a crucial one. I am glad we got a chance to raise it.

Senator MENENDEZ. Yes?

Dr. BURTRAW. On a narrow matter, a specific area of reform in H.R. 2454 has to do with, as I have been talking about this morning, the local distribution companies, that free distribution to the local distribution companies preserves low prices for electricity and natural gas consumption through 2026, and only then does it begin to phase out.

There is a justification for this kind of subsidy to consumers and businesses, because they inherit a stock of capital, appliances, home building efficiency, et cetera now at the outset of a program, and they cannot immediately respond to changes in pricing as well as they can over time when they begin to make investment changes in their own house infrastructure.

But, if they do not anticipate any changes in relative prices until after 2026, there is no incentive for the next decade for housing and land use planners, et cetera, to begin to anticipate that.

Senator MENENDEZ. Which anticipates the next question. That is, reducing the cost of this bill for working-class families under the bill is essential, and I will support efforts that accomplish this more.

But what you just talked about: one of my concerns is that my understanding of the House bill is that local distribution companies are required to pass some allowance value to residential consumers, but much is left to their discretion and to State regulators' discretion.

Do you see States under such a system competing for carbon-intensive business by funneling this value to industry? If so, then how do we get the consumer side of that benefit, and is that sound policy?

Dr. BURTRAW. I think you have really hit a great point there. There is a sort of a prisoner's dilemma. Many of the State public utility commissions are chartered under State constitutions to promote economic development and job growth in their States. That is perhaps as it should be, but consequently their incentives, when given these allowance values and decisions about how they should be distributed within their States, they could make the decisions that are geared primarily towards job growth and subsidizing industrial growth in the State and not seeing pass-through to consumers. So it is really an open question. It is an undetermined question, what the outcome would be.

Senator MENENDEZ. We certainly want to see the job growth but also strike a balance to make sure that consumers get part of the benefit.

Dr. Keohane? The last word on that?

Dr. KEOHANE. I just wanted to say, very quickly, I think it is very important that consumers get that benefit. I think one approach that the House legislation, which is not perfect, tries to take

is, that benefit would go in proportion to the electricity consumed. So there are provisions in there to prevent what you are talking about, but I think we can go beyond those and do a better job of ensuring that consumers see that benefit.

Senator MENENDEZ. Thank you, Mr. Chairman.

The CHAIRMAN. I have no more questions.

Senator Kerry, do you have questions? We are supposed to, as you know, board a bus in about 5 minutes.

Senator KERRY. Yes. I would like to before I come down.

The CHAIRMAN. Go ahead. Sure. Why don't you go ahead?

Senator KERRY. I will just be a little later.

Let me ask this generally of the panel. Last week, the McKinsey Company released this report showing that investments in energy efficiency——

The CHAIRMAN. Senator Kerry, why don't you go ahead, and then you can just finish the hearing.

Senator KERRY. All right. Thank you.

The CHAIRMAN. Recess when you are finished.

Senator LINCOLN. Can I ask——

The CHAIRMAN. You can work it out with Senator Kerry.

Senator KERRY. Sure. Do you want to go ahead?

Senator LINCOLN. I just have two quick questions to put out there.

Just, to any of you all in the panel, if you would, just to talk further on Senator Menendez's issue on consumers, would any of the witnesses disagree with the assumption that free allowances benefit the recipient industries more than they do consumers? That would be my first question.

I am trying to figure out, as he mentioned—and I think it is going to be critical in terms of cost to consumers—the language in the bill, at least Waxman-Markey does not provide very specific rules. You leave it up to State public utility commissions to determine how those households are going to be compensated, which I think is incredibly open-ended, which I do not think is going to work for constituents like I represent, predominantly low-income. I have the third-lowest median income in the country in Arkansas.

And the last thing is, and I asked this question to the USDA folks which they did not include in their analysis, but the cost of food. For those of us who come from farm States and the input costs that we are going to incur, the relative cost of food, not just the cost of utilities to consumers, but the cost of food.

Thank you.

Dr. BURTRAW. In the analysis from the numbers I've been studying, we do include the cost of food. We include the entire composition of the household basket of expenditures on regions and income deciles across the country. So I think that the free allocation for the local distribution companies, a lot of it does fall to industry, not just to consumers.

For example, an unappreciated fact is that the electricity industry can expect profits of about $2.5 billion because of the free allocation on behalf of consumers to local distribution companies. That results because of expanded generation and production in the electricity industry, and so that is extra revenues and extra profits through the industry. That is not really the intent of this free allo-

cation on behalf of consumers, and so I think that is on the table when you think about other claims for compensation in the industry.

Senator LINCOLN. You mentioned several in your testimony.

Dr. KEOHANE. If I may briefly just add, I think in particular for those low-income consumers and the low-income households you mentioned, it is important to keep in mind, again, there are multiple channels here. And one thing I think the House legislation does get right is in setting aside 15 percent of the allowances to low-income households.

The Center for Budget and Policy Priorities says that, in combination with the electricity LDC allocation, will fully compensate the poorest one-fifth of households and start to compensate the next fifth. So that provides, again, a starting point. If we want to go further, terrific. But it is important to recognize that is in there.

Senator LINCOLN. And I do not disagree with you that it is there. My biggest concern is, we have worked for years and years and years to get a refundability to the child tax credit to the lowest of income folks who suffer or certainly need that the most, so getting it to them is a whole other question. Setting it aside is one thing and that is great, but getting it to those people who need it the most is a whole other issue.

Thank you. Yes, Dr. Viard?

Dr. VIARD. Yes, Senator. I think that you have hit on an important point here. You mentioned the refundable child credit, which I think is a much better way to try to provide compensation to vulnerable consumers than any of these schemes that work through the local distribution companies.

You have mentioned, quite rightly, some of the problems with the provisions of the House bill. I think we can honestly try to perfect those provisions and so on, but it is almost trying to square the circle, I think. I guess the thing that comes to my mind is that, if it is not worth doing, it is not worth doing well. And I think that that applies to trying to channel this through the LDCs.

If you flow it through in variable rates to either residential consumers or to business consumers, then you are undermining conservation incentives and you are just creating bigger consumer burdens elsewhere in the economy. If you flow it through as fixed-rate reductions to industrial consumers, it is captured by the stockholders of those companies, as Dr. Burtraw mentioned.

If you do not put precautions in place, it could be captured by the stockholders of the utilities. If you do successfully flow it through in reduction of fixed charges for residential consumers and you make sure residential consumers understand that, then you actually have created a consumer rebate system that may not look too bad at first glance.

But then we come back to the question: Why not do something with the refundable child credit or with their Earned Income Tax Credit or with per-person rebates which you could easily finance through auction revenues?

Senator LINCOLN. Well, thank you all. I certainly look forward to working with you all, as well as my colleagues, Senator Kerry, Chairman Baucus, and Senator Grassley, to come up with some good solutions.

Thank you.

Senator KERRY. Thank you, Senator.

Dr. Keohane, how do you respond to that issue of the LDCs and this ability to get back to the consumer more effectively?

Dr. KEOHANE. Well, I think Dallas actually made a reference to this, as did Dr. Viard. I think ideally what you would be able to do is compensate consumers through the LDC allocation, since that is the way, as I said, that reflects those geographic disparities, and you can phase that out over time, once those disparities ease.

Now, in terms of the mechanism, I think the ideal is to distinguish the price signal that gives the incentive to reduce energy use and invest in energy efficiency, to keep that, while compensating households through a lump sum mechanism. One way you might do this—I think it would be pretty simple—it does not have to be on the utility bill. It could be a check that shows up in the same envelope, or maybe a different envelope.

Senator KERRY. Would that still be through the LDC?

Dr. KEOHANE. Yes. So the LDC would simply send a check to its rate payer.

Senator KERRY. What is the value of doing it through the LDC? Because obviously some people here have challenged that.

Dr. KEOHANE. In some ways you could always come up with another——

Senator KERRY. So far you have talked about the regional impact.

Dr. KEOHANE. Right. I think that is——

Senator KERRY. Is that the only value?

Dr. KEOHANE. Well, so, let me say, I think Dr. Viard said, you could come up with another system that would respect regional differences. It seems to me that maybe that is possible. It sounds like it would be pretty complicated, and I think the advantage of the LDC allocation is it is sort of a natural way, in my view, to reflect some of that geographic variation, some of the starting point. Exactly how you do that, exactly what the balance is, exactly what the mechanism is, I think those areas can be worked out.

I guess the idea is that using multiple channels here is a way of getting at the multiple dimensions. You have the low-income household tax credit for low-income families, you have a broad-based consumer dividend for consumers as a whole, and then you can use the LDC allocation to try to reflect some of those geographic variations.

Senator KERRY. Are you contesting, the rest of you, the notion that 83 percent of the total here is going to go back to the consumer?

Mr. STEPHENSON. I just think it is hard to tell at this point. I think that most economists would say that——

Senator KERRY. Well the auction piece is not hard to tell. Fifteen percent is automatically going directly back.

Mr. STEPHENSON. Right. Right.

Senator KERRY. And then you have the LDC distribution component, which is about 35-plus percent, 40 percent with a bonus, so you are up around 55 or 60 percent right there, and then you have the additional fee. Why is it hard to measure? What is hard about it?

Mr. STEPHENSON. I just think there are efficient mechanisms for allocating to make sure that they go to the right place. For example, as was mentioned, the Earned Income Tax Credit for low income, or a rebate check, simply, keep it apart from the LDCs to make that determination on how to lower a consumer's bill and expect that they will understand the difference between the fixed and the variable portion of their bill and still have the price incentives for them to be more energy efficient in their everyday practice.

Senator KERRY. Senator Lincoln spoke about the cost to this person and that person, and the cost to the industry, et cetera, et cetera. McKinsey, last week—I mean McKinsey is not the first time. McKinsey spent millions of dollars doing a complete analysis of the carbon cost-abatement curve, and over a year ago they came out with a report that showed that upwards of 35 to 40 percent of the reductions here pay for themselves the first 20 years.

It seems to me there is a lot of knee-jerk push-back, to be honest with you, by people who just want to protect their current status quo who are not taking into account the realities of energy efficiencies, of new technologies, and of what is happening in the marketplace anyway. Now, McKinsey, last week, came out and said that investments in energy efficiency could result in 17 percent emission reductions, which is what we are looking for, below 2005 levels within the next decade, at a net savings of $700 billion for U.S. consumers and businesses.

What do they know that you do not, or what do you know that they do not?

Dr. BURTRAW. I have a lot of respect for them, but it is the questions that they are not asking that really you have to ask, which is, really, what are the institutions that are going to help deliver those savings? But I believe those studies are superb with respect to identifying opportunities in the economy for these kind of efficiency savings. The questions of what institutions, what incentives are we going to put in place to get firms and households——

Senator KERRY. Well, we have already put $80 billion worth of incentives in in the stimulus package this year.

Dr. BURTRAW. Yes. Yes.

Senator KERRY. And we are going to pass an additional energy package, I am confident, that is going to do even more.

But nobody, it seems, when they come up here, likes to take these things into account. None of the analyses that I have seen yet that factors in the cost, including CBO, the EPA, and the Waxman bill, actually factored in energy efficiencies and new technologies.

Dr. BURTRAW. Well, Senator, we have looked at that, and the results that we found were so striking that it gave us great pause, that the investments in energy efficiencies would so dramatically reduce the cost of a cap-and-trade program, that we had to stop and ask ourselves the same question you are asking and that McKinsey is asking, which is, why are these potential cost savings not being realized? And the answer I have for you is that the institutions and the incentives for households, for individual decisionmakers, are not quite clear. They do not quite work the way we think they should, and that is the public policy problem.

Senator KERRY. Well, maybe the Cash for Clunkers Program is evidence that people are underestimating the smarts of the average citizen here to respond to their economic need and reality.

Dr. Viard?

Dr. VIARD. Senator, I think you have raised some good points here.

You know, economists are certainly reluctant to assume that there are any private cost-reducing measures that firms could be taking now that they are not taking and that the government could then go identify those. I think we would certainly resist that notion. But I think that it may well be true that when you give firms the right incentive by putting a price on carbon, either through a carbon tax or through cap and trade, that of course firms will be able to identify those opportunities. I think it is certainly important that we use a market-based mechanism, preferably a carbon tax in my view, but cap and trade is also market-based, rather than intrusive government regulations.

There is also, of course, a role for government to play in promoting basic research into technology, including clean energy technology.

Senator KERRY. Well, I need to get down to the White House.

But let me just say in departure that all of these companies that are stating exaggerated opposition to this, based on very unrealistic modeling, need to stop and consider what their models are going to look like when this is regulated by the EPA without any allowances and without any auction, because then they are in for a very different economic world. Would you agree?

Dr. VIARD. I think the EPA regulation is a command-and-control approach that would be highly unsuitable.

Senator KERRY. But it is going to happen if we do not do something up here, and I hope people hear that message loudly and clearly. They are smarter and better to come to this table and work with us as they did with the House to define the solution here. It may not be ideal, but the alternative, I would think, to most of those companies, is going to be that they will be regulated. If you care about coal in America, and there are plenty of Senators up here and plenty of States that do and have reasons to do so, then the only solution is not to sit there and wait to be regulated so that coal prices go up, natural gas goes down—and coal is a lesser choice anyway for ReGGIe in New England, for California, for the Midwest coalition. The only way there is going to be a choice is if they burn it clean, and the only way to burn it clean is to have clean coal technology, and the only way to do that is through this kind of a mechanism where you have $10 billion over 10 years going into that clean coal technology. If it is regulated by EPA, there is no money going into the clean coal technology. It is a battle of appropriations.

Sir?

Dr. BURTRAW. Senator, I have been an advocate for cap-and-trade programs for 20 years, but I would say that, when it starts to look like the Chicago phone book, when it is so complicated that you cannot figure out who is benefiting and who is losing and exactly how the system works, when there is also massive wealth redistributions and shifting going on within the program, then I ask the

question, is it in the public interest to see direct regulation instead of cap and trade? I do not want us to go there, but I think that is the challenge that we face.

Senator KERRY. Well, none of us wants to go there, and that is the challenge we face. Our objective is to try to make it as simple, as straightforward, as transparent, and as accountable as possible. That is exactly what we are working on. It is the purpose of this hearing, and others. And we will not end with this hearing. We will follow up with you, and we will talk with you about how you think we can deal with some of the flaws that you see in Waxman-Markey without so changing the equation that we cannot put it back together again, too. That is part of the trickiness here. I think you would agree with that.

So we look forward to working with you on that.

We will stand adjourned. The record will remain open until Thursday for obvious reasons, and we look forward to following up with you.

Thank you very much. We stand adjourned.

[Whereupon, at 11:38 a.m., the hearing was concluded.]

APPENDIX

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Hearing Statement of Senator Max Baucus (D-Mont.)
Regarding Allowance and Revenue Distribution Under Climate Change Legislation

Aristotle was said to define the term "justice" as "a virtue of the soul distributing that which each person deserved."

Today, we consider various methods of distributing emission allowances. We consider options for distributing revenues from a cap-and-trade program. We'll see if we can find the way that has the most of what Aristotle called "justice."

Most major climate-change bills place a limit — or "cap" — on carbon dioxide. Companies subject to the cap must buy permits — often called "allowances" — to emit greenhouse gases.

One key issue in such a system is: How much of these allowances should the government sell at auction? And how much should the government give away for free?

Economists expect that these allowances will have a value, like cash. Thus, many argue that the government should not just give these allowances away. Many argue that the government should auction them, and return the proceeds to consumers.

Others argue that the government should allocate a portion of the allowances to regulated companies. Doing so would soften the effects of putting a price on carbon.

For example, last month, the Committee heard testimony regarding "trade-exposed" industries. Those are industries that could be hurt by trade with countries that did not have a carbon regime. Many argue for providing a portion of free allowances to these industries.

Under the House-passed bill, at the outset, the government would freely allocate about 85 percent of the emission allowances.

Roughly 40 percent of the overall allowance amount would go to local distribution companies that deliver power to customers. Proponents expect that the power companies would pass the benefits on to consumers.

Another 15 percent or so would go to trade-exposed industries. And the balance would go to a range of stakeholders — including states, energy research entities, and refineries.

Allowances will have significant value. In 2012, the first year of the program in the House-passed bill, the Congressional Budget Office puts their value at about $60 billion. For the period of 2010 to 2019, they amount to more than $870 billion.

CBO calls these allowances "revenues." CBO makes no distinction between allowances that are auctioned and those that are allocated freely.

According to the Congressional Budget Office:

"[T]he creation of allowances by the government should be recorded as revenues. That logic does not hinge on whether the government sells or, instead, gives away the allowances. Allowances would have significant value even if given away because the recipients could sell them or, in the case of a covered entity, use them to avoid incurring the cost of compliance."

In other words, CBO says that all allowances are revenues. And whether they are allocated to local distribution companies or auctioned for other purposes, these allowances are like cash.

There are a number of ways to use allowance revenues to mitigate the cost of climate legislation on consumers and businesses.

For example, Congress could use the money from auctioning allowances to cut taxes: by cutting marginal rates, by cutting capital gains rates, by cutting payroll taxes. Or we could do all of the above.

This approach could apply broadly — to individuals as well as businesses. And we could implement this approach with a system that's already in place — the tax law.

Alternatively, Congress could compensate consumers through rebates or fixed payments per-capita. For example, the government could give every American a fixed dividend every year. That's what happens in Alaska. Every year, the Alaska Permanent Fund pays an annual share of oil earnings to every resident of the state.

We could also devote allowance proceeds to helping low-income Americans. We could expand the Earned Income Tax Credit. And we could use the electronic benefit transfer system that states already use to provide assistance like food stamps and low-income Medicare drug benefits.

The House bill provided solid relief to low-income Americans through these means. The Senate should match it, or build on it.

Still another approach would be to dedicate a share of revenues to investment in energy efficiency. Just last week, McKinsey Consulting said that America could save $1.2 trillion through 2020 by investing less than half that amount — $520 billion — in energy efficiency.

Whatever the approach, we need to devise a system that both meets environmental goals and passes political muster. That won't be easy. The close vote in the House tells us that. But it is something that we can — and must — do.

Today, we'll talk about how to do it. This is the fourth climate change hearing that the Senate Finance Committee has held since April, as we prepare for a markup later this year. And I'm pleased to welcome yet another distinguished panel of witnesses.

So let us see if we can figure out how to distribute emission allowances in a way that one might call "just." Let us see if we can figure out how to give all Americans what they deserve. And let us see if we can figure out the way to do so that has the most of what Aristotle would call "virtue of the soul."

Hearing on

Climate Change Legislation: Allowance and Revenue Distribution

Written Testimony of Dallas Burtraw
Senior Fellow, Resources for the Future, Washington, DC

Prepared for the U.S. Senate Committee on Finance

August 4, 2009

Summary of Testimony

This testimony focuses on the allocation of emissions allowances to consumers through their local distribution companies. This provision and some other features of the proposal are designed to protect consumers from the adverse impacts of price increases and reduce regional inequities. However, this approach also raises the overall cost of achieving emissions reductions. The degree to which it raises the costs will depend on how public utility commissions at the state level incorporate the allowance value into their rate design. The outcome at this juncture is uncertain and beyond the reach of legislative language included in H.R. 2454.

I consider incremental changes to the allocation formula. A simple per-household rebate of allowance revenue raised by the government through auction, coupled with a more moderate allocation to local distribution companies, can achieve distributional and regional goals at less cost and with greater administrative simplicity and predictability. In this framework, there may still be a role for limited allocation to local distribution companies on behalf of residential-class consumers to correct for regional differences in the cost burden of the program.

However, any implementation of free allocation to local distribution companies needs some amendment to the way it is described in H.R. 2454. In addition, the allocation to local distribution companies should phase out a decade earlier than it does currently.

Hearing on

Climate Change Legislation: Allowance and Revenue Distribution

WRITTEN TESTIMONY OF DALLAS BURTRAW

Mr. Chairman, thank you for the opportunity to testify before the Senate Committee on Finance. 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, DC, 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 oxides (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 that developed an outline for a statewide cap-and-trade program under its 2006 greenhouse gas law.

Currently I serve on California's Economic and Allocation Advisory Committee, advising on implementation of the state law and focusing specifically on allocation under a potential cap-and-trade program in the state. I also currently serve on the EPA Advisory Council on Clean Air Compliance Analysis and the National Academies of Science Board on Environmental Studies and Toxicology. Recently, with colleagues at RFF, I have conducted economic analysis of mechanisms to contain the costs and the variability of costs of implementing climate policy.

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I want to focus on one aspect of the allocation of emissions allowances under a cap-and-trade program that emerged as part of H.R. 2454, "The American Clean Energy and Security Act of 2009," which the House passed on June 26, 2009—the allocation of allowances to consumers through their local distribution companies. This provision and some other features of the proposal are designed to protect consumers from the adverse impacts of price increases and reduce regional inequities.

The main point I want to leave you with is that there is another approach that can achieve these goals at less cost and with greater administrative ease: a simple per-household rebate of allowance revenue raised by the government through auction, otherwise known as a cap and dividend. In this framework, there may still be a role for limited allocation to local distribution companies on behalf of residential-class consumers to correct for regional differences in the cost burden of the program.

However, any implementation of free allocation to local distribution companies needs some amendment to the way it is currently described in H.R. 2454. In addition, the approach should phase out a decade earlier than it does.

I evaluate the allocation formulas in H.R. 2454 with three criteria in mind.

First, focus on administrative simplicity and consistency: The allocation approach in H.R. 2454 is complex, but nonetheless leaves the distributional outcome largely undetermined. State public utility commissions will play the determining role in how households are affected, not Congress, and this will be done in 50 different ways. In fact, there is great uncertainty about how the allowance value directed to local distribution companies will flow back to consumers.

Second, protect consumers from adverse impacts: It is broadly accepted that the free allocation to local distribution companies raises the overall cost of the program.[1] This occurs because by reducing energy costs for consumers, the policy would also reduce the price incentive for households and businesses to change the way they use energy. Detailed modeling results show that on average, households are made worse off by the effort to protect them from electricity price changes because it will lead to greater electricity consumption. Consequently, greater emissions reductions will be necessary, at higher cost, in other parts of the economy. Nonetheless, free allocation to local distribution companies may have a justification in reducing regional disparities.

Third, avoid disparate regional and distributional impacts: A more limited approach of allocation to local distribution companies than appears in H.R. 2454 is sufficient to level the playing field across geographic regions and protect low income households. The more limited allocation would be on behalf of just residential consumers.

In H.R. 2454, over the first couple decades of the program, about 56 percent of emissions allowances are directed back to consumers and business to address equity concerns, including allocation to electricity and natural gas local distribution companies, home heating and low income families. This does not include allocations for trade-exposed industries (15 percent) or the merchant plant allocation (totaling about 5 percent). The question is how well the goal of achieving equity across income groups and regions is

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[1] See: Paul, Anthony, Dallas Burtraw and Karen Palmer, 2008. "Compensation for Electricity Consumers under a U.S. CO_2 Emissions Cap," RFF Discussion Paper 08-25 (July). An updated description of this is reported in a technical memo: "The Effects on Households of Allocation to Electricity Distribution Companies," Rich Sweeney, Josh Blonz, and Dallas Burtraw, Resources for the Future, June 5, 2009. http://www.rff.org/wv/Documents/LDC_Allocation_090605.pdf

achieved under the current design? We evaluate this by holding the 56 percent constant, but changing the way some of this compensation is delivered. Each change is then compared to a simple metric of direct allocation to households on a per-capita basis.

The first incremental change we consider is the free allocation of allowances to electricity local distribution companies on behalf of industrial- and commercial-class customers. This allocation raises the cost of the program because it is likely to result in one way or another in increased electricity consumption. Moreover, the allocation to local distribution companies on behalf of industrial- and commercial-class customers is especially complicated and Congress cannot anticipate or effectively determine how this program will work. How well customers actually will be compensated depends on arcane issues about the fixed and variable components of an electricity bill. Ambiguity of this nature is a concern because legislation would create a new commodity with a market value of over $100 billion per year. Complexity and lack of transparency is likely to undermine public confidence and the long-run political will to address climate change. I discuss the nature of this ambiguity in detail below.

One way to reduce the cost of the program is to move away from free allocation on behalf of commercial and industrial class electricity customers. Substituting a direct dividend to households in place of free allocation to industrial- and commercial-class electricity customers would reduce the cost of the program by $99 per year for the average household.[2] The middle class would also experience cost savings. The fifth, sixth, and seventh income deciles would all face costs at least $112 lower than in H.R. 2454. Shifting the allocation away from industrial- and commercial-class electricity consumers and towards dividends to households would be the simplest and easiest way to modify H.R. 2454 to reduce costs, while still achieving regional and distributional goals. Industrial and commercial customers would still be protected to a large extent by the other portions of the allocation formula, including the 15 percent allocation for trade-exposed industries.

Another important, unanticipated and unappreciated outcome of free allocation to local distribution companies on behalf of energy consumers is the benefit that accrues to energy producers. The reduction in electricity price and the associated expansion of electricity generation would lead to greater utilization of incumbent assets and greater revenue. In the period 2015–2020, in competitive regions of the country, electricity producers would see their annual profits increase, as a result of free allocation on behalf of consumers, by a total of about $2.5 billion per year. Let me note, this benefit to the

[2] A full description of the model is provided in Burtraw, Dallas, Richard Sweeney and Margaret Walls, 2009. "The Incidence of U.S. Climate Policy," Resources for the Future Discussion Paper 09-17-Rev. Our calculations differ from EPA's analysis of H.R. 2454 for a number of reasons. We model a limited role for offsets and hold that level constant across various scenarios examining alternative approaches to allocation. In H.R. 2454, expanded use of offsets early in the program shifts the costs associated with domestic abatement to later years. This combined with the five percent annual discounting of costs results in lower cost estimates for households in the EPA's analysis. In contrast, our estimates correspond to the EIA estimates of domestic compliance activities in their analysis of S. 2191 (Lieberman-Warner). We evaluate the effects without discounting on households in eleven regions and ten income deciles in the first decade of the program. All reported values are in 2006 dollars.

industry is distinct entirely from the 5 percent allocation (about 5 percent of total allowances or $5 billion per year) to merchant generating plants that appears in a separate part of H.R.2454. In previous testimony, I and others have reported on research that indicates that the change in the value of existing assets of incumbent firms is likely to be less than this amount.[3]

In the rest of the country, where the electricity industry operates under cost-of-service regulation, it is usually suggested that the profitability of firms would not be affected because regulators there establish a revenue requirement and set rates to achieve a fair rate of return on invested capital. However, once these rates are set, additional sales due to lower electricity prices constitute revenue beyond the level calculated to recover capital investments, and that translates into profits for shareholders. So in these regions, industry also can benefit from free allocation to consumers. Electricity generation in these regions would expand by 8 percent or 200 million MWh in 2020 as a result of free allocation to local distribution companies.

On Behalf of Households

Thus far I have only addressed free allocation to local distribution companies on behalf of industrial- and commercial- class customers. One might view the free allocation on behalf of residential customers in a different light. While it also raises the overall cost of the program, free allocation on behalf of residential customers may more directly help to reduce the cost of the program in regions that are relatively hard hit due to the greater use of coal for electricity generation, like the states surrounding the Ohio Valley. We find that households in all income deciles in an eight-state region benefit more from free allocation to local distribution companies directed to residential-class customers, compared to direct allocation to households. Again, free allocation has an efficiency cost and the program is more expensive for the national average household, but the tradeoff between equity and efficiency is relatively straight-forward. Congress can be confident what it is buying in this tradeoff.

The status quo allocation of the 56 percent of allowances in H.R. 2454 leads to an inverted 'U' with respect the distribution of costs across household income groups. It would do a good job of protecting the bottom 20 percent of households and the top 10 percent. The increase in costs associated with the inefficient allocation to local distribution companies falls hardest on the middle range of household incomes. In contrast, direct dividends to households allocate the value of allowances in a way that does not disadvantage the middle class, is less costly and administratively simpler. Furthermore, in a profound way, direct dividends avoid the appearance of favoritism, by distributing to households an equal share of the value of a new property right that is created under a cap-and-trade program.

Let us consider broadly the consequence of changes in the portion of the allocation formula intended to achieve distributional and regional goals, holding constant the 56

[3] Burtraw, Dallas and Karen Palmer, 2008. "Compensation Rules for Climate Policy in the Electricity Sector," 2008. *Journal of Policy Analysis and Management.* 27 (4):819-847.

percent of allowance value, but consider the alternative of direct taxable dividends of 41 percent of the value, with the remaining 15 percent directed to residential customers of electricity and natural gas, to be delivered through their local distribution companies. This approach would lower the cost of the program for the average household by $106 per year compared to the approach used in H.R. 2454. Further, it would fully protect households below the poverty line, including approximately the bottom two deciles of the population.[4] The middle class, who bears a large portion of the burden under H.R. 2454, would also receive relief with this approach. The fifth, sixth and seventh income deciles would face cost savings of $177, $231 and $263 respectively compared to H.R. 2454.

This approach retains the attribute of H.R. 2454 in promoting regional equity by compensating residential electricity consumers in regions which previously might have had larger cost increases. For example, the Ohio Valley faces a burden $52 lower than if there was no allocation to residential electricity and natural gas consumers.

Another important element of the allocation formula is the "apportionment" of allowances among local distribution companies, or more generally among states and regions of the country. H.R. 2454 considers two metrics for apportionment in the electricity sector, consumption and emissions in different regions, and weights these metrics equally. If a different formula were applied it would have significant regional effects. For example, if the policy were to apportion on the basis of the emissions-intensity of electricity consumed, our modeling indicates it would increase the allocation going to the Ohio Valley region by more than 20 percent.

Exhibit 1 illustrates the share of allowances going to each of 21 regions of the continental United States under the formula in H.R. 2454, compared to two alternatives. One is based on the emissions-intensity of consumption, which is calculated using a detailed simulation model, and the other is the emissions-intensity of production. In many regions there is not much difference between the emissions-intensity of consumption (which is hard to measure) and the emissions-intensity of production (which is easy to measure), but it does make a big difference in regions that are net importers or net exporters of power. The conceptually preferred approach is the emissions-intensity of consumption, because it reflects the impact on prices that will be felt by consumers. Even small adjustments to the formula, giving greater weight to the emissions-intensity of consumption, could direct greater compensation to households in the Ohio Valley yet not affect the overall cost of the program and leave a large per capita dividend in place.[5]

A second type of incremental reform to H.R. 2454 would be to reconsider its timing. A justification for free allocation on behalf of consumers is that households will enter the

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[4] We assume the tax collected on the dividends is returned to the program in a revenue neutral manner, leading to greater effective benefits for lower income households with lower tax rates. If the dividends were nontaxable, the average cost per household would be the same but it would result in a shift of net dividend value to higher income households.

