Allowance Allocations in the 2009 Senate and House Climate & Energy Bills:

A comparative analysis of the Senate Environment and Public Works (EPW) Committee-passed Clean Energy Jobs and American Power Act (S.1733) and the House-passed American Clean Energy and Security Act (HR. 2454)

Executive Summary

In 2009, the House passed comprehensive climate and energy legislation called the American Clean Energy and Security Act of 2009 (HR. 2454) and the Senate Environment and Public Works Committee passed the Clean Energy Jobs and American Power Act (S. 1733). Both bills include a cap-and-trade program – in addition to other climate and energy policies – designed to reduce (and put a price on) carbon emissions and jump-start a transition to a clean energy economy. This analysis focuses on the provisions in the bills that determine how the allowance value, created under the cap-and-trade program, will be divided.

The bills spell out a percentage division of the allowances to several uses, including:

- Deficit Reduction
- Creating a Market Stability Reserve (or Strategic Reserve)
- Consumer Protection
- Consumer Rebates
- Transition Assistance for Industry
- Energy Efficiency and Clean Energy Technologies
- Transportation
- Other Public Purposes[1]

We have taken the information on allowance allocations in both bills and organized it into a more accessible format, with more focused categories (see figures E.1 and E.2). Analyses of the House bill from the EIA and EPA indicate a range of projected allowance prices for 2012-2050. Based on these prices, both bills will generate substantial allowance value by instituting a cap on emissions. Between 2012 and 2050, the value of the allowances under both bills is $1.4 trillion to $2.9 trillion (all cumulative dollar values are discounted to 2007 dollars using a real discount rate of 4 percent).[2] The percentage allocations for each category can also be translated into a range of dollar values using the range of projected allowance prices from EIA and EPA,

The tables and figures in the main body of the report present the summary information from our analysis, focusing on the cumulative amounts allocated to each category over two time periods: 2012-2029 and 2030-2050.

[1] Such as transition assistance and training for workers, funding programs to help the U.S. and other countries adapt to unavoidable climate change, and funding reduced emissions abroad, through reduced deforestation and deployment of clean technologies

[2] The 4 percent discount rate is the same value EIA used in it's analysis of the House-passed bill.

Figure E.1: Senate Allowance Allocations (2012-2050)
(Percent of allowances allocated, by category, for each time period)

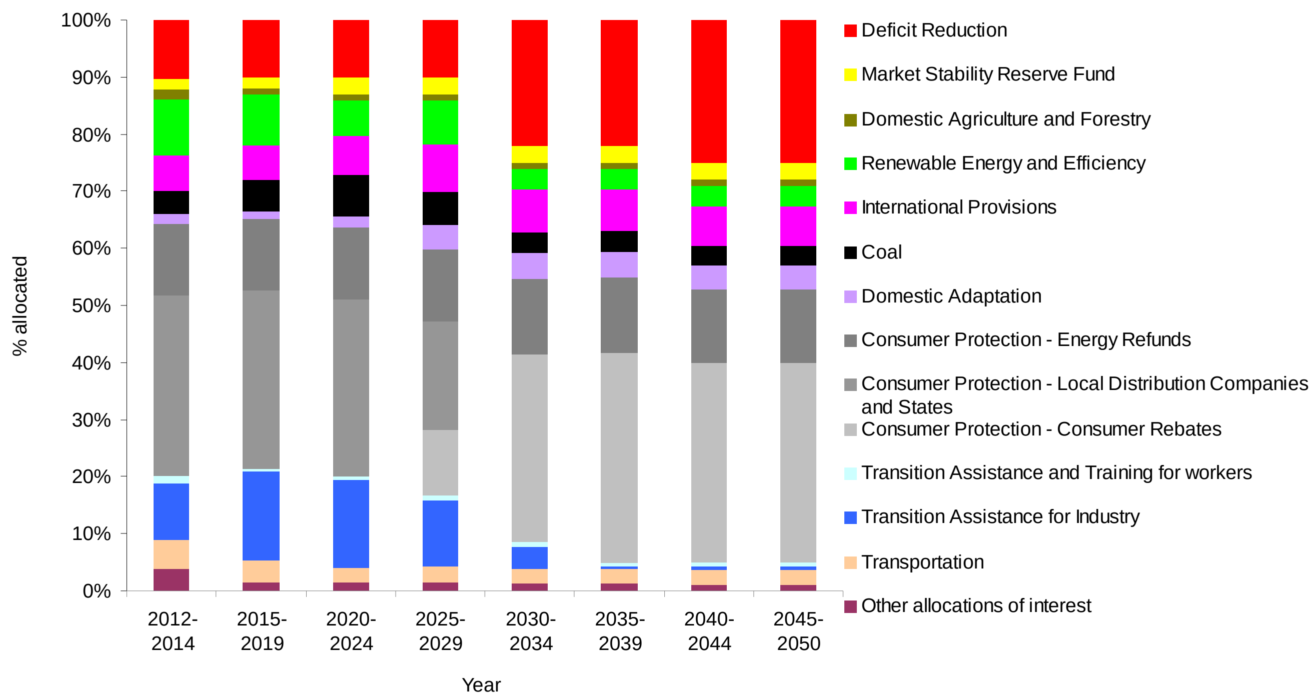
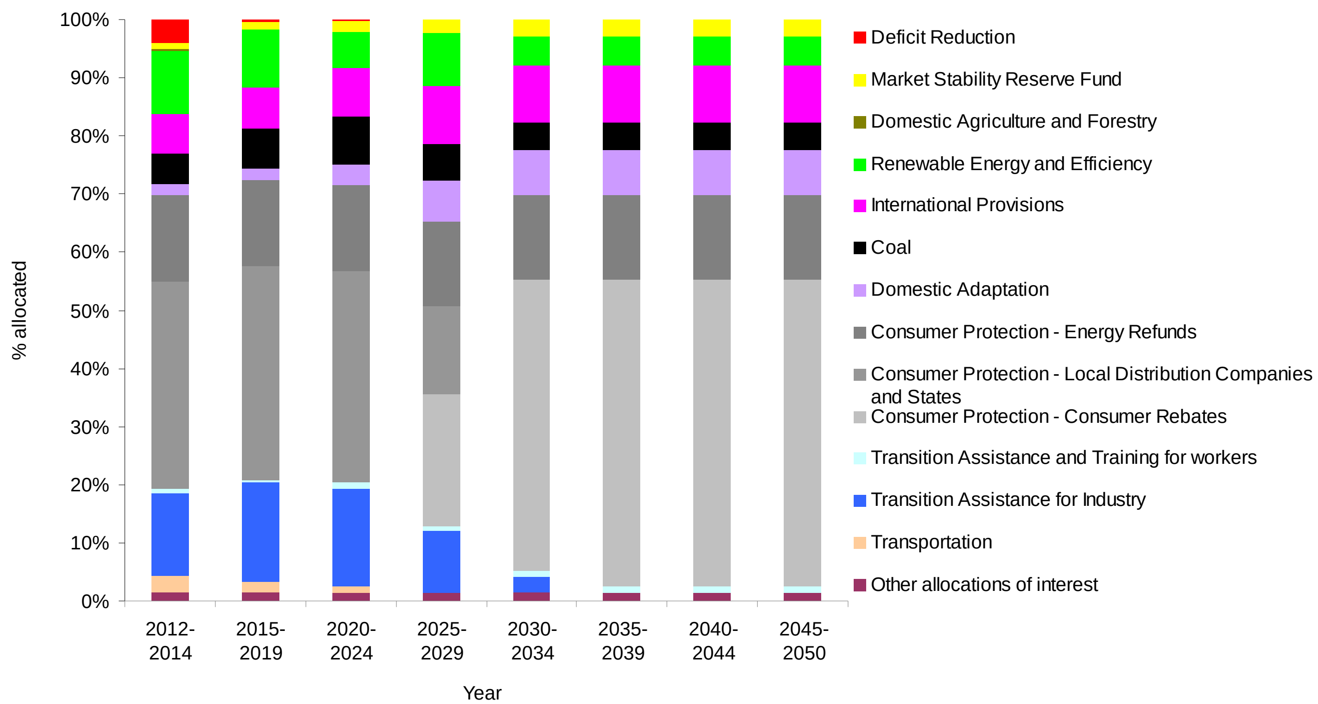


Figure E. 2: House Allowance Allocations (2012-2050)
(Percent of allowances allocated, by category, for each time period)



In general, UCS recommends that the allowance value created under a cap should go to uses that help reduce emissions here and abroad, help in the transition to a clean energy economy, benefit households, help vulnerable communities adapt to climate change, and reduce emissions from tropical deforestation. While both bills do fund these purposes, some are not funded at levels that are necessary to fully capture the benefits of increasing energy efficiency and renewable energy in the stationary and transportation sectors and facilitate the transition to a clean energy economy. In addition, significant funds are set aside for the fossil-fuel industry that should be reduced and reallocated to the purposes listed above. More specific recommendations are presented within the analysis.

Introduction

On June 26, 2009, the House passed the American Clean Energy and Security Act, a comprehensive climate and energy bill. On September 30, 2009, Senators John Kerry (D-MA) and Barbara Boxer (D-CA) introduced the Clean Energy Jobs and American Power Act (CEJAPA/S. 1733) [3]. A Chairman's Mark of the bill was released on October 23, which added certain key elements to the original bill, most prominently the allocation formula for carbon allowances. On November 5, 2009, the Senate Environment and Public Works (EPW) Committee passed this bill. Currently Senator Kerry is working with Senator Graham and Senator Lieberman to create a bill that has bipartisan support. Senator Baucus may also draft a bill in the Finance Committee. After the Senate acts, the House and Senate bills will have to be reconciled in conference before it can receive a final vote from both bodies and go to the President for his approval.

Below is an analysis and comparison of the allowance allocation provisions of the cap-and-trade program that is a centerpiece of the House-passed and Senate EPW-passed bills. ***It is not a comprehensive summary of either bill***. UCS has previously released a policy brief comparing other key aspects of the bills.[4]

This analysis compares both the percentage allocations for different purposes in the House and Senate bills and the dollar value of allowances devoted to each purpose. To calculate the dollar values, we have assumed a range of allowances price projections from modeling of the House-passed bill conducted by the Department of Energy's Energy Information Administration (EIA) and the Environmental Protection Agency (EPA).[5] We begin with some summary information in section 1. We then describe the allocations in more detail, and make specific recommendations regarding them, in sections 2-11.

1. Overview of Allowance Allocations

A centerpiece of both the House and the Senate bills is a cap-and-trade program which sets a declining cap on heat trapping emissions and issues allowances to match the cap. Sources covered by the cap are required to hold allowances equivalent to their emissions (or the emissions attributed to them, in the case of an "upstream" cap) in a given year, or they have the option of purchasing offset credits.[6]

Under both bills, the allowances are distributed through a combination of auctioning and free giveaway. Under the Senate bill, an average of 19 percent of the allowances are auctioned between 2012 and 2029, increasing to 52 percent from 2030-2050.[7] Under the House bill, 23

[3] Many important energy provisions, such as a renewable electricity standard and an energy efficiency standard, are in a separate energy bill (S. 1462, the American Clean Energy Leadership Act or ACELA) that passed out of the Senate Energy and Natural Resources Committee in May.

[4] Comparison of Clean Energy Jobs and American Power Act of 2009 and American Clean Energy and Security Act of 2009. Available at:
http://www.ucsusa.org/global_warming/solutions/big_picture_solutions/CEJAP-comparison-to-the-house-bill.html

[5] Specifically we have used allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

[6] The bills allow a maximum of 2 billion tons of offsets annually.

