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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.

[*] 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

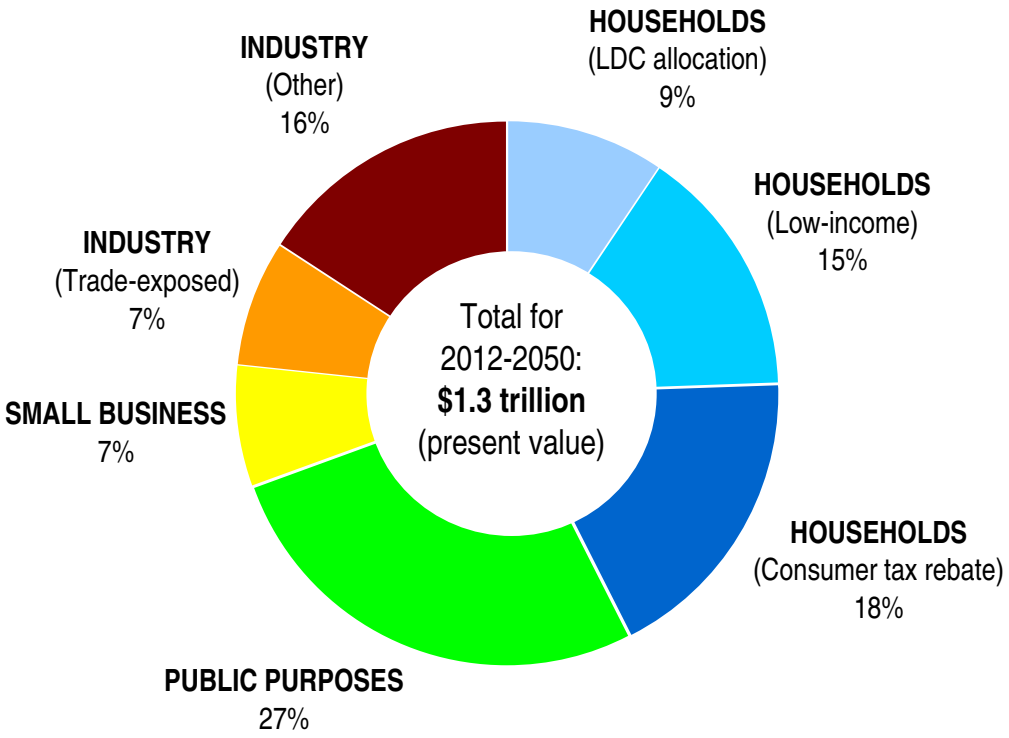
  A projected $360 billion will fund public purposes such as worker training, technical assistance to farmers, clean energy research and development, deficit reduction, and protecting vulnerable ecosystems.

- 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.