[5] If an emissions-based approach were used, and limited only to residential class customers, the emissions intensity of production might be a straight-forward solution that was acceptable to regions that have relatively low emissions-intensity of their own generation but import emission-intensive electricity because it would leave a large share of allowances to be distributed through direct dividends.

program with an existing stock of household capital in appliances and building shell efficiency. There would be relatively less opportunity to respond to a sudden price change, with existing household capital in place, than there would be to a gradual change in prices that emerges over time because households would have the opportunity to change their appliance purchase decisions and make other changes. A sudden change in prices would not be especially effective and would be politically unpopular. However, to provide households with an incentive to purchase more efficient appliances, etc., it is essential that they anticipate they will see increasing prices in the near future. The current duration of the free allocation to local distribution companies through 2026, with a phase out of the allocation beginning only then, is too long to provide incentives for changes in consumer behavior over the next ten years. From the vantage point in 2009, I think the simplest and most effective change to H.R. 2454 would be to begin the phase out of free allocation to local distribution companies at the outset of the program and to have the phase out completed before the end of the next decade.

A third type of incremental reform to H.R. 2454 would be to clarify the language that provides direction to local distribution companies and their public utility commissions about how allowance value should be returned to customers. The current language is problematic. Directing allowance value to reduce the fixed part of the electricity bill "to the maximum extent possible" is conceptually advantageous but it is impractical and unlikely to have the desired result. Conceptually, reducing the fixed part of the bill would preserve the incentive for consumers to reduce consumption because consumers would be compensated by reducing their overall bill, but prices for incremental consumption would remain at full value.

In practice this approach is nearly unworkable. One reason is because bills do not separate the fixed and variable portions of the charge in this way, especially for residential class customers. A survey of sample residential bills from around the country indicates that rarely is there a fixed part that is greater than just a few dollars. Four examples of sample bills are included in **Exhibit 2.** What might be considered a fixed cost (that is, not a variable cost) such as transmission and distribution charges are broken out only sometimes, but they almost always are recovered on a volumetric (per KWh) basis. To change that practice would require widespread bill reform, and there is no legislative language to achieve that outcome. Further elaboration of this is provided below.

However, even if bills did separate fixed and variable charges, and the allocation was used to reduce the fixed part of the bill but leave the price of incremental changes in consumption untouched, it remains implausible that customers would respond to the marginal price signal in the desired way. I consider myself an energy expert, but few people I know pay attention to the difference between their electricity price and their electricity bill. I venture that in 99 percent of households, customers just sit down at the computer to pay the bill, and if the bill is less, they figure electricity just got cheaper and their consumption is likely to increase.

One might expect more sophisticated behavior from commercial- and industrial-class customers, who might recognize their true marginal production costs. However, the implementation of the rebates to consumers will require oversight of state-level public utility commissions to determine, for example, how much of a rebate to the fixed portion of a bill a large customer should receive compared to a small customer. If they were receive the same size rebate it would seem unfair, or even potentially absurd if they were of very different size. But, if they receive different size rebates, then their rebates would actually hinge on the volume of electricity they consume, so we are right back at the beginning. H.R. 2454 acknowledges this complication for industrial customers, and the final version of the proposed legislation allows for rebates to industrial customers to be placed in the variable portion of the bill. In any case, the final outcome actually will be decided in 50 different ways in the different states, where PUCs interpret their missions to protect the public in different ways. The outcome is beyond the reach and determination of the legislation currently.

In the remainder of this testimony, I provide background for the committee on institutional issues associated with the free allocation to local distribution companies, and the influence the various approaches I discuss are likely to have on the cost of the policy to households in different regions and income groups.

Institutional Issues Associated with Electric Local Distribution Companies

Local distribution companies, or LDCs, are regulated entities responsible for providing physical distribution of electricity to end-use loads as well as customer billing for electricity consumption. The effects of free allocation to LDCs will largely depend on how LDCs return allowance value to consumers. State-level public utility commissions, which regulate retail prices, will need to determine how to treat the income received by LDCs for the sale of allowances. Distributing the value to consumers through lower rates could offset much of the increase in electricity prices imposed by a cap-and-trade program, yet may encourage increased consumption. State commissions will have discretion over how to balance lower rates with sufficient conservation incentives in their ratemaking and design process.[6]

Currently, there are no widely accepted standards that state commissions use to determine rate design and cost recovery, nor guidelines on how LDCs are to convey the rate structure to consumers through electricity bills. Some state commissions may apply common principles to the rate structures of utilities under their jurisdiction, yet there is a wide range of approaches among the state commissions, and the rate design itself (how costs are recovered through the rate structure) may still vary by utility. For example, the California Public Utility Commission employs a five-tier inclining block rate as the default pricing scheme for residential consumers.[7] Although the overall structure for each utility may be similar with each tier of electricity usage corresponding to a higher

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[6] For an overview, see: National Regulatory Research Institute, 2008. *State Commission Electricity Regulation Under a Federal Greenhouse Gas Cap-and-Trade Policy*

[7] http://www.dra.ca.gov/DRA/energy/Electric+Rate+Design.htm#DRA_Advocacy

per-kilowatt-hour charge, each utility may recover costs differently since the rate structure does not differentiate between cost components.

In providing electricity to consumers, utilities generally face a fixed cost component and a variable cost component. The fixed portion covers costs that do not change with changes in electricity output. This is generally predictable and includes elements such as operations (i.e. transmission and distribution), maintenance, customer service, capital costs and taxes. The variable cost component is a volumetric expenditure associated with generation. This mainly includes the cost of fuel or purchased power.

The goal of a state regulatory commission is to provide an LDC with the opportunity to recover its costs plus earn a competitive return on investment. The regulatory process through which LDCs receive an approved rate structure is called a rate case and consists of two phases. The first phase is ratemaking during which the state commission determines a reasonable revenue requirement for the utility. The second phase is rate design where the state commission determines how the revenue requirement shall be recovered through various charges for each customer class.

This process results in unique rate structures for each LDC. Some examples of sample bills from various parts of the country are included as **Exhibit 2**. The rate structure, through which LDCs collect revenue, may consist of a number of separate components, including energy charges, demand charges, consumer service charges, environmental surcharges, fuel and purchased power adjustments, and other miscellaneous charges.[8] In general, most of the fixed costs incurred by the utility are recovered through variable charges on the customer bill. Often, customers will have one fixed customer charge on their bill representing the minimum payment allowed (if no electricity is consumed) along with one or more volumetric charges. These may be structured as a single rate for all consumption, an inclining block rate (such as the California example above), or the volumetric charges may be divided categorically (i.e., transmission charge, distribution charge). Large end-users, such as industrial customers, often have a demand charge which is based on kilowatts (not kWh) and reflects their contribution to peak-load. There is considerable heterogeneity in rate structures by state as well as by utility and customer class.

Allowance Value to Consumers

State commissions can treat the allowance value in rate design in myriad ways. Since allowance value is essentially additional fixed income to the LDC, state commissions could logically view the allowance as an offset of the LDC's fixed costs. The variable cost, which would remain an indicator of the true price of electricity generation, would increase to reflect the added costs of the cap-and-trade program. However, as stated previously, LDCs recover most of their fixed costs through a variable charge on consumer electric bills. Furthermore, practice is heterogeneous across states, utility and customer classes. So it is unclear how the allowance value applied to an LDC's fixed costs would appear in customer bills.

[8] See EIA: http://www.eia.doe.gov/cneaf/electricity/page/prim2/toc2.html

One straightforward treatment of allowance revenue would be to simply reduce the revenue requirement by the allowance value and then apply the same function in allocating the revenue requirement to the rate structure components. This would likely result in lower rates and/or fees for each line item on a bill. Alternatively, the state commission could allocate the allowance value to reductions in just one or more rate components. Depending on the structure of the bill, customers may see increases in some of the non-targeted rate components, but these would be offset to an extent by reductions in the targeted component. The state commission could also reduce each customer's bill by a fixed amount. Since each state commission approaches rate design in a different manner, the return of allowance value to consumers will also likely vary among state commissions and among utilities within each jurisdiction.

Additional Considerations by State Commissions

In deciding how to treat the income from the sale of free allowances, state commissions must consider how their decisions affect household consumption. This largely relies on three things: (1) the pricing signals in electricity retail rates, (2) consumers' capacity to respond to changes in electricity rates or the different components of their bills, and (3) conservation incentives for LDCs.

First, state commissions must consider how the return of allowance value will affect the pricing signals conveyed to consumers. Since state commissions act in the interest of the public, they often have multiple competing goals that complicate the regulatory process. They must balance energy efficiency with consumer protection while ensuring competitive returns to LDCs. Because of the complexity of rate design, retail prices often fail to accurately reflect the underlying cost of electricity.[9] The return of allowance value to consumers through changes in retail rates has the potential to further distort this pricing signal. Without appropriate signals, households will not consume socially efficient levels of electricity.

Second, the effect of free allocation to LDCs depends on how customers respond to changes in their electricity bills. Likely, the state commission decisions will lead to at least one or more line-item reductions in a consumer bill. If the price reductions lead to increases in consumption, the emission reductions achieved by the cap-and-trade program could be partially eroded by increases in consumption. State commissions need to balance price reductions with the need to encourage consumers to conserve and invest in energy efficiency measures. Currently, it is unclear how customers would react to different changes in electricity rate structures. For example, I argued above that customers may react to variable charges different than fixed charges or they may only pay attention only to the overall total bill.

Lastly, state commissions must consider how rate designs affect conservation incentives for the utility. Since cost recovery is largely achieved through variable charges on a

[9] Faruqui, Ahmad, and Stephen George, March 2006: Pushing the Envelope on Rate Design. *The Electricity Journal*, Vol 19, Issue 2, pp 33 – 42.

customer bill, the LDC's revenue increases as sales increase. This provides a disincentive for the LDC to encourage conservation or invest in efficiency measures. Decoupling is a rate mechanism alternative to correct this disincentive. Under a decoupled rate design, fixed cost recovery is independent from the sale of electricity. Basically, the allowed revenue is fixed instead of the allowed rate. Although there are many nuances to the specific design, this trend is becoming more popular and state commissions will need to understand how it can complement the return of allowance value to customers since the fixed-cost portion of the bill is specifically targeted. Currently, 15 utilities in 7 states have some form of decoupling policy for electricity and two states have approved future initiates.[10]

An alternative to decoupling is the straight-fixed variable rate design which assigns all fixed costs to a fixed charge on the customer bill and all variable costs to a variable charge. This would be a straightforward way to ensure that the LDC allowance value is returned to customers without affecting the variable cost of electricity, yet there are two issues with this design.[11] First, this mechanism reduces the variable component of customer bills by moving fixed costs from the variable to fixed components. This reduces consumer incentives to conserve electricity. Of course, under a cap-and-trade program, the variable charge of electricity would likely increase so the potential net effect on the variable charge is unclear. The other problem with a straight-fixed variable design is that moving fixed costs from the variable charge may adversely affect small and low-income users.

Although some utilities have considered this approach to rate design, no utilities currently invoke this approach, owing to these issues. Nonetheless, this alternative highlights the complexity of decisions and considerations that state commissions face during a rate case. Free allocation of permits to LDCs has the potential to cushion the price effects of a cap-and-trade program but it will add to the complexity faced by state commissions.

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[10] Lesh, Pamela (NRDC), June 2009: *Rate Impacts and Key Design Elements of Gas and Electric Utility Decoupling: A Comprehensive Review.*

[11] Boonin, David M., May 2009: A Rate Design to Increase Efficiency and Reduce Revenue Requirements. *The Electricity Journal*, Vol. 22, Issue 4, pp 68-78

Exhibit 1: Regional Distribution of Emissions Allowances in 2020

The following chart compares the distribution of allowances to local distribution companies in H.R.2454 with allocation based strictly on the emissions-intensity of consumption or the emissions-intensity of production. The 21 regions are identified below.

Region	States
OHMI	Ohio and parts of Michigan
KVWV	West Virginia and parts of Kentucky and Virginia
IN	Indiana
ERCOT	Parts of Texas
NJD	Delaware and New Jersey
MD	Maryland
PA	Pennsylvania
MAIN	Parts of Illinois, Iowa, Michigan, Minnesota, Missouri, and Wisconsin
MAPP	Nebraska, North Dakota, South Dakota, and parts of Illinois, Iowa, Minnesota, Montana, and Wisconsin
NY	New York
NEN	Maine, New Hampshire, and Vermont
NES	Connecticut, Massachusetts, and Rhode Island
FRCC	Parts of Florida
AMGF	Alabama, Georgia, Mississippi, and parts of Florida
ENTN	Tennessee and parts of Arkansas, Kentucky, Louisiana, Missouri, and Texas
VACAR	North Carolina, South Carolina, and parts of Virginia
SPP	Kansas, Oklahoma, and parts of Arkansas, Louisiana, Missouri, New Mexico, and Texas
NWP	Idaho, Oregon, Utah, Washington, Wyoming, and parts of Montana and Nevada
RA	Arizona, Colorado, and parts of Nevada and New Mexico
CALN	Parts of California
CALS	Parts of California

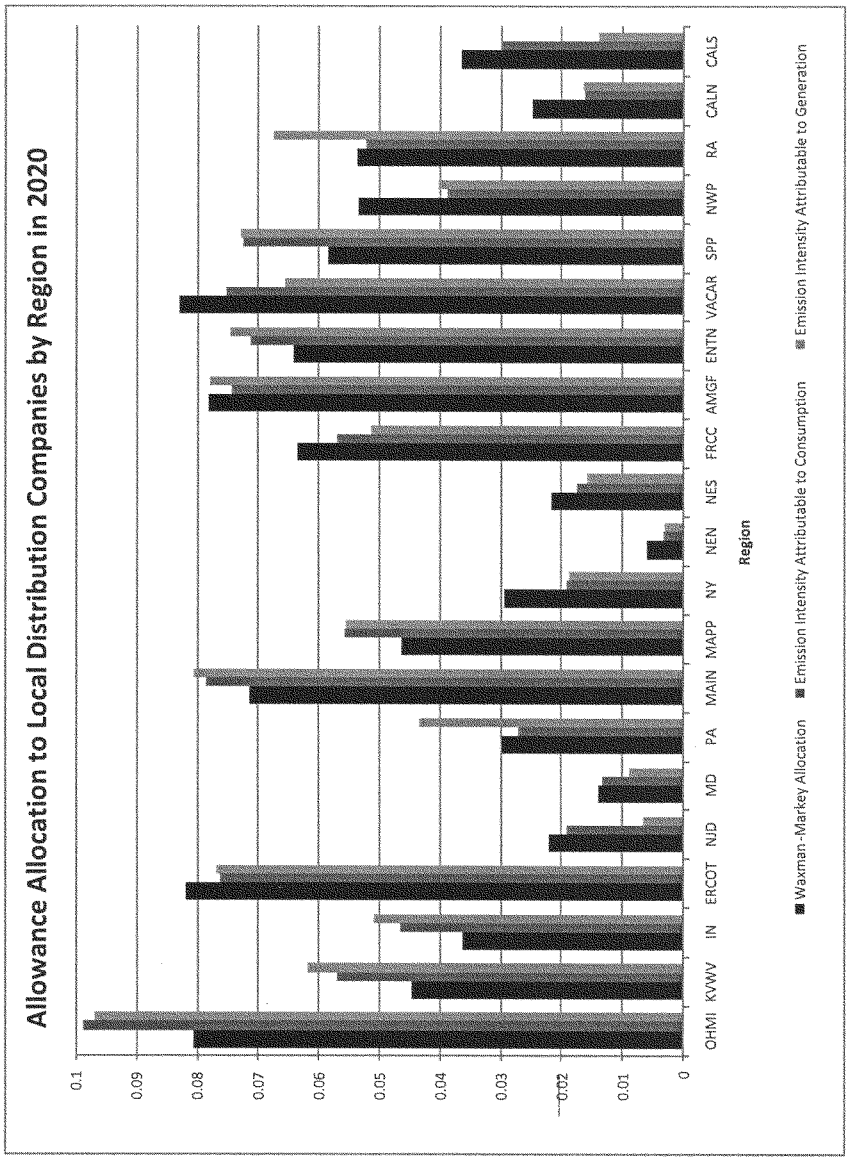

Allowance Allocation to Local Distribution Companies by Region in 2020
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
OHMI KVWV IN ERCOT NJD MD PA MAIN MAPP NY NEN NES FRCC AMGF ENTN VACAR SPP NWP RA CALN CALS
Region
Waxman-Markey Allocation
Emission Intensity Attributable to Consumption
Emission Intensity Attributable to Generation

Exhibit 2: Sample Electricity Bills

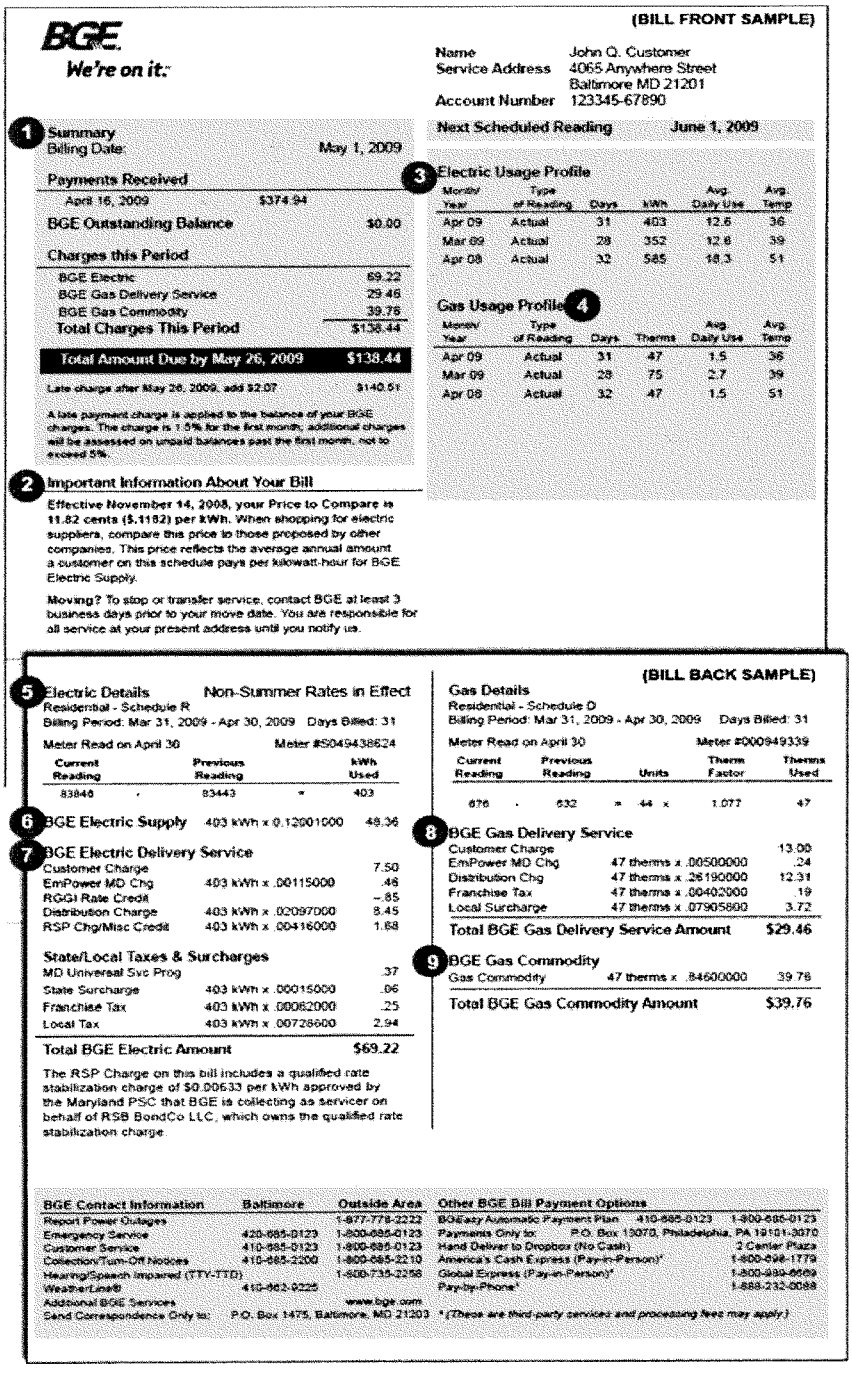
These four sample bills represent demonstrate the diversity in bills delivered to electricity customers. Note the following characteristics:

(1) Baltimore Gas and Electric (Maryland)
- Competitive region
- BGE uses a decoupling mechanism to recover lost revenue from energy efficiency programs
- Gas and Electric services are on the same bill
- Supply and delivery charges separated on the bill. "Delivery" is further broken down into a fixed charge plus several volumetric charges

(2) Pacific Gas & Electric (California)
- Regulated region
- PG&E uses a decoupling mechanism (revenue is independent of sales)
- Gas and electric services are the same bill
- PG&E uses a volumetric inclining block rate
- The total amount is then separated into different components (generation, transmission, distribution...)

(3) Pacific Power (Oregon)
- Regulated region
- No decoupling mechanism
- Small basic charge (98 cents, non-volumetric). The rest of the bill is a single volumetric charge (plus taxes)

(4) Florida Power & Light (Florida)
- Regulated region
- No decoupling mechanism
- Electric service amount consists of a customer charge (fixed), fuel charge (volumetric) and non-fuel charge (volumetric)



(BILL FRONT SAMPLE)

BGE
We're on it.

Name John Q. Customer
Service Address 4065 Anywhere Street
Baltimore MD 21201
Account Number 123345-67890

Next Scheduled Reading June 1, 2009

1 Summary
Billing Date: May 1, 2009

Payments Received
April 16, 2009 $374.94

BGE Outstanding Balance $0.00

Charges this Period

BGE Electric	69.22
BGE Gas Delivery Service	29.46
BGE Gas Commodity	39.76
Total Charges This Period	$138.44

Total Amount Due by May 26, 2009 $138.44

Late charge after May 26, 2009, add $2.07 $140.51

A late payment charge is applied to the balance of your BGE charges. The charge is 1.5% for the first month; additional charges will be assessed on unpaid balances past the first month, not to exceed 5%.

3 Electric Usage Profile

Month/ Year	Type of Reading	Days	kWh	Avg. Daily Use	Avg. Temp
Apr 09	Actual	31	403	12.8	36
Mar 09	Actual	28	352	12.8	39
Apr 08	Actual	32	585	18.3	51

4 Gas Usage Profile

Month/ Year	Type of Reading	Days	Therms	Avg. Daily Use	Avg. Temp
Apr 09	Actual	31	47	1.5	36
Mar 09	Actual	28	75	2.7	39
Apr 08	Actual	32	47	1.5	51

2 Important Information About Your Bill

Effective November 14, 2008, your Price to Compare is 11.82 cents ($.1182) per kWh. When shopping for electric suppliers, compare this price to those proposed by other companies. This price reflects the average annual amount a customer on this schedule pays per kilowatt-hour for BGE Electric Supply.

Moving? To stop or transfer service, contact BGE at least 3 business days prior to your move date. You are responsible for all service at your present address until you notify us.

(BILL BACK SAMPLE)

5 Electric Details Non-Summer Rates in Effect
Residential - Schedule R
Billing Period: Mar 31, 2009 - Apr 30, 2009 Days Billed: 31
Meter Read on April 30 Meter #S049438624

Current Reading		Previous Reading		kWh Used
83846	-	83443	=	403

6 BGE Electric Supply 403 kWh x 0.12001000 48.36

7 BGE Electric Delivery Service

Customer Charge		7.50
EmPower MD Chg	403 kWh x .00115000	.46
RGGI Rate Credit		-.85
Distribution Charge	403 kWh x .02097000	8.45
RSP Chg/Misc Credit	403 kWh x .00416000	1.68

State/Local Taxes & Surcharges

MD Universal Svc Prog		.37
State Surcharge	403 kWh x .00015000	.06
Franchise Tax	403 kWh x .00062000	.25
Local Tax	403 kWh x .00726000	2.94

Total BGE Electric Amount $69.22

The RSP Charge on this bill includes a qualified rate stabilization charge of $0.00633 per kWh approved by the Maryland PSC that BGE is collecting as servicer on behalf of RSB BondCo LLC, which owns the qualified rate stabilization charge.

Gas Details
Residential - Schedule D
Billing Period: Mar 31, 2009 - Apr 30, 2009 Days Billed: 31
Meter Read on April 30 Meter #000949339

Current Reading		Previous Reading		Units		Therm Factor	Therms Used
676	-	632	=	44	x	1.077	47

8 BGE Gas Delivery Service

Customer Charge		13.00
EmPower MD Chg	47 therms x .00500000	.24
Distribution Chg	47 therms x .26190000	12.31
Franchise Tax	47 therms x .00402000	.19
Local Surcharge	47 therms x .07905800	3.72

Total BGE Gas Delivery Service Amount $29.46

9 BGE Gas Commodity

Gas Commodity	47 therms x .84600000	39.76

Total BGE Gas Commodity Amount $39.76

BGE Contact Information	Baltimore	Outside Area
Report Power Outages		1-877-778-2222
Emergency Service	410-685-0123	1-800-685-0123
Customer Service	410-685-0123	1-800-685-0123
Collection/Turn-Off Notices	410-685-2200	1-800-685-2210
Hearing/Speech Impaired (TTY-TTD)		1-800-735-2258
WeatherLine®	410-662-9225	
Additional BGE Services		www.bge.com
Send Correspondence Only to:	P.O. Box 1475, Baltimore, MD 21203	

Other BGE Bill Payment Options		
BGEasy Automatic Payment Plan	410-685-0123	1-800-685-0123
Payments Only to:	P.O. Box 13070, Philadelphia, PA 19101-3070	
Hand Deliver to Dropbox (No Cash)		2 Center Plaza
America's Cash Express (Pay-in-Person)*		1-800-898-1779
Global Express (Pay-in-Person)*		1-800-999-9669
Pay-by-Phone*		1-888-232-0088

*(These are third-party services and processing fees may apply.)

Pacific Gas and Electric Company WE DELIVER ENERGY.

JANE SAMPLE

ELECTRIC ACCOUNT DETAIL

Service ID# : 1357913579
Rate Schedule: E1 TB Residential Service
Billing Days: 30 days

Serial	Rotating Outage Blk (29)	Meter #	Prior Meter Read (30)	Current Meter Read (30)	Difference (31)	Meter Constant (32)	Usage (33)
Z	10	63L788	61,553	62,093	540	1	540 Kwh

Charges

01/01/2008 – 01/30/2008

Electric Charges			$90.95	
(34) Baseline Quantity	246.00000 Kwh			
Baseline Usage	246.00000 Kwh	@ $0.11560		
101-130% of Baseline	73.80000 Kwh	@ $0.13142		
131-200% of Baseline	172.20000 Kwh	@ $0.22166		
201-300% of Baseline	48.00000 Kwh	@ $0.30507		
Over 300% of Baseline	0.00000 Kwh	@ $0.34878		
(35) Net Charges				$90.95

The net charge shown above include the following component(s). Please see definitions on Page 2 of the bill.

(36) Generation	$41.82
Transmission	4.29
Distribution	31.91
Public Purpose Programs	6.15
Nuclear Decommissioning	0.15
DWR Bond Charge	2.57
Ongoing CTC	2.35
Energy Cost Recovery Amount	1.71

Taxes

Energy Commission Tax	$ 0.12
Utility Users' Tax (5.0000%)	4.55 (9)

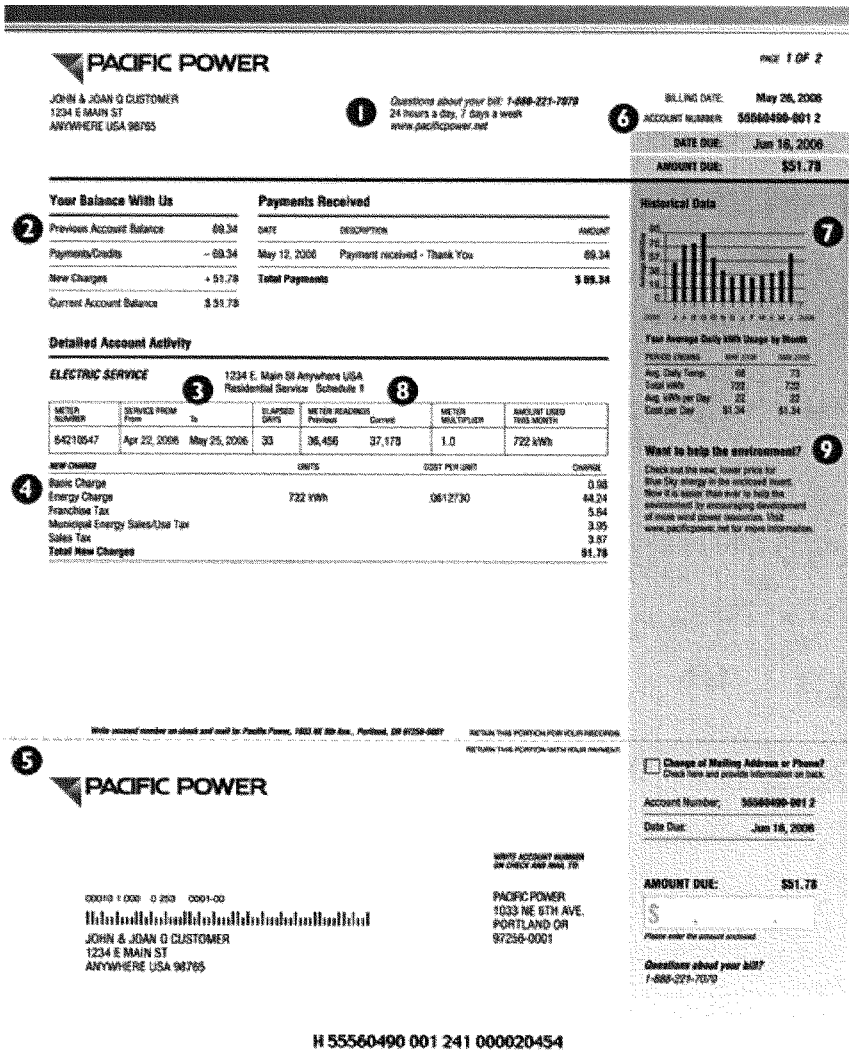
TOTAL CHARGES **$95.62**

Usage Comparison	Days Billed	Kwh Billed	Kwh per Day
This Year	32	540	16.9
Last Year	30	950	31.7

Rotating outage blocks are subject to change without advance notice due to operational conditions.