[7] Note that in the later years a higher percentage of allowances are auctioned in a given year, but there are fewer total allowances since the cap is lowered over time.

percent of allowances are auctioned between 2012 and 2029, increasing to 72 percent from 2030-2050.

The value of the allowances, whether auctioned or freely distributed, goes to fund a variety of purposes. These purposes, as described in the bills, include:

- Deficit Reduction
- Creating a Market Stability Reserve (or Strategic Reserve)
- Consumer Protection
- Consumer Rebates
- Transition Assistance for Industry
- Energy Efficiency and Clean Energy Technologies
- Transportation
- Other Public Purposes, such as transition assistance and training for workers, funding programs to help the U.S. and other countries adapt to unavoidable climate change, and funding reduced emissions abroad, through reduced deforestation and deployment of clean technologies

In the bills, the category names for the allowance allocation "bins" do not completely match all the specific programs included in a particular category. For example, there are some programs to provide funding for industry included under both the Consumer protection and Transition Assistance categories (e.g. allowances for Merchant Coal and Petroleum Refiners). For the purposes of this analysis, we have chosen to organize the information differently, according to more aptly named and focused categories. In some instances, even though the name of a category may be the same, what is included within it may not be – for example, if UCS expert opinion differs on what constitutes true consumer protection. Please refer to appendix A for a full list of these categories and what is included in each one.

Below is a summary list of the UCS categories for allowance allocations:

- Deficit Reduction
- Market Stability Reserve Fund
- Domestic Agriculture and Forestry
- Renewable Energy and Efficiency
- International Provisions
- Coal
- Domestic Adaptation
- Consumer Protection and Rebates
- Transition Assistance and Training for Workers
- Transition Assistance for Industry
- Transportation
- Other Allocations of Interest (Clean Energy Research and Development and Early Action)

The allocation formulas are very complex and change over time. For convenience, in this analysis we will primarily focus on cumulative allocation amounts to each category over two time periods: 2012-2029 and 2030-2050. All cumulative dollar values presented below are discounted to 2007 dollars using a real discount rate of 4 percent.[8] Please see Appendix B for an

[8] The 4 percent discount rate is the same value EIA used in it's analysis of the House-passed bill.

overall summary of the dollar values assigned to each category in the Senate and House bills. We should also note that in several cases the language of the bills is ambiguous about the exact amount allocated to a purpose (for example, by using phrases like "up to" a certain amount or "at least" a certain amount, or a formula based on “leftover allowances”). In such cases, we have used our best judgment and made a reasonable assumption about the exact amount.

1.1 Comparison of Allowance Allocation Percentages Over time

Figure 1 and Figure 2 show how the bills allocate allowances in these broad categories over time.

Figure 1: Senate Allowance Allocations (2012-2050)

(Percent of allowances allocated, by category, for each time period)

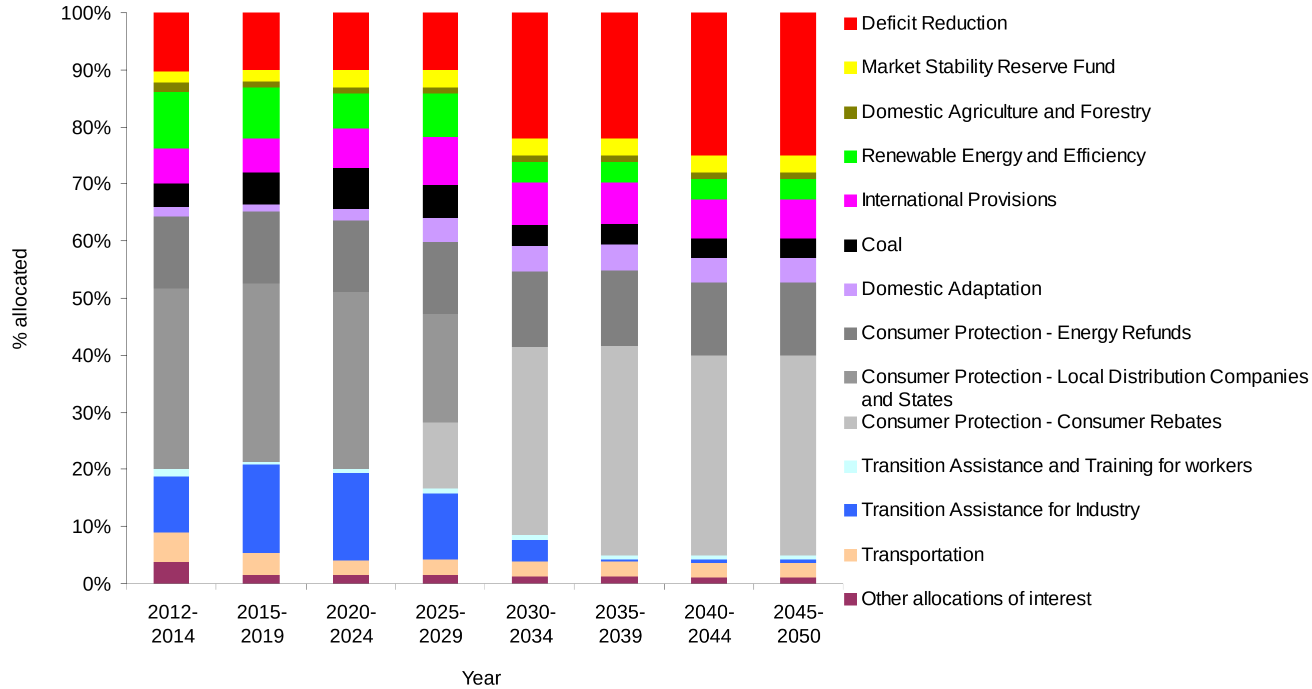
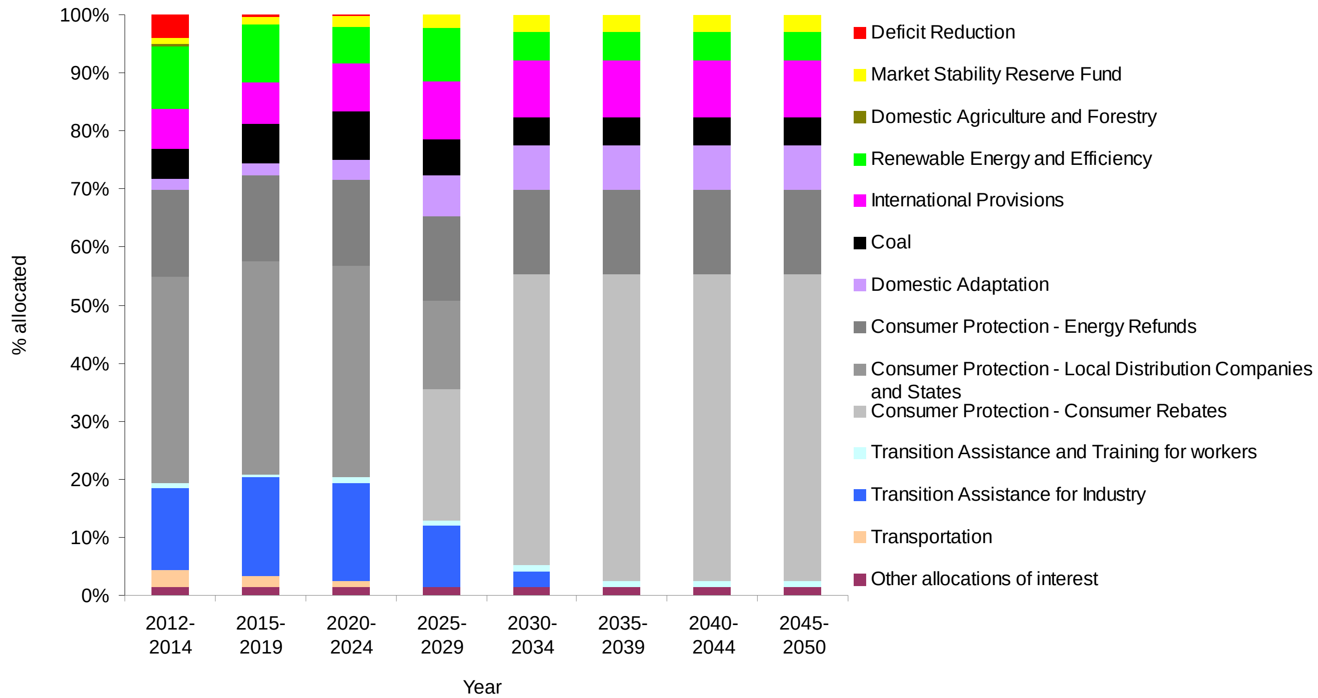


Figure 2: House Allowance Allocations (2012-2050)

(Percent of allowances allocated, by category, for each time period)



1.2 Comparison of Allowance Allocation Dollar Values

Based on a range of allowance price projections from EPA's and EIA's analyses of the House bill, we can also compare the dollar values of the allocations in the Senate and House bills. The cumulative discounted values (in 2007 dollars using a 4 percent discount rate) of the allowances allocated to each category are compared over the 2012-2029 time period in Figure 3 and Table 1; and for the 2030-2050 time period in Figure 4 and Table 2.

Table 1: Allocations in the House and Senate EPW Bills, 2012-2029 (Billion 2007 Dollars*)

	Senate			House		
	EPA		EIA	EPA		EIA
Deficit Reduction	**81**	**to**	**155**	**11**	**to**	**18**
Market Stability Reserve Fund	**21**	**to**	**40**	**13**	**to**	**25**
Domestic Agriculture and Forestry	**9**	**to**	**17**	**0.63**	**to**	**1.04**
Renewable Energy and Efficiency	**65**	**to**	**121**	**76**	**to**	**142**
International Provisions	**56**	**to**	**109**	**65**	**to**	**126**
Coal	**47**	**to**	**91**	**57**	**to**	**109**
Domestic Adaptation	**19**	**to**	**38**	**28**	**to**	**56**
Consumer Protection and Rebates	**354**	**to**	**672**	**423**	**to**	**803**
Local Distribution Companies and States	*228*	*to*	*424*	*272*	*to*	*507*
Energy Refunds	*102*	*to*	*194*	*122*	*to*	*232*
Consumer Rebates	*24*	*to*	*54*	*29*	*to*	*65*
Transition Assistance and Training for workers	**6**	**to**	**11**	**6**	**to**	**12**
Transition Assistance for Industry	**110**	**to**	**209**	**122**	**to**	**231**
Transportation	**28**	**to**	**52**	**12**	**to**	**21**
Other allocations of interest	**15**	**to**	**27**	**13**	**to**	**24**
Total **	**811**	**to**	**1541**	**825**	**to**	**1569**