Generation includes charges for the portion of your energy usage provided by the Department of Water Resources (DWR) and is being collected by PG&E as an agent for DWR. DWR is collecting 6.932 cents per kWh from bundled customers for each kWh it provides plus the Cost Responsibility Surcharge from direct access and transitional bundled service customers.

The rates shown above are applicable to bundled service customers. Direct Access and Community Choice Aggregation customers pay only a portion of these rates. Please see the appropriate rate schedule for the applicable charges.



PACIFIC POWER

PAGE 1 OF 2

JOHN & JOAN Q CUSTOMER
1234 E MAIN ST
ANYWHERE USA 98765

1 Questions about your bill: 1-888-221-7070
24 hours a day, 7 days a week
www.pacificpower.net

6 BILLING DATE: May 26, 2006
ACCOUNT NUMBER: 55560490-001 2
DATE DUE: Jun 16, 2006
AMOUNT DUE: $51.78

Your Balance With Us

2

Previous Account Balance	69.34
Payments/Credits	– 69.34
New Charges	+ 51.78
Current Account Balance	$ 51.78

Payments Received

DATE	DESCRIPTION	AMOUNT
May 12, 2006	Payment received - Thank You	69.34
Total Payments		**$ 69.34**

Historical Data

7

Your Average Daily kWh Usage by Month

PERIOD ENDING	THIS YEAR	LAST YEAR
Avg. Daily Temp.	68	73
Total kWh	722	722
Avg. kWh per Day	23	23
Cost per Day	$1.34	$1.34

Want to help the environment? 9

Check out the new, lower price for Blue Sky energy on the enclosed insert. Now it is easier than ever to help the environment by encouraging development of more wind power resources. Visit www.pacificpower.net for more information.

Detailed Account Activity

ELECTRIC SERVICE

3 1234 E. Main St Anywhere USA
Residential Service Schedule 1

8

METER NUMBER	SERVICE FROM From	To	ELAPSED DAYS	METER READINGS Previous	Current	METER MULTIPLIER	AMOUNT USED THIS MONTH
842108547	Apr 22, 2006	May 25, 2006	33	36,456	37,178	1.0	722 kWh

4

NEW CHARGES	UNITS	COST PER UNIT	CHARGE
Basic Charge			0.98
Energy Charge	722 kWh	0.612730	44.24
Franchise Tax			5.64
Municipal Energy Sales/Use Tax			3.05
Sales Tax			3.87
Total New Charges			**51.78**

Write account number on check and mail to: Pacific Power, 1033 NE 6th Ave., Portland, OR 97256-0001 — RETAIN THIS PORTION FOR YOUR RECORDS. RETURN THIS PORTION WITH YOUR PAYMENT.

5

PACIFIC POWER

☐ Change of Mailing Address or Phone? Check here and provide information on back.

Account Number: 55560490-001 2
Date Due: Jun 16, 2006
AMOUNT DUE: $51.78
$ _____
Please enter the amount enclosed.

Questions about your bill?
1-888-221-7070

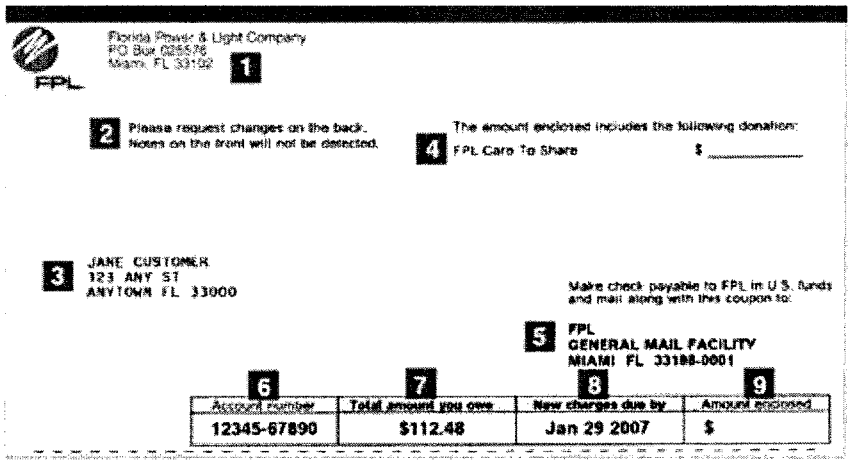
WRITE ACCOUNT NUMBER ON CHECK AND MAIL TO:

PACIFIC POWER
1033 NE 6TH AVE.
PORTLAND OR
97256-0001

00010 1 000 0 250 0001-00

JOHN & JOAN Q CUSTOMER
1234 E MAIN ST
ANYWHERE USA 98765

H 55560490 001 241 000020454



Florida Power & Light Company
PO Box 025576
Miami, FL 33102

1

2 Please request changes on the back. Notes on the front will not be detected.

4 The amount enclosed includes the following donation:
FPL Care To Share $ _____

3 JANE CUSTOMER
123 ANY ST
ANYTOWN FL 33000

Make check payable to FPL in U.S. funds and mail along with this coupon to:

5 FPL
GENERAL MAIL FACILITY
MIAMI FL 33188-0001

6 Account number	7 Total amount you owe	8 New charges due by	9 Amount enclosed
12345-67890	$112.48	Jan 29 2007	$

Your electric statement

Account number: 12345-67890

For: Dec 05 2006 to Jan 08 2007 (34 days)
Customer name: JANE CUSTOMER
Service address: 456 SERVICE AVE

10 Statement date: Jan 08 2007
Next meter reading: Feb 07 2007

Amount of your last bill	Payments (-)	Additional activity (+ or -)	Balance before new charges (=)	New charges (+)	Total amount you owe (=)	New charges due by
0.00	0.00	0.00	0.00	112.48	$112.48	Jan 29 2007
11	12	13	14	15		

16 **Meter reading** - Meter SC54015

Current reading	82280
Previous reading	- 81280
kWh used	1000

Energy usage 17

	Last Year	This Year
kWh this month	1029	1000
Service days	32	34
kWh per day	32	29

18 ****The electric service amount includes the following charges:**

Customer charge:	$5.17
Fuel:	$54.20
(First 1000 kWh at $0.054200)	
(Over 1000 kWh at $0.064200)	
Non-fuel:	$41.55
(First 1000 kWh at $0.041550)	
(Over 1000 kWh at $0.051550)	

19

Balance before new charges	$0.00
New charges (Rate: RS-1 RESIDENTIAL SERVICE)	
Electric service amount	100.92**
Gross receipts tax	2.59
Franchise charge	3.11
Utility tax	5.86
Total new charges	$112.48
Total amount you owe	**$112.48**

20 - A late payment charge of 1.50% will apply if not paid by January 29, 2007, and your account may be subject to being billed an additional deposit.

Florida Power & Light Company
PO Box 025576
Miami, FL 33102

21 Please have your account number ready when contacting FPL.

Customer service:	(305) 442-8770
Outside Florida:	1-800-226-3545
To report power outages:	1-800-4OUTAGE (468-8243)
Hearing/speech impaired:	1-800-432-6564 (TTY/TDD)
Online at:	www.FPL.com

Senate Finance Committee
Climate Change Legislation: Allowance and Revenue Distribution
August 4, 2009
Responses to Questions for Mr. Dallas Burtraw – Senior Fellow, Resources for the Future

Questions from Senator Stabenow

1. Regardless of how many allowances are distributed to LDCs what is the most equitable means of distributing them to reconcile regional inequities? While H.R. 2454 may have used a formula based of a 50/50 split using both energy consumption and historic emissions, is this the most equitable formula for regions that may pay more under a cap and trade approach?

   The approach in H.R.2454 introduces inefficiencies that raise the cost of the program for everyone, but that is often acceptable if it achieves equity goals. If one assumes the distributional goal is to level the impacts across regions it is still necessary to discuss "how many allowances are distributed to LDCs" in order to answer how they should be distributed. Our research indicates that the amount allocated to LDCs can be reduced, the program can be made more efficient, and regional equity can be better achieved. This not only levels the playing field but lowers the cost for the nation. Moreover, if the allowances were based entirely on historic emissions, regional equity could be addressed more directly and few allowances could be directed to LDCs to achieve this outcome.

   Does the equity of this formula depend on whether we increase more allowance value, in relation to the framework in H.R. 2454, directly to consumers?

   No. The proposal I suggest would direct less value to consumers than is done in HR 2454, but it does so more effectively for the purpose of achieving regional equity.

2. You mention in your testimony that we can lower the overall cost of the program by providing more allowance value to households. If such a change were made in comparison to the framework in H.R. 2454, and we used decreased the allowance value to LDCs to make this change, can you further explain how we may ensure that commercial and industrial rate payers of electricity receive adequate protection from excessive electricity costs?

   To protect the nation's economy, industrial ratepayers need to be assured that they will not be put at an economic disadvantage relative to industries abroad that are not subject to the same environmental constraints. This is accomplished by the allocation to protect trade exposed industries. Industry that does not face international competitiveness problems can be expected to pass through the higher costs to their consumers. This is also true for commercial customers, who in general are not subject to international competition. These higher costs to consumers would be offset by the increased dividends given to households.

3. I realize that there are a variety of needs for revenue to transition to a low carbon economy but is there a simpler way to distribute allowance revenue than the H.R. 2454 in order to keep costs low to the most vulnerable sectors of the economy or and what are the most important categories to distribute allocations for in order to minimize costs of greenhouse gas abatement and transition to a low carbon economy?

   Furthermore, does a price collar of some variation diminish the need for certain allowance allocations that are made in H.R. 2454?

   There are a variety of ways that money could be spent to ease the transition to a low carbon economy. Some claims come from parties that will be adversely affected during the transition, and other claims come for the need to invest in research and infrastructure to accelerate the transition. It would seem compelling to allocate a small portion of allowances to assist communities and workers that are especially hard hit. This is done in previous environmental legislation also. And there is a strong argument for funding investments. As with any appropriation, there is a difficulty in making sure these expenditures reach their intended purposes. A risk is the public's perception of the play to special interest when the allocation formulas become complicated. A greater direct allocation to households helps compensate in a broad based way the general public, and also conveys a sense of equity without a play to special interest. The reforms that I suggested would also ensure that the lowest income households and most disadvantaged regions would be protected.

   The introduction of a price collar can be expected to improve the implementation of the program and reduce its costs by reducing price uncertainty and volatility. But it does not directly affect the arguments for allocation.

4. The proper distribution of allowances for various sectors will be vital for legislation to accomplish greenhouse gas reductions in a manner that is beneficial for manufactures, small businesses and the environment.

   When determining the amount of allowances needed, how important is it to have good emissions data from other countries, so we can better determine the amount of allowance value needed to prevent emission and economic leakage from our energy intensive and trade exposed industries to other nations? In what ways can we improve the accuracy of current monitoring efforts to obtain such data?

   If border tax adjustments are triggered after 2020, good data on emissions intensity of economic activity from other countries will be essential. However, the approach in H.R. 2454 to protect trade exposed industries with rebates of allowance value does not require extensive information about emissions from other countries. It is sufficient to know the participation of domestic firms in markets that are subject to foreign competition, and to know the emissions intensity of the domestic firms so that their change in costs can be addressed through allocation.

Questions from Senator Cantwell

1. In your estimation, what is the minimum percentage of allowance value needed to compensate, fully, the entire low and lower middle classes (or the bottom five deciles)? And the bottom seven deciles?

   From our research, my guess is that if 86% of revenue was rebated, that the bottom five to six deciles would be fully compensated. That is these groups would at worst break even, and for the most part they would be made better off from the policy. There would be no way to reach so far as the bottom seven deciles, but the households in the seventh and eighth deciles are not substantially affected under a divided approach.

2. If the bottom five deciles were compensated fully with a per-capita rebate, roughly what percentage of the allowance value would be needed to compensate for regional disparities? Does the amount necessary to compensate regional disparities increase, decrease or stay the same with a greater percentage of allowance value going to direct, per capita rebates?

   Our research indicates that a 15% allocation to LDCs for residential class customers would do a better job than H.R. 2454 at correcting regional disparities. If that allocation were on the basis of emissions rather than consumption it would do even more to correct regional disparities. My testimony indicates that with this approach in place, then allocating 41% directly as per capita dividends to all households would protect entirely the bottom two deciles. At this time I do not have information about what it would take to compensate the bottom five deciles. However, the approach I suggest would reduce the cost generally and levelized the cost for the middle income households.

3. What effect does the point of regulation have on regional disparities, when one accounts for both direct and indirect costs on consumers from the carbon price signal?

   LDC allocation, creates so much uncertainty that it is hard to know what is going to happen. Cap-and-dividend, or limiting LDC allocation would reduce this uncertainty. The point of regulation does not affect the regional disparities except that it is used as a justification for a regionally-specific allocation formula.

Questions from Senator Hatch

1. Let's assume that we implement this cap and trade legislation and actually reach our target reductions of CO2 emissions in the United States. Can you tell me what the specific climate reduction benefit we can expect to enjoy from all this effort?

   No, the climate reduction benefit is uncertain and the effects of climate change will unfold over decades. Economics does not have a way of quantifying the specific benefits of individual action at this juncture.

2. The National Rural Electric Cooperative Association estimates that my state of Utah will be the hardest hit by a cap-and-trade scheme, raising our power rates by a whopping 70 percent. Can you estimate that how much residential energy prices will rise per household?

> Our research would come to a different conclusion. It is important to realize that no state is an island within our regional electricity markets. Changes in prices in Utah will be similar to changes in prices in other western states.

3. That is a very high rate compared to most other states. Am I correct that the people of Utah, and those other carbon-intensive states such as West Virginia, North Dakota, and Arkansas, would have to bear a far greater burden of higher electric bills as a result of the President's climate change agenda?

> One can expect the change in electricity bills to be related to the carbon intensity of electricity generation in a region. But the close interconnection with regional power grids means that individual states are not likely to suffer changes in prices that are substantially different from neighboring states. Moreover, areas in the southeast and Texas, for example, have substantially higher electricity consumption and the impact on bills is a function of the change in price and the quantity of electricity consumed. It is also useful to keep in mind that changes in electricity prices are only part of the impact on households and businesses that would occur if we put a price on CO_2 emissions in the economy. Regions that use relatively more electricity for air conditioning use less natural gas for home heating, for example.

Questions from Senator Snowe

1. Mr. Burtraw, the House-passed legislation grants emission allowances to local distribution companies (LDCs) for natural gas and electricity. You say in your testimony that free allocations to LDCs may be necessary as a means to address regional cost differences that are created under a cap and trade system. However, the Waxman-Markey bill also includes a 1.5 percent allowance to states like Maine, that use a high portion of heating oil for thermal energy, and provides the allowances to states rather than local home heating oil distributors.

   First, can you explain the merits behind providing allowances to LDCs as opposed to providing them directly to state governments? Who do you believe would do a more effective job and address the dual task of reducing carbon emissions and mitigating consumer burden?

> This is an excellent question but my expertise does not enable me to comment in an authoritative way. I think highly of many programs in place in many states to promote energy efficiency, but many states do not have well developed programs or expertise in this area to date.

Second, do you have any guidance on what percent of emission allowances would need to be freely allocated to LDCs address regional differences?

> Our research suggests that a reform to H.R. 2454 could be implemented and do a better job at addressing regional goals by allocating just 15% of the allowances to LDCs, with the difference being allocated on a per capita basis to all households. The LDC allocation could be limited to just residential class customers. Using this strategy, it would be possible to change the formula so that the LDC allocation was based on emissions entirely, and the regional goals would be even more directly achieved. The State of Maine does not have a lot of emissions associated with electricity generation, so this proposal would not directly benefit Maine. However, we show that this approach could be expected to lower the overall cost of the program substantially leading to a reduction in costs for Maine households as a consequence.

Third, you suggest that a much shorter transition window is necessary for allocation to local distribution companies than is envisioned in the House-passed bill. Could you please discuss how a 10 year transition window – which is shorter than the House bill – would encourage homeowners to change their home appliance purchasing decisions?

> A compelling case for allocating to consumers through the LDCs can be made on the basis that households effectively inherit a stock of household appliances, building efficiency, etc. at the start of the program. They cannot respond immediately to a sudden price shock. Therefore a transition period has some credibility. The important thing is to create the expectation that future prices will be higher, so that it informs proactively all current and future investment decisions in the home. A phase out that does not begin until 2026 does not accomplish this, because that is well beyond the planning horizon for investments by households. Even a "rational" buyer will factor in the fact that major appliances have an average life of 10-15 years. For many, the next appliance they buy would not be the last one before they felt the impact of a change in prices. For most buyers, though, decisions are made on a myopic basis. Consequently while providing a transition can be politically helpful and fair, it should phase out within a decade if not sooner in order to provide expectations that will affect purchase decisions now.

2. Three of the witnesses testified today that auctioning emission allowances and giving Americans some sort of a rebate is the best approach to encourage less pollution and better results toward addressing global climate change. Mr. Keohane supports freely allocating allowances.

   For all of the witnesses, I'd like your opinions on whether rebates are best accomplished through a per-household rebate or through changes to the tax rates or payroll taxes.

   > Rebates to reduce tax rates has an important efficiency advantage because lower tax rates can be expected to lead to greater labor supply, lowering the overall cost

of the program. This has been demonstrated in many studies. However, lowering tax rates associated with labor or capital earnings is unfortunately very regressive. One could design a tax reduction to be progressive as well, but the process of doing so is uncertain. Dividends to households is a progressive approach, and moreover it is simple and conveys a sense of fairness. I think it is the preferred approach given the challenges of our political system.

Questions from Senator Enzi

1. I have been told that a 100 percent auction could be problematic for companies who need to buy allowances to cover their emission because they will require a new cash flow that does not necessarily exist. In previous testimony before the Finance Committee, a witness noted that "any delays in pass-through of such costs to consumers could seriously disrupt their financial position."

   I am extremely concerned about this potential consequence – particularly because smaller businesses will have a difficult time raising the money necessary to buy allowances. Are there specific industries that you anticipate will have more trouble raising the necessary funds?

   Do you anticipate that companies will be able to easily pass through these upfront costs to consumers even under the limited auction approach in the Waxman-Markey bill?

   The concern that firms may suffer a cash flow problem and have difficulty in raising the money to buy allowances is understandable. However, it may be that the opposite outcome is at least as likely. That is, firms may be able to pass through costs well before they have to make expenditures to obtain emissions allowances. That is because within the compliance period a firm is not required to hold until the end when it surrenders allowances for compliance. But, prices should adjust throughout the period. So firms may collect revenue over the course of the compliance period and go into the market at various times to acquire allowances.

   I believe the main difficulty in passing through costs would stem first from international competition. However, the allocation for trade exposed industries is intended to correct this and I believe it will be successful in doing so. Second, the difficulty would stem from contraction in spending by households. A direct dividend of allowance value to households could correct this as well, and the prospect of "money illusion" could lead households to perceive that they are wealthier than in the status quo because they would have dividend available.

2. Some electrical power generators have the ability of switching to a more costly low-carbon fuel source, but there is no commercial-scale low-carbon source to fuel the nation's 250 million cars or the millions of trucks and buses and airplanes. In addition to

raising consumer's electricity prices, this will cause them to see price increases at the gasoline pump – in part because of the way the allocation approach of Waxman-Markey allocates permits to refiners. Is there a better way to allocate allowances to ensure that gasoline prices do not increase substantially?

3.

Gasoline prices will increase, but not substantially under Waxman-Markey. I would estimate that in 2015, Waxman-Markey would only be responsible for a 15cent increase in gasoline prices. In general a price on CO_2 of $25/ton would lead to an increase in gasoline prices of about 20 cents. An allocation of dividends to households could offset the wealth effect of this change in prices.

4. A "cap and trade" system is promoted as a market-based mechanism for putting a price on greenhouse emissions. However, the Waxman-Markey bill establishes a "cap and trade" system and predetermines who will be the large buyers and the large sellers; in other words, it chooses the winners and losers.

   For example, refiners are held responsible for 44% of emissions, including the refinery emissions (about 4%) as well consumer emissions from planes, trains, automobiles, heating oil, and other petroleum use. Yet refiners are allocated only 2% of allowances, with an additional 0.25 percent allocated for small refiners. In contrast, some other sectors receive free allowances that match or exceed their obligation.

   Does this type of legislation add overall costs, which are eventually borne by individuals and businesses, if the distribution of free emission allowances to various sectors are unbalanced?

   Parochial protection of any industry or sector of the economy will raise the overall costs of the program. The allocation scheme in H.R.2454 carves out allowances to compensate consumers through electricity and natural gas LDCs. This introduces inefficiency in the program that raises the overall cost of compliance, and raises the amount and cost of emissions reductions that have to be achieved in other sectors. In addition, it leads to favorable pricing of economic activities that use electricity or natural gas directly.

5. Can a cap and trade system be designed that does not increases costs to consumers and that achieves the intended environmental benefits of lowering emissions?

   The system of cap and trade works by introducing a price on emissions of CO_2. The beauty of this approach is that it leaves up to individual entities the decision of how they behave, invest and comply with the introduction of the price signal. That is why it is called a market-based policy. The introduction of the price increases costs to consumers. Efforts to mitigate this can be useful to achieve equity goals, but there is an efficiency tradeoff. Dampening the price signal through various allocation schemes raises the overall cost of the program. In the other hand, some types of investment can accelerate innovation and reduce the costs of the program. But to address the intent of the question that is asked, for the

program to work as intended one should expect consumers to see higher prices. Finally, the impact on households is not just a matter of the price impact, but also determined by how the value introduced by placing a price on CO_2 is distributed through the economy. A household may see higher prices, but see lower taxes or see a direct dividend payment that returns this value, and the program goals would be achieved in an efficient manner. And, the impact on household wealth would be small.

6. Your testimonies suggest that there is much support among economists for auctioning allowances as opposed to allocating those allowances freely. Can you comment further on the design of the H.R. 2454? Are there specific industries that will clearly benefit from the free allocations? What industries will be harmed by the current policies?

   We estimate that the electricity industry will see profits of 2.5 billion in 2015 due to the LDC allocation that guarantees a subsidized demand for electricity. This profit will be paid from the pockets of consumers who have to bear higher good prices in other non-electricity sectors of the economy. Another group of industries that benefit relative to other parts of the economy are the trade exposed industries, which receive 15% of the allowances. They benefit in that they will not experience a change in costs as will other industries that are not trade exposed. This is a reasonable design to address the problem of unfair international competition, in my mind, but it works to the disadvantage of industries that are domestic and are not exposed to international competition because they will bear the full cost of CO_2 emissions.

7. In your experience examining other carbon management systems, has the government been successful in picking where allowances should be allocated freely or have you seen problems with the allocations? I know that in the European Emissions Trading Scheme, some companies experienced windfall profits and I would be interested to know if that experience is typical.

   There are three operating market-based systems today for CO_2. The largest and most important is the EU ETS, where the vast majority of allowances were given away for free in the first phase (2005-2007) and the second phase (2008-2012). There is a broad literature from academia, the business community as well as popular press that has identified the presence of windfall profits that resulted from the free allocation. The windfalls are simply the reflection that change in revenues were greater than change in costs for much of the electricity sector, in particular.

   Another problem with free allocation in the EU is that each member state has been able to use benchmarking techniques to direct allocation to various technologies according to their emission use. There is an ample literature that illustrates that these allocation formula change the ordering of cost effectiveness for new investments, effectively subsidizing choices in dirtier technologies that otherwise would not be taken by the market economy.

The Europeans have recognized the problems with free allocation and are moving dramatically toward the use of auctions in the third phase (2013-2020). In this phase a majority of the electricity sector will acquire allowances through auction in 2013, and the entire sector will rely on an auction by 2020. In addition, the large majority of the overall system will rely on auctions by 2020. In Germany, a country with heavy reliance on coal for electricity generation, the electricity sector will acquire all of its allowances through an auction beginning in 2013.

The second operational cap and trade program is the Regional Greenhouse Gas Initiative affecting the electricity sector in the ten northeast states. The program took effect in January 2009. In the first phase (2009-2011), 85% of allowances will be auctioned. The expectation is that 100% will be auctioned thereafter.

The third operational program is an emissions tax in British Columbia, which as a tax looks similar to an auction. That program is interesting because the revenue is earmarked for reductions in other taxes.

United States Senate
Committee on Finance

Sen. Chuck Grassley · Iowa
Ranking Member

Opening Statement of Sen. Chuck Grassley
Finance Committee Hearing
"Climate Change Legislation: Allowance and Revenue Distribution"
August 4, 2009

Today's hearing deals with the allocation of emissions allowances under a proposed cap and trade tax system intended to address global warming. The Senate Finance Committee has primary jurisdiction over all matters dealing with federal revenues, and the Congressional Budget Office has made clear that these allowances hold value and therefore represent federal revenues. This is true regardless of whether allowances are auctioned or simply given away, which the CBO would treat the same as if they had been auctioned and the revenue given away.

Today we are going to hear thoughts from a wide range of perspectives from across the political spectrum about how emissions allowances, or revenue from those allowances, should be allocated. We know where the Obama administration stands when it comes to free allowances. The President supports 100 percent auction of allowances. Testifying before the House Budget Committee earlier this year, Treasury Secretary Geithner said, "This program should include a 100 percent auction of emissions allowances – ensuring that the biggest polluters don't profit on the basis of past pollution…"

Testifying before that same committee at another time, the President's Director of the Office of Management and Budget, Dr. Peter Orszag, said, "…if you didn't auction the permit, it would represent the largest corporate welfare program that has ever been enacted in the history of the United States." The Administration clearly has strong feelings about the topic, and this Committee will soon have to draw its own conclusions on this same topic. To do so, it is important that this Committee understand all the implications for the American taxpayer of the various options for distributing allowance revenue.

It is also important to provide some context for this discussion based on what we've learned at other hearings about the economics of a cap and trade tax system. We sometimes hear such a system described as though there will be no net cost to the American people, because the federal government is creating a commodity that holds value and can be sold to recoup the costs or even make money. This makes it sound as though we've stumbled upon the economic equivalent of

the mythical philosopher's stone that can turn lead into gold. Of course, there is no such thing as a free lunch and the government cannot create wealth through regulation.

At a hearing before this committee earlier this year, CBO Director Doug Elmendorf referred to a "consensus of economic analysis" that a cap and trade system results in a net cost to the economy because of a "diversion of economic resources." For instance, America currently uses coal as a cheap, domestically plentiful source of energy, but it produces a lot of carbon dioxide. So, this bill would force a switch to more costly forms of energy that produce less CO2. In short, as Director Elmendorf wrote to this committee in response to my written question, "The allowances that are created under a cap and trade program do not add wealth to the economy. Rather, they are simultaneously a cost and a source of income."

It is in this light that I approach the question of what to do with the allowance value. It is not free money. Rather, it is in effect a national energy tax on all Americans -- one that will exacerbate the negative impact of other taxes on economic growth and jobs. This means that above all, we have a responsibility to mitigate, as much as possible, those painful effects on the American people.

Testimony of Nathaniel O. Keohane, Ph.D.
Director of Economic Policy and Analysis
Environmental Defense Fund
Before the
Committee on Finance
United States Senate

August 4, 2009

INTRODUCTION AND OVERVIEW

I am honored to be here today as this chamber addresses one of the most important aspects of one of the most important areas of legislation any of us will get a chance to see in our lifetimes.

Environmental Defense Fund is a leading national nonprofit organization representing more than 500,000 members. Since 1967, we have linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems. We have long championed market-based approaches to environmental issues, and helped design the highly successful acid-rain program created in the Clean Air Act Amendments of 1990. As Director of Economic Policy and Analysis, I oversee EDF's economic analysis of climate change policy and help to shape our advocacy. Before coming to EDF in 2007, I was an Associate Professor of Economics at the Yale School of Management, where I taught for six years. I have published a number of peer-reviewed academic articles on a range of subjects on the economics of environmental policy, and have authored or edited two books on market-based environmental policy and the economics of environmental law.

Congress has an unprecedented opportunity right now — in these next few months — to put the American economy on a strong footing for the twenty-first century. Last month, the House of Representatives took a crucial first step, passing comprehensive climate and energy legislation: H.R. 2454, "America's Clean Energy Security Act." Now it's the Senate's turn.

The centerpiece of climate legislation will be a mandatory and declining cap on carbon. A carbon cap will harness the efforts of entrepreneurs and innovators throughout our economy — ensuring that America will lead the world in making the next generation of clean-energy technologies. And the investment unleashed by a carbon cap will help jump-start our economy today, while paying rich dividends later — in the form of cleaner air, enhanced energy security, and most of all a livable planet to pass on to our children and grandchildren.

In the process, a carbon cap will transform a portion of the public commons into a valuable asset. That asset is a public trust, and allocating its value wisely and equitably is a crucial test of any climate bill.

In my testimony today, I will offer my perspective — as an economist and public policy expert — on how that test can be met in a way that strengthens our economy. The principles are straightforward: Protect consumers. Preserve and strengthen American competitiveness. And invest in the transition to a new, growing clean-energy economy.

After presenting these guidelines, I discuss how allocation was addressed in the House legislation. My conclusion is that the House bill strikes a sound balance, with the appropriate emphasis on the individual American family. Indeed, what is commonly overlooked is the extent to which HR 2454 channels allowance value to households — fully 43% of the total value over the life of the program.

I close by identifying three areas that deserve special consideration as the Senate seeks to find its own balance in allocating the value of allowances. First, I discuss how a range of mechanisms can be used to return allowance value to households. One such mechanism — allocating allowances to local distribution companies, or LDCs — offers a natural means of channeling value directly to households, farmers, and small businesses in a way that reflects regional variation in how energy is generated. Other critical channels for households include tax credits for low-income consumers and a broader tax rebate for all American families.

Second, with regard to the LDC allocation in particular, I argue that the legislation must include clear language that leaves no doubt that the allowances given to LDCs will genuinely benefit consumers. At the same time, the performance of the program will be enhanced by ensuring that the LDC allocation is distributed to consumers in a way that keeps electricity and natural gas bills low, while preserving economic incentives for energy efficiency and conservation.

Finally, I consider the allocation of allowances to manufacturing industries. A judicious allocation to industry can play an important role in smoothing the transition to a clean-energy economy, preserving jobs, and preventing emissions leakage to countries without carbon caps. In determining that allocation, however, Congress should rely on the best available information to help limit double-counting and prevent unintended windfalls.

PRINCIPLES TO GUIDE ALLOWANCE ALLOCATION

Here are three broad guidelines for allowance allocation.