*** Using a real discount rate of 4%**

****Totals may not equal the sum of individual categories due to independent rounding.**

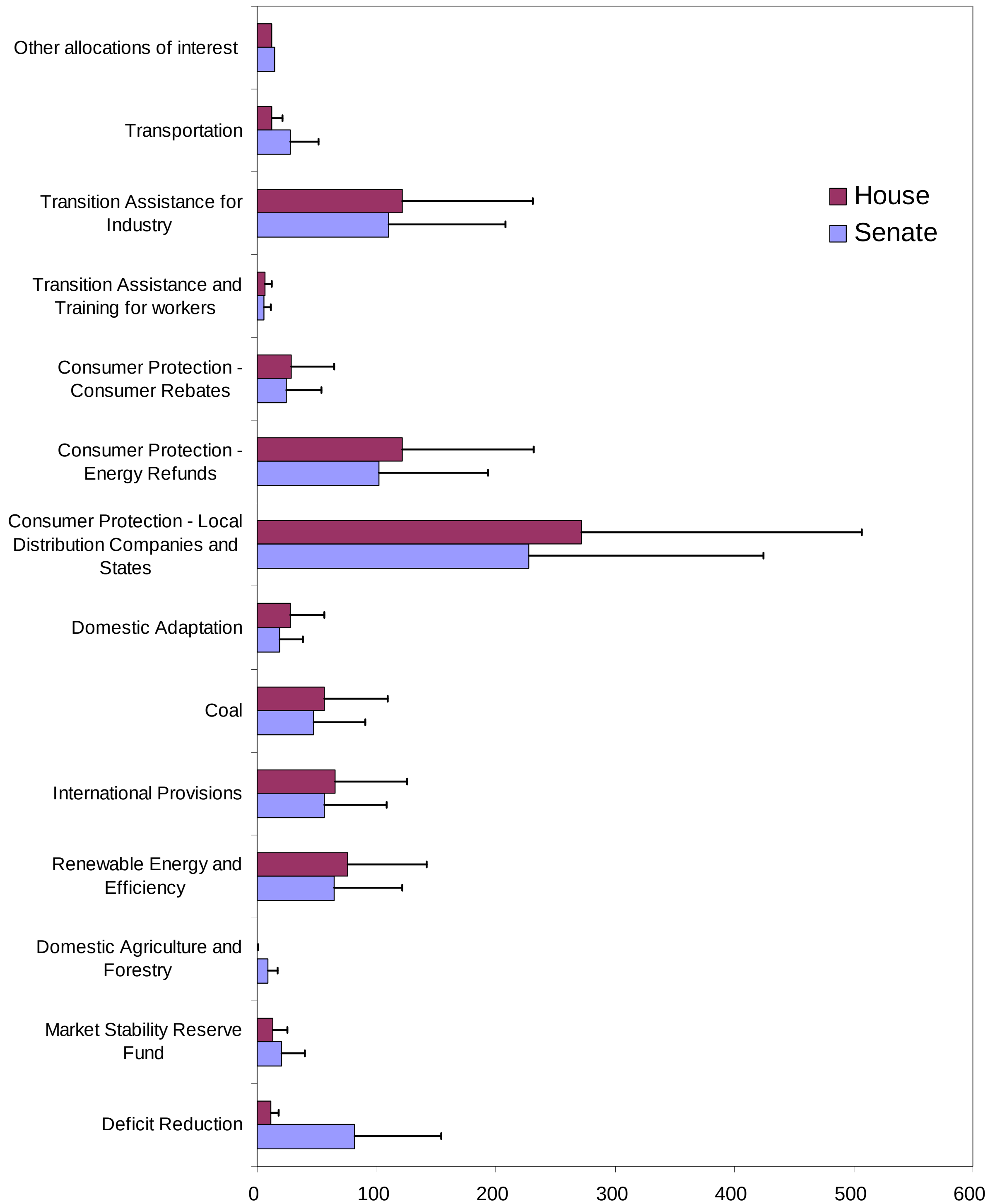
Table 2: Allocations in the House and Senate EPW Bills, 2030-2050 (Billions 2007 Dollars*)

	Senate			House		
	EPA		EIA	EPA		EIA
Deficit Reduction	129	to	304	0	to	0
Market Stability Reserve Fund	17	to	39	17	to	39
Domestic Agriculture and Forestry	6	to	13	0	to	0
Renewable Energy and Efficiency	21	to	49	27	to	64
International Provisions	40	to	93	54	to	128
Coal	20	to	46	27	to	64
Domestic Adaptation	25	to	58	43	to	102
Consumer Protection and Rebates	267	to	628	368	to	866
Local Distribution Companies	*0*	*to*	*0*	*0*	*to*	*0*
Energy Refunds	*73*	*to*	*172*	*81*	*to*	*191*
Consumer Rebates	*194*	*to*	*456*	*287*	*to*	*675*
Transition Assistance and Training for workers	4	to	9	5	to	13
Transition Assistance for Industry	9	to	21	7	to	17
Transportation	14	to	33	0	to	0
Other allocations of interest	7	to	16	8	to	19
Total **	558	to	1312	558	to	1312

*** Using a real discount rate of 4%**

****Totals may not equal the sum of individual categories due to independent rounding.**

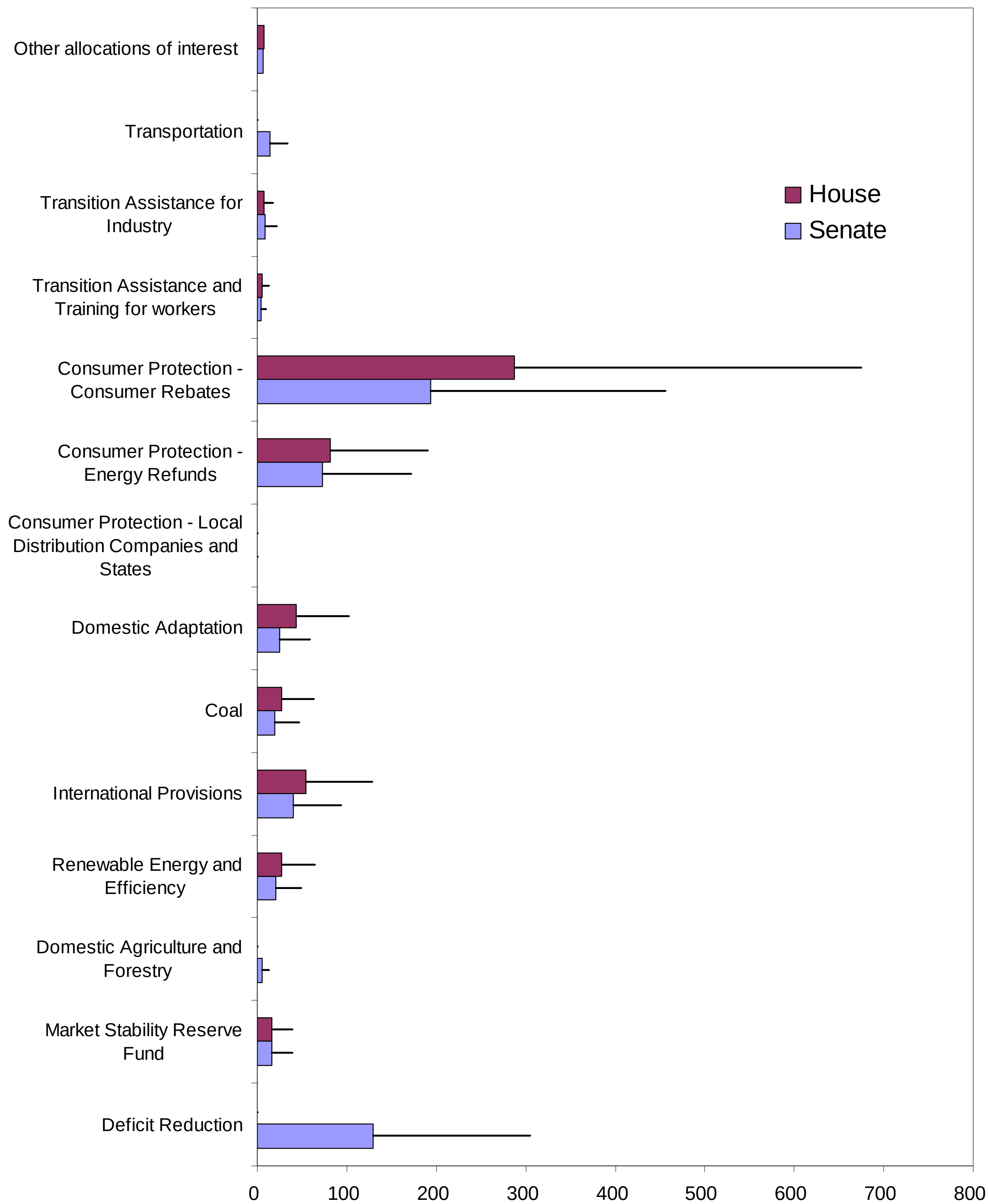
Figure 3: Allocations Comparison 2012-2029 (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill. A discount rate of 4 percent has been used.

Union of Concerned Scientists

Figure 4: Allocations Comparison 2030-2050 (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill. A discount rate of 4 percent has been used.

2. "Up-Front Allocations" and "Remaining Allocations"

Both the Senate and the House bill first make an up-front allocation to a small number of purposes and then, secondarily, allocate a percentage of the remaining allowances to a much larger number of purposes. The Senate EPW bill reserves a portion of allowances up-front for the following purposes: the Deficit Reduction Fund, Market Stability Reserve Fund, and several supplemental programs. The House bill has only one up-front allocation: for the Strategic Reserve Fund (the equivalent of the Senate Market Stability Reserve).

These up-front allocations are referred to here as "haircuts."[9] The "haircut" allocations must be satisfied before any other allocations are made, so in a sense they reduce the "total pie" available for other uses such as funding for consumer benefit, increased energy efficiency and clean technology, tropical forest protection and adaptation to the unavoidable effects of climate change.[10]

How the allowance pie is divided among different purposes over the 2012-2029 time period is shown in Figure 5 for the Senate EPW bill and Figure 6 for the House bill. How the Senate allowance pie is divided among different purposes over the 2030-2050 time period is shown in Figure 7 for the Senate EPW bill and Figure 8 for the House bill.

2.1 Deficit Reduction

In the Senate EPW bill, allowances are allocated to deficit reduction both up-front (as a haircut) and as a portion of the remaining allowances. In the House bill, deficit reduction is funded as a portion of remaining allowances.

Overall, the Senate EPW bill allocates a significantly larger number of allowances to deficit reduction than the House bill, as shown in Figure 9, because of differences in Senate and House rules related to balancing the budget. The Senate rules require that all legislation be deficit neutral over the entire horizon of the legislation (2050 in this case) whereas the House rules only require balancing the budget over a 10-year period. In the case of these bills, which have a 50-year horizon, the difference in the House and Senate rules has significant implications for the allowance revenues that must be allocated for deficit reduction over time, with the Senate rules forcing a much larger deficit reduction set-aside.

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[9] The allocation to deficit reduction is commonly referred to as the "CBO haircut," after the Congressional Budget Office, which is tasked with analyzing the fiscal implications of legislation. Note that our use of the term "haircut" is broader than this.

[10] For example, let's assume there are 100 allowances in total and 5 percent of the allowances are subject to an up-front haircut. If the bill allocates 10 percent of the ***remaining*** allowances to purpose X, in fact that purpose is actually getting an amount equal to 9.5 percent of the total (10 percent of the remaining 95 allowances after the haircut).