1. Protect consumers. A substantial portion of the allowance value should be directed to households through a number of different channels. By using more than one mechanism, Congress can achieve multiple goals: providing targeted assistance to low-income consumers; fairly reflecting geographic differences in how energy is generated; and at the same time providing broad coverage to American households, farmers, and small businesses. The integrity and credibility of the program must also be preserved. Allowances that are intended for the

benefit of consumers must be accompanied by strong safeguards to ensure that consumers receive the value.

2. Preserve and strengthen American manufacturing by preventing carbon leakage. Particularly in the early years of a cap-and-trade program, allowance value can help manufacturing industries make a transition to a low-carbon economy while remaining fully engaged in global markets for their products. Carefully designed policies will prevent emissions leakage to uncapped countries, safeguarding the environmental integrity of the cap while and strengthening American businesses and workers. Allowance value should be distributed in a way that preserves incentives for cost-effective abatement and avoids windfall profits.

3. Invest in the transition to a growing clean-energy economy. Allowance value can provide additional incentives to accelerate the deployment and development of new technologies, overcoming market failures that hinder the adoption of energy-efficient technologies and limit the returns to research and development. In the agricultural sector, allowance value can not only help farmers manage the transition, but can also give them a leg up in taking advantage of the tremendous economic opportunity provided by the market for offset credits. And because some climate change is inevitable, allowance value can also be invested in adaptation — enhancing the resiliency of human and ecological communities and helping them cope with a changing climate.

In sum: Consumers, jobs, and the transition to a clean-energy economy are the guideposts. These principles are consistent with the Blueprint for Legislative Action put forward by the US Climate Action Partnership, a coalition of businesses and environmental groups.

AUCTION VS. FREE ALLOCATION IS LESS IMPORTANT THAN IT SEEMS

Note that I have not said anything about the fraction of the allowances that is auctioned rather than given away. That may be surprising, because there has been a good deal of hand-wringing in the media about the supposed drawbacks of free allocation.

Despite all the attention it has received, the split between auctioning permits and giving them away turns out to be a red herring. Although it might seem counterintuitive at first, the bottom line is clear: Whether the allowances are auctioned off or freely allocated doesn't affect the environmental efficacy or cost-effectiveness of the program.

First, let's consider the environmental performance of the program. It's pretty obvious that the atmosphere doesn't care whether the allowances are auctioned off or given away. From an environmental perspective, all that matters is the cumulative emissions into the atmosphere. That's the job of the cap, which ensures that we achieve the reductions scientists tell us we need. In fact, as I noted above, a wise allocation of allowances can even enhance the environmental

outcomes achieved by the legislation — by preventing emissions leakage, driving technological innovation and deployment, jumpstarting emissions reductions on farms and forests, and helping communities adapt to climate change.

Perhaps more surprisingly, the economic performance of the program also does not hinge on whether the allowances are auctioned off or freely allocated. Under a cap-and-trade program, the economic incentive to reduce pollution comes from the price of allowances — which will be determined by the cap, not by how allowances are distributed. In the jargon of economics, there is an opportunity cost associated with holding allowances, regardless of whether a firm got those allowances for free or had to buy them from the government.

Because the value of allowances is independent of how they are distributed, so is the incentive to reduce pollution. In fact, as a general rule, whether allowances are auctioned off or freely allocated will not have any impact on the cost-effectiveness of the program.*

If the auction versus allocation split doesn't matter for the environmental performance of the bill, and it doesn't affect the economic incentives, surely it matters for distribution? Wrong again. Distributional impacts depend on who gets the value of the permits — not whether they are sold at auction or not. After all, being given permits worth $1000 is no different than receiving $1000 in auction revenue.

In sum, what matters is who receives the value of allowances — not whether that value is distributed as allowances or auction revenue. As I will discuss below, *how* the allowance value does play an important role. But first, let me highlight the approach taken in the House legislation.

HOW THE HOUSE LEGISLATION PERFORMS

As I noted above, one of the common criticisms of H.R. 2454 is that it supposedly gives away most of the allowances for free – the implication being they are given to "big emitters who don't need them." In fact, that conventional wisdom gets the story almost entirely backwards. Over the life of the bill, fewer than half of the allowances are given away for free. And as I noted above, what matters most is who receives the value of allowances — not whether they are auctioned or not. A close look shows that the House legislation would channel nearly 80 percent of the permits to households, small businesses, and public purposes.

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* This result is a standard tenet of economic theory, going back to Ronald Coase's seminal article in 1961, and applies to the total costs of achieving a given reduction in emissions. A separate and more recent body of work in the environmental economics literature shows that using revenue from allowance auctions to reduce marginal tax rates on labor or capital can provide a boost to overall economic efficiency.

Directing allowance value to consumers

H.R. 2454 channels allowance value directly to households in three ways. First, to address regional disparities in how electricity is generated, 39 percent of allowances in the first phase of the program will go to local distribution companies (LDCs) that deliver electricity and natural gas to residences, commercial businesses, farmers, and manufacturers. For the electric power sector, allowances would be distributed among LDCs using a formula that puts equal weight on historical carbon dioxide emissions and electricity generation.

Households would receive allowances according to the residential share of the electricity and natural gas distributed. LDCs are regulated by state commissions, and the value of allowances would have to benefit energy consumers. What's more, the legislation includes clear and stringent provisions requiring the LDCs to demonstrate how they will pass the value on to consumers before they can receive a single allowance. An even tougher requirement, also in the House bill, would make these distributions subject to audit, with recovery provisions if the value was not passed on to consumers.

Second, ACES reserves 15 percent of the value of allowances for low- and moderate-income households. This is crucially important, as these households are least able to weather even small and temporary increases in energy prices. The Center for Budget and Policy Priorities, a think-tank that focuses on poverty, has estimated that the 15 percent allocation, in conjunction with other provisions (such as the LDC allocation), will be sufficient to fully compensate the poorest one-fifth of households for costs related to energy prices that may affect them.

Third, most of the allowances in the later years of the program would be returned to all households through a broad-based tax refund. Over the life of the program this amounts to nearly one-fifth of total allowance value — the biggest single category of allowance allocation in the legislation.

It's easy to get lost in all the percentages. But in a sense the true test of the allocation scheme boils down to just one number: the estimated cost to American households.

The Environmental Protection Agency has analyzed the House legislation using two of the most highly respected, peer-reviewed economic models available. They looked only at the costs of reducing emissions, and ignored the benefits from averting the catastrophic consequences of unchecked climate change, not to mention cleaner air and greater energy security.

Even just looking at the cost side of the ledger, that analysis projected that over the entire life of the bill, the annual cost to the average household will be just $80 to $111 (in present value). That is just 22 to 30 cents a day for the average American family — less than the cost of a postage stamp. To put it another way, it's about a dime a day per person.

Perhaps even more notably, the EPA analysis projects that under H.R. 2454, consumers will actually save money on their home utility bills in the short run (through the year 2020), relative

to business as usual. That's because even as the bill will keep household energy prices low, it contains other provisions to help boost energy efficiency and reduce energy consumption.

Strengthening American manufacturing

Another important feature in the House legislation is the allowance allocation to energy-intensive, trade-exposed industries such as iron and steel, pulp and paper, and fertilizer manufacturing. In particular, the Inslee-Doyle provision directs 15% of allowances to EITE industries in 2014, phasing out by 2030. The number of allowances an individual firm receives would be proportional to its economic output, but would be tied to the *average* emissions intensity for its sector — preserving some incentive for firms to reduce their own emissions below the industry benchmark.

From an environmental perspective, this type of "output-based rebate" can play an important role in protecting the integrity of the emissions cap. That's because it is designed to prevent emissions "leakage" to countries that do not cap their own emissions. And by keeping manufacturing emissions under the cap, we'll also keep jobs and businesses here in America. As more and more countries participate in capping and reducing their emissions, the output-based rebate will no longer be necessary and will phase out.

Researchers at Resource for the Future have shown that this approach can be effective in stemming emissions leakage. The EPA draws the same conclusion in analyzing the House bill, finding that the output-based rebates provision limit carbon leakage while fully compensating trade-exposed industries for their increased costs in the initial years of the program.

Investing in the transition

Finally, over one-fifth of the allowance value over the life of the bill will fund public purposes to help achieve the broader environmental objectives. These include funding for clean energy innovation, carbon capture and sequestration, investments in renewable energy and energy efficiency, technical assistance to farmers, and adaptation.

A look at the numbers

Over the life of the program, the cumulative value of allowances under H.R. 2454 would be distributed as follows (dollar values are based on the Environmental Protection Agency's analysis of the legislation):

- Households: 43% of allowance value

  An estimated $570 billion will go directly to consumers through tax refunds and through reductions in utility bills distributed through the LDCs.

- Small businesses: 7% of allowance value

  Small businesses will receive an estimated $100 billion distributed by the LDCs to commercial consumers of electricity and natural gas.

- Public purposes: 27% of allowance value

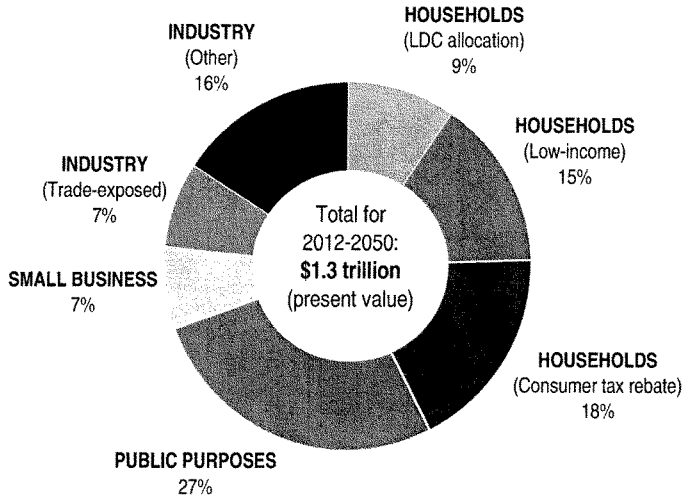
  A projected $360 billion will fund public purposes such as worker training, technical assistance to farmers, clean energy research and development, deficit reduction, and protecting vulnerable ecosystems.

- Industry: 22% of allowance value

  Most of this category goes to energy-intensive trade-exposed industries, to ensure a level playing field for U.S. businesses and workers. Other industries will receive smaller allocations to offset compliance costs. All of these provisions would phase out by 2030.

When you add it all up, 77 percent of allowance value goes to households, small business, and public purposes. **Figure 1** illustrates these numbers.

Figure 1: Allocation of allowance value under H.R. 2454.



KEY ISSUES FOR CONSIDERATION

Having said all that, no legislation is perfect, and the Senate will surely want to determine its own priorities for allocating allowance value. Here are a few areas for consideration as the Senate moves forward.

Multiple channels for allocating value

One of the things that the House bill gets right is the use of multiple channels to direct allowance value to households. That's important, because households differ along a number of dimensions (in particular geography and income), and multiple channels can be designed to address these dimensions separately.

Giving a portion of allowances to local electric and gas utilities for the benefit of customers can address geographic disparities. This is particularly true for the electric power sector, since a price on carbon will have different impacts on different areas of the country, depending on the types of fuel used to generate electricity. Even as we look ahead to a new clean-energy economy it is only fair to take into account our starting point — current patterns of electricity generation that have emerged over time, for geographical and historical reasons unrelated to the challenge of solving climate change. Eventually, as we build a new low-carbon energy infrastructure, these past disparities will disappear, and the LDC allocation can be phased out accordingly.

Meanwhile, allocating a portion of the allowance value to low-income consumers can address concerns about the impact of higher energy prices on those people who are least able to respond. While the overall impacts will be very slight — recall that the EPA's estimate is less than the cost of a postage stamp a day for the average household — even that amount can be a stretch for consumers who are already struggling to afford basic food and shelter.

Finally, it's important to keep in mind the third channel to direct allowance value to households: namely, a broad-based consumer dividend. As noted above, this is a key feature in the House bill. A broad-based dividend is important for a number of reasons. First, it provides a natural way to compensate consumers for increases in energy costs that do not vary by region, such as transportation fuels. Second, it captures the fundamental reality that the value of the carbon cap is a public asset, and one that should be used as much as possible for the common good.

Protecting consumers while preserving incentives

In giving allowances to LDCs, it is crucial that the legislation be absolutely clear that the value of allowances must go to the benefit of consumers. It would be particularly useful, in this context, for the Senate to define "consumer benefit" in a way that ensures that allowances given to LDCs are used to lower total utility bills for households, farmers, and small businesses. Legislation should also provide strong protections to ensure that consumers actually receive the allowance value. For example, the House legislation requires LDCs to demonstrate how they will pass the

value on to consumers before they can receive a single allowance — and includes auditing provisions to ensure that they follow through on their commitments.

Care must also be taken to ensure that the method of allocating allowances does not dampen the incentives to take advantage of cost-effective, common-sense ways to reduce energy use. Ideally, the LDC allocation should be passed along to consumers in a way that preserves the price signal from the carbon cap, while compensating them directly and fully for any increase in price. This could be done with something as simple as a monthly check made out to each ratepayer, where the size of the check could be the same across households or increase with the number of people — but would not depend on the amount of energy consumed.

Tailoring allocations to industry

Allocating allowance value to industrial sources can play an important role in smoothing and accelerating the transition to a clean-energy economy. At the same time, since the number of allowances is limited, it makes sense to ensure that allocations to industry are tailored as closely as possible to the underlying need.

A crucial step is to use the best available data in writing the legislation — and to direct the EPA Administrator to do the same when implementing it. One concern is indirect emissions from electricity consumed by energy-intensive trade-exposed industries. If allowances are given to LDCs for the electricity they distribute *and* to manufacturers for the electricity they consume, the potential for double-counting arises. The most straightforward solution is to include both direct and indirect emissions as part of the EITE allocation only — while using the LDC allocation to residential and commercial users. Data from EPA and other sources is available to ensure that the EITE allocation is sufficient to cover all relevant emissions for manufacturers.

A second example of how good data can help is in preventing unintended windfalls. In providing allowance value to firms, Congress should recognize the wide disparity in the ability of firms in different sectors to pass along their costs to consumers. The relevant task here is to determine what economists call the "cost pass-through rate," defined as the fraction of an increase in input costs that a firm can pass on to its customers. When cost pass-through rates are high, there is less need (or justification) for giving allowances to firms. Instead, in such instances the value of allowances should be given to the end consumers, who will ultimately bear their cost.

In turn, the cost pass-through rate depends on standard economic measures of price sensitivity — what economists call the elasticity of demand and supply. When demand is less elastic than supply — that is, when consumers respond less readily to price changes than producers do — the cost pass-through rate will be high. This will be the case, for example, when few substitutes are available for a product. The degree of competition among producers also plays a role.

Evidence on cost pass-through rates varies, but studies have generally found them to be near 100% for many consumer goods. (The Congressional Budget Office, for example, typically assumes full cost pass-through in its analyses of legislation.) Of course, for particular industries

the cost pass-through rate may be substantially lower, suggesting a possible role for allowance allocation at least in the early years of a cap-and-trade program.

CONCLUSION

Allowance allocation is sometimes caricatured as complex, but the basic principles are easy to grasp: Protect consumers. Preserve and strengthen America's manufacturing base. And invest in a new, growing, clean-energy economy. Focusing on these principles can produce lasting legislation that tackles climate change, provides real energy security, and strengthens the American economy. The House legislation provides an excellent start. Now it's time to finish the job.

Senator Blanche Lincoln Opening Remarks
August 4, 2009 Climate Change Hearing

Mr. Chairman, Ranking Member Grassley, thank you for holding this hearing today to discuss the distribution of allowances and revenues in the context of cap-and-trade. Without a doubt, these are critical issues in the creation and implementation of any cap-and-trade legislation that will have a huge impact on our families and businesses across the country. I want to begin today, Mr. Chairman, by letting you know how pleased I am that the Finance Committee is asserting its jurisdiction over the issue of climate change. I am proud to be a part of this committee, which has a long history under the bipartisan leadership of you and Senator Grassley of legislating responsibly. We thoughtfully approach tough issues, do our homework and then carefully formulate long-term sustainable solutions that work for all Americans. We are doing that now on health reform. And I hope we are just as thoughtful and pragmatic as we work on this difficult issue we are discussing today.

With that said, this is indeed a very difficult issue—made even more difficult in the current economic environment. The average family in my state these days sits down at their kitchen table, where they talk through their worries about their retirement plans losing value, and their kids college savings account losing value and their neighbor that just received notice he was being laid off . . . and they are scared. Our businesses, they are making tough choices about whether to cut benefits or cut hours or cut workers . . . or close their doors altogether. I'd say the vast majority of Arkansans do indeed believe efforts need to be made to reverse the detrimental effects of climate change. However, they are apprehensive—and rightly so—about what a massive policy change such as cap-and-trade will mean for them at a time when they are working day-to-day just to make ends meet.

And, to be frank, the legislation we've seen come out of the House has done nothing to ease those apprehensions. Waxman-Markey picks winners and losers and places a disproportionate share of the economic burden on families and businesses in rural America. It is a deeply flawed bill. It would significantly increase the cost of fuel for consumers. Some have gone so far as to say the oil industry and its consumers were 'singled out by the House of Representatives to bear the cost of cap-and-trade.' And while that may not seem a big problem to my urban colleagues on the East and West coasts, it is a huge concern for me. Many of my rural constituents have no choice but to drive quite a ways to get to work or school every day. Many spend their days in the fields, behind the wheel of a combine or a tractor. Gasoline and diesel are and will continue to be for the foreseeable future important parts of their everyday lives. In addition, many businesses in my state that compete with international manufacturers tell me the protections for our energy-intensive domestic industries in Waxman-Markey are insufficient to combat unfair competition overseas from countries such as India and China; and the offsets provided for agriculture will not benefit many of our producers, who will all undoubtedly face increased input costs if this bill were to become law.

I point out these concerns to indicate to you, Mr. Chairman, that much work must be done to ensure we craft a proposal in this committee that works for all of America. Last year, I joined several of my colleagues in laying out a set of principles that must be addressed before I would consider supporting any climate change legislation. I stand by those principles today and look forward to working with you to craft responsible legislation to address climate change. There are many options to deal with the issue of climate change, and all should be up for discussion in order to meet our environmental and economic goals. In fact, I'm very proud of the work we have already completed under Chairman Bingaman's leadership in the Energy Committee, where we passed out bipartisan legislation that will implement a national renewable electricity standard, increase our investments in energy research and technology and put in place a plan to combat our energy challenges of the future. I hope that this Committee will have the opportunity to create companion legislation, that will focus on investments in new renewable technologies and clean-energy technologies that, combined with the Energy Committee bill, can really lay the foundation of a new national policy intended to decrease our nation's greenhouse gas emissions in a reasonable and sustainable way.

United States Government Accountability Office

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CLIMATE CHANGE POLICY

Preliminary Observations on Options for Distributing Emissions Allowances and Revenue under a Cap-and-Trade Program

Statement of John Stephenson, Director
Natural Resources & Environment

GAO-09-950T

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Highlights

Highlights of GAO-09-950T, a testimony before the Committee on Finance, U.S. Senate

Why GAO Did This Study

Congress is considering proposals to establish a price on greenhouse gas emissions through a cap-and-trade program that would limit overall emissions and require covered entities to hold tradable emissions permits, or allowances, for their emissions. The purpose of such a program is to raise the cost of activities that produce emissions and thereby provide an economic incentive to decrease emissions.

Carbon dioxide, which results from burning fossil fuels, is the primary greenhouse gas and accounts for about 80 percent of U.S. emissions. A cap-and-trade program would increase the cost of burning fossil fuels and other activities that generate emissions and potentially raise costs for consumers. A key decision is the extent to which the government offsets these costs. For example, the government could sell the allowances and then return the revenues to covered entities or households. The government could also give away some or all of the allowances. According to the Congressional Budget Office, the value of the allowances could total $300 billion annually by 2020.

Today's testimony provides preliminary results of ongoing work assessing the potential effects of (1) allowance allocation methods, and (2) options for distributing program revenues or the economic value of allowances.

GAO reviewed economic literature and interviewed experts in climate policy, including those involved in existing cap-and-trade programs.

View GAO-09-950T or key components. For more information, contact John Stephenson, (202) 512-3841, stephensonj@gao.gov

August 2009

CLIMATE CHANGE POLICY

Preliminary Observations on Options for Distributing Emissions Allowances and Revenue under a Cap-and-Trade Program

What GAO Found

The method for allocating allowances in a cap-and-trade program can have significant economic implications for the government, regulated entities, and households. Most importantly, a cap-and-trade system would create a market for a valuable new commodity: emissions allowances. The government could allocate these allowances to regulated entities in three main ways. First, it could auction all of the allowances and collect a significant amount of revenue that it could use, for example, to compensate households affected by the cap-and-trade program. Second, it could give away the allowances to entities affected by the program and thereby transfer the value of the allowances to those entities. This could enhance the program's appeal to covered entities but could also increase the program's overall cost to the economy if it reduced incentives for those entities to decrease their emissions. Third, the government could give away some allowances and auction the rest. For example, studies have suggested that freely allocating 6 to 21 percent of the allowances created by a cap-and-trade program would be sufficient to compensate entities in energy-intensive industries for any profit losses incurred as a result of the cap-and-trade program. According to the economic literature and economists we interviewed, regardless of the mechanism for distributing allowances, consumers will bear most of the costs of a cap-and-trade system because most regulated entities will pass along their increased costs in the form of increased prices; however, these costs could be largely offset depending on how revenues are used.

Available literature and economists we interviewed point to five main options for distributing a program's allowance revenues, although numerous other options exist. First, the government could lower the overall cost of the cap-and-trade program to the economy through accompanying reductions in taxes on income, labor, or investment. Second, auction revenues could be distributed to households through lump-sum payments, which could offset the higher consumer prices resulting from a cap-and-trade program and mitigate any disproportionate impacts on low-income households. Third, the government could expand the scope of the Earned Income Tax Credit to further benefit low-income working families. Fourth, the government could compensate regulated entities and their shareholders for lost profits by allocating them free allowances. Finally, revenues might be used to fund climate-related programs, such as research on low-carbon technologies, or used to support climate change mitigation activities in developing nations. Each potential use of revenues has trade-offs. For example, decreasing tax rates could lower the overall economic cost of the program; however, this approach may do little to compensate low-income consumers, who would receive greater benefit from a direct rebate. In addition, using revenues to dampen increases in energy prices may benefit ratepayers but reduce their incentives to conserve energy, potentially increasing the program's overall cost.

Mr. Chairman and Members of the Committee:

I am pleased to be here today to discuss our preliminary observations on different options for distributing allowances and revenue under a potential cap-and-trade program intended to address climate change. Elevated concentrations of greenhouse gases in the atmosphere as a result of the combustion of fossil fuels and other sources may cause significant changes in the earth's climate.[1] Potential impacts from climate change include rising sea levels and shifts in weather patterns, both of which pose threats to coastal and other infrastructure. Concerns about the potential effects of climate change have led Congress to consider legislation that would limit greenhouse gas emissions nationwide. Because the harm caused by U.S. emissions of greenhouse gases is not generally incorporated into the underlying costs of goods and services, many proposals to limit greenhouse gas emissions involve placing a price on greenhouse gases emitted by businesses and other entities covered under the program (hereafter referred to as "covered entities"). In this way, the price on emissions would provide covered entities with an economic incentive to emit less. It could also provide consumers with incentives to reduce their consumption of carbon-intensive goods and services. The impact of these incentives depends on the program's stringency.

One option for pricing emissions is a cap-and-trade program, in which the government would limit the overall quantity of emissions and issue permits to covered entities. These permits—also known as allowances—would each represent a set quantity of greenhouse gas emissions, such as one metric ton. Allowances could be purchased and sold, creating a market in which the price of emissions fluctuated with supply and demand. The government could also generate substantial revenue through this program by selling allowances to covered entities, as opposed to giving them away for free. Recently, the House of Representatives passed H.R. 2454, the American Clean Energy and Security Act, which would, among other things, create a cap-and-trade program covering about 85 percent of U.S. emissions.

In addition to potentially providing the benefits of emissions reductions, a cap-and-trade program could also impose costs on covered entities and

[1]The six primary greenhouse gases are carbon dioxide, methane, and nitrous oxide, as well as three synthetic gases including hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

consumers. The most obvious cost would be a likely increase in the cost of energy derived from fossil fuels, the main source of man-made greenhouse gas emissions. Covered entities could see their production costs increase as a result and could either accept lower profits or, more likely, pass costs on to consumers.[2] In the absence of compensatory measures by the government, a cap-and-trade program could have a disproportionate impact on low-income households, since they generally spend a higher percentage of their income on energy and energy-intensive goods and services than do higher-income households.

Congress is considering various mechanisms for distributing allowances in a cap-and-trade system, including auctions, free allocation to certain covered entities, or a combination of both. The choice of mechanism could have significant effects on the distribution of costs and benefits throughout the economy. At the request of this committee, we have work under way on the collection and distribution of revenues in programs intended to address climate change and will release a report on these topics later this year. My testimony today focuses on (1) the effects of various methods of allocating allowances on government, consumers, and covered entities; and (2) options for distributing the program's revenue or economic value of emissions allowances.

To address these objectives, we drew on ongoing work for this committee, which will result in a final report later this year. Specifically, we reviewed and analyzed academic and professional literature produced by industry associations, research organizations, academic institutions, and environmental groups, including international research. We also analyzed literature from government agencies, including the Congressional Budget Office (CBO), the Congressional Research Service, and the Environmental Protection Agency (EPA). We did not independently assess the validity of data, assumptions, or methodologies underlying the economic studies we reviewed. We also reviewed documents from international and state-level organizations that operate cap-and-trade programs to address climate change—including the U.S.-based Regional Greenhouse Gas Initiative (RGGI), a coalition of 10 Northeast states that has implemented a cap-and-trade program for electricity generators, and the European Union's Emissions Trading Scheme—and interviewed individuals familiar with

[2]Profits could also decrease if costs were passed on to consumers, who would likely reduce their consumption in response to higher prices.

these programs.[3] In addition, we conducted semi-structured interviews with leading economists and researchers selected on the basis of their expertise in climate or tax policy. Finally, we drew on previous GAO reports and testimonies.[4] We conducted our work from December 2008 to August 2009 in accordance with all sections of GAO's Quality Assurance Framework that are relevant to our objectives. The framework requires that we plan and perform the engagement to obtain sufficient and appropriate evidence to meet our stated objectives and to discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions in this product.

Background

According to the Intergovernmental Panel on Climate Change—a United Nations organization that assesses scientific, technical, and economic information on the effects of climate change—global atmospheric concentrations of greenhouse gases have increased markedly as a result of human activities over the past 200 years. These gases trap heat that would otherwise escape the earth's atmosphere, contributing to climate change. Climate change is a long-term and global issue because greenhouse gases disperse widely in the atmosphere once emitted and can remain there for an extended period of time. Among other potential impacts, climate change could threaten coastal areas with rising sea levels, alter agricultural productivity, and increase the intensity and frequency of floods and tropical storms. Carbon dioxide is emitted in by far the largest volume of any greenhouse gas, and most emissions are caused by fossil fuel combustion. According to the EPA, carbon dioxide emissions from fossil fuel combustion accounted for approximately 80 percent of all greenhouse gas emissions in 2007.

Placing a price on emissions is likely to raise the cost of production of many goods and services. The size of the impact will depend on the price of allowances, as well as the ability of producers to substitute less emission-intensive processes and inputs. While some studies suggest that

[3]The European Union Emission Trading scheme, which commenced operation in January 2005, is the world's largest greenhouse gas cap-and-trade system.

[4]See GAO, *Climate Change Trade Measures: Considerations for U.S. Policy Makers*, GAO-09-724R (Washington, D.C.: July 8, 2009) and *International Climate Change Programs: Lessons Learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism*, GAO-09-151 (Washington, D.C.: Nov 18, 2008).

the overall impact would be modest, a cap-and-trade program could have a disproportionate effect on covered entities that rely heavily on fossil fuels, such as electricity generators. According to the Energy Information Administration (EIA), electricity generators derived about 49 percent of their electrical power from coal in 2007. The combustion of coal generates about twice as much carbon dioxide per unit of energy as the combustion of natural gas, the next most common fuel source for U.S. electricity generation, according to EIA.

Due to changes in the regulation of electricity markets, certain companies may be limited in their ability to pass on emissions reduction costs to their customers. Historically, electricity was generated, transmitted, and distributed by local monopolies. These companies were overseen by regulators who restricted the entry of new companies, approved investments and retail prices, and determined profits. Since the 1970s, efforts have been made to "restructure" electricity markets by introducing more competitive conditions. At the wholesale level, federal regulators have introduced market-based pricing, although these markets can take a variety of forms. About half the states have made efforts since the 1990s to restructure how retail prices are set, generally seeking to increase competition in electricity sales. According to EIA, 14 of these states—located in New England and the upper Midwest, plus Texas—currently operate retail markets in which customers may choose among competing power suppliers. The other states where restructuring was introduced have either suspended or repealed these efforts. In the remaining states, regulators still approve utility costs and prices. In addition to covered utilities, which are mostly investor-owned, most states also have utilities that are owned either by the public (such as through a municipality) or cooperatively by customers themselves. Such utilities—which currently account for about one-quarter of electricity sales—generally set prices at cost instead of maximizing profits.

In markets where regulation and international competition are not major factors, it is likely that consumers will ultimately bear most of the costs associated with pricing emissions. These costs are expected to disproportionately affect low-income consumers, who tend to spend a higher proportion of their incomes on energy products like electricity, heating, and gasoline. EPA has estimated that the cap-and-trade program in the American Clean Energy and Security Act would cost the average household $80 to $111 per year. A similar study by CBO estimated average household costs to be $175 per year, with some lower-income households receiving a net benefit. On the other hand, research suggests that policy makers could mitigate or eliminate these effects by selling allowances to

covered entities through auctions and returning the revenue back to consumers in the form of lump-sum rebates or tax adjustments.

If the government were to 'recycle' revenue through tax reductions, it could also realize benefits to the overall economy in the form of "economic efficiency." Many economists view certain taxes as inefficient or "distortionary," because they shift resources away from their most highly valued use. For example, efficiency costs may arise because taxes on labor income may affect job choices or hours worked. Most economists agree that minimizing the efficiency cost of the revenue raised to fund government services is an important objective of tax policy, among other objectives such as distributing the burden of taxation equitably.

The effects of emissions pricing on consumers and industry will also vary by region. While some recent studies suggest that this variation would be minimal, it may be more substantial for low-income households.[5] Areas that get most of their electricity from coal, the most emissions-intensive source, may see a greater electricity cost increase than areas that rely heavily on natural gas, nuclear energy, or hydropower. One study has estimated that the cost burden as a percentage of household income would range from about 1.9 percent in the East South Central region to about 1.5 percent in the West North Central region.