Figure 5: Distribution of Allowances by Program in the Senate EPW Bill, 2012-2029

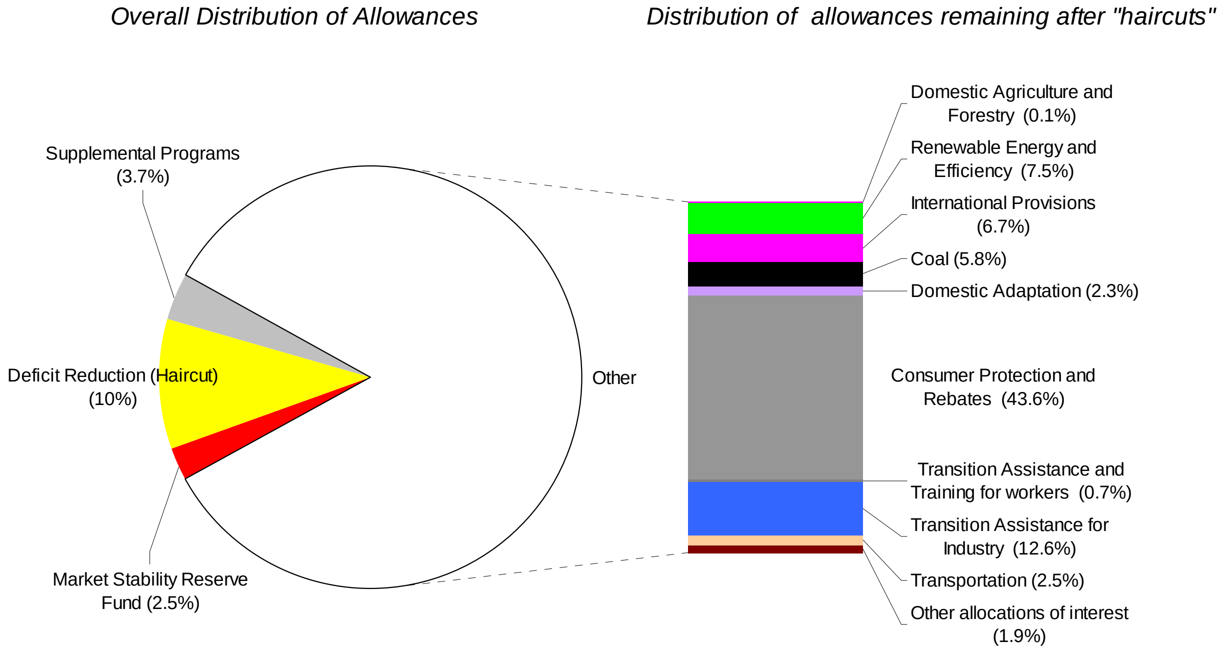
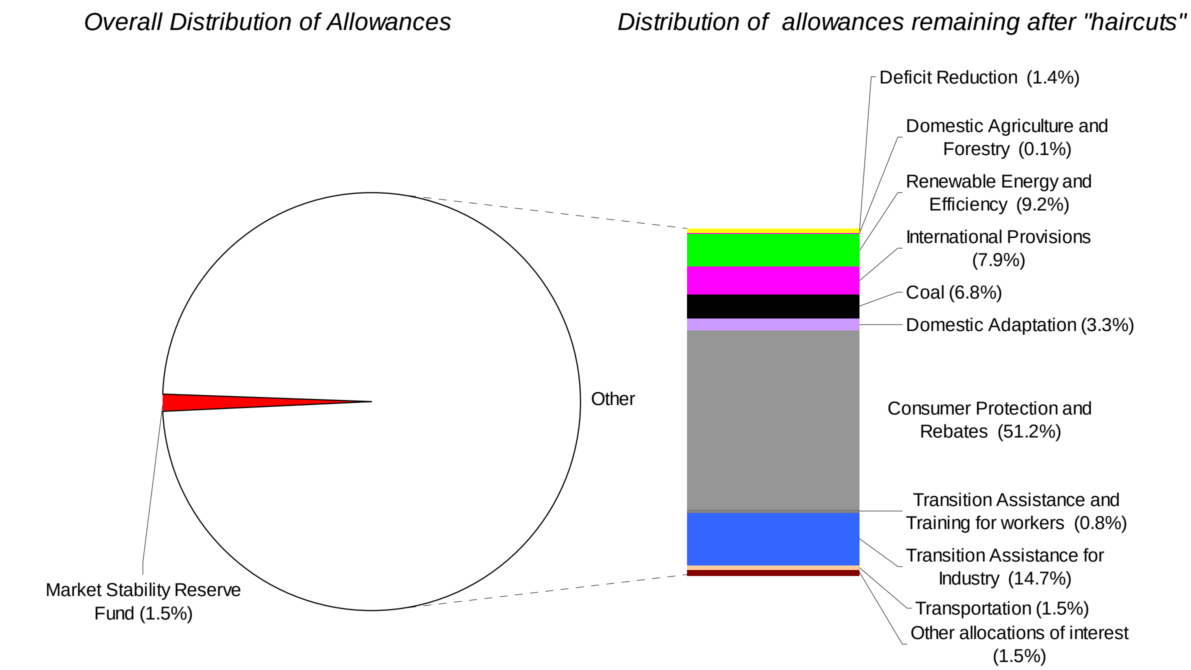


Figure 6: Distribution of Allowances by Program in the House Bill, 2012-2029



Note: The values shown in the bars to the right for the allowances remaining after the haircuts add up to 100 percent

Figure 7: Distribution of Allowances by Program in the Senate EPW Bill, 2030-2050

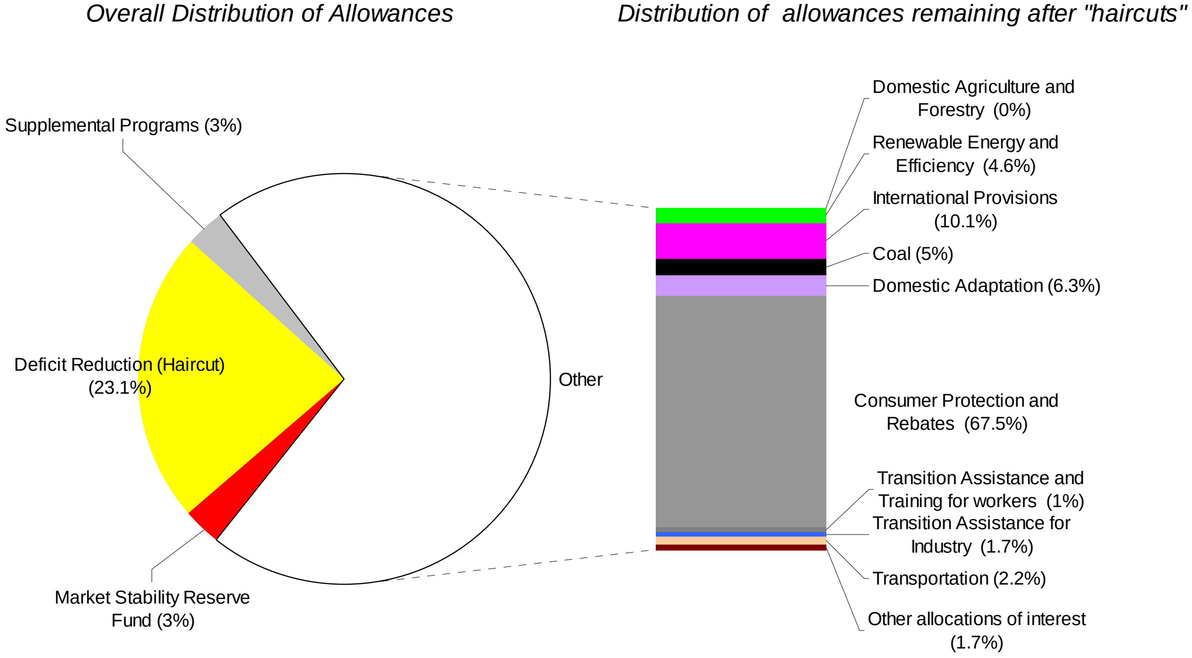
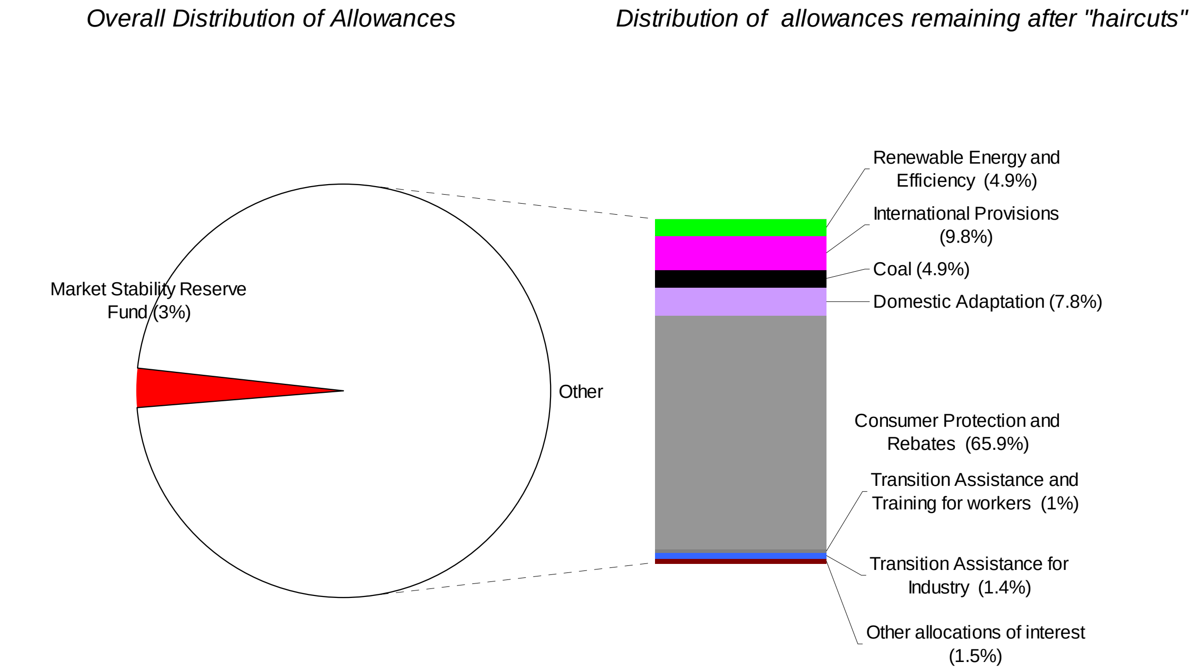


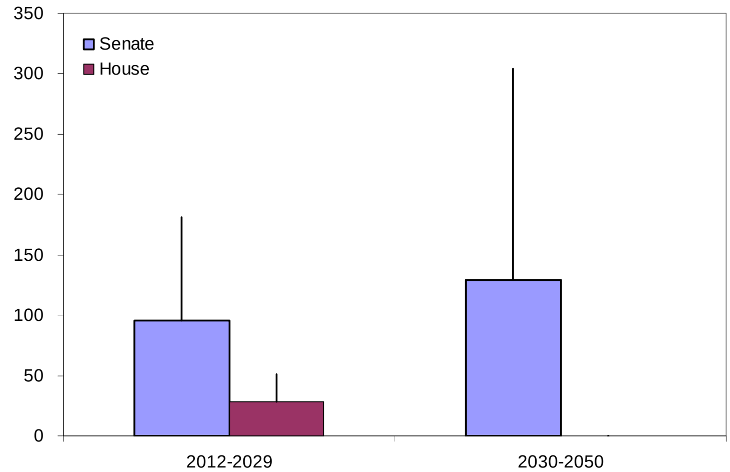
Figure 8: Distribution of Allowances by Program in the House Bill, 2030-2050



Note: The values shown in the bars to the right for the allowances remaining after the haircuts add up to 100 percent

The Senate EPW bill allocates 10 percent of total allowances, plus any allowances leftover after all the other allocations are made (less than 0.1 percent), to the Deficit Reduction Fund between 2012 and 2029, and 23.1 percent of total allowances between 2030 and 2050. By comparison, allocations to deficit reduction in the House bill come only from leftover allowances, which amount to 1.4 percent of total allowances between 2012 and 2026, falling to zero in 2027 and beyond. These differences are a direct result of the difference in budget rules. Eventually, when the two bills are reconciled into law, it is the Senate budget rule that will prevail and thus should be seen as the determining provision.

Figure 9: Deficit Reduction Allocation in House and Senate EPW Bills, (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

2.2 Market Stability

To provide increased certainty about allowance prices and maintain a robust carbon market, the Senate EPW bill creates a reserve pool of allowances (the Market Stability Reserve). If carbon market prices reach a trigger price (set at $28 per ton in 2012, increasing at 5 percent plus the rate of inflation from 2013-2017, and at 7 percent plus the rate of inflation from 2018 onwards), additional emissions allowances from this reserve will be released for auction. This trigger price essentially functions as a "price ceiling" for allowances and helps contain price volatility and costs. The House bill also has a similar Strategic Reserve but with a different formula for calculating the annual rise in the trigger price that provides less cost containment protection.

The Senate EPW bill also provides details on how the reserve pool would be set up initially. From 2012 through 2019, 2 percent of allowances created under the cap will be placed in reserve. From 2020 through 2050, 3 percent of allowances will be allocated to the reserve. The House bill allocated a lower percentage of allowances to the reserve (1 percent from 2012-2019, 2 percent from 2020-2029 and 3 percent from 2030-2050). In subsequent years the reserve is refilled by using reserve auction proceeds to purchase and retire offset credits (only REDD offset credits in the case of the House bill; both domestic and international offset credits in the case of the Senate bill) and establish an equivalent amount of allowances for the reserve.
Both bills also set a minimum reserve price (a "price floor") for allowances that are sold at an auction. This is equal to $10 per ton of CO_2 in 2012 and rises annually at a rate 5 percent greater than the inflation rate. This reserve price is a critical tool to help prevent market collusion from artificially driving down prices, and to maintain the value of the auctioned commodity (in this case, a carbon allowance) when there may be short-term spikes in demand or supply conditions. A reserve price will also ensure that low carbon technology innovators and investors will always have an incentive for making investments in these areas.

***<u>Recommendation:</u>* Any final bill should retain these Reserve Fund and Price Floor provisions to help moderate prices without undermining the emissions reductions goals of the bill. As other amendments to the bill are made, it is also critical to ensure that the market has sufficient oversight and integrity in order to be robust, well-functioning and transparent.**

2.3 Miscellaneous Supplemental Programs

The Senate EPW bill also reserves allowances up-front for a number of supplemental programs and purposes. These supplemental programs and purposes include: agriculture and forestry greenhouse gas reduction; renewable energy; transportation greenhouse gas reduction; industrial emissions reduction; state and local investment in energy efficiency and renewable energy; small local electricity distribution companies; and international climate change adaptation and global security. These supplemental program allocations, which were not included in the House bill up-front allocations, represent 3.7 percent of the total allowances between 2012 and 2029, declining to 3 percent by 2030, and remaining at those levels through 2050.

Taken together, the Senate EPW bill allocates 16.2 percent of the total allowances to the Market Stability Reserve Fund, Deficit Reduction, and supplemental programs between 2012 and 2029 and 29.1 percent between 2030 and 2050. This represents an estimated $132 to $251 billion in cumulative allowance revenues between 2012 and 2029, and $163 to $383 billion between 2030 and 2050, based on a range of allowance price projections from EPA's and EIA's analyses of the House bill.[11] By comparison, the House bill allocates nearly 3 percent of total allowances for deficit reduction and the strategic reserve between 2012 and 2029 ($24 to $43 billion), and 3 percent between 2030 and 2050 ($17 to $39 billion).

3. Allocations for Domestic Agriculture and Forestry

The House bill creates an Agriculture and Renewable Energy Incentives Program that would receive 0.28 percent of the allowance pool limited to the years 2012 through 2016. The allowances would be auctioned, and the revenues would be used to fund projects that reduce, avoid or sequester greenhouse gases but do not meet the rigorous criteria to qualify as an "offset." The revenues could also support "actions to adapt to climate change" and to "prevent conversion of land that would increase greenhouse gas emissions." A portion of these funds can also be used by state and local governments for renewable energy infrastructure deployment.

The Senate EPW bill creates the *Supplemental Agriculture, Abandoned Mine Land, Renewable Energy, and Forestry Greenhouse Gas Reduction and Renewable Energy Program* that, in part, would fund farm and forestry programs that sequester carbon or reduce greenhouse gas emissions. The Senate bill allocates 1 percent of the allowances to this program in 2012 and 2013, 0.28 percent in 2014 – 2016, and an additional 1.0 percent in supplemental allowances in 2012-2050. In contrast, the House bill phases out allocations to this purpose by 2017.

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[11] Based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

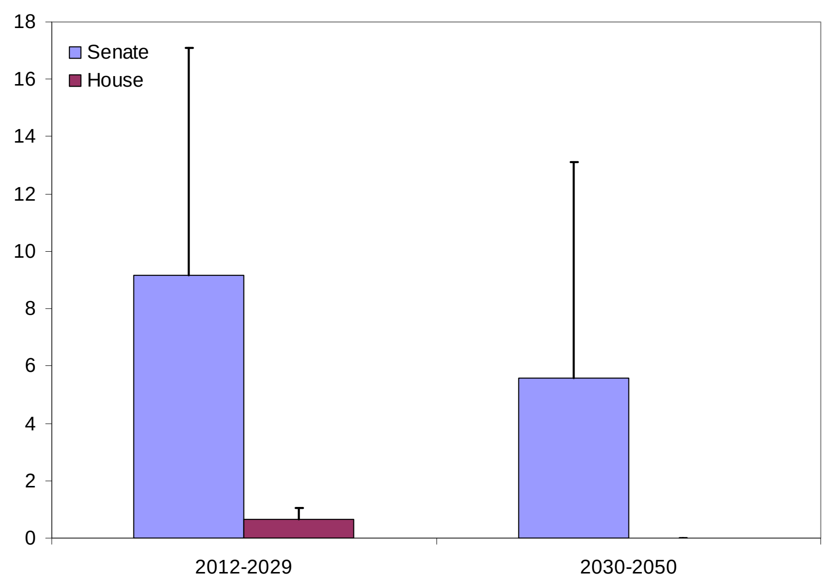
Table 3: Allowance Allocations for Programs that Specifically Include Domestic Agriculture and Forestry

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Haircut Allocation	1.0%	1.0%
Senate Remaining Allocation	0.2%	0.0%
House Allocation	0.1%	0.0%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$9 to $17	$6 to $13
House	$0.6 to $1.0	$0

Agriculture and forestry projects could also be supported through allowance allocations created in the House and Senate bills for renewable energy and energy efficiency (see Section 4 below). Moreover, both bills create agriculture and forestry offsets programs.

Farming is an energy-intensive industry. To limit the upward price pressure on energy sources used by farmers, both bills give allowances to the oil (diesel fuel), electricity (building operations/drying) and natural gas (heating, fertilizer production) sectors through 2025.

Figure 10: Allocations in the House and Senate EPW Bills for Programs that Specifically Include Domestic Agriculture and Forestry (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

In addition, both bills provide allowances to energy-intensive and trade exposed industries, which is likely to include nitrogen fertilizer manufacturers. According to the EPA and U.S.

Department of Agriculture (USDA), the House bill "imposes no uncompensated costs on nitrogen fertilizer manufacturers related to increases in the price of natural gas through 2024."[12]

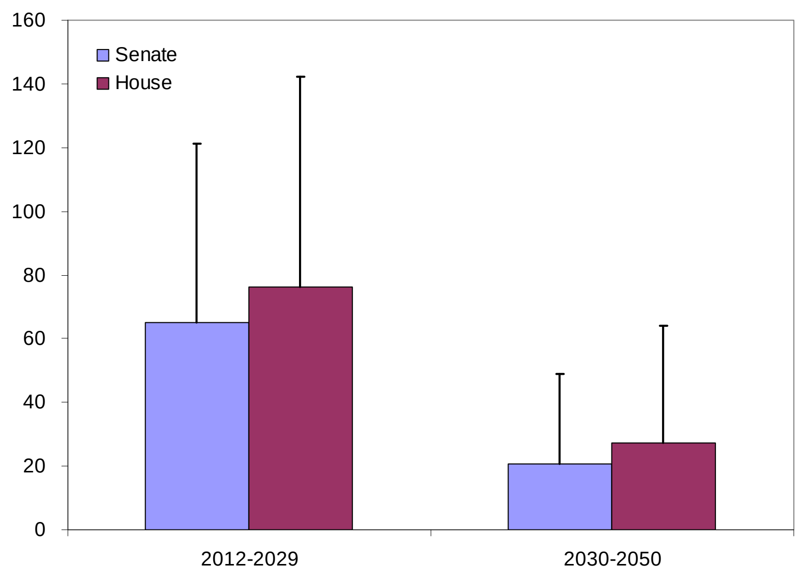
4. Allocations for Renewable Energy and Efficiency

Table 4 and Figure 11 summarize the allowance allocations for renewable energy and energy efficiency in the House and Senate bills. These allocations are further divided into a number of categories, described in more detail in sections 4.1 through 4.6.

Table 4: Allowance Allocations for Renewable Energy and Energy Efficiency

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Haircut Allocation	0.5%	0.5%
Senate Remaining Allocation	9.0%	4.6%
House Allocation	9.3%	5.0%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$65 to 121	$21 to 49
House	$76 to 142	$27 to 64

Figure 11: Renewable Energy and Energy Efficiency Allocation in the House and Senate EPW Bills, (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

4.1 State Energy and Environment Development (SEED) program.

[12] USDA testimony before the House Agriculture Committee. Dec. 3, 2009. http://agriculture.house.gov/testimony/111/h120309/Glauber1.pdf

In general, both the House and Senate bills use a newly created SEED program to distribute the bulk of allowances to state and local energy efficiency and renewable energy programs. Under the Senate bill, the SEED program receives 5.3 percent of the entire pool of annual allowances from 2012 to 2029, and 3.4 percent annually from 2030 to 2050. Depending on allowance prices, this allocation could supply between $43 billion and $79 billion for energy efficiency and renewable energy programs cumulatively from 2012 to 2029, and an additional $19 billion to $44 billion from 2030 to 2050. The House bill language allocates 6 percent of the entire pool of allowances to the SEED program from 2012 through 2029, and 4.4 percent from 2030 to 2050. This represents approximately $49 billion to $91 billion dollars from 2012 to 2029, and $25 billion to $58 billion from 2030 to 2050.

Within the SEED program, the House bill follows a specific formula to distribute annual funds to the states. One half percent of allowances go to support Indian renewable energy and energy efficiency programs. Of the remaining allowances, one third is divided equally among the states, one third is distributed based on population, and one third is distributed based on state-level energy consumption.

The House bill also specifies how each state must distribute its own share of the allocations. For example, no less than 12.5 percent should be distributed to local governments and 20 percent must be made available exclusively for energy efficiency programs that include implementation of new building codes with tighter efficiency requirements, low-income energy efficiency assistance, and other programs for end-use consumers. In addition, at least 5.5 percent of each state's account shall be used for the Retrofit for Energy and Environmental Performance (REEP) program to perform energy efficient retrofits in existing residential and commercial buildings. At least 1 percent of the funds going to REEP must be used for low income consumers. Finally, at least 20 percent of the state accounts must be used exclusively for capital grants, tax credits, production incentives, loans, loan guarantees forgivable loans, and interest rate buy-down programs for manufacturing facilities for renewable energy and electricity storage systems; and deployment of renewable electricity generating technologies and thermal energy technologies. The remaining 47.5 percent of the SEED accounts can be allocated at the discretion of the states for any of the preceding programs or other renewable energy and energy efficiency programs.

In contrast, the Senate language allocates between one percent and three percent of the SEED allocations to Indian tribes. State governments receive 60 percent of the SEED allocations, which is divided up using the following scheme: 30 percent is divided equally among states, 30 percent based on population, 30 percent based on energy consumption, and 10 percent based on an energy-efficiency formula that measures each State's success at decreasing energy consumption or increasing energy efficiency. . State governments are required to spend 40 percent of their allocation for implementing new building codes, low-income energy efficiency programs and other efficiency programs for end-use consumers.