A cap-and-trade program would also affect federal, state, and local governments, which purchase energy intensive goods and would be responsible for the program's implementation. According to one study, governments produce approximately 13 percent of U.S. carbon dioxide emissions, and the allowance consumption associated with these emissions could cost governments an additional $16.6 billion.[6] Furthermore, price increases could increase government payments—such as Social Security benefits and federal pensions, which are indexed to prices—and reduce personal income tax collections. Finally, depending on

[5]See Kevin Hassett, Aparna Mathur, and Gilbert Metcalf, *The Incidence of a U.S. Carbon Tax: A Lifetime and Regional Analysis*, Working Paper 14023 (Cambridge, Mass.: National Bureau of Economic Research, January 31, 2008); and Dallas Burtraw, Richard Sweeney and Margaret Walls, *The Incidence of U.S. Climate Policy: Alternative Uses of the Revenue from a Cap-and-Trade Program*, Discussion Paper 09-17 (Washington, D.C.: Resources for the Future, June 2009).

[6]Dinan, Terry M. and Rogers, Diane Lim. Distributional Effects of Carbon Allowance Trading: How Government Decisions Determine Winners and Losers. National Tax Journal, 55(2), 199-221.

the details of the program, a cap-and-trade program could increase the administrative burden on the government relative to a business-as-usual situation. For example, markets for emissions allowances would require oversight, and the distribution of auction revenues could require additional personnel or a new entity to administer payments.

Different Methods of Allocating Emissions Allowances Will Affect Government, Covered Entities, and Consumers

The design of a cap-and-trade program's allowance allocation plan—the ways in which tradable allowances are allotted to covered entities at the outset of the program—will help determine how costs and benefits are distributed across the economy, according to available literature. The method of allowance allocation will generally not affect the level of emissions reductions achieved by the program, because allocation is independent of the overall cap. Therefore, the principal consideration in designing an allowance allocation plan is how to distribute the allowances in a way that helps to achieve certain goals: for example, to offset the program's economic impact on disproportionately affected industries or to generate revenue that could be redistributed to consumers or used for other purposes. To accomplish these goals, three basic design choices are available: allowances may be sold through an auction or other means, distributed for free, or dispensed using a combination of these methods.

Auctioning Allowances Could Generate Substantial Revenue and Provide Other Key Benefits

Selling allowances to regulated entities could provide several benefits. First, it would generate a source of revenue that the government could use to defray the economic costs associated with emissions reductions or direct toward other purposes. These revenues could be substantial: in June 2009, CBO reported that the American Clean Energy and Security Act would generate annual revenues of $45 billion by the year 2019 by auctioning of a percentage of the allowances. Earlier CBO estimates indicated that annual allowance revenues could range between $30 billion and $300 billion by roughly the same time period if all allowances were auctioned, although this proposal is not part of the bill.[7]

Some existing cap-and-trade programs have already sold allowances through auctions or commodity exchanges. For example, several member states participating in the European Union's Emissions Trading Scheme (ETS)—including Ireland, Hungary, Lithuania, the United Kingdom, and

[7]*Auctioning under Cap and Trade: Design, Participation and Distribution of Revenues Before the Senate Comm. on Finance*, 111th Cong. (2009) (statement of Douglas Elmendorf, Director, Congressional Budget Office). CBO notes that the actual value of the allowances would depend on the design of the cap-and-trade program.

Germany—have generated revenues from allowance sales; in Germany, these totaled approximately $1.2 billion in 2008. The level of auctioning is expected to increase as the program moves toward its third phase, which is to begin in 2013. In the United States, the Regional Greenhouse Gas Initiative—a regional cap-and-trade program involving 10 northeastern states—has conducted four auctions since it began auctioning allowances in 2008. These auctions, held quarterly, have each raised between $38 million and $118 million for programs to promote energy efficiency and assist low-income households with energy costs, among other things.[8] Given the revenue generation potential of auctions, many experts we consulted as part of a prior study suggested that a cap-and-trade program should maximize the level of auctioning.[9]

Auctioning may confer other additional benefits, according to available literature and researchers we spoke with. For example, many economists favor auctioning because of its transparency and because it discourages behaviors motivated by a desire to gain free allowances, such as "baseline inflation." This occurs when a firm attempts to boost the number of allowances it receives by increasing its emissions prior to the outset of a cap-and-trade program. Auctioning can also help ensure that new entrants to an industry face the same emissions reduction costs as existing firms. Finally, auctioning could decrease the possibility that covered entities earn windfall profits as a result of the cap-and-trade program, particularly in restructured regions where prices are determined largely by market factors. Covered entities could earn windfall profits if they pass along the "opportunity costs" of free allowances—that is, the revenue foregone by not selling them—in the form of increased electricity prices. For example, in the first phase of the European Union's ETS, electric utilities that received free allowances reaped substantial profits by charging ratepayers for the opportunity cost of those allowances.[10]

On the other hand, auctioning does not offer compensation to covered entities, particularly those that face disproportionate costs due to a cap-

[8]Data provided by Environment Northeast, a non-profit environmental research and advocacy organization.

[9]See GAO-09-151.

[10]As one economist whose work we reviewed has noted, opportunity costs can more easily be passed on to consumers in deregulated energy markets, as is common in the European Union, where the market price of electricity reflects costs associated with buying and selling allowances.

and-trade program. The government will also incur certain administrative costs associated with designing and administering the auctions, although these activities could be funded using part of the auction revenues. Moreover, the effectiveness of allowance auctions will depend partly on their design.[11]

Free Allocation of Allowances May Ease Entry Into Emissions Regulation but Can Increase the Overall Cost of the Program

Free allocation could help establish political support at the outset of a cap-and-trade program and compensate covered entities for any decrease in profits they might experience as a result the program, but it could also have some disadvantages. Two principal options are available when allocating allowances for free: "grandfathering" or "output-based updating allocation." Grandfathering involves allocating allowances based on historic (pre-regulation) emissions measures, while output-based updating allocation involves adjusting the number of allowances provided to an entity based on its recent production levels. Available literature indicates that since past emissions measures do not change, grandfathering may be less susceptible to manipulation than output-based updating allocation. However, research suggests that grandfathering is unlikely to prevent the "leakage" of economic activity—including production, jobs, and emissions—to countries where greenhouse gases are not regulated.[12] As we have previously reported, leakage may be of particular concern to firms in certain energy-intensive industries that face international competition—such as primary metals, paper, and chemicals—as these firms could find it more difficult than other covered entities to pass on costs to consumers by raising prices.[13] Grandfathering could also provide an advantage to existing facilities, which are more likely to have outdated, inefficient technologies in place.

Output-based updating allocation could also present trade-offs. As we have previously reported, output-based updating allocation could provide

[11]A large body of literature exists on the design of allowance auctions, including aspects such as timing, frequency, size, requirements for participation, and existence of a reserve price. We did not evaluate auction design features as part of this testimony.

[12]Specifically, as allowance prices rise, production may shift to abroad to existing competitors or new firms; in addition, regulated entities may shift some of their production to facilities that exist in countries without binding emissions limits. If leakage were to occur, the resulting increase in emissions in those countries may largely offset some of the environmental benefits of the cap-and-trade program.

[13]For further information, see GAO, *Climate Change Trade Measures: Considerations for U.S. Policy Makers*, GAO-09-724R (Washington, D.C.: July 8, 2009).

incentives for covered entities to maintain or increase production, potentially reducing the likelihood that these entities would move production to countries that are not subject to emissions regulations. However, output-based updating allocation could also decrease incentives for covered entities to engage in conservation and reduce their energy intensity, depending on how the program is designed. Moreover, some research indicates that an output-based approach would subsidize entities in certain industries, forcing entities in other sectors to make deeper cuts in their emissions in order to meet the overall cap. Since these cuts may be more expensive than the reductions that would have otherwise taken place, the overall cost of the cap-and-trade program would increase. In addition, some research suggests that maintaining output may not always be a worthwhile goal: for example, the contraction of output from a high-emissions sector may be one of the most cost-effective means by which to reach the overall emissions target.

Furthermore, attempts to keep energy prices low could increase the cost of the program to the economy. Rising prices for energy and energy-intensive goods are critical to the success of the program, because these "price signals" create incentives for both covered entities and consumers to conserve energy, and thereby reduce emissions of greenhouse gases. To the extent that price signals are not preserved, fewer households and businesses will change their behavior in response to these signals. This could reduce the economic efficiency of a cap-and-trade program, since some of the less costly emissions reduction opportunities would be forgone.

The structure of the U.S. electricity generation sector—which represents roughly 40 percent of domestic carbon dioxide emissions—could affect whether price signals reach energy users. Since the price of electricity is regulated in certain regions, generators that receive free allowances in these regions may not be able to pass along the costs associated with an emissions price to residential and commercial electricity users. If costs are not passed through, incentives for conservation decrease. A diminished price signal could also have indirect effects—for example, if the price of energy intensive goods does not rise in relation to other goods, consumers have less of an incentive to purchase fewer of these goods.

Considering the limitations of free allocation, some analyses have advocated limiting the use of free allowances to specific subsets of carbon intensive industries. Several studies suggest that freely allocating between 6 and 21 percent of all allowances would be enough to compensate these industries—which include coal-fired power plants, fossil fuel suppliers,

and energy intensive manufacturers—for profit losses related to emissions regulation.[14] In 2007, CBO reported that less than 15 percent of allowances would be sufficient to offset net losses in stock value as a result of the program.

The Effects of a Cap-and-Trade Program Depend on the Use of Revenues or Allowance Value

The establishment of a cap-and-trade program creates opportunities for the government to direct the value of allowances in a variety of ways. For the purposes of this testimony, we assessed five options that are frequently discussed in the economic literature, although numerous other options exist. First, the government could reduce the overall cost of the program by reducing taxes on capital or income that currently make the economy less efficient. Second, the government could distribute lump-sum rebates to consumers, who would likely pay the bulk of the economic costs associated with a cap-and-trade program. Third, revenues could be used to expand the Earned Income Tax Credit to assist low-income working families. Fourth, policymakers could compensate covered entities for their increased costs through free allocation—an approach equivalent to selling allowances on the market and transferring all the revenue to covered entities. Finally, revenues could help fund climate-related programs or activities, including research and development, energy-efficiency programs, or international aid to developing countries that face challenges in mitigating and adapting to climate change.

Reducing Existing Taxes

Using program revenues to reduce marginal tax rates—whether from individual income or payroll or taxes, corporate income taxes, or taxes on capital gains or investments—can reduce economic distortions in the tax code and lower the overall cost of the program. The benefits of tax reduction depend on the extent to which these taxes currently distort economic activity, according to literature and economists we spoke with. For example, existing taxes on labor or capital can discourage individuals from participating in the labor force or investing money. The structure of the tax code can also create distortions by directing spending toward certain areas where the buyer has a tax advantage, such as homeownership or employer-provided medical insurance.

[14]See Jonathan L. Ramseur, *"Emission Allowance Allocation in a Cap-and-Trade Program: Options and Considerations."* Congressional Research Service, June 2, 2008.

A cap-and-trade program could further exacerbate these tax distortions, according to economic literature. This so-called "tax interaction effect" could occur because a cap-and-trade program may have some of the same effects as a tax. Specifically, covered entities that face additional costs due to an emissions price will generally pass on their increased costs to consumers in the form of higher prices, thereby reducing the amount of goods that consumers can purchase. Because a loss of purchasing power effectively represents a decrease in real wages, incentives to work may also decrease. These effects could ultimately raise the cost of the program to the economy, according to economic literature we reviewed.

However, 'recycling' auction revenues through the tax code could partially or wholly offset costs that result from inefficiencies in the tax code, as well as potential costs imposed by the cap-and-trade program, according to a review of economic literature and interviews conducted with economists.[15] For example, because an emissions cap could cause prices to rise—and real wages to fall—a reduction in labor, income, or capital taxes could provide efficiency gains and help reduce the overall cost of the program.

These efficiency gains may present trade-offs. Economic analyses suggest that reducing tax rates would do little to compensate low-income individuals that may be disproportionately affected by the cap-and-trade program. According to these analyses, most benefits from reduced taxes would accrue to higher income households, regardless of the tax targeted for reduction. Moreover, in the absence of supplemental policies, the benefits of reducing labor taxes will not reach individuals who do not file tax returns. To close this gap in coverage, the government could supplement a tax reduction with payments issued through existing systems, such as the Electronic Benefit Transfer system or state-based food stamp programs.[16] However, using a combination of systems could increase the administrative burden and complexity of the program, and may require additional governmental coordination. In addition, adjusting

[15]A significant body of economic research indicates that ultimately the costly tax-interaction effect will be larger in magnitude than the beneficial effects of recycling revenue through the tax code, implying that the overall cost of an emissions price is somewhat larger than the costs of carbon reductions. However, the magnitude of the recycling effect is dependent on the details of the program that is implemented.

[16]The Electronic Benefit Transfer (EBT) is an electronic system that allows a recipient of government benefits like food stamps to use these benefits at a retailer.

the payroll tax rate may be complicated since these taxes represent social security and Medicare financing contributions.

Lump-Sum Rebates for Consumers

Another way to distribute revenues to consumers would be to distribute lump-sum rebates to consumers. Such a program could take many forms, but the underlying goal would be to compensate consumers or households through rebates of a specific amount. The amount of the rebate could be based on a simple per-capita formula with checks of equal size—also known as "cap-and-dividend"—or could account for household size, region, or other factors.

An important advantage of lump-sum rebates, according to many economists, is that they help offset the costs of a cap-and-trade program on consumers, particularly on low-income households. Depending on the design of the program, certain consumers may even experience a net benefit. However, research indicates that distributing lump-sum rebates would forgo the efficiency gains that could be achieved through tax reductions, making the program comparatively more expensive to the economy overall.

The ultimate cost of lump-sum rebates and the resulting effects on consumers would depend in part on the program's administration. The funds could be distributed, for example, using existing government programs, such as the income tax system or other benefit transfer programs. For example, one economist has proposed that the government could provide rebates for taxes paid on the first $3,660 of each worker's earnings, leading to a maximum rebate of $560 per worker. Alternatively, the government could develop a new distribution mechanism, although this approach would carry additional administrative costs. While using a single existing mechanism for rebate delivery would be the simplest and most transparent option, it would exclude individuals that did not participate in that program—for example, rebates that use the tax system would exclude individuals that do not file tax returns. The government could encourage these individuals to file through outreach campaigns, a strategy used when stimulus checks were distributed under the Economic Stimulus Act of 2008. Evidence suggests that such efforts could encourage more individuals to file—for example, of the 150 million individual income tax returns processed for tax year 2008, approximately 9 million claimed only the economic stimulus payment. However, any outreach effort would entail additional costs and administrative requirements.

Policymakers could also design a rebating system that uses a combination of mechanisms to maximize coverage, although this strategy would increase the program's complexity, given the need for program coordination, as well as the risk of fraud or duplicate rebates.

Expanding Earned Income Tax Credit

Several proposals for distributing revenue involve expanding the Earned Income Tax Credit (EITC) program. The EITC was enacted in 1975 and was originally intended to offset the burden of Social Security taxes and provide a work incentive for low-income taxpayers. It is a refundable federal income tax credit, meaning that qualifying working taxpayers may receive a refund greater than the amount of income tax they paid for the year. According to one study, approximately half of all households would benefit from this approach, with lowest-income households with children reaping the highest gains.[17] However, this study suggests this option would affect low-income households differently depending on their location. Low-income households in the Northeast, for example, could see about a 2 percent gain in income, compared to a 7.4 percent gain in Texas.[18] Some research also indicates that the EITC may encourage labor activity for low-income workers.

Using the EITC to distribute revenue, however, may involve trade-offs. For example, as the Treasury Inspector General for Tax Administration has reported, the EITC has been vulnerable to taxpayer error in the past, due in part to changes in eligibility and the tax code. Prior reviews by the IRS and GAO also suggest that errors are common—for example, an IRS study has reported that the EITC program has an erroneous payment rate estimated to be between 23 and 28 percent.[19]

[17]The 2009 EITC thresholds require that earned income and adjusted gross income must each be less than $43,279 ($48,279 if married filing jointly) with three or more qualifying children. The threshold drops to $13,440 ($18,440 if married filing jointly) with no qualifying children.

[18]Burtraw, Dallas, Richard Sweeney, and Margaret Walls, "*The Incidence of U.S. Climate Policy*," Resources for the Future discussion paper 09-17.

[19]Department of the Treasury, *IRS Earned Income Tax Credit (EITC) Initiatives* (2008) and see also GAO, *IRS's 2008 Filing Season Generally Successful Despite Challenges, although IRS Could Expand Enforcement during Returns Processing*, GAO-09-146 (Washington, D.C.: 2009).

Free Allocation of Allowances

Allocating free allowances to covered entities can help establish political support at the outset of a cap-and-trade program and compensate covered entities for any increased costs they incur as a result. However, as noted earlier, free allocation can raise the cost of the program if such allocation decreases incentives to conserve energy and reduce emissions in one sector and forces other sectors to make less efficient reductions. In addition, economic literature suggests that a grandfathering approach to free allocation would do little to discourage the leakage of economic activity, jobs, and emissions, since covered entities' variable costs of production would remain unchanged. An output-based approach to free allocation, on the other hand, could reduce the likelihood that covered entities would relocate or decrease production, although it could also reduce their incentives to decrease emissions.

Most of the benefits of freely allocated allowances will accrue to the shareholders of entities that receive them by compensating shareholders for any declines in stock value they might experience as a result of the cap. However, consumers are unlikely to see these benefits in the form of lower prices, since most covered entities will pass on costs associated with a cap-and-trade program, even when they receive allowances for free. Free allocation is therefore likely to benefit those with higher incomes more than those with lower incomes.

The administrative burden associated with free allocation of allowances depends primarily on how policymakers determine the relative allocations to each industry. A grandfathering approach, for example, would require the government to select a set of years with which to determine a baseline. An output-based approach would require the government to define a baseline, which could prove challenging. As one economist we interviewed pointed out, "output" could be subject to numerous interpretations, each with its own implications for equity.

The government could also direct the recipients of free allowances to use these allowances for the benefit of consumers. For example, HR 2454, as passed by the House on June 26, allocates some allowances to electric and natural gas local distribution companies (LDC) for the benefit of retail ratepayers.[20] Distributing free allowances through LDCs may go some way

[20]The bill defines 'electricity local distribution company' as an electric utility that, among other things, has a legal, regulatory, or contractual obligation to deliver electricity directly to retail consumers in the United States, and whose retail rates are regulated.

toward mitigating regional differences in cost impacts, according to some researchers. However, the overall effects of this approach would depend largely on the extent to which it creates incentives to reduce energy use, according to economists we spoke with. Importantly, if benefits to electricity customers were conferred in the form of decreased energy rates, the incentives for energy conservation may diminish and the overall cost of the program could increase. This may be particularly true for residential customers, according to economists we interviewed, since industrial customer may have other reasons to pursue efficient practices. To help preserve incentives, LDCs could allow electricity rates to rise and rebate consumers through the fixed portion of their utility bills—that is, the portion not based on energy use. However, this approach assumes that electricity customers will differentiate between the fixed and variable portions of their utility bill when assessing their costs, as opposed to simply looking at the bottom line amount, which could remain largely unchanged. Several economists and researchers we spoke with expressed skepticism that customers would react to the price signal if their total energy costs did not change, although some said that distributing rebate checks separately from the utility bill could address this concern.

The effect of this approach on consumers will depend on other factors. If both residential and business customers receive benefits, for example, the benefits conveyed to businesses may not get passed along to their customers. According to a CBO analysis of H.R. 2454, most of the allowance value given to local distribution companies would benefit business customers. The analysis also estimates that 63 of percent allowance values conferred to businesses would ultimately benefit the highest earning 20 percent of households, since these households are more likely to be shareholders.[21] In addition, the way in which benefits are conveyed to customers—for example, through lower prices, investments in energy efficiency, or other means—will depend on the state public utility commissions that regulate the LDCs. While some organizations have expressed concern that past regulation has been uneven, several economists and state officials we spoke with expressed confidence that the existing regulatory structure could effectively ensure that customers received the benefits.

[21]Congressional Budget Office, *The Estimated Costs to Households From the Cap-and-Trade Provisions of H.R. 2454* (June 19, 2009).

Funding Climate-Related Programs or Activities

Revenues generated through allowance auctions could also be directed toward climate-related programs or activities, including the research and development of low-carbon technologies, programs to promote energy-efficiency, or mitigation and adaptation activities abroad. Beyond their environmental benefits, such programs could also convey efficiency gains, if they lowered the cost of emissions reductions. The development of renewable energy sources, for example, could ultimately lower covered entities' total expenditures on emissions allowances. Funding for efficiency programs could also offset costs for households through reduced energy demand. Some research organizations have also suggested that funding in these areas could create job opportunities, and in the long run could help ensure greater economic stability due to energy security.

Economic research suggests that an emissions price, on its own, will go some way toward promoting low-carbon technologies and the efficient use of energy. However, economists we spoke to said that there are certain instances—known as "market failures"—where opportunities for reduction may not be captured. For example, builders and owners of rental properties may not have incentives to consider energy efficiency in the construction and renovation of these properties, since they may not be responsible for paying electricity and heating costs. In these cases, subsidies for efficient construction or renovation may be appropriate. In addition, certain technologies—such as carbon capture and storage—may face cost barriers that could be mitigated through grants or subsidies.[22] Other technologies may need nationwide infrastructure that could require additional funding at the federal level—for example, an enhanced transmission grid to transmit renewable energy. While many economists we spoke with said funding such activities could be beneficial, several also cautioned that selecting, implementing and evaluating these programs could pose challenges.

Technology Research and Development

Developing and promoting low-carbon technologies could provide important benefits and significantly reduce the cost of emissions reductions in the long run, according to available information. However, firms may be dissuaded from conducting research if they are prevented from appropriating all of the associated benefits—for example, if other firms are able to copy and profit the new technology without penalty. As a

[22]Carbon capture and storage involves capturing CO_2 from a power plant's emissions, transporting it to an underground storage location, and then injecting it into a geologic formation for long-term storage.

result, several economists we spoke with recommended allocating part of the allowance revenues for research and development to help overcome these cost barriers. However, several also noted that it is difficult to determine how to allocate such funds effectively. For example, selecting which technologies receive funding places the government in the position of attempting to choose the best technologies rather than allowing the market to make that determination. Overall, research suggests that funding technologies in the early stages of development may be more cost-effective than using revenues to commercialize existing technologies.

Energy Efficiency Programs

Investments in energy efficiency have the potential to alleviate some of the effects of the cap-and-trade program on households. For example, using auction revenue to support weatherization improvements for homes or the purchase of energy-efficient appliances could lower these households' energy consumption and expenditures. Some research suggests that tax credits, for example, can have a significant impact on efficiency investments by homeowners and businesses. However, several researchers have noted that the implementation of such programs has been unpredictable in the past, in part because it is difficult to determine whether these activities would have occurred anyway.

Aid to Developing Countries

Allowance revenues could also be used as aid to developing countries, either in the form of grants, loans, or other means of assistance. Such aid could target activities that reduce greenhouse gas emissions in these countries—for example, programs that aim to deploy low-carbon technologies in areas where they would not normally be financially feasible. Revenue could also support adaptation activities that could help these countries prepare for and adjust to the project effects of climate change.

Several economists and researchers we spoke with supported directing some portion of auction revenue for international aid efforts. Some highlighted an obligation on the part of developed countries, which represent the bulk of greenhouse gas emissions to date, to help less developed nations deal with potential problems associated with climate change, such as food shortages, water quality problems, and the increased risk of malnutrition or disease. In addition, research indicates that the developing world presents low-cost opportunities for emissions reduction—for example, avoiding landfill waste through composting—as well as opportunities to prevent future emissions in those countries that are rapidly developing their energy, industrial, and transportation infrastructures. Furthermore, some researchers noted that the provision of mitigation or adaptation aid to developing countries may essentially be a

prerequisite to these countries' participation in an international agreement to limit emissions.

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions that you or other Members of the Committee might have.

Contacts and Staff Acknowledgments

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United States Government Accountability Office
Washington, DC 20548

September 9, 2009

The Honorable Max Baucus
Chairman
Committee on Finance
United States Senate

Dear Mr. Chairman:

We appreciate the opportunity to respond to the Committee's questions for the record as a follow-up to its August 4, 2009 hearing on allowance and revenue distribution in climate change programs. We also appreciated the opportunity to testify at the hearing and hope that the Committee found our testimony useful in its deliberations on climate change policy.

We provide answers to your questions below. It is worth noting that, in some cases, we do not have a basis to respond to some of the questions because we do not have ongoing or completed work in those areas. To the extent that the Committee has a continuing interest in areas where we are not able to provide complete responses, we are available to meet with you to discuss your interests and assist in developing a request for GAO to respond to these questions.

Sincerely yours,

John Stephenson
Director, Natural Resources and Environment

Enclosure

Enclosure

GAO Response to Questions

Questions from Senator Stabenow

1. I realize that there are a variety of needs for revenue to transition to a low carbon economy but is there a simpler way to distribute allowance revenue than the H.R. 2454 in order to keep costs low to the most vulnerable sectors of the economy or and what are the most important categories to distribute allocations for in order to minimize costs of greenhouse gas abatement and transition to a low carbon economy?

Furthermore, does a price collar of some variation diminish the need for certain allowance allocations that are made in H.R. 2454?

Many economists agree that pricing greenhouse gas emissions—either through an emissions tax or a cap-and-trade program—is an economically efficient way to achieve emissions reductions. As we reported in our August 4 testimony, a cap-and-trade program that allocates all or part of its allowances for free could, under certain circumstances, increase the overall cost of the program to the economy.[1] For example, if free allowances were allocated based on a firm's output, the firm could theoretically maintain its current production and employment levels, as it would not incur significant costs resulting from the cap-and-trade program. On the other hand, the firms may not be as likely to reduce its emissions, forcing other sectors to make larger emissions cuts and leading to higher price increases overall.

Some economists believe that allocating a fraction of allowances for free could help compensate potentially vulnerable industries. Earlier this year, GAO issued a report examining the industry sectors that could potentially be vulnerable to a price on carbon.[2] These sectors include energy- intensive and trade-exposed industries such as steel and paper mills. Overall, several analyses—including one by the Congressional Budget Office—suggest that allocating between 6 and 21 percent of allowances to industry would be sufficient to compensate entities in energy-intensive industries for their increased costs under a cap-and-trade program.

[1]See GAO, *Climate Change Policy: Preliminary Observations on Options for Distributing Emissions Allowances and Revenue under a Cap-and-Trade Program*, GAO-09-950T (Washington, D.C.: Aug 4, 2009).
[2]See GAO, *Climate Change Trade Measures: Considerations for U.S. Policy Makers*, GAO-09-724R (Washington, D.C.: July 8, 2009).

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GAO Response to Questions

GAO has not assessed the allocation methods used in Waxman-Markey, nor done a comparative assessment of this legislation in relation to other proposals. The extent to which a price collar would affect the need to allocate allowances to certain groups would depend on the minimum and maximum prices set by the collar. In most proposals, a price collar would be used to prevent extreme price volatility, rather than limiting allowance prices to a very narrow range. In such a case, the market would typically set the price of an allowance to emit a given quantity of carbon dioxide equivalent.

2. The proper distribution of allowances for various sectors will be vital for legislation to accomplish greenhouse gas reductions in a manner that is beneficial for manufacturers, small businesses and the environment.

When determining the amount of allowances needed, how important is it to have good emissions data from other countries, so we can better determine the amount of allowance value needed to prevent emission and economic leakage from our energy intensive and trade exposed industries to other nations? In what ways can we improve the accuracy of current monitoring efforts to obtain such data?

GAO has ongoing work examining the reliability of greenhouse gas data from other nations. We have also reported on this topic in the past.[3] However, we have not assessed the relationship, if any exists, between the quality of emissions inventories for other nations and the potential for emission or economic leakage to these nations.

Questions from Senator Cantwell

1. What effect does the point of regulation have on regional disparities, when one accounts for both direct and indirect costs on consumers from the carbon price signal?

As we have reported in previous work, the point of regulation in a cap-and-trade program may occur (1) "upstream" and cover sources of carbon dioxide when they first enter the economy, such as fossil fuel producers; (2) "downstream" and cover direct

[3]See GAO, *Climate Change: Selected Nations' Reports on Greenhouse Gas Emissions Varied in Their Adherence to Standards*, GAO-04-98 (Washington, D.C.: Dec 23, 2003).

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and indirect emitters, such as power plants; or (3) at a combination of upstream and downstream sources.[4] An upstream program would involve fewer entities to regulate and therefore would simplify data requirements and avoid the challenges of obtaining facility-specific data. However, GAO has not assessed the impact of the point of regulation on potential regional disparities that may result from a price on emissions.

2. Do you think the Local Distribution Companies (LDCs) are more accountable to the public than the federal government? If not, is there any justification for all consumer rebates to go through LDCs instead of directly going to the people?

GAO has not examined the accountability of LDCs relative to that of federal agencies that might be involved in administering a cap-and-trade program. Some research indicates that using LDCs to distribute allowance revenues would mitigate some of the disparities in regional impacts that may result from a cap-and-trade program, whereas other approaches—for example, distributing rebates of equal amounts to each household—may not necessarily account for regional disparities. However, research also indicates that a lump-sum rebate approach, depending on its design, could still fully compensate low- and middle- income households in those regions that are expected to see the highest price increases.[5] In addition, a direct rebate approach may be administratively simpler to implement. [Note: GAO has not independently assessed the validity of research findings regarding the LDC and rebating approaches.]

Questions from Senator Hatch

1. Let's assume that we implement this cap and trade legislation and actually reach our target reductions of CO2 emissions in the United States. Can you tell me what the specific climate reduction benefit we can expect to enjoy from all this effort?

GAO has not independently evaluated the benefits that could result from any proposed climate legislation. Many economists cite the importance of international cooperation in addressing climate change.[6] However, independent economic assessments have also

[4]See GAO-09-423T

[5]Dallas Burtraw, Richard Sweeney, and Margaret Walls. *The Incidence of U.S. Climate Policy: Alternative Uses of the Revenue from a Cap-and-Trade Program,* Discussion Paper 09-17 (Washington, D.C.: Resources for the Future, June 2009).

[6]See GAO, *Climate Change: Expert Opinion on the Economics of Policy Options to Address Climate Change*, GAO-08-605 (Washington, D.C.: May 9, 2008).