Twenty-five percent of the SEED allocation is reserved for local governments, and the remaining 15 percent is directed to utility-scale (10 MW or greater) renewable energy generators.

Recommendation: ***We urge the Senate to support the allocations provisions contained in the EPW reported bill – in particular the allowances that supply a specified amount of allocations directly to renewable energy generators.***

4.2 Home Heating Oil and Propane Energy Efficiency Allowances

Additional allowances will flow to energy efficiency programs through sections pertaining to home heating, propane, and kerosene. In both bills, allowances starting at 1.9 percent in 2012 and gradually phasing out by 2030 are made available to the states to be used for the benefit of these energy customers. Cumulatively, these represent 1.4 percent of the allowances between 2021 and 2029. While allowances may be distributed to furnish direct rebates to customers, the bills require that at least 50 percent of the value of the allowances under this program flow to energy efficiency programs. Because of this 50 percent mandate, we have put half of this allocation under "Renewable Energy and Efficiency," and the other half under "Consumer Protection" in our aggregated graphs, though the bills would allow an even greater share to be spent on energy efficiency.

4.3. Natural Gas Local Distribution Companies (LDCs)

Under both bills, natural gas distribution companies receive allowances starting at 9 percent from 2016 to 2025, declining to 1.8 percent in 2029. The bills require these allowances to be used exclusively for the benefit of retail customers (under state regulatory oversight). At least one–third of the allowances must be used for to energy efficiency and the remainder to supply direct rebates to consumers. In our graphs we have put one-third of this allocation under "Renewable Energy and Efficiency" and the other two-thirds under "Consumer Protection—Local Distribution Companies," though the bills would allow a greater share to be spent on energy efficiency.

4.4. Electricity Local Distribution Companies (LDCs)

Under the provisions of both bills, the electricity local distribution companies receive a substantial amount of allowances that is intended to mitigate rate impacts from the bills and is therefore considered a consumer protection benefit (discussed in more detail in section 8.1). This allocation is to be used "exclusively for the benefit of retail ratepayers" and would be subject to oversight by state regulators. Unlike the provisions for natural gas and heating oil/propane distributors, there is no requirement that a portion of the electricity LDC allocation be spent on energy efficiency under either bill, and therefore this entire allocation appears under "Consumer Protection—Local Distribution Companies" in our graphs.

Recommendation: ***Energy efficiency programs can supply long term benefits for both consumers and carbon reductions. We recommend that the Senate maintain the energy efficiency requirements of the heating oil/propane and natural gas distributors, and add a similar requirement that at least one-third of the allowance allocations given to the electricity LDCs be devoted to energy efficiency programs.***

4.5. Small Electricity LDCs

Under the provisions of both the House and Senate bills, small electricity local distribution companies (less than 4 million megawatt hours generated per year) receive an additional allocation of .5% of allowances through 2025 and phasing out by 2030. This additional stream of allowances may be used for a) cost-effective electricity savings programs; b) deployment of renewables; and c) low-income residential assistance. However, the Senate bill would allow the small electricity LDCs to also use this allocation to pay the costs of compliance with the cap and trade program, which could leave nothing for energy efficiency, renewable energy, or low income assistance. In our analysis we count this allocation as part of "Consumer Protection – LDCs" under the House bill" and as part of "Transition Assistance for Industry" under the Senate bill.

4.6 Rural Electric Cooperatives, Consumer or Publicly-Owned Small LDCs

In addition to the allocation described in 4.5, the Senate bill makes yet another allocation of .5% of allowances through 2025, phasing out by 2030. This allocation is intended for a different but overlapping group of LDCs that are rural cooperatives or consumer or publicly owned (though an apparent cross-referencing error creates some ambiguity about which section governs this allocation). And some of this additional allocation could go to large rural cooperatives as well, depending on how the language is read. This allocation may only be spent on energy efficiency, renewable energy, or low-income assistance, and we have placed it under "Consumer Protection – LDCs."

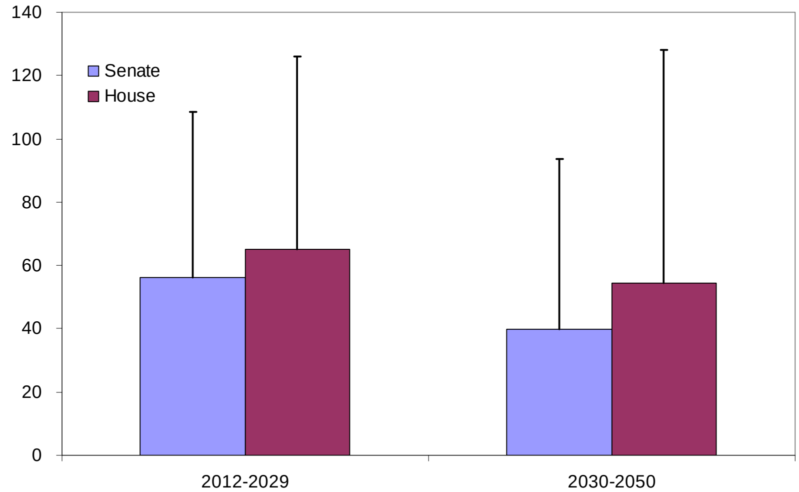
<u>Recommendation:</u> The Senate, like the House, should require small LDCs to spend their extra allocation only on programs that directly benefit consumers such as energy efficiency, renewable energy, or low-income assistance, not on compliance costs. It should also make clear that the additional allocation described in section 4.6 only goes to small rural cooperatives.

5. Allocations for International Provisions

The House and the Senate bills contain several international provisions, related to funding for tropical forest protection, international clean technology deployment and international adaptation.[13]

[13] Note that additional funding for tropical forest protection, international clean technology deployment, and international adaptation is included in the House and Senate fiscal year 2010 appropriations bills. For tropical forest protection, Chairman Leahy committed $275 million in the Senate, which apparently combines funding for exclusively tropical forests protection programs and general conservation programs that include tropical forests protection activities. The House adds $145 million. For clean technology deployment, the Senate would add $400 million, and the House $225 million. For adaptation, the Senate would add $200 million, while the House adds $100 million.

Figure 12: International Provisions Allocation in the House and Senate EPW bills, (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

5.1 Reduced Emissions from Deforestation and Forest Degradation in Developing Countries (REDD)

The Senate EPW bill allocates allowances for tropical forest activities, generally referred to as "REDD" (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries). This allocation, called "supplemental reductions from reduced deforestation" in the bill, is based on the recognition that reducing tropical deforestation, which is responsible for about 15 percent of the world's greenhouse gas emissions, is one of the most cost-effective ways to limit global warming pollution worldwide.

The EPW bill allocates 5 percent of allowances to this purpose through 2025, 3 percent between 2026 and 2030 and 2 percent from 2031-2050 (after the up-front allocations, as explained in Section 2). The percentage allocation is the same in the Senate EPW bill as it was in the House bill. UCS estimates that, for the Senate bill, this allocation will result in funding of between $31 billion and $58 billion over the period 2012-2029, and between $8 billion and $19 billion from 2030 to 2050. The trend of the funding is to rise in the early years, as both carbon prices and the percent of the economy covered by the bill's cap increase; to reach a plateau in the early 2020s, and then to fall in the late 2020s and after as the 5 percent is reduced to 3 percent and then to 2 percent.

Table 5: Allowance Allocations for Reduced Emissions from Deforestation and Forest Degradation in Developing Countries (REDD).

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	4.6%	2.1%
House Allocation	4.6%	2.1%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$31 to $58	$8 to $19
House	$37 to $70	$11 to $26

The tropical forest allocation will be used to achieve two principal goals. First, it will compensate tropical forest countries that reduce their emissions from deforestation. Second, it will fund programs that increase these countries' capacity to make such reductions; to provide measurable, verifiable and reportable (MRV) proof that such reductions have been made; and to supply this proof to both public (non-offset) and private (offset) buyers of credits. Thus, the 5 percent allocation both provides public funding to reduce emissions, and makes it possible for countries to begin to receive private funding. Private funding levels will likely overtake public funding levels in the 2020s, both because more countries will be able to participate in the private market and because the allocation of public funds will diminish from 5 percent to 3 percent and then 2 percent.

Both the House and Senate bills set out two quantitative goals for the emissions reductions to be achieved from the allocation: an annual rate of 720 million metric tons of CO_2 by 2020, and a cumulative total of 6 billion metric tons by 2025. UCS analyses indicate that these are reasonable and achievable goals. The 2020 annual figure would represent a reduction equal to 10 percent of U.S. 2005 emissions, adding considerably to the reductions achieved by the bill in that year.

Recommendation: ***It is very important that Congress maintain the 5% allocation for tropical forests, both because of its cost-effectiveness in dealing with global warming pollution and because of the commitments that the U.S. government made in Copenhagen to pay our fair share of the global effort. The 5% tropical forest allocation also benefits the U.S., helping to increase the future supply of offsets and reducing low-cost competition with U.S. agriculture and timber production.***

5.2 International Clean Technology Deployment

To avoid the worst effects of global warming, all countries will have to make dramatic reductions in their emissions by mid-century. For many developing countries facing immediate development challenges, financing these reductions on their own will be difficult. As such, as part of a global effort to reduce emissions, the U.S. should help finance clean technology deployment in developing countries. Both the Senate EPW and House-passed bills include provisions to help finance the transition to low-carbon development in developing countries.

The table below summarizes the percentage of allowances and the dollar value of allowances allocated to international clean technology deployment in the Senate and House bills.

Table 6: Allowance Allocations for International Clean Technology Deployment.

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	1.5%	3%
House Allocation	1.7 %	4%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$11 to $21	$12 to $28
House	$14 to $28	$22 to $51

Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

The Senate bill currently allocates 1 percent of allowances to this purpose from 2012-2022, 2 percent from 2022-2026 and 3 percent after that. These provisions are critically important to help jump-start clean energy worldwide. However, they fall short of what the U.S. can and should contribute to this global effort.

***Recommendation:* An appropriate U.S level of funding for international clean technology deployment would be about $15-22 billion per year, as part of an overall global fund of $75-111 billion a year.[14] This would be a fair share based on this country's economic standing and contribution to global emissions. This funding must be in addition to existing development assistance. It is also critical to front-load this financing so that it can be most effective in forestalling lock-in to dirty technologies as countries develop their economies.**

5.3 International Adaptation

The House and Senate bills also establish a fund to help developing countries cope with the unavoidable effects of climate change, some of which are already unfolding in the form of extreme weather patterns.[15] Runaway climate change has the potential to cause increases in sea level rise, droughts, floods, wildfires, water shortages, food shortages, the severity of hurricanes, and the unpredictability of monsoon cycles—all of which put human health and lives at risk. Many developing countries least implicated in the build-up of heat-trapping emissions in the atmosphere will be most vulnerable to the effects of climate change. These include several small island nations and sub-Saharan African countries.

The Senate bill sets up an international climate change adaptation and global security program involving the State Department, USAID, Treasury Department, and the EPA. The funding for this will come from allowance allocations.

The table below shows the allowance allocations in the House and Senate bill to help fund international adaptation.

[14] This is based on a Project Catalyst study that estimates how developed countries would need to provide to help finance clean energy development in developing countries between 2010 and 2020.
[15] See http://unfccc.int/essential_background/feeling_the_heat/items/2904.php

Table 7: Allowance Allocations for International Adaptation.