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concluded that limiting greenhouse gas emissions would be economically justified—that is, the benefits would outweigh the costs to the U.S. economy— although we have not independently assessed the validity of these studies. As many economists have noted, benefits from emissions reductions are much more difficult to quantify and estimate than costs.

2. The National Rural Electric Cooperative Association estimates that my state of Utah will be the hardest hit by a cap-and-trade scheme, raising our power rates by a whopping 70 percent. Can you estimate that how much residential energy prices will rise per household?

GAO has not assessed the benefits or costs of legislative proposals to limit greenhouse gas emissions or the potential impacts on households, geographic areas, or energy prices. GAO has not assessed the validity of the studies that have attempted to estimate these impacts.

3. That is a very high rate compared to most other states. Am I correct that the people of Utah, and those other carbon-intensive states such as West Virginia, North Dakota, and Arkansas, would have to bear a far greater burden of higher electric bills as a result of the President's climate change agenda?

As noted above, GAO has not assessed these potential impacts. However, the burden borne by consumers in carbon-intensive states would depend on the program's stringency and its allowance allocation and revenue distribution strategy.

Questions from Senator Snowe

1. Mr. Stephenson, I'd like to start with an issue you address as a final point in your testimony on the issue of research into low-carbon technologies and programs that promote energy-efficiency. Our tax code already has a research and experiment tax credit that would promote private sector investment in these technologies. Do you think these low-carbon technologies are not yet to the point of viable private sector research and thus need direct grants or government-lead research? I know you are not on the tax team at GAO, but I'd like to get information from GAO on this point.

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The House-passed legislation, the "American Clean Energy and Security Act of 2009 or "ACES Act" would create a "State Energy & Environment Development Fund" or "SEED Fund" to promote energy efficiency programs and investments in renewable energy technologies.

However, I see great value in also approaching this efficiency issue through the tax code – such as the current tax credits of 45L and the 179D tax credits for new building construction, as well as the 25C tax credit for existing residential homes from energy efficiency tax credits that I authored with Senator Feinstein in 2005 and expanded in 2008. Unfortunately, our House Ways & Means Committee colleagues did not markup the ACES Act so such provisions were not integrated into the House legislation. Do you believe that tax incentives for energy efficiency and renewable energy should be also considered for investments as opposed to strictly grants to state governments?

As experts have noted, selecting a particular financing mechanism with which to further technological goals is not always a clear-cut endeavor. The effectiveness of a given financing mechanism may be affected by a number of factors, including the particular technology being promoted and the specific plans for disbursement and program evaluation. As a result, the issues mentioned here—for example, the relative merits of state grants vs. tax credits—warrant further study. While GAO has not yet looked into the specific issues cited here, we would be happy to discuss these topics further with your staff, at your convenience.

2. Mr. Stephenson, the House-passed legislation targets roughly 15 to 17.5 percent of emissions allowances for auction under the cap and trade system and would provide 85 percent of emission allowances for free to various industries. In your testimony you state that an efficient cap and trade system would only need between 6 and 21 percent of emission allowances to be freely allocated in order to "fully compensate" coal fired power plants, fossil fuel suppliers and energy intensive industries for profits lost due to emission regulation. Thus the remainder would then be available to auction with the proceeds being recycled to consumers.

This finding of between 6 and 21 percent free-allocations is on-target with the Congressional Budget Office finding that roughly 15 percent of allowances

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could be freely allocated. Yet the House-passed bill makes a completely inverse allocation and auctions only 15 percent of allowances.

Mr. Stephenson, could you please discuss for me what inefficiencies in the cap and trade system would result from such a high percentage of free-allocations?

In general, free allocation foregoes the opportunity to generate revenues through allowance sales. Such revenue could be used to compensate consumers or for other purposes, as described in our testimony. Second, free allocation can also increase the overall cost of the cap-and-trade program if it reduces incentives for firms or consumers to lower emissions or conserve energy (see testimony for further details).[7] Third, free allocation leaves open the possibility of windfall profits, if firms that receive free allowances pass on opportunity costs to consumers. Fourth, freely allocating allowances using a grandfathering approach can generate costly political lobbying and "baseline inflation" to influence how allowances are distributed. Finally, depending on how the legislation is designed, grandfathered allowances may create incentives to keep older, dirtier plants in operation.

However, the allowance allocation method used in H.R. 2454 may not be directly comparable to other methods of free allocation (such as grandfathering). While GAO has not conducted an in-depth analysis H.R. 2454, the bill as passed directs local distribution companies (which receive 35 percent of free allowances) to direct the value of the allowances they receive to their customers. Depending on how this provision was implemented, the effect could be similar to a "revenue recycling" approach.

3. Mr. Stephenson, there are different ways to freely allocate emissions, and you touch on the issue in your testimony. One way is the "grandfathering approach" which sets a base year for amount of emissions and then grants future emission allowances to those businesses. Over time the base period is updated but it continues to allocate based on past pollution and rewards the least efficient or most dirty polluters of today. An "output-based approach" to free allocations promotes clean energy and less air pollution by measuring emissions per unit of useful energy output. Therefore, cleaner energy is most heavily rewarded in this approach.

[7]See GAO, *Climate Change Policy: Preliminary Observations on Options for Distributing Emissions Allowances and Revenue under a Cap-and-Trade Program*, GAO-09-950T (Washington, D.C.: Aug 4, 2009).

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Mr. Stephenson, can you tell me which approach is used in the House bill? Which approach would lead to faster adoption of cleaner, more energy efficient technologies being installed in businesses and homes? Does one approach or another have a cost advantage? It is my understanding that output-based emission limits level the playing field by allowing energy efficiency and renewable energy to compete on an equal footing economically with any other method of reducing emissions. Do you agree with that assessment?

GAO has not formally assessed the allocation approach used in H.R. 2454. The legislation indicates that both output-based rebating and grandfathering will be used to some extent. For example, allowances allocated to LDCs will be distributed based on a 50/50 formula, wherein 50 percent of the distribution would be based on past emissions and 50 percent based on the quantity of electricity delivered. Merchant coal-fired generators would receive free allowances based on an output-based formula.

GAO has commented on the strengths and limits of output-based approaches in this testimony (GAO-09-950T) as well as in a previous report (GAO-09-724R). Specifically, output-based free allocation or rebates may address competitiveness issues for firms that receive them by compensating firms for additional costs that they would incur under the program. Such an approach could provide incentives to maintain production and employment levels. On the other hand, depending on how an output-based approach is implemented, it could reduce incentives for firms to engage in conservation and drive up the cost of the program.

In general, a price on emissions will encourage covered entities to reduce their emissions in the least costly manner, whether through increasing efficiency, purchasing allowances or offsets, or other means. To the extent that certain firms are exempt from paying these costs, or a certain amount of their production is exempt, this diminishes their incentives to reduce emissions. This could force bigger reductions in other areas of the economy and drive up the cost of the program. However, some economists we spoke with said that these cost increases might be acceptable if the output-based approach effectively deterred emissions leakage, since such leakage would result in potentially greater economic costs overall.

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It is important to note that output-based allocation could be employed in a variety of ways, each with its own strengths and limitations. GAO has not assessed the specific output-based approach used in H.R. 2454.

4. Three of the witnesses testified today that auctioning emission allowances and giving Americans some sort of a rebate is the best approach to encourage less pollution and better results toward addressing global climate change. Mr. Keohane supports freely allocating allowances.

For all of the witnesses, I'd like your opinions on whether rebates are best accomplished through a per-household rebate or through changes to the tax rates or payroll taxes.

Mr. Stephenson, your testimony addresses the issue in more detail than the others regarding low-income individuals who may not be in the workforce or senior citizens who are not in the workforce. Do you think that the per-household rebate is then the best means to recycle funds from the auction of emission allowances?

The choice between per-household rebate and changes in tax rates depends on the goal that policymakers wish to achieve. As we reported, lowering tax rates can increase the economic efficiency of the tax code, thereby reducing the overall cost of the program to the economy. However, lowering tax rates would confer more benefits to higher-income households than lower-income households who may be disproportionately affected by a price on emissions. Lower-income households would likely be better off using a per-household rebate approach, although this option would not confer the same efficiency benefits.

Many proposals for distributing rebates often use the tax code as a way to distribute the checks (for example, payroll tax rebates and expansion of the Earned Income Tax Credit), since it is an existing system that is already set up to distribute checks. The stimulus checks that were distributed in 2008 also used the tax code. However, without supplementary measures, using the tax system to distribute rebates may exclude those individuals who do not file taxes. These individuals could potentially be reached through supplementary systems (like food stamp programs), although this would require additional coordination. They could also be reached if non-filers were encouraged to file, such as through an advertising campaign. Alternatively, a new

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rebate distribution system could be created, although this option would result in additional administrative costs.

Questions from Senator Enzi

1. I have been told that a 100 percent auction could be problematic for companies who need to buy allowances to cover their emission because they will require a new cash flow that does not necessarily exist. In previous testimony before the Finance Committee, a witness noted that "any delays in pass-through of such costs to consumers could seriously disrupt their financial position."

I am extremely concerned about this potential consequence – particularly because smaller businesses will have a difficult time raising the money necessary to buy allowances. Are there specific industries that you anticipate will have more trouble raising the necessary funds?

Do you anticipate that companies will be able to easily pass through these upfront costs to consumers even under the limited auction approach in the Waxman-Markey bill?

GAO has not specifically assessed the implications of a cap-and-trade program on the cash flow of entities potentially covered by the program. However, existing studies that have assessed the short run costs to these entities suggest that cost impacts, even with auctioning, are relatively modest given the type of carbon policies currently under discussion. However, certain trade and energy intensive industries—representing approximately 4.5 percent of domestic output— are potentially vulnerable to reductions in output or profits (for more information, see our previous report (GAO-09-724R).

2. Some electrical power generators have the ability of switching to a more costly low-carbon fuel source, but there is no commercial-scale low-carbon source to fuel the nation's 250 million cars or the millions of trucks and buses and airplanes. In addition to raising consumer's electricity prices, this will cause them to see price increases at the gasoline pump – in part because of the way the allocation approach of Waxman-Markey allocates permits to refiners.

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Is there a better way to allocate allowances to ensure that gasoline prices do not increase substantially?

The goal of a cap-and-trade system is to incorporate the costs associated with greenhouse gas emissions into the price of goods and services. Goods and services that are energy-intensive will likely be priced higher, thereby creating an incentive for consumers and businesses to conserve energy and reduce the consumption of energy-intensive goods. The ability of a sector to substitute inputs, such as fuels, can affect the extent to which prices rise as the result of the program.

GAO has not assessed the potential to mitigate gasoline price increases through a cap-and-trade program. However, as we reported, dampening price increases in certain sectors—such as transportation—necessarily forces other sectors to make reductions that are potentially less efficient, since the system-wide cap remains the same regardless of how it is met. This can increase the overall cost of the program to the economy. An alternative means of defraying gasoline and other energy costs could be to provide rebates or tax reductions that are funded through the proceeds of allowance auctions. Using auction revenues to compensate individuals could potentially defray some or all of the increased costs as a result of the program while maintaining incentives to conserve energy, provided that efficiency incentives were preserved.

3. A "cap and trade" system is promoted as a market-based mechanism for putting a price on greenhouse emissions. However, the Waxman-Markey bill establishes a "cap and trade" system and predetermines who will be the large buyers and the large sellers; in other words, it chooses the winners and losers.

For example, refiners are held responsible for 44% of emissions, including the refinery emissions (about 4%) as well consumer emissions from planes, trains, automobiles, heating oil, and other petroleum use. Yet refiners are allocated only 2% of allowances, with an additional 0.25 percent allocated for small refiners. In contrast, some other sectors receive free allowances that match or exceed their obligation.

Does this type of legislation add overall costs, which are eventually borne by individuals and businesses, if the distribution of free emission allowances to various sectors are unbalanced?

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As noted above, the purpose of a cap-and-trade system is to introduce a uniform price on emissions in order to encourage energy conservation and efficiency. For the cap-and-trade program to be effective, this price signal must reach businesses and households. According to experts, most firms, including refiners, will be able to pass on all or most of their increased costs, whether or not they receive allowances for free.

However, some trade- or energy-intensive industry sub-sectors may find it more difficult to pass through prices, potentially posing risks of leakage and output contraction. As a result, some economists suggest that a portion of allowances be allocated for free to these sectors. As we've reported, however, free allocation has several drawbacks—for example, it can increase the overall cost of the program if it discourages low-cost reductions in the sectors that receive free allowances.

As a result, most economists would likely advocate targeting free allowances to the most vulnerable sectors, rather than allocating free allowances equally throughout emitting sectors. Maintaining price signals while avoiding leakage would ensure that the most efficient reductions are made.

4. Can a cap and trade system be designed that does not increase costs to consumers and that achieves the intended environmental benefits of lowering emissions?

According to some experts, this is possible. For example, some economists maintain that using revenue generated through a tax on emissions or a cap-and-trade system with auctioning to lower taxes would result in a net gain for the economy. The potential for this to occur would depend on numerous variables, including:

- Stringency of cap and timelines
- Use of cost containment mechanisms
- Allowance allocation and use of auction revenues, if any
- Whether economic and/or social benefits are considered

5. Your testimonies suggest that there is much support among economists for auctioning allowances as opposed to allocating those allowances freely. Can you comment further on the design of the H.R. 2454? Are there specific

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industries that will clearly benefit from the free allocations? What industries will be harmed by the current policies?

GAO has not assessed the allocation methods of H.R. 2454. Any industry that received free allowances (without stipulations to direct the value toward consumers) would benefit.

6. In your experience examining other carbon management systems, has the government been successful in picking where allowances should be allocated freely or have you seen problems with the allocations? I know that in the European Emissions Trading Scheme, some companies experienced windfall profits and I would be interested to know if that experience is typical.

The experience of the ETS suggests that free allocation does not prevent firms from passing along the costs of allowances to consumers in the form of higher prices. Specifically, EU firms in the power sector passed along the "opportunity cost" of not selling the allowances. According to economists and experts we have consulted for this and previous reports, a similar effect could occur in the U.S.—firms that receive free allowances would be able to pass along opportunity costs to consumers. There are several notable exceptions, however, including power producers that operate in regulated electricity markets and certain trade- and energy-intensive industries.

7. Your written testimony discusses the possibility of using revenues from allowance auctions to develop low carbon technologies. It appears that many of the economists you spoke with supported aspects of this approach.

Do you think that technological improvements to improve energy efficiency and reduce emissions will ultimately bring down the costs of this program to consumers? If so, shouldn't we be directing revenue from this program towards developing those technologies? What is the rationale for using revenue from this program for non-environmental spending?

Would such an approach allow for more emissions reductions in developing nations if we shared that technology with those nations than currently anticipated under Waxman-Markey?

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Most economists we spoke with recommended allocating a portion of the allowances for energy-efficiency programs or to fund research and development in low-carbon technologies. Energy-efficiency programs could ultimately reduce the demand for energy by households and businesses, thus lowering their energy costs. Energy efficiency measures could produce economic gains as well. A 2007 McKinsey study, for example, stated that widespread adoption of energy-efficient products that already exist on the market—lighting and electronics, for example—could save the U.S. economy an estimated $37.5 billion.[8] Funding for research and development could also spur the development of lower-emissions energy sources, which would lower the cost of producing a given amount of energy, and help encourage the creation of more efficient production technologies.

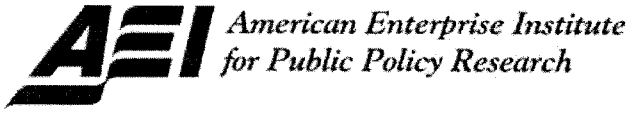
A reduction in energy demand or emissions that occurred as a result of these programs would reduce the price of allowances and the cost of the cap-and-trade system to consumers. Given the billions of dollars expected to be generated through a potential U.S. cap-and-trade system, it may be difficult to strategically allocate the entirety of these revenues to technology development and at the same time ensure that the revenues are spent effectively. Further, several economists we spoke with pointed out that selecting the best mechanism to deliver funds—for example, grants or contests—may vary depending on the type of technology and other factors. Given these considerations, many economists we consulted said that allocating between 7 to 10 percent of the allowances for technology development would be appropriate.

GAO has not assessed the implications of creating and sharing technologies with developing nations, nor compared this approach to that employed in H.R. 2454.

8. Instead of imposing a cap and trade system that would appears to have much uncertainty and would ultimately raise prices for consumers, could a minimal carbon tax that sends funding to technology development achieve the intended environmental goals at less cost to the economy?

Many economists maintain that a carbon tax is administratively simpler than a cap-and-trade program. However, GAO has not assessed the impact of a "minimal" tax with the funding stipulations cited above.

[8]McKinsey & Co., *Reducing U.S. Greenhouse Gas Emissions: How Much and What Cost?* (Dec. 2007).



Testimony before the Senate Committee on Finance on

"Climate Change Legislation: Allowance and Revenue Distribution"

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The views expressed in this testimony are those of the author alone and do not necessarily represent the views of the American Enterprise Institute.

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

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[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 CO_2 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 CO_2 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

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[3] "Trade-Offs in Allocating Allowances for CO_2 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, Exectuvie 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 CO_2 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,

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[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

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[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) CO_2 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

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[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-

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[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 CO_2 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 UTILTIES

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]

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[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.

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[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 CO_2 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.

American Enterprise Institute
for Public Policy Research

September 9, 2009

Re: Questions for the Record from August 4, 2009 hearing, "Climate Change Legislation: Allowance and Revenue Distribution"

PART I – RESPONSE TO SENATOR LINCOLN'S QUESTION

The Honorable Blanche Lincoln
Committee on Finance
U.S. Senate

Senator Lincoln:

Thank you for submitting a question for the record. I have set forth my response below. The views expressed in the response are solely my own and do not necessarily reflect the views of any other person or any organization.

1. I will not support any climate legislation that doesn't provide a fair and equitable allowance allocation for domestic oil refiners and, more importantly, their customers. Under Waxman-Markey, refiners are responsible for 44% of all covered emissions, yet they receive a mere 2% of free allowances. This will result in the domestic refining industry being required to purchase over 90 percent of the allowances it would need for compliance with this legislation.

One independent refinery from my state, Lion Oil Company, has laid out very clearly what this will mean for their business. The small refinery and the fuels it produces emit 10 million metric tons of CO2 each year. Under the Waxman-Markey mandates, they would have to purchase on the open market 9 million CO2 allowances annually. If those allowances are assumed to cost $20 per ton, Lion would have to spend $180 million annually to purchase allowances in the early years and much more in the later years. Over the last 23 years, their average annual profits have been $13 million per year. So, in testimony before the House Energy and Commerce Committee, Lion's Vice President, Steve Cousins, explained the obvious-- that under Waxman-Markey, "the company will be unprofitable in year one and insolvent within a matter of months, not years." That would mean 1,200 Lion employees in El Dorado, Arkansas, out of work and 70,000 more barrels of foreign oil imported every day. Without a doubt, a similar impact would be felt by other independent domestic refiners, such as Murphy Oil, one of the best corporate citizens in my state, along with the resulting domestic job losses and decrease in domestic refining capacity.

To make matters even worse, the bill compounds the inequities by barring US refiners from receiving the same domestic protections granted other energy-intensive industries. Waxman-Markey establishes international competitiveness protections for energy-intensive, trade-exposed industries, with one exception-petroleum refiners. This is the case, even though the refining sector is one of the most energy-intensive industries in the nation.

So, my question is for you, Mr. Viard, do you think the allowance allocation structure in Waxman-Markey would increase the US market share supplied by foreign oil as compared to domestic production?

Under the Waxman-Markey bill, refiners are required to obtain allowances for two categories of emissions. The two requirements have sharply different competitiveness implications.

First, refiners are required to obtain allowances for emissions resulting from consumer use of the refined oil. This obligation imposes no competitive disadvantage on domestic refiners. Foreign refiners are subject to exactly the same economic burden because the oil they refine also requires allowances if it is used by consumers in the United States. As an administrative matter, of course, the allowances are not obtained by the foreign refiners, but instead by the party importing the oil into the United States. That administrative variation, however, makes no economic difference. The best-settled principle of public finance holds that the distribution of the economic burden of an explicit or implicit tax on an activity does not depend on the point in the production chain at which the tax is collected. The domestic refiners therefore bear no greater burden than they would if the end-users of the oil were required to obtain the allowances. Any competitive disadvantage applies to domestic end-users of the oil, because allowances must be obtained for oil used in the United States, but not oil used abroad, not to domestic refiners.

Second, refiners are required to obtain allowances for emissions resulting from their own refining activities. This obligation does impose a competitive disadvantage on domestic refiners because foreign refiners are not required to obtain allowances for their corresponding emissions. These emissions have been estimated to be 4 percent of all emissions and are therefore only a small portion of the 44 percent figure stated in the question.

In any event, free allocation based solely on past activity is not a solution for a competitive disadvantage, because such allocations simply enrich stockholders without increasing output. Conditioning the free allocation on the firm remaining in business may help preserve existing firms, but disadvantages new entrants into the industry. A possible solution is subsidies linked to output, but not to emissions. In the end, though, the only real solution to competitiveness problems is international cooperation in addressing global warming is the only real solution.

PART II – RESPONSE TO SENATOR STABENOW'S QUESTION

The Honorable Debbie Stabenow
Committee on Finance
U.S. Senate

Senator Stabenow:

Thank you for submitting a question for the record. I have set forth my response below. The views expressed in the response are solely my own and do not necessarily reflect the views of any other person or any organization.

1. I realize that there are a variety of needs for revenue to transition to a low carbon economy but is there a simpler way to distribute allowance revenue than the H.R. 2454 in order to keep costs low to the most vulnerable sectors of the economy or and what are the most important categories to distribute allocations for in order to minimize costs of greenhouse gas abatement and transition to a low carbon economy?

Furthermore, does a price collar of some variation diminish the need for certain allowance allocations that are made in H.R. 2454?

Like any system of free allowance allocation, the allocation in H.R. 2454 is deeply flawed. The allocations to firms in unregulated sectors will generally benefit stockholders, except that the allocations to firms in tradable-good sectors will be shared by workers and other producers because the allocations are linked to output. The allocations to local distribution companies will flow through to electricity consumers in accordance with the regulatory mandate, but the resulting shortfall in electricity conservation will require deeper emission reductions elsewhere in the economy, drive up the equilibrium price of allowances and increasing consumer burdens in other sectors of the economy.

If the allowances were auctioned, the resulting revenue could be used for tax cuts or transfer payments. A desirable approach might include transfer payments or per-person rebates to compensate low-income consumers, individual income tax reductions to promote economic efficiency and compensate middle-income consumers, and corporate income tax reductions to promote economic efficiency. If desired, relief could be targeted to regions that are affected more severely by cap-and-trade, either by providing larger transfer payments to residents of these areas or by providing grants to the state governments in the affected region.

A price collar would not reduce the need for free allocation because there is no need for free allocation, whether or not a price collar exists. A price collar would be highly desirable, however, for a quite different reason; it would allocate emission reductions more efficiently over time.

Efficiency requires that emissions be reduced by less in years in which such reductions are costly and by more in years in which such reductions are cheap. This is particularly true because global warming is little affected by the emissions in each particular year; it is the stock of carbon dioxide in the atmosphere, not any given year's emissions, that matters. To ensure an efficient outcome,

the price of carbon should be equal across time or follow a smooth path linked to the marginal environmental harm of emissions. The simplest way to keep the price path smooth is by imposing a carbon tax with a smooth path for the tax rate, but an alternative way is to adopt a cap-and-trade program with a tight price collar.

To some extent, the price of cap-and-trade allowances will be smoothed if allowances can be banked to use in future years. Banking is desirable, but is not a full substitute for a price collar. Firms may be reluctant to bank allowances when their future value depends upon future legislative action that cannot be predicted.

PART III – RESPONSE TO SENATOR CANTWELL'S QUESTION

The Honorable Maria Cantwell
Committee on Finance
U.S. Senate

Senator Cantwell:

Thank you for submitting a question for the record. I have set forth my response below. The views expressed in the response are solely my own and do not necessarily reflect the views of any other person or any organization.

1. What resources would the federal government require to ensure that the Local Distribution Companies (LDCs) carried out the provisions as intended in H.R. 2454?

H.R. 2454 would introduce significant federal oversight of local electricity rate regulation, as set forth in proposed Clean Air Act sections 783(b)(6) through (8) that would be added by section 321 of the bill. Each regulatory body would be required 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.

This federal oversight will likely prove to be unnecessary along one dimension and ineffective along another dimension. Such oversight will probably not be required to ensure that the value of the freely allocated allowances is flowed through to ratepayers, as that outcome would tend to arise under the average-cost principles of utility rate regulation even without federal intervention. On the other hand, such oversight will probably be ineffective in ensuring that the reduction is flowed through as a reduction in the fixed monthly charges rather than as a reduction in variable rates. If the value of the free allowances is flowed through as a reduction in variable rates, then an efficient reduction in electricity consumption will not occur. The cap-and-trade system will then

require deeper reductions in emissions elsewhere in the economy, driving up the equilibrium price of allowances and increasing consumer burdens elsewhere in the economy.

This intrusion into local utility regulation would be unnecessary if cap-and-trade allowances were auctioned. It vividly illustrates the complexity of this approach.

PART IV – RESPONSE TO SENATOR GRASSLEY'S QUESTION

The Honorable Charles Grassley
Committee on Finance
U.S. Senate

Senator Grassley:

Thank you for submitting a question for the record. I have set forth my response below. The views expressed in the response are solely my own and do not necessarily reflect the views of any other person or any organization.

1. The Congressional Budget Office has stated that if cap and trade was enacted, everyone will pay higher prices for energy and energy-related goods and services. Higher-income Americans will pay more in terms of dollars than lower-income taxpayers will. However, lower-income Americans will pay a higher percentage of their income in higher energy and energy related goods and services, so cap and trade is a regressive tax.

Dr. Viard, you have stated that the earned income tax credit could be used as a way to compensate lower-income Americans for the new tax increases under cap and trade.

However, the IRS has stated that the earned-income tax credit has a 30 percent error rate. Does that error rate concern you? Is there another way to deal with this issue other than the earned-income tax credit?

The high error rate in the earned income tax credit is a serious and long-standing concern. Because the credit is likely to remain a part of the tax system, though, it needs to be improved, whether or not it is expanded as part of cap-and-trade legislation. If such improvement occurs, it could be a suitable vehicle for relief. Alternatively, there are other ways to provide consumer relief, including expansion of the child tax credit or per-household rebates.

PART V – RESPONSES TO SENATOR HATCH'S QUESTIONS

The Honorable Orrin Hatch
Committee on Finance
U.S. Senate

Senator Hatch:

Thank you for submitting questions for the record. I have set forth my responses below. The views expressed in the responses are solely my own and do not necessarily reflect the views of any other person or any organization.

1. Let's assume that we implement this cap and trade legislation and actually reach our target reductions of CO2 emissions in the United States. Can you tell me what the specific climate reduction benefit we can expect to enjoy from all this effort?

This question relates to climate modeling and falls outside my expertise as an economist. In general, although the *existence* of an impact of carbon emissions on climate is well established, the *magnitude* of the impact is subject to significant uncertainty. It is clear that the climate reduction benefit will be much greater if other countries cooperate by reducing their carbon emissions.

[I have combined my responses to Questions 2 and 3, because they are closely interrelated.]

2. The National Rural Electric Cooperative Association estimates that my state of Utah will be the hardest hit by a cap-and-trade scheme, raising our power rates by a whopping 70 percent. Can you estimate that how much residential energy prices will rise per household?

3. That is a very high rate compared to most other states. Am I correct that the people of Utah, and those other carbon-intensive states such as West Virginia, North Dakota, and Arkansas, would have to bear a far greater burden of higher electric bills as a result of the President's climate change agenda?

Dallas Burtraw, Richard Sweeny and Margaret Walls, "The Incidence of U.S. Climate Policy: Alternative Uses of the Revenue from a Cap-and-Trade Program," Resources for the Future Discussion Paper 09-17-Rev, June 2009, study the geographical allocation of consumer burdens from a stylized cap-and-trade program. Unfortunately, their estimates refer to regions rather than individual states. They find (page 9, Table 2) that electricity prices would rise by 16 percent for the nation as a whole. The highest increase, 27 percent, occurs in the region that includes West Virginia, with a 13 percent increase for the region that includes Arkansas and an 8 percent increase for the region that includes Utah.

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 144,

December 23, 2008, study the geographical allocation of burdens from a stylized carbon tax, which would be similar to those from a stylized cap-and-trade program. They estimate (page 25, Table 2) a 22 percent increase for the region that includes North Dakota, a 21 percent increase for the region that includes West Virginia, a 14 percent increase for the region that includes Arkansas, and a 9 percent increase for the region that includes Utah.

The net burden of cap-and-trade on any given region depends on many things other than the rise in electricity prices, including the rise in other energy prices, the rise in the price of other goods and services, and the distribution of the cap-and-trade allowances. If the allowances are auctioned, the resulting revenue can be used, if desired, to offset any uneven geographical impact that would otherwise occur.

PART VI – RESPONSES TO SENATOR SNOWE'S QUESTIONS

The Honorable Olympia Snowe
Committee on Finance
U.S. Senate

Senator Snowe:

Thank you for submitting questions for the record. I have set forth my responses below. The views expressed in the responses are solely my own and do not necessarily reflect the views of any other person or any organization.

1. Mr. Viard, I am drawn to the passage in your testimony where you quote Greg Mankiw who was President Bush's Chairman of the Council of Economic Advisors and who has referred to free allocations with the formula of "Cap+Trade = Carbon tax + corporate welfare".

To the extent that allowances are allocated to industry for free, do you believe that this action could eventually undermine public support?

Which garners more transparency in a cap-and-trade system free allocations or auctions?

Can you speak to the economic efficiencies of an auction instead of free-allocation?

Finally, I'd like for you to discuss income-distribution issues related to a higher rate of auctioned allowances and how a simple per-household rebate of auction proceeds would provide a progressive form of incentives for individuals and families moving to cleaner energy and product choices.

In the short run, free allocation probably increases support for cap-and-trade by mobilizing firms and stockholders to support it. As you suggest, however, free allocation could ultimately

undermine public support because average Americans may realize that free allocation limits the tax cuts and other relief that they could otherwise receive.

An auction is far more transparent than free allocation. With an auction, revenue is raised and is then explicitly spent on the purposes that Congress selects. With free allocation, the transfer of revenue to stockholders is much less visible. To its credit, CBO has adopted budgetary scoring conventions that maximize the transparency of free allocation by recording the value of freely allocated allowances as revenue accompanied by an offsetting outlay to the entity that receives the free allocation. Clearly, however, this budgetary accounting is no substitute for the transparency of an auction. If Congress really desires (for some reason) to provide a windfall gain to stockholders, it should do so in a transparent manner by auctioning the allowances and giving the resulting revenue to firms.