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Haircut Allocation	0.2%	0.0%
Senate Remaining Allocation	1.8%	5%
House Allocation	1.7%	4%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$14 to $29	$20 to $46
House	$14 to $28	$22 to $51

Recommendation: ***Given its economic standing and contribution to global emissions, the U.S. must provide a fair share of adequate and predictable levels of funding to help vulnerable people and places cope with climate change, and these must be additional to existing development aid commitments. A recent World Bank study[16] estimates that it will cost $75 - $100 billion each year for developing countries to adapt to climate change from 2010 to 2050.[17] This would indicate that a fair U.S. share would be $15 - $20 billion per year for that period, based on this country's economic standing and contribution to global emissions. Clearly, the Senate and the House allocations fall far short.***

6. Allocations for Coal

The two primary allocations related to coal under both the House and Senate bills (and included under the heading of "coal" in the tables and charts in Section 1) are: (a) subsidies for the deployment of carbon capture and sequestration (CCS) technology; and (b) allocations to merchant coal plants. The Senate provisions are very similar to their counterpart allocations under the House bill. (See also Section 8.1 for a discussion of allocations made directly to electric utilities, which are partly based on the coal plant emissions attributable to them).

6.1 Carbon Capture and Sequestration

The dollar value of the allocation to CCS projects under the Senate and House bills, and its percentage relative to total allocations under each bill, are:

[16] The Costs to Developing Countries of Adapting to Climate Change. Available at: http://siteresources.worldbank.org/INTCC/Resources/EACCReport0928Final.pdf

[17] The study assumes an approximately 2°C rise in global temperatures. Obviously, a greater rise in temperatures would lead to higher costs.

Table 8: Allowance Allocations for Carbon Capture and Sequestration.

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	3.6%	5%
House Allocation	3.6%	5%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$25 to $50	$20 to $46
House	$30 to $59	$27 to $64

The percentage of allowances allocated to CCS subsidies are the same in the Senate and House bills, except as affected by the "haircuts." However, under the Senate bill, the first phase of the program – under which CCS projects receive larger guaranteed subsidies per ton of CO_2 sequestered – is greatly expanded, and payments can be made before a project is built. Under both bills up to 15 percent of this allocation can be spent on industrial sources other than coal power plants, but under the Senate bill, only after 10 GW of coal power plants have been subsidized.

<u>Recommendation:</u> The allowances allocated to CCS under both the Senate and House bills are far too large and unconditional given that CCS is as-yet undemonstrated at commercial scale. Moreover, these generous subsidies are on top of a separate, $10 billion CCS demonstration program created under both bills (which is not funded by allowance allocations but by a special assessment on distribution utilities following a referendum, and therefore not reflected in this analysis). These subsidies should be greatly reduced, and the bills should include a process for evaluating the technology's performance after several years and redirecting the subsidies if CCS fails to adequately perform.

6.2 Merchant Coal

Merchant coal plants, which are non-utility coal plant operators, will receive allowances for 2012 amounting to up to half their carbon dioxide emissions prior to 2009, declining at the same rate as the overall allocation to the power sector and phasing out completely by 2030. The amounts they receive are:

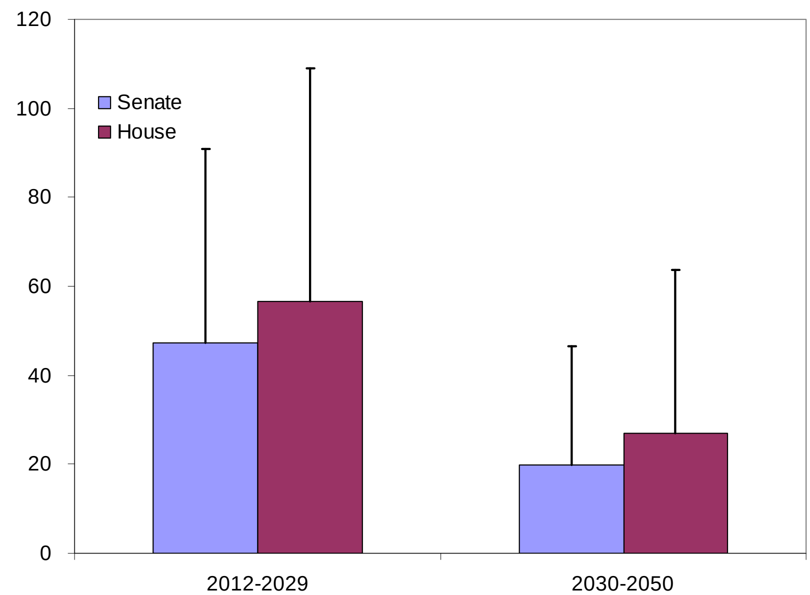
Table 9: Allowance Allocations for Merchant Coal.

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	3.3%	0.0%
House Allocation	3.3%	0.0%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$22 to $41	$0
House	$27 to $50	$0

The overall amounts and the formula for distribution are the same between the Senate and House bills, except as affected by the "haircuts." In addition, under both bills, some coal plant operators (merchant and otherwise) will receive an unknown portion of the allowances given to long-term contract generators (see Section 10.2), which as a group get up to 1.4 percent of the total allocations through 2029.

<u>Recommendation:</u> While the merchant coal allocation is listed under a section entitled "Electricity Consumers," it would not likely benefit consumers since merchant plants, by definition, operate in competitive markets and will still charge their customers the marginal price of power in that market (typically set by natural gas plants). The allocation, which is more accurately seen as benefiting the merchant coal operators themselves, diminishes the incentive to cut emissions. It should therefore be redirected toward measures that actually reduce emissions and help electricity consumers (like renewable energy or energy efficiency).

Figure 13: Coal Allocations in the House and Senate EPW Bills, for (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

7. Allocations for Domestic Adaptation to Climate Change

Both the House and the Senate bills divide allocations to domestic adaptation among state adaptation programs, public health, state natural resources adaptation programs, and federal agency natural resources adaptation programs. The state adaptation programs are divided among states and tribes in the House bill and among coastal programs in the Senate bill. (The Senate bill also prioritizes water infrastructure, wildfire, and flood protection, but does not specify allocation amounts for these priorities). The House and Senate bills provide the same amount for public health adaptation programs, roughly 0.1 percent of allowances. The Senate bill gives slightly more to coastal agencies for state natural resources adaptation and slightly less to state wildlife agencies as compared to the House bill. Funding for the federal natural resources adaptation programs is disbursed through a number of relevant agencies. The Senate bill gives slightly more to the USDA, but less to the Department of the Interior, National Oceanic and

Atmospheric Administration, Environmental Protection Agency and Army Corps of Engineers, as compared with the House bill. Both bills provide more for funding for domestic adaptation in later years that in the early years

Table 10: Allowance Allocations for Domestic Adaptation.

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	2.7 %	6.3 %
House Allocation	3.3 %	8.0 %
Cumulative Value of Allowances		
(Billions of 2007 $, discounted at 4%)		
Senate	$19 to $38	$25 to $58
House	$28 to $56	$43 to $102

***Recommendation:* The tiny percentage of allowances allocated to domestic adaptation needs to be increased to adequately build the domestic resiliency to the climate change impacts that prior emissions of heat-trapping gases have already locked in.**

8. Allocations for Consumer Protection and Rebates

The House and Senate bills both allocate money to protect consumers from energy price increases as we transition to a clean energy economy. During the first years of the program, money will be made available to protect consumers against electricity, natural gas, heating oil and propane price increases. After this transition period, a large fund is created that provides tax dividends or rebates to consumers. A separate fund has been created to protect low- and middle-income families throughout the duration of the program.

8.1 Electricity Bills

In both bills, the regulated utilities that distribute electricity to consumers (also called electricity local distribution companies or electricity LDCs) will receive 28.5 percent of allowances from 2012 to 2029 and then zero after that. This represents $229 billion to $425 billion through 2029 in the House bill. In the Senate Bill, because of the additional haircuts, this represents $192 billion to $355 billion through 2029.

Both the House and Senate bills allocate allowances to LDCs based on the same formula, which looks at both the LDC's total emissions and its total power deliveries. Half of the available allowances are distributed based on the average annual CO2 emissions attributable to generation of the power that the LDC distributed during a specified base period. The other half of allowances is distributed based on each LDC's total electricity deliveries.

The LDCs are directed to use these allowances solely for the benefit of ratepayers, distributed equitably across all rate classes. To the extent these allocations are distributed as consumer rebates, the LDC must to the maximum extent practicable provide the rebates independent of the quantity of power a ratepayer consumes (except for industrial consumers, where the LDC is allowed to pass through the value of the allowances based on the quantity of electricity delivered, muting the price signal for these consumers). State utilities regulators are given oversight over how electricity LDCs spend these allowances, to ensure that they are used to benefit ratepayers.

For this analysis we have placed this allocation under "Consumer Protection – Local Distribution Companies."

Both bills also include a special allocation for small electricity utilities that deliver less than 4 million megawatt-hours per year, based on emissions resulting from retail deliveries. This money must be used to fund cost-effective energy efficiency programs and renewable energy deployment programs and to assist low-income residential ratepayers, though the Senate bill would also allow the small LDCs to spend the allowance value on compliance (as discussed in part 4.5). In both bills, small electricity utilities receive 0.5 percent of allowances through 2029, which represents $4 billion to $7 billion in the House bill, and $3 billion to $6 billion in the Senate bill because of the haircut. And the Senate bill includes another special allocation to rural cooperative and consumer or publicly owned small LDCs of roughly the same size to be used for energy efficiency, renewable energy, and low income assistance, discussed in section 4.6. See sections 4.5 and 4.6 for a discussion of how these allocations are categorized in our graphs.

8.2 Natural Gas Bills

In the both bills, the regulated utilities that distribute natural gas to consumers will receive 6.1% of allowances from 2016 through 2029. This amounts to $50 billion to $97 billion in the House bill and $42 billion to $81 billion in the Senate bill due to the haircut.

One-third of these allowances must be used for energy efficiency programs. The remainder must be passed through to consumers through lower prices under provisions similar to those that apply to the regulated electric utilities. In our analysis we have placed one-third of this allocation under "Renewable Energy and Efficiency" and the rest under "Consumer Protection – LDCs".

8.3 Heating Oil Bills

Both bills allocate 1.4 percent of allowances to Home Heating Oil and Propane Consumers between 2012 and 2029. This represents $11 billion to $21 billion in the House bill and $10 billion to $18 billion in the Senate bill because of the haircut. These allowances must be used for rebates to consumers and at least half must go to investments in energy efficiency. In our graphics we included half of this allocation under "Renewable Energy and Efficiency" and half under "Consumer Protection."

8.4 Low- and Middle-Income Protection

The House directs 15 percent of of allowances every year through 2050 for low and middle income households, which totals $122 billion to $232 billion in 2012-2029 and $81 billion to $191 billion from 2030-2050. The Senate directs 15 percent of allowances to this purpose every year from 2012 to 2029 but increases the percentage to 18.5 percent for the 2030 to 2050 period, totaling $102 to $194 billion from 2012 to 2029 and $73 billion to $172 billion from 2030 to 2050. These allowances are to be auctioned and the proceeds distributed back to consumers through a combination of refundable tax credits and electronic benefit payments.