An auction can be used to promote an outcome that is both more efficient and more progressive than the lump-sum transfer to stockholders that results from free allocation. Per-person rebates would be far more progressive than free allocation while tax rate reductions would be more efficient. A combination of both approaches would be best. Please see my response to Question 2 for further discussion.

2. Three of the witnesses testified today that auctioning emission allowances and giving Americans some sort of a rebate is the best approach to encourage less pollution and better results toward addressing global climate change. Mr. Keohane supports freely allocating allowances.

For all of the witnesses, I'd like your opinions on whether rebates are best accomplished through a per-household rebate or through changes to the tax rates or payroll taxes.

The relative merit of per-household rebates and changes in tax rates depends upon the purpose of the relief. The per-household rebates provide more help to those at low income levels than the tax cuts and therefore better achieve the goal of consumer relief. The tax cuts, however, are better suited to promoting economic efficiency by offsetting the work and saving disincentives caused by cap-and-trade. CBO director Douglas W. Elmendorf discussed this tradeoff in his May 7, 2009 testimony before this committee.

With full auction of the allowances, there is ample revenue to achieve both purposes. While I believe that a substantial portion of the revenue should be used to cut tax rates, I also believe that some of the revenue should be used for per-person rebates or credits directed toward low-income households. Congress can combine these approaches in any manner that it sees fit.

PART VII – RESPONSES TO SENATOR ENZI'S QUESTIONS

The Honorable Michael Enzi
Committee on Finance
U.S. Senate

Senator Enzi:

Thank you for submitting questions for the record. I have set forth my responses below. The views expressed in the responses are solely my own and do not necessarily reflect the views of any other person or any organization.

1. I have been told that a 100 percent auction could be problematic for companies who need to buy allowances to cover their emission because they will require a new cash flow that does not necessarily exist. In previous testimony before the Finance Committee, a witness noted that "any delays in pass-through of such costs to consumers could seriously disrupt their financial position."

I am extremely concerned about this potential consequence – particularly because smaller businesses will have a difficult time raising the money necessary to buy allowances. Are there specific industries that you anticipate will have more trouble raising the necessary funds?

Do you anticipate that companies will be able to easily pass through these upfront costs to consumers even under the limited auction approach in the Waxman-Markey bill?

There should be no difficulty in passing through the costs of the allowances. (Again, note that the opportunity cost of the permits will be passed through, even if the allowances are distributed free of charge.) The pass-through occurs because production declines and will therefore occur when the cap-and-trade restrictions become binding.

If firms are required to buy allowances before they are required to use them, they may incur costs before experiencing the offsetting price increases. If this occurs, the solution is to defer payment for the allowances, not to excuse payment altogether through free allocation. I do not have information on which industries might have greater trouble raising funds.

2. Some electrical power generators have the ability of switching to a more costly low-carbon fuel source, but there is no commercial-scale low-carbon source to fuel the nation's 250 million cars or the millions of trucks and buses and airplanes. In addition to raising consumer's electricity prices, this will cause them to see price increases at the gasoline pump – in part because of the way the allocation approach of Waxman-Markey allocates permits to refiners. Is there a better way to allocate allowances to ensure that gasoline prices do not increase substantially?

If carbon dioxide emissions cause harmful effects through global warming, then the efficient response involves raising the cost of every activity that results in such emissions. An increase in gasoline prices is therefore an appropriate part of the response. If gasoline or any other sector is shielded from the appropriate price increases, too few emission reductions occur in that sector. To meet the national cap on emissions, deeper reductions must then occur in other sectors, driving up the equilibrium price of allowances. Total national costs increase because emission reductions occur at higher cost in the other sectors rather than in the shielded sector.

It should be noted, however, that H.R. 2454 will cause a needlessly large increase in gasoline prices because it shields the electricity sector, by allocating free allowances to local distribution companies and requiring that the value of the allowances be flowed through to ratepayers. Costs are therefore increased in all other sectors. CBO director Douglas W. Elmendorf noted in his May 7, 2009 testimony before this committee that shielding the electricity sector is likely to result in greater gasoline price increases.

An efficient response would allow both electricity and gasoline prices to rise to reflect their carbon cost. Shielding either sector increases the burden in the other and also raises the total national costs of reducing emissions.

3. A "cap and trade" system is promoted as a market-based mechanism for putting a price on greenhouse emissions. However, the Waxman-Markey bill establishes a "cap and trade" system and predetermines who will be the large buyers and the large sellers; in other words, it chooses the winners and losers.

For example, refiners are held responsible for 44% of emissions, including the refinery emissions (about 4%) as well consumer emissions from planes, trains, automobiles, heating oil, and other petroleum use. Yet refiners are allocated only 2% of allowances, with an additional 0.25 percent allocated for small refiners. In contrast, some other sectors receive free allowances that match or exceed their obligation.

Does this type of legislation add overall costs, which are eventually borne by individuals and businesses, if the distribution of free emission allowances to various sectors are unbalanced?

The free allocation of allowances in unregulated markets does not undermine the market-based nature of cap-and-trade. In the relevant sense, the market still chooses the winners and losers, namely which emission reductions are achieved and which are not achieved. The national costs of reducing emissions are unchanged.

The fundamental flaw of free allocation in unregulated markets relates to the use of the implicit revenue raised by cap-and-trade. With free allocation, it is used to make lump-sum transfers to stockholders rather than to provide consumer relief or lower marginal tax rates. This fundamental flaw is equally present, whether or not the allocation is "unbalanced" among different groups of stockholders.

Free allocation in price-regulated markets can increase the total national costs of emission reduction if the value of the free allowances is flowed through to consumers. The failure of prices to rise efficiently prevents an appropriate amount of emissions reduction from occurring in the regulated sector, which then requires deeper reductions elsewhere in the economy. The inefficient allocation of reductions across sectors increases national costs. As discussed in my response to Question 2, H.R. 2454 makes this mistake in the electricity market.

As indicated by your reference to unbalanced allocations, the free allocation allows ample scope for political lobbying ("rent-seeking" in economic terminology) by different stockholders, seeking higher shares of the allowances. Because there is no principle indicating that any stockholders should receive any allowances, there is no principled way to fairly allocate allowances among different groups of stockholders.

4. Can a cap and trade system be designed that does not increases costs to consumers and that achieves the intended environmental benefits of lowering emissions?

An increase in the prices of carbon-intensive consumption is an essential part of cap-and-trade (or a carbon tax) and cannot be avoided. Limiting price increases in one sector simply magnifies the price increases in other sectors, as discussed in my response to Question 2. It is possible, however, to offset the consumer burdens from these price increases through tax cuts or transfer payments, provided that the allowances are auctioned and the revenue used appropriately.

5. Your testimonies suggest that there is much support among economists for auctioning allowances as opposed to allocating those allowances freely. Can you comment further on the design of the H.R. 2454? Are there specific industries that will clearly benefit from the free allocations? What industries will be harmed by the current policies?

As discussed in my response to the other questions, the free allocation is flawed because it leads to stockholder windfalls in the unregulated sectors and to inefficiently low electricity prices in the regulated electricity sector. I do not have specific information about effects at the industry level.

6. In your experience examining other carbon management systems, has the government been successful in picking where allowances should be allocated freely or have you seen problems with the allocations? I know that in the European Emissions Trading Scheme, some companies experienced windfall profits and I would be interested to know if that experience is typical.

The problems of free allocation are inherent to the concept and cannot be avoided through a "successful" allocation. In unregulated markets, free allocation simply results in a lump-sum gift to stockholders. As discussed in my response to Question 3, because there is no economic logic to making such gifts to any stockholders, there is no right way to allocate such gifts among different groups of stockholders. Windfall profits are a necessary consequence of free allocation in

unregulated markets; such windfalls have occurred in the European system and also in the acid rain program in the United States.

The free allocation to local distribution companies is also flawed, although for different reasons. As discussed in my response to Questions 2 and 3, this prevents electricity prices from rising appropriately and thereby results in greater costs in other sectors and an increase in total national costs of reducing emissions.

Sincerely,

Alan D. Viard, Resident Scholar
American Enterprise Institute for Public Policy Research

American Forest & Paper Association

American Forest & Paper Association
Statement Submitted for the Record

Senate Finance Committee
Hearing on Climate Change Legislation: Allowance and Revenue Distribution
August 4, 2009

Introduction

The American Forest & Paper Association (AF&PA) appreciates the opportunity to comment on the topic of today's hearing in the Senate Finance Committee. AF&PA is the national trade association of the forest products industry, representing pulp, paper, packaging and wood products manufacturers, and forest landowners. Our companies make products essential for everyday life from renewable and recyclable resources that sustain the environment. The forest products industry accounts for approximately 6 percent of the total U.S. manufacturing GDP, putting it on par with the automotive and plastics industries. Industry companies produce $200 billion in products annually and employ approximately 1 million people earning $54 billion in annual payroll. The industry is among the top 10 manufacturing sector employers in 48 states.

Since early 1997, more than 170 pulp and paper mills have closed in the U.S. The recent downturn in the nation's economy, especially the housing market, has only compounded these challenges. Since 2006, more than 300,000 forest products employees have lost their jobs—almost a quarter of the industry's total workforce. These jobs are critical for the survival of the rural communities where most of our forest products facilities are located.

On the topics of specific focus of this hearing, AF&PA believes that:

- Competitiveness and international leakage concerns largely can and should be avoided by distributing, without charge or auction, a sufficient number of allowances to all facilities under the cap, in particular to affected energy intensive and trade exposed industries, such as the forest product industry.

- Significant indirect costs exist due to demand pressure for fuel and feedstocks (natural gas, biomass), in addition to the direct cost of compliance for regulated industry facilities. The Senate bill should include provisions to address these additional costs through additional allowances or credit pool as they are not addressed by the current allowance allocation level.

- For the forest product industry's manufacturing facilities, the allocation of emission allowances should be based on a facility's historical emissions rather than performance standards. The performance based allocation formulas as currently outlined in the House-passed American Clean Energy and Security Act are unnecessarily complex and potentially unworkable for the forest products industry.

- A border tax or other border measures are highly imperfect, will have their own negative repercussions, and should be avoided.

A Commitment to Environmental Stewardship

From carefully managing private forests that absorb carbon dioxide, manufacturing recyclable products from a renewable resource that stores carbon, to producing and using renewable energy, AF&PA member companies have a longstanding commitment to environmental stewardship.

Greenhouse Gas Reductions
From 2000 to 2006, working together AF&PA members voluntarily reduced their carbon dioxide (CO_2) emissions intensity by 14 percent. Our members collectively reduced their direct greenhouse gas emissions 34 percent. Approximately half of this reduction can be attributed to improvements in greenhouse gas emissions, such as efficiency improvements or reduced fossil fuel use, and half can be attributed to decreases in production and changes in the baseline from the year 2000.

Renewable Energy
The forest products industry is the leading U.S. producer and user of renewable, carbon neutral biomass energy. In fact, the energy we produce from biomass presently exceeds the total energy produced from solar, wind, and geothermal sources combined. Sixty-five percent of the energy used at AF&PA member paper and wood products facilities is generated on-site from carbon-neutral biomass. The industry also is a leader in combined heat and power technology (CHP) with highly efficient co-generation of electric power, much of it from biomass, both for internal use and for sale to the power grid.

Managed Forests and Forest Products
Managed forests, just like all forests, absorb CO_2 from the air and store it as carbon. In the U.S., forests and forest products store enough carbon each year to offset approximately 10 percent of U.S. CO_2 emissions. Approximately one-third of the carbon in wood harvested for the industry ends up in long-lived products such as lumber, wood-based panels, books, and archived paper and is stored in some cases for decades, even centuries. EPA estimates that the amount of carbon stored annually in forest products in the U.S. is equivalent to removing more than 100 million tons of CO_2 from the atmosphere every year. Manufactured products that store carbon make a significant contribution to reducing greenhouse gases in the atmosphere.

Recycling
Our industry is also a leader in recovering and reusing paper fiber. Paper recycling reuses a renewable resource that sequesters carbon and helps reduce greenhouse gas emissions. Greenhouse gas reductions result from avoided methane emissions and reduced energy required for a number of paper products. In addition, recovering paper extends the fiber supply. The amount of paper being recovered far exceeds the amount sent to landfill sites. Having achieved its previous goal of 55 percent, the industry has set a new goal of 60 percent recovery of all paper consumed in the U.S. by 2012. Achieving this goal will lead to reductions in greenhouse gas emissions.

Allocating Allowances to Energy Intensive Manufacturers

Allocation of Allowances

Given the energy intensiveness of the forest products industry and its significant use of carbon neutral biomass fuels, AF&PA members will be significantly impacted by the energy and climate change legislation. How these programs are designed will determine whether the forest products industry can remain competitive in the global marketplace. Ensuring that legislation recognizes the forest products industry's production and use of renewable energy, forest and product sequestration, recycling, and addresses competitiveness concerns via an adequate allocation of allowances is essential.

AF&PA believes that competitiveness and international leakage concerns largely can and should be avoided by distributing without charge or auction a sufficient number of allowances to all facilities under the cap. If Congress ultimately proceeds with a program designed to collect revenues from covered sources, AF&PA supports inclusion of a method to mitigate competitiveness concerns via an adequate allocation of emission allowances for affected energy intensive industries such as forest products.

AF&PA does not support the use of auctions within a cap and trade system. Allowances should be allocated to all sectors covered under the cap and trade program as opposed to having to purchase allowances at auction. Requiring entities to purchase allowances at auction will raise the cost of the program without providing additional significant emissions reductions. Furthermore, auctions reduce the funds available for regulated entities to invest in GHG reductions. Where elimination of auctions across the board is not feasible, elimination of auctions for the manufacturers of global commodities, like pulp and paper, remains important in reducing one of the largest compliance costs facing our industry.

For example, in the pulp and paper portion of our business (the portion of the industry with the majority of emissions), our members' combined annual net income averaged about $4.3 billion per year from 2000-2007. Meanwhile, in 2006, members' pulp and paper facilities emissions were 61.5 million metric tons carbon dioxide equivalents. At an allowance price of $30, purchasing allowances at auction would cost pulp and paper manufacturers nearly two billion dollars or almost half of their net income. At $50 per ton, approximately three-fourths of the pulp and paper sectors' profits would be eliminated. No manufacturer of low margin commodities in an international marketplace could sustain this

impact. It is likely that many facilities would shut down, and production (and jobs) would shift to unregulated foreign countries. It is also important to note that net income levels will be much lower than stated above for the foreseeable future due to the recent economic downturn.

Language in the House-passed climate change legislation limits emissions allowances to 13.5 percent of the available pool for most of the program. Earlier proposals allocated 15 percent of allowances to energy-intensive trade-exposed industries. This is a substantial difference that amounts to hundreds of millions of allowances valued at billions of dollars over the life of the program. Any Senate legislation should at least restore the 15 percent allocation for direct cost increases and extend that allocation to 2030 to allow for the adoption of new low-GHG emitting technologies that are currently unavailable.

Allocation or Rebates for Indirect Costs

We appreciate the House-passed bill's recognition of indirect costs for purchased electricity price increases. Additional, significant indirect costs exist due to demand pressure for fuel and feedstocks (natural gas, biomass). EIA projects that biomass demand consumption for generated electricity will increase 450 percent or nearly five-fold between 2008 and 2020, not taking into account passage of national RES or climate change legislation. This increase amounts to half of what the entire forest products industry currently consumes. With fiber already the number one cost for the industry, increased biomass may present significant economic challenges. The Senate bill should include provisions to address these additional costs through additional allowances or credit pool as they are not addressed by the current allowance allocation level.

Allowances Based on Actual Emissions

AF&PA believes that the allocation of emission allowances for forest products facilities should be based on a facility's actual emissions rather than performance standards. The performance based allocation formulas as currently outlined in the House-passed American Clean Energy and Security Act are unnecessarily complex and potentially unworkable for the forest products industry.

Pulp and paper processes are not comparable at the six digit North American Industry Classification System (NAICS) code level. Pulp and paper products are produced from a variety of fiber blends and by different manufacturing processes with distinctly different energy profiles which makes comparisons among different manufacturing facilities difficult. Furthermore, performance benchmarks defeat the intended purpose of a cap and trade policy which is to allow the emissions reductions to take place at the lowest cost source. When potentially applied on an international basis, many U.S. manufacturers sector efficiency averages would not compare favorably to those of their international trading partners (in the European Union, for example) thus putting U.S. manufacturers at a further competitive disadvantage.

Facilities have different ages, sizes, and technologies and older and smaller facilities are generally more inefficient. By imposing a proportionately higher compliance burden

on such facilities, those operations would be potentially forced out of business by legislated action rather than market forces. In addition, facilities have access to different types of energy depending on the region in which they are sited.

An overly complex allocation method is unnecessary particularly when resulting environmental impacts are determined by the cap and not the allocation. Allocations based on a facility's historical emission are much simpler, particularly for the forest products industry, create the same incentives for emissions reductions, and can be supported by robust data and tied to production levels to ensure no over-allocation occurs.

Border Measures

A border tax or other border measures are highly imperfect, will have their own negative repercussions, and should be avoided. If a border tax is levied on imports, it is likely that developing countries will find a way to protect their industries. Experience teaches us that even if we secured a favorable WTO ruling on a border tax, there are many ways for governments and companies to work around it to protect their jobs and maintain their export industries. Governments with large publicly-owned forest estates can reduce the price of wood fiber concessions to their forest products companies. Other WTO-legal subsidies exist that countries could use to offset the cost of a U.S. border tax. Moreover, a tax at the U.S. border will not affect competition in third country markets unless the added cost of meeting a U.S. climate change regime is rebated to U.S. exporters at the border. Finally, U.S. exports could be subject to border measures by countries with more stringent GHG regulations than found in the U.S.

There is no consensus on whether a border adjustment on energy intensive products imported into the U.S. from countries that do not regulate carbon emissions – in the form of a tariff, taxes, or emission certificates – would be found in violation of GATT/WTO rules. The legality of a given border measure would depend on its specific design and the types of climate policies in place in the exporting country. The legal uncertainty ultimately would be resolved only through a decision by a WTO panel responding to a challenge by other WTO parties.

Imposing a tariff on imports of products from countries that do not have carbon restrictions will be in violation of WTO rules. The WTO imposes two basic rules of nondiscrimination: Article I establishing the "most favored nation" rule and Article III, the "national-treatment" rule. Under the "most favored nation" rule, WTO members are prohibited from discriminating between imports from different countries of origin. So imposing different rules to imports from different countries is considered to be trade distorting and in violation of WTO rules.

Under the "national-treatment" rule, WTO members must ensure that any taxes or regulations imposed on imports will treat the imports "no less favorably" than the treatment it gives to domestic products. One way this can happen is if the standard for

determining the number of allowances required differs for imports and domestic products.

To survive a WTO challenge, border measures will have to qualify for an environmentally related "exception" under GATT/WTO Article XX. The border measure will have to be crafted in a way that its primary purpose is to meet the objective of reducing greenhouse gas emissions, and not to protect the competitiveness of U.S. manufacturing. The border measure will have to be designed in the least trade restrictive manner. This objective might require the determination of the carbon content of a product case-by-case, manufacturing facility-by-facility. Otherwise, a border measure could be considered to be discriminatory and in violation of WTO trade rules if it is applied to imports of products based on the average energy intensity or carbon intensity in the exporting country's sector. The sheer complexity of keeping track of the carbon content of a product throughout the production chain in countries that have limited capacity for tracking statistics or consider such statistics on a facility-by-facility basis to be business confidential, renders such a tailor-made monitoring and reporting system at the border unmanageable.

A post-2012 agreement with GHG mitigation commitments even if signed by all major countries, both developed and developing, will not solve the competitiveness issue. The agreement that China and India might agree to will likely be less stringent than what the U.S., the European Union, Japan, and other developed countries would commit to since a key principle of the United Nations Framework Convention on Climate Change is "common but differentiated responsibility." Such an outcome makes it more critical that allowances should be allocated to the forest products industry that cover all expected increased costs in direct and indirect energy, as well as raw materials, resulting from a cap-and-trade law.

The forest products industry is an internationally competitive industry with a commitment to environmental stewardship including greenhouse gas reductions. Our products are made from renewable and recyclable raw materials; we are the nation's leader in renewable energy production and support programs to ensure sustainable forest management. We urge the Senate Finance Committee to provide adequate allowances to the trade-exposed, energy-intensive industries, such as forest products, to account for resulting cost increases from a cap-and-trade bill that may jeopardize the competitiveness of our products both domestically and internationally.

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Statement of the AMERICAN PUBLIC POWER ASSOCIATION (APPA) for the SENATE FINANCE COMMITTEE'S Hearing Entitled "Allowance and Revenue Distribution"

August 5, 2009

The American Public Power Association (APPA) appreciates the opportunity to provide the following statement for the record for the Senate Finance Committee's hearing on allowance and revenue distribution. APPA represents the interests of more than 2,000 publicly-owned electric utility systems across the country, serving approximately 45 million Americans. APPA member utilities include state public power agencies and municipal electric utilities that serve some of the nation's largest cities. However, the vast majority of these publicly-owned electric utilities serve small and medium-sized communities in 49 states, all but Hawaii. In fact, 70 percent of our member systems serve communities with populations of 10,000 people or less.

Overall, public power systems' primary purpose is to provide reliable, efficient service to their local customers at the lowest possible cost, consistent with good environmental stewardship. Public power systems are locally created governmental institutions that address a basic community need: they operate on a not-for-profit basis to provide an essential public service, reliably and efficiently, at a reasonable price.

Less than one-third of public power utilities own generating capacity, and so most public power utilities are dependent on purchased power or are considered "net purchasers of power." As for fuel mix, public power generators produce power from a diverse mixture of fuels. For example, in 2007, public power utilities' "actual generation" (as opposed to generating capacity) consisted of 46% coal, 18% hydropower, 17% nuclear, 16% natural gas, 1% oil, and 2% other (which is primarily renewable fuels other than hydropower). It should be noted that APPA supports maintaining a diverse fuel mix under any greenhouse gas reduction regime and that none of the information contained in this statement should be viewed as a preference for one fuel over the other.

While there are many important and controversial questions facing the 111th Congress, one of the most important to the electric utility industry is potential passage of a federal mandatory greenhouse gas (GHG) emissions reduction program to address climate change. APPA supports federal legislation to reduce GHG emissions, but recognizes the difficulty of addressing this issue in a comprehensive manner that achieves the desired environmental results while protecting the American economy and consumers. APPA, therefore, appreciates the Committee holding this hearing to discuss climate issues in general and allowance revenue and distribution more specifically. During the House Energy and Commerce Committee's debate on H.R. 2454, APPA expressed strong concerns with the bill; specifically, the distribution of free allowances to merchant coal generators, and the legislation's impacts on consumers and the reliability of the electric system. APPA also stressed the importance of allocating allowances at no cost to the electric sector rather than distributing them through an auction. These issues are discussed in further detail below.

APPA believes allowances should be allocated for free to local distribution companies (LDCs) rather than auctioned for a number of reasons, but primarily because of the unnecessary cost to consumers of an auction. Further, the electric utility sector should receive the amount of allowances it needs to operate under the targets and timelines established without having to fuel switch to natural gas until the necessary technology is available to implement wide-scale carbon, capture and storage and other types of innovative technologies to enhance base-load power generation. An auction unfairly disadvantages small, not-for-profit entities like public power electric utilities, and favors large, for-profit national and multi-national corporations. Under an auction, those entities that can afford to pay more are rewarded with allowances, and those that cannot match the auction price are left with either inadequate access to electricity or high prices. Moreover, an auction would expose our consumers to the risks of unpredictable cost increases and heightened regional economic inequalities.

One of the rationales we have heard for relying so heavily on an auction is that the legislation should avoid giving industry a "windfall profit" at the expense of consumers. This concern arose from experience with the European cap-and-trade system where many generators included the market cost of allowances in their electricity prices even though they were allocated allowances and did not pay for them. Allocating allowances to load-serving entities, rather than fossil fuel-fired generators, eliminates this concern. Moreover, in the case of not-for-profit, consumer-owned public power entities, we cannot reap any windfall or other profit by definition. Public power entities operate at cost, and any additional costs (such as buying allowances at an auction) will be passed directly to consumers, while any costs avoided result in direct savings to our consumers. These additional costs will be imposed on regions of the country most economically impacted by climate change legislation such as those heavily dependent on coal.

Additionally, the annual emissions cap will ensure reductions in emissions regardless of whether allowances are auctioned or allocated. Some parties are concerned that customers will not alter their behavior to reduce consumption unless their cost of energy increases substantially (through the addition of allowance prices). However, utilities and their regulators can agree to substantial investments in energy-efficiency programs to achieve the same goal of reduced electricity consumption.

Once the decision is made to allocate allowances, we also believe it is important to allocate enough allowances for the utility sector's emissions profile to avoid fuel switching as discussed above. Such a result would put tremendous upward pressure on the cost of natural gas. Finally, APPA would urge the Committee and the full Senate to ensure that allocations flow directly to the local distribution companies whose retail rates are regulated at the state and local levels as opposed to providing some allowances to wholesale or "merchant" generators, as is the case in H.R. 2454.

The arguments made by the generators to support their request for allowances cannot be substantiated. These companies say they need allowances to cover their "net compliance costs," but there is no commercial technology available to remove CO2 emissions from an existing generator. Free allowances will not help to keep generators with high carbon emissions in operation – even if that were desirable. If carbon prices are too high, the company could simply

retire its generator and keep the value of the allowance stream for its shareholders – like a "golden parachute."

Regardless of whether the allowances are allocated or auctioned to generation owners in deregulated markets, consumers will see no benefit. Under a free allocation, generators will just add to their electricity price the opportunity cost of holding, rather than selling, the allowance. Coal and natural gas plants will therefore simply add an estimated market price of the allowance to their price charged for electricity.

Because these generators sell into the organized wholesale electricity markets, the structure of these markets will further exacerbate the increase in the cost of achieving carbon reduction goals by raising the price of all electricity sold in these markets – including renewable and nuclear generation which emit no carbon – and severely distort the market price signals for carbon that are integral to the success of any cap and trade program.

In the deregulated Regional Transmission Organization (RTO) markets covering much of the country, electricity is sold in spot markets priced by a single clearing price auction or under relatively short contractual arrangements greatly influenced by those spot market prices. Fossil fuel-fired electric generating units (natural gas or coal) set the market clearing price for virtually every time period. For example, in the largest RTO, PJM, coal plants are the marginal units approximately 78% of the time[1]. The result is that all of the electricity dispatched in those hours receives the price set by the coal units, even though the cost of generating electricity from other units, such as nuclear units, is much lower. Nuclear power plants, which operate whenever available, emit no carbon, but very rarely set the clearing price, will be paid this extra cost of the allowance – receiving excess revenues while continuing to operate as always.

At a time when consumers are facing extreme hardships from increasing energy costs and shut-offs of utility service, implementation of a carbon mitigation policy must be done in a manner that achieves needed emission reductions at the least cost to consumers. Allocation of allowances to generators in the deregulated wholesale electricity markets will only raise the cost for consumers without guaranteeing any corresponding reduction in carbon emissions.

To further support the arguments for not giving allowances to merchant coal generators, APPA along with the National Association of Regulatory Utility Commissioners, the National Rural Electric Cooperative Association and the National Association of State Utility Consumer Advocates, on July 15, 2009 released the **Synapse Study**[2] which was prepared by Synapse Energy Economics, Inc. of Cambridge, MA. The study shows that the impact of new greenhouse gas cap-and-trade policies across the country will vary greatly depending upon how carbon allowances are allocated and the electricity market structure. The study demonstrates that any allocations given to merchant generators in deregulated markets will result in windfall profits without taking any steps to reduce carbon emissions. The additional "unproductive" (i.e. resulting in no emissions reductions) costs imposed on consumers is not only paid for by those

[1] PJM State of the Market Report--2008

[2] http://www.appanet.org/files/pdfs/synapsestudyrelease71509.pdf

consumers in RTO regions, but also by consumers in non-RTO regions as the allowances going to merchant generators is subtracted from the total allowances allocated to LDCs, so LDCs are getting fewer allowances than they need throughout the country, thereby driving up prices everywhere.

While all four sponsors of the study support enactment of affordable climate legislation that protects consumers and prompts investments to reduce emissions and spur economic growth, all four groups also recognize that cap-and-trade legislation will inevitably raise electricity rates and that there are many individual provisions in H.R. 2454 that have the potential to raise or lower rates while promoting energy efficiency or clean energy programs. The groups acknowledge that a number of studies have been done to estimate consumer costs but this report is the first to attempt to address how allocations to merchant generators, instead of LDCs, can drive prices up higher than necessary by imposing unproductive costs on consumers with no additional benefit to the environment.

The report analyzes three different scenarios for allocating emission allowances and determines that the scenario that produces the lowest cost for consumers is one in which all emission allowances are allocated for free to LDCs, the utilities that deliver power to the customer. Although this scenario will likely result in higher electricity prices, it will also allow regulatory entities to use benefits from the allowances for programs that can lower the burden on consumers. Allocating allowances to merchant generators would needlessly increase costs to consumers because it reduces the number of allowances available to LDCs which are required to use the allowances to mitigate consumer costs.

The report, based on credible electricity plant-specific data from the Environmental Protection Agency, aggregates consumer and producer impacts by regions of the country. It demonstrates how allocating allowances to merchant generators will increase unproductive costs for consumers. The report states: "One particularly dramatic manifestation of these effects is the windfall profits that would accrue to the owners of unregulated non-emitting generators (i.e. nuclear and hydroelectric) under cap-and-trade. This windfall would amount to several billion dollars annually."

Thank you for your time and consideration and we look forward to working with the Committee as this important process moves forward.

BEFORE THE
COMMITTEE ON FINANCE
UNITED STATES SENATE
WASHINGTON, D.C.

Climate Change Legislation: Allowance and Revenue Distribution

Comments of the Cargo Airline Association

August 6, 2009

Mr. Chairman and members of the Committee: My name is Steve Alterman and I am the president of the Cargo Airline Association ("the Association"), the nationwide voice of the all-cargo air carrier industry.[1] I also have the honor of serving as the current Chairman of the FAA's Environmental Subcommittee of the Agency's Research, Engineering and Development Advisory Committee (REDAC). As a key segment of the air transportation industry, the all-cargo carriers recognize the growing importance of addressing our industry's contribution to global climate change. At the same time, especially in a time of global economic uncertainty, any environmental legislation must take care not to impair our ability to continue investing in a modernized aviation system. We appreciate the opportunity today to comment on climate change legislation as the Committee considers issues involved with allowance and revenue distribution.

Background

The nation's aviation community plays a pivotal role in the United States economy. Indeed, the industry represents approximately 5.6% of the U.S. Gross Domestic Product (GDP); contributes over $1.2 trillion annually to the U.S. economy and is responsible for approximately 11 million jobs.[2] In addition to these economic facts, the industry has been in the forefront of addressing environmental issues associated with our operations. To a large extent, of course, the environmental record of the entire aviation community is a result of a search for greater fuel efficiency in an era of generally rising fuel prices. Nevertheless, the environmental benefits of this quest for fuel efficiency cannot be overlooked. For example:

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[1] U.S. air carrier members of the Cargo Airline Association are ABX Air, Atlas Air, Capital Cargo, FedEx Express, Kalitta Air and UPS Airlines.

[2] FAA, *The Economic Impact of Civil Aviation on the U.S. Economy* (October 2008). This report is available at:
http://www.faa.gov/about/office_org/headquarters_offices/ato/media/2008_Economic_Impact_Report_web.pdf

- Emissions from aircraft now account for less than 3% of the total U.S. Greenhouse Gas emissions.[3]
- Over the past 40 years, fuel efficiency has improved by over 70%[4] and, compared to 2000, in 2007 the U.S. commercial airlines consumed 3% **less** fuel while transporting over 20% **more** passengers and cargo.

Significant attention has been paid to industries other than aviation in the climate change debate with respect to allowance allocation and distribution. While aircraft minimally contribute to emissions, we stand to be impacted greatly and continue to be very invested in improving the future.

Addressing the Future

While aviation's accomplishments are significant, we recognize that more must be done to meet the environmental challenges of the future. Many of the necessary improvements will come from advances in technology and the implementation of FAA airspace modernization initiatives. This process requires the cooperation of all parties to the aviation environmental debate – industry, Congress and the Administration. Accordingly, an FAA Reauthorization bill in this Congress becomes an environmental imperative. The substantive provisions of all versions of FAA Reauthorization contain significant environmental initiatives that require both authorization and funding – including a joint industry/government initiative to develop, test and certify alternative aviation fuels that may well be the most promising way of addressing aviation emissions in the future. In addition, FAA Reauthorization will help to advance the move toward the airspace system of the future. This system will permit more direct flight paths, more efficient landing trajectories and better use of movements on the airport surface. In turn, all of these results will save fuel and reduce emissions that contribute to global warming. In the longer term, a new generation of aircraft and aircraft engines being developed by industry and NASA will further help reduce aviation's environmental footprint.

"Cap and Trade" and its Impact

How does all this activity impact the ability of the U.S. aviation sector to remain competitive? Simply stated, the entire aviation industry is extremely capital intensive and any move to impose significant additional costs on an industry already suffering in today's economy will reduce the industry's ability to make the investments necessary to service customers around the world. Unfortunately, some of the initiatives now being advanced for dealing with global climate change will have this negative effect. Specifically, the House of Representatives has already passed legislation that includes a cap and trade regime that potentially will have a severe dampening effect on aviation's global competitiveness. (See, H.R. 2454, the Waxman-Markey Bill). This bill would impose an "upstream" tax on aviation, with the industry forced to buy carbon credits

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[3] This figure includes all segments of U.S. aviation, including commercial aviation, general aviation and the military. See, *Inventory of Greenhouse Emissions and Sinks: 1990-2006*, U.S. Environmental Protection Agency (April 15, 2008).

[4] International Civil Aviation Organization, *Environmental Report 2007*, page 107.

from fuel producers who will pay the fees directly (or in a secondary market that will undoubtedly emerge). At least for aviation, this method of attempting to deal with global climate change is extremely problematical. Some of the obvious downsides of such a cap and trade system are:

- As noted above, such a system will, in effect, impose a significant additional tax burden on an already heavily taxed industry.
- These taxes will inhibit the ability of the industry to make the capital expenditures necessary to take advantage of a modernized airspace system – a system that will provide significant environmental benefits.
- As we understand the current proposals, they will potentially funnel monies collected to a variety of programs – none of which have any relation to aviation or modernization of the aviation system.
- The bureaucracy necessary to administer any cap and trade program will siphon off a significant portion of any funds collected.
- A cap and trade system is subject to market manipulation.[5] Indeed, the potential effects of establishing carbon credits as an investment tool (a result of enactment of H.R. 2454) may mirror the current wild swings of oil prices as speculators, not the natural effects of supply and demand, set the price of oil to all consumers.

Potential Alternatives to "Cap and Trade"

Faced with these facts and potential pitfalls, is there another way for aviation to meet its environmental responsibilities, while, at the same time, continuing to invest in modernization? We believe that there is. Rather than being subjected to a cap and trade system, a tailored **revenue-neutral carbon tax** for the commercial airline industry appears to make more sense.[6] Under such a system, the commercial airline industry could be further directly taxed on its use of aviation fuel (the source of pollutants contributing to global climate change),[7] with these levies offset by a corresponding decrease in the existing excise taxes paid by the airlines.[8] Such a scheme would provide a powerful incentive to modernize aircraft fleets, while, at the same time, retain the same overall level of industry taxation.[9] In addition, the funds collected could be used to assist in the effort to convert the nation's air traffic system into one based upon satellite technology rather than the existing reliance on decades-old ground-based radar. And, since such taxes would be collected at the pump, virtually 100% of the proceeds could be

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[5] See, for example, op ed piece by Rep. Peter DeFazio in the January 27, 2009, edition of the *Oregonian*.

[6] If a cap and trade system is enacted, however, with respect to aviation it should contain "safety valve" provisions to protect carriers if the price of oil escalates past a predetermined level and funds collected should be transferred to the Aviation Trust Fund for use in system modernization.

[7] Commercial airlines currently pay a fuel tax of 4.3 cents per gallon.

[8] The existing excise tax on air cargo is a 6.25% airway bill levy.

[9] We recognize that variations of the carbon tax possibility set forth herein have been suggested by various parties to the global climate change debate. Each of these other proposals should be analyzed for their merits and their impact on U.S global competitiveness.

used on aviation programs that benefit the environment.[10] As noted by the non-partisan Congressional Budget Office (CBO), "A tax on emissions would be the most efficient incentive-based option for reducing emissions and could be relatively easy to implement."[11] Further, the GAO's recent report on Aviation and Climate Change, asserted "Economic research indicates that an emissions tax is generally a more economically efficient policy tool to address greenhouse gas emissions than other policies, including a cap-and-trade program, because it would better balance the social benefits and costs associated with the emissions reductions. In addition, compared to a cap-and-trade program, an emissions tax would provide greater certainty as to the price of emissions."[12]

Conclusion

The challenge of addressing global warming, while at the same time remaining financially stable, is perhaps one of the most difficult balancing acts that commercial airlines currently face. On the one hand, we must be able to meet the demands of businesses throughout the world. On the other hand, in planning to meet the requirements of our customers, there must be an environmental overlay on all corporate decision-making. On the government side, we understand the reasons that legislation is being considered to ensure that global climate change is addressed – and addressed as expeditiously as possible. But that legislation must take care not to cripple an industry that is necessary for economic recovery and that has a long-standing record of environmental sensitivity.

We recognize that the suggestions made herein are broad overviews and that the details of any final plans to address global climate change will require difficult negotiations among both industry and government representatives. For our part, we stand ready to engage in this necessary dialogue. If the Committee, or its staff, wants to discuss these issues further, please do not hesitate to contact us.

Thank you very much.

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[10] Other, ancillary, issues that should be included in the discussion of aviation's place in the global warming debate include (1) the role of the International Civil Aviation Organization (ICAO) and its ongoing attempts to establish international standards for aircraft emissions that relate to climate change and (2) the need for any federal action in this area to preempt any state and local action that would result in a patchwork quilt of regulations on an industry that operates nationwide.

[11] See, *Policy Options for Reducing CO2 Emissions*, Congressional Budget Office, February 2008.

[12] See, *Aviation and Climate Change*, General Accountability Office Report GAO-09-554, page 42, June 2009.

Statement for the Record, on hearing entitled "Climate Change Legislation: Allowance and Revenue Distribution," 8-04-09

Kalen Pruss
Avaaz.org DC Action Factory
518 4th St. SE
Washington, DC 20003

We attended today's hearing dressed in Strongman costumes in order to embody our demand that the climate bill be made "stronger" in the Senate. The Strongman costumes remind Senators and staffers that the ACES bill passed by the House is not enough; we need a stronger bill that mandates aggressive and immediate action to cull global warming and stimulate our green energy economy.

A stronger bill must provide for:

- **HARDER Oversight on Coal Plants through the EPA**
  The Senate must empower the EPA to set performance standards for old dirty power plants so that polluters are held accountable. Under the ACES Act, the EPA can only regulate the emissions of *new* coal plants.

- **BETTER Investments in International Measures**
  The United States will only be taken seriously at international negotiations if US legislation allocates at least 5% of allowances each to adaptation and clean technology transfer. Each of these measures receives only 1% of the funding from ACES, rather than the 5% needed to bolster the legislation and make the US stance palatable on the international stage. This is a relative policy vacuum and a fundamental area that the Finance Committee must address.

- **FASTER Emissions Reductions Targets: 40% by 2020**
  In order to have a chance of avoiding catastrophic climate change, all developed countries must reduce carbon emissions 40% below 1990 levels by 2020. This will also improve the US bargaining position at UN negotiations. At its best, the ACES Act only reduces U.S. emissions 17-23% below 1990 levels by 2020.

- **STRONGER Leadership in the Senate and a Stronger Bill**

In a room full of dirty-energy lobbyists, many whom paid line-sitters up to $40.00 an hour to wait in line almost 24 hours in advance, our presence in the hearing is critically important. As young people, we are the constituents who must live with the environmental and economic repercussions of inaction. Moreover, as young people our only economic stake in the climate bill is that it will provide for a rapid transition to a clean energy economy. No one is paying us to attend these hearings; we are not trying to play the democratic system to maintain dirty energy subsidies that benefit our employers. We are only trying to guarantee the health and wealth of our country and our world—and to make sure that we have jobs as we graduate from college!

Unemployment is at 15 percent in my home state of Michigan. Clearly, the economic status quo is not working for Michigan; we must take radical action now to stimulate our state economy. Michigan is wholly dependent on dirty fossil fuels like coal, but clean energy manufacturing and deployment presents a golden opportunity to create good-paying blue-collar jobs, stimulate research and development in factories and universities, and preserve our beautiful state's natural resources for future generations. Building a clean energy economy will likewise grow prosperity across the nation, creating jobs, increasing our national security, and fighting on onslaught of global warming.

Because climate change is a global crisis, however, it mandates a global solution beyond that of individual communities, states, and countries. The Copenhagen treaty negotiations in December are a critical theater in which to craft an equitable and effective agreement between all nations to fight global warming. Because the US is historically the biggest contributor to global warming pollution, and because the US plays a decisive role in all international negotiations, the eyes of nations across the globe are turned to the climate bill deliberations currently under way in the US Senate. Passing a strong bill that guarantees America's transition to clean energy is therefore an opportunity to strengthen our environmental and economic security both at home and abroad.

Allocating additional allowances to international finance measures will ensure that the US does not take unilateral action toward creating this green economy. Rather, inching up the percentage of allowances allocated to international adaptation and clean tech transfer will send a strong signal to the global community that the US is taking a leadership role in solving global warming. By making this small commitment to international leadership, we will ensure that that India and China make similar commitments to cutting global warming pollution in Copenhagen, and that developing nations grow along low-carbon pathways in the future.

As young people, we ask our legislators to seize the clean energy opportunity before us, demonstrate national and global leadership, and pass a stronger climate bill. In so doing, we will once again take up the mantle of global leadership and safeguard our world for future generations. There is no time to waste.

National League of Cities

STATEMENT FOR THE RECORD

National League of Cities
1301 Pennsylvania Avenue NW, Ste. 550
Washington, DC 20004
(202) 626-3101

BEFORE THE
SENATE FINANCE COMMITTEE

"Climate Change Legislation: Allowance and Revenue Distribution"
August 4, 2009
Washington, DC

August 4, 2009

The Honorable Max Baucus
Chair
Finance Committee
United States Senate
511 Hart Senate Office Building
Washington, DC 20510

The Honorable Charles E. Grassley
Ranking Member
Finance Committee
United States Senate
135 Hart Senate Office Building
Washington, DC 20510

Dear Chairman Baucus and Ranking Member Grassley:

On behalf of the 19,000 cities and towns represented by the National League of Cities (NLC), I am writing to share our recommendations for climate change legislation allowance and revenue distribution.

NLC supports the purposes of the American Clean Energy and Security Act of 2009 (H.R. 2454), which are to "create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy." We believe, however, that the bill does not go far enough in assisting local governments in our efforts to reduce greenhouse gas emissions and adapt to the potentially unavoidable effects of climate change.

As you begin developing climate change legislation for Senate consideration, we urge you to dedicate a portion of the anticipated cap-and-trade revenue to support the Energy Efficiency and Conservation Block Grant and to support energy efficient transportation solutions. Additionally, we call on you to include the language from the House Energy and Commerce Committee's original draft that would create a Climate Change Adaptation Fund to provide federal support for state, local and tribal adaptation projects.

The Energy Efficiency and Conservation Block Grant (EECBG) provides a foundation for local energy efficiency and conservation strategies, which represent the most cost-effective and immediate form of greenhouse gas reductions. With the transportation sector accounting for nearly one third of the nation's greenhouse gas emissions, steps must be

made not only to increase fuel efficiency, but also to decrease vehicle miles traveled by providing people with safe, convenient and energy efficient transportation options. While the House-passed climate change bill allows states to use up to 1 percent of their allocations for transit and other energy efficient transportation options, we recommend increasing the percentage allowed and directing the money to local governments and metropolitan planning organizations, where most of the planning, strategy development and project implementation occurs. Supporting these programs with a dedicated source of funding will enable cities and towns to continue and expand efforts to reduce greenhouse gas emissions, conserve energy, implement energy efficiency and renewable energy programs, and create more livable communities while strengthening our economy.

Additionally, a successful national climate protection strategy must not only focus on mitigating the effects of climate change, but also on adaptation measures that are necessary to prepare cities and residents for those changes that may not be possible to avoid. Many communities are already proactively planning for sea-level rise that will impact airports, roads and rail lines; extreme weather events such a heat waves, droughts, wildfires, heavy precipitation and strong storms; and food shortages due to pest infestations and plant disease. The range of adaptation issues must be uniquely addressed by each local government, many of which they have never experienced before or that were once relegated to other parts of the country. The breadth and severity of these threats require the assistance and resources of the federal government.

We are hopeful you will consider including these important provisions in the Senate climate change legislation. A partnership among local, state and federal governments is the best way to confront the threat of climate change on our nation, our cities, and our citizens.

Sincerely,

Donald J. Borut
Executive Director

CC: Members of the Senate Finance Committee

Written Statement of

Charles T. Drevna
President
National Petrochemical & Refiners Association
1667 K Street, NW, Suite 700
Washington, DC 20006

on

"Climate Change Legislation: Allowance and Revenue Distribution"

before the

Senate Finance Committee
August 4, 2009

I. Introduction

NPRA, the National Petrochemical & Refiners Association, appreciates the opportunity to submit this testimony regarding *Climate Change Legislation: Allowance and Revenue Distribution.* NPRA is a national trade association with more than 450 members, including those who own or operate virtually all U.S. refining capacity, as well as most of the nation's petrochemical manufacturers who supply "building block" chemicals necessary to manufacture products ranging from pharmaceuticals to fertilizer to Kevlar. We commend the committee for addressing this important topic and would like to discuss with you our concerns with H.R. 2454, the "American Clean Energy and Security Act of 2009" ("ACES").

NPRA members produce the gasoline, diesel and jet fuel that power virtually all of our nation's transportation needs. In addition to providing the energy necessary for the driving public, these fuels are essential for shipping companies, farmers and livestock producers, our nation's airlines, and the United States military. Petroleum-based fuels are and will continue to be a critical component of our nation's energy needs and economic growth for decades to come.

Climate change is a complex public policy challenge that must be addressed with realistic, long-term strategies recognizing the vital role that all forms of energy – traditional, supplemental and renewable – will play in maintaining our country's freedom, economic strength and quality of life. Any policy to address climate change must be based on cost-effective approaches that maintain the global competitiveness of the American economy.

There are several incontrovertible principles that must be followed as the climate debate progresses in order to maintain our global competiveness, keep energy costs reasonable, and allow consumers continued access to the reliable fuels that run our transportation infrastructure and help sustain our economy. Unfortunately, H.R. 2454 not only fails to comply with any of these principles, but enactment of this legislation will result in the exact opposite.

This legislation's cap-and-trade allowance allocation regime is an ill-conceived, poorly disguised, and heavily regressive increase in the federal motor fuels excise tax on petroleum products. If enacted into law, H.R. 2454 will adversely impact all gasoline, diesel and jet fuel consumers, including truckers, farmers, airlines and the driving public. This legislation quite simply is intended to have a detrimental and disproportional impact on the nation's domestic refining industry, and it will impede our nation's energy security by providing foreign refiners with a distinct competitive advantage over U.S. refiners.

Passing H.R. 2454 in its current form will impose a massive tax increase on American motorists and consumers and drive the domestic petroleum refining industry overseas. NPRA urges this Committee and the entire Senate to take a drastically different approach to a federal carbon constraint program to avoid the twin policies of increasing the tax burden on consumers and outsourcing of our nation's transportation energy future that are embedded in H.R. 2454's provisions.

II. Negative Impact on Consumers

At its core, the climate change legislation narrowly passed by the House threatens to destroy the economic viability of the domestic refining industry. By singling out refiners and

making them responsible for the emissions of both their facilities and the fuels they produce, every consumer in the United States will be forced to bear the burden of this ill-conceived "new energy future."

In 2008, Americans consumed nearly 270 billion gallons of finished petroleum products such as gasoline, diesel fuel, jet fuel and home heating oil.[1] EPA's projected and very conservative carbon cost of $20 per ton for CO_2 would translate to a cost increase of roughly 20 cents per gallon,[2] which means the cost of producing gasoline, diesel fuel, jet fuel and other petroleum-based products would increase by more than $53 billion in the first years after enactment of H.R. 2454, with even more significant increased costs as the carbon cap decreases. According to the champions of H.R. 2454, all of these increased costs would be passed along to consumers at the pump.

Climate change legislation would also affect industries dependent on moving goods and people. The trucking industry has stated that any change, however slight, in the price of transportation fuels will have a disproportionate impact on its economic viability. The American Trucking Association states that in 2008, trucking companies consumed more than 39 billion gallons of diesel fuel, which means that a one-cent increase in the average price of diesel costs the trucking industry an additional $390 million in fuel expenses.

The Air Transport Association says that cap-and-trade legislation would serve as an "additional, exorbitant tax" on jet fuel.[3] Higher shipping costs inevitably find their way into higher costs for the goods being shipped.

H.R. 2454 would likewise impose additional costs on the agricultural sector. In 2007, EIA projected every dime added to the price of gasoline and diesel oil, sustained over a year, costs U.S. agriculture $400 million annually.[4] Approximately 65 percent of farmers' costs are dedicated to fuel, electricity, fertilizer, and chemicals. Rural households also spend 58 percent more on fuel as a percentage of their income than urban residents. A recent National Black Chamber of Commerce study predicted that under a cap-and-trade program, agricultural employment will decline by 59,000 workers by 2030. These facts emphasize that any ill-conceived cap-and-trade program would have a disproportionate effect on rural families and farmers.

III. Allowance Allocations

According to EPA's recent estimates, the combined CO_2 emissions from domestic petroleum refineries and the emissions resulting from the use of their products constitute approximately 35 percent of the nation's current CO_2 inventory. These emissions also represent about 50 percent of H.R. 2454's total emissions allowance pool in 2014. However, in the House

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[1] Energy Information Administration. http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_nus_mbbl_a.htm.
[2] David Friedman, Union of Concerned Scientists, testimony before the House Energy & Commerce Committee on April 24, 2009.
[3] Testimony of James May Testimony before the House Energy and Commerce Committee Subcommittee on Energy and the Environment, U.S. House of Representatives, June 9, 2009.
[4] Testimony of Dr. Howard Gruenspecht, Deputy Administrator, U.S. Energy Information Administration, before the Committee on Agriculture, U. S. House of Representatives, October 18, 2007.
http://agriculture.house.gov/testimony/110/h71018/Gruenspecht.pdf

legislation, refiners receive only two percent of the GHG emissions allowances during the early years of the cap-and-trade program. This forces the domestic refining industry to purchase well over 90 percent of the allowances it would need to comply with the cap.

This biased allowance allocation will impose extremely high costs on domestic refiners and, ultimately, on consumers. If refiners are forced to pay even a conservative carbon price of $20 per ton with two percent of the emissions allowances, a domestic refinery with 100,000 barrels per day of capacity would have to spend roughly $253 million annually to purchase emissions allowances for the fuels it produces. This cost would total roughly $53 billion per year for the American refining community, and escalate significantly over time as the carbon cost increases and the emissions cap tightens. EPA concluded in a 2008 analysis of the Lieberman-Warner cap-and-trade bill that costs would be significantly higher if adequate nuclear, biomass or carbon capture and sequestration capabilities were not developed. Under such a scenario, EPA estimated carbon allowance prices would be $69 per ton in 2020 and $112 per ton by 2030. If fuel consumption remained stable at 2008 levels, EPA's estimate would result in consumers paying an additional $185 billion annually in 2020 and $300 billion in 2030.[5]

The true losers in this scenario are the American people. Every single citizen who depends on gasoline for their daily commute or to take their children to school, truckers who transport vital goods, farmers who require fuel to cultivate their fields, and even the American military will bear the brunt of this unfair allowance allocation.

IV. Principles

Aside from simply re-evaluating the allowance allocations, this Committee and the entire Senate must take an in-depth look at every facet of the House-passed legislation in order to understand just how seriously flawed it is.

At its core, the assumed goal of any carbon control program is to mitigate the effects of climate change. But the House bill ignored the obvious conclusion that one nation cannot do this alone. If climate change is truly a global problem, it requires a global solution. Without other nations willing to address this problem in a similar manner, any carbon control program implemented in the United States is meaningless and simply serves to harm U.S. competitiveness in global markets.

The refining industry is unique in that refineries around the world can produce identical and globally fungible grades of finished products. In other words, a gallon of diesel fuel produced in India can be used in the same manner as a gallon of diesel fuel produced in Indiana. Therefore, a U.S. refinery competes directly with other refineries internationally. If U.S. refineries are forced to scale back production due to higher marginal operating costs that cannot be passed through to consumers due to a cap-and-trade program, a refiner in India will make up for that reduction in finished product supply. This competitive disadvantage would clearly have a widespread, adverse impact on the domestic refining community and even more importantly on the consumer and national energy security. A 2008 study of the potential impacts of the Lieberman-Warner cap-and-trade-bill concluded the legislation would reduce refining capacity

[5] EPA Analysis of Lieberman/Warner, http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf

in this country by 3 million barrels per day, causing gasoline and diesel imports (as opposed to crude oil imports) to double from 15 percent to nearly 30 percent by 2020.[6]

As domestic refining capacity decreases, so do the number of high-paying, high-quality American jobs. For example, in July 2009 an Indian refinery sent its first gasoline shipment to the United States. Furthermore, other countries anxious to capture the U.S. market have substantially increased imports. Brazil has doubled its oil imports to the U.S., and Russia has increased them nearly ten-fold.[7] To be clear, this is gasoline that will be sold at American gas stations and used by American consumers, and could easily have been produced in the United States by American workers were it not due to the increased costs the refining business already faces when compared to their foreign counterparts. Such import competition will only increase under the dramatically higher costs that would be imposed on domestic fuel producers under H.R. 2454.

Accordingly, in order to mitigate against a decline in international competitiveness and the emissions "leakage" that would occur with more refineries going overseas, any carbon control program must be compliant with the international trade regulations of the World Trade Organization ("WTO"), of which the United States is a member. By imposing a tax on goods specifically on countries that do not implement a carbon control program, the United States effectively imposes trade limits, which goes firmly against WTO policy. This has the potential to incite an international trade war.

In addition to ensuring adequate international participation, any carbon control regime must take a look at potential conflicts and contradictions with current regulations and harmonize any new requirements with existing regulatory mandates. In the past several decades, we have often seen programs adopted to regulate emissions under the Clean Air Act ("CAA") that have the direct effect of increasing carbon emissions from industrial plants, including petroleum refineries. As a facility adjusts its operations to remove one pollutant from its processes, the energy intensity and the GHG emissions of the facility increase. Any carbon control program must be harmonized with all previous requirements that increase GHG emissions from domestic industrial operations. Once again, the House-passed legislation overlooks this basic principle. For example, H.R. 2454 would overlay a U.S. climate program with an international climate scheme if the program is certified by the Environmental Protection Agency. In addition, the bill fails to address the potential for duplicative, costly and contradictory regulations among the federal and various state governments.

In recent years, individual states have begun to implement their own carbon control programs and fuel standards. In 2009, the California Air Resources Board approved a Low-Carbon Fuel Standard (LCFS) for the State of California. The LCFS requires fuel providers to ensure the mix of fuel they sell into the California market meets a declining standard for GHG emissions. Last month, the Oregon legislature adopted an LCFS for use in the State of Oregon. A continuation of this trend could lead to each state setting its own, individual carbon controls

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[6] ICF International, "Addendum to Impact Assessment of Mandatory GHG Control Legislation on the Refining and Upstream Segments of the U.S. Petroleum Industry; Lieberman/Warner Climate Security Act of 2007, S. 2191." April 2008.

[7] *BNet Energy*. "Energy Roundup: Brazil, Russia Hinder OPEC Cuts, GE Blows Away Competition, and More." April 14, 2009. http://industry.bnet.com/energy/10001076/energy-roundup-brazil-russia-hinder-opec-cuts-ge-blows-away-competition-and-more/

and fuels standard and requiring businesses to comply with dozens of different carbon programs and fuel standards. To manufacture individual fuel blends that would comply with dozens of different state programs would be virtually impossible. If carbon is to be constrained through federal legislation, then it is absolutely essential that this legislation pre-empt local and state carbon and fuels statutes and regulations. Again, the authors of H.R. 2454 overlooked this essential aspect of any federal legislation, as nothing in the legislation prevents localities and states from setting individual carbon controls or fuel standards. In fact, provisions of the bill actually *encourage* such a proliferation of overlapping state regulations.

It is axiomatic that any federal carbon control program must encompass the entire U.S. economy, not pick winners and losers, and treat industries and economic sectors equally and fairly. The House-passed legislation does not meet this principle. In the allowance allocation alone, the refining industry is treated dramatically different than other sectors. As previously stated, the combined CO_2 emissions from refineries and consumers constitute approximately 35 percent of the nation's current CO_2 inventory. These emissions make up approximately 52 percent of H.R. 2454's total emissions allowance pool in 2014, yet refiners receive only two percent of the CO_2 emissions allowances. As the Senate moves forward in this debate and if the body intends to explore a cap-and-trade mechanism, any proposal must treat all industries and economic sectors equitably in terms of allowance allocations.

Along with controlling carbon, a primary goal of a cap-and-trade program is to drive the commercial viability of developing technology that will lead to decreased carbon emissions and promote a "new energy future". Again, H.R. 2454 has fallen far short of achieving or even promoting this goal. In fact, by shortchanging some responsible parties with respect to allowances, they are forcing the very industries they expect to lead a "technological revolution" to spend hundreds of millions – and ultimately billions – of dollars to comply with a carbon emissions reduction program. Common sense dictates that as industries are forced to spend more money to comply, the funding to develop and advance such new technologies as renewable energy and carbon capture and sequestration will drastically decrease. As the program advances, industries will be forced to spend more money on compliance, leaving less money for developing and implementing newer, cleaner technologies in the future. Adversely, cap-and-trade proponents argue that investing in new technology will be cheaper than non-compliance penalties. However, forced development with the aim of avoiding financial penalties will have the same effect and will drain financial capitol and research and development lead time.

To encourage investment, avoid market manipulation and price volatility, any carbon control program must be inherently simple, transparent, and cost-effective. Unfortunately, as the House sought to create an entirely new financial market for carbon credits, these three key principles were overlooked. H.R. 2454's 1,200 pages are not simple, transparent, or cost-effective. Even on its surface, the bill is complicated. It would give multiple federal agencies authority over different aspects of the cap-and-trade program. Under H.R. 2454, FERC would regulate the allowance and offset cash market, the CFTC would regulate the allowance derivates, and the EPA and USDA would monitor compliance and offset certification. Clearly, this is a far cry from "simple" or "transparent".

The confusing nature of the House-passed program leaves a tremendous risk for market manipulation, and considering the current state of the U.S. economy, placing our nation's energy future and security in the hands of Wall Street and multiple government agencies is a risk that should not be taken, especially during these uncertain economic times.

Finally, in the past decade, many industrial producers, including the domestic refining community, have made great advancements in GHG controls and reducing their overall emissions. NPRA members have made significant progress in reducing energy intensity while at the same time engaging in highly energy-intensive activities in order to reduce sulfur in gasoline and reduce stationary source emissions at refineries. For example, NPRA members who responded to a survey on energy intensity and represent more than 80 percent of the nation's refining capacity reduced their energy intensity by more than two percent between 2002 and 2004. During that same period, the industry was also designing and constructing new process units to remove sulfur from gasoline and diesel fuels, an extremely energy intense activity. If the government mandates a carbon control program, these previous industry successes must be recognized. Under H.R. 2454, the EPA will issue offset credits for each ton of CO_2-equivalent emissions reduced, avoided or sequestered under an offset program begun after 2001. But EPA will only recognize such a credit if it was issued under any regulatory or voluntary GHG emissions offset program established before 2009 with established standards that ensure the reductions of sequestrations are "permanent, additional, verifiable, and enforceable"; and verified by a State agency or accredited third party. These stringent guidelines fail to take into consideration a significant amount of emissions reductions that have been accomplished in the past ten years.

V. Conclusion

In summary, NPRA believes the Senate must take a significantly different approach than the House of Representatives in crafting climate change legislation. H.R. 2454 is deeply flawed and ultimately will drastically increase energy costs to consumers. Additionally, the lack of allowances provided to the refining industry in relation to their compliance responsibility is unfair to domestic refiners and will undoubtedly lead to increased foreign imports, the loss of American jobs, and increased costs to American consumers. We urge the Committee to consider these principles, consumer impacts, energy security implications, and the viability of our nation's energy future. We look forward to working with members of the Committee as this debate progresses.

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