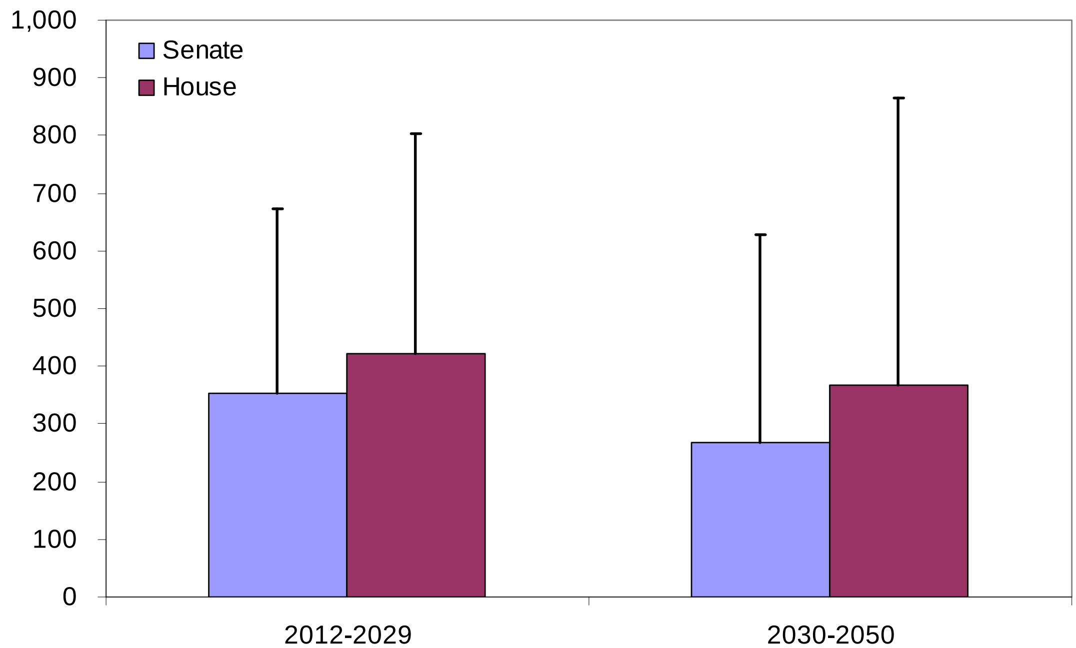
8.5 Consumer Climate Dividend

In the House and Senate bills, many of the allowance allocation provisions phase out starting in 2026. As these allowance allocations are phased out, both bills direct that the remaining allowances be auctioned and the proceeds distributed to consumers through tax credits. In addition, from 2027 on any leftover allowances are allocated to this purpose instead of deficit reduction.

Table 11: Allowance Allocations for Consumer Protection and Rebates

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	51.5 %	67.5 %
House Allocation	52.0 %	68.0 %
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$354 to $672	$267 to $628
House	$423 to $803	$368 to $866

Figure 14: Consumer Protection Allocation in the House and Senate EPW Bills, (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

<u>Recommendation</u>: Because of the very cost-effective energy savings that can be obtained through energy efficiency programs, the Senate should require that one-third of the allocation to electricity LDCs be spent on energy efficiency. Not only will energy efficiency programs save consumers money and help mitigate any cost increases in the bills, they will also generate significant emission reductions to help meet the cap.

9. Allocations for Transition Assistance and Training for Workers

Both the House and Senate bills include some up-front provisions to help workers in industries that are disproportionately affected by the legislation, as well as create opportunities for workers to transition into new clean energy jobs. In addition to worker training for energy efficiency and renewable energy jobs, the Senate bill also includes a special category of funding to train workers for the nuclear power industry.

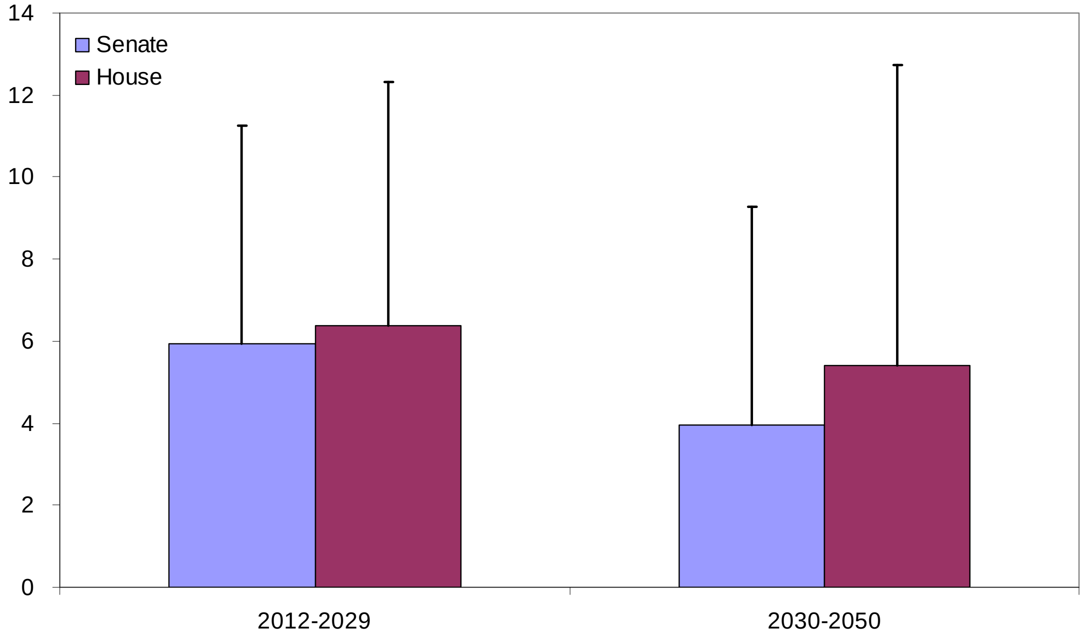
In both bills, the worker transition assistance starts at 0.5 percent of allowances in 2012 and ramps up to 1 percent from 2022 onwards. The energy efficiency and renewable energy worker-training fund is only available for the first four years of the program (2012-2015) in the Senate bill. For the first two years, the program gets 1 percent of allowances, but after that, the allocation drops to 0.05 percent. In addition the Senate bill allocates 0.5 percent of allowances in 2012 and 2013 and 0.05 percent in 2014 and 2015 for Nuclear Worker Training. The House bill only has funding for energy efficiency and renewable energy worker training for the first two years of the program (2012 and 2013), equal to 0.75 percent of the allowances.

Table 12: Allowance Allocations for Transition Assistance and Training for Workers

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Remaining Allocation	0.9%	0.7%
House Allocation	1.0 %	1.0 %
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$6 to $11	$4 to $9
House	$6 to $12	$5 to $13

Recommendation: ***The final bill should reallocate some of the assistance away from corporate interests to direct assistance for workers. In addition, because energy efficiency and renewable energy will be the growth industries of the future, transition assistance to workers should be phased out within the first 15 years of the program, but worker training should continue to be funded throughout the life of the program. Funding for nuclear worker training should be made commensurate with the role of nuclear power in the set of climate solutions.***

Figure 15: Worker Transition Assistance Allocation in the House and Senate EPW Bills (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

10. Allocations for Transition Assistance for Industry

Transition assistance for industry comes in a number of ways in the House and bills.

10.1 Trade-exposed, energy-intensive industries

Allowances allocated to energy intensive and trade exposed industries is the largest category under transition assistance, and most of this assistance is front-loaded in the first half of the program (2012-2029) in both the House and the Senate bills. The Senate bill makes allocations to this purpose both before and after the "haircuts", and allows for them to be extended or reduced based on Presidential discretion. The House bill allocations phase out by 2035 unless the President makes a determination that this would result in severe economic harm to the eligible industries.

This provision is designed to help these industries remain competitive with industry in countries that do not regulate carbon emissions, and prevent a "leakage" of emissions that could result if industries move to countries without regulation. Studies show that there is likely to be a very modest effect on competitiveness for most energy-intensive sectors due to climate legislation and that this effect is confined to a very narrow group of industries.[18]

[18] Joseph E. Aldy and William A. Pizer. 2009. The Competitiveness Impacts of Climate Change Mitigation Policies http://www.pewclimate.org/international/CompetitivenessImpacts

Table 13: Allowance Allocations for Trade-exposed, energy-intensive industries.

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Haircut Allocation	0.5 %	0.5 %
Senate Remaining Allocation	12.0 %	1.4 %
House	11.8 %	1.4 %
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$89 to $164	$9 to $21
House	$96 to $184	$7 to $17

<u>Recommendation</u>: The final bill should recognize competitiveness and leakage concerns while avoiding trade protectionism and providing positive encouragement to other countries to take steps to reduce their emissions. These allocations should be carefully targeted and phased out more quickly to ensure that these industries transition to clean energy, which will be important if they are to remain globally competitive.

10.2 Long Term Contract Generators

This allocation section is much smaller and phases out completely by 2030. These allocations are designed to provide assistance to generators who are locked into longer term contracts for fossil-intensive sources of energy and cannot switch out of them quickly in response to the cap.

Table 14: Allowance Allocations for Long Term Contract Generators

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	1.4 %	0%
House Allocation	1.4 %	0%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$10 to $18	$0
House	$12 to $21	$0

<u>Recommendation:</u> The Senate should significantly reduce or eliminate the long-term contract allowance allocations, and the amount of time it's available, at least for more recent contracts. These generators assumed the (very foreseeable) risk that their costs would someday rise under future greenhouse gas regulations. They should not be shielded from the consequences of that business decision by receiving additional allocations under these bills, particularly since they may have negotiated a higher price to compensate them for accepting this risk.

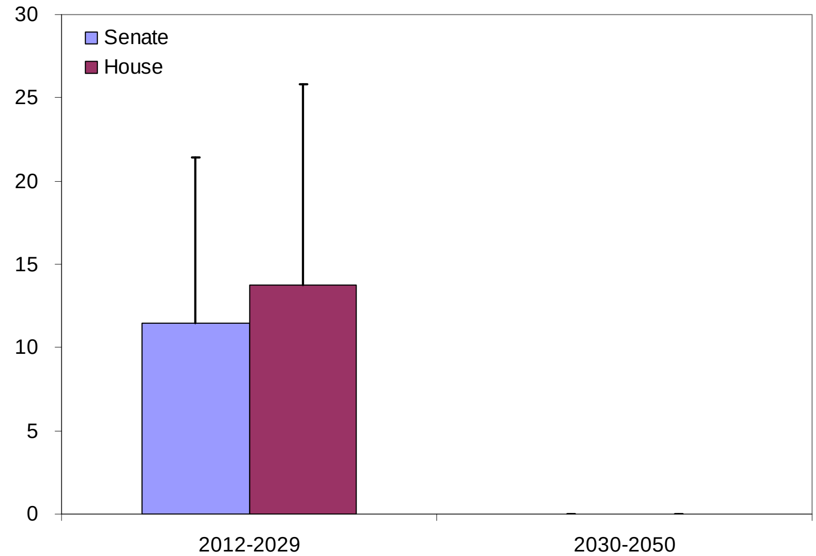
10.3 Petroleum Refiners

Both the House and Senate bills include a provision for allowance allocations to domestic petroleum refiners, with an additional allocation exclusively for small refiners. By 2027, these provisions are phased out. Between 2012 and 2029, the Senate bill allocates an average of 0.9 percent of allowances to domestic refiners and an additional 0.8 percent to small refiners. In the same period, the House bill allocates an average of 1.5 percent to domestic refiners and 0.2 percent to small refiners.

Table 15: Allowance Allocations for Petroleum Refiners.

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	1.7 %	0%
House Allocation	1.7 %	0%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$11 to $21	$0
House	$14 to $26	$0

Figure 16: Petroleum Refiners Allocation in the House and Senate EPW Bills (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

***Recommendation:* The major oil companies, which own most of the U.S. refineries, are not in need of transition assistance. They have been making record profits in recent years and are expected to remain quite profitable as world demand for oil is projected to grow over the period of these allocations. The assistance to small refiners that are independent from the major oil companies may be appropriate, but the general assistance to refiners should be eliminated.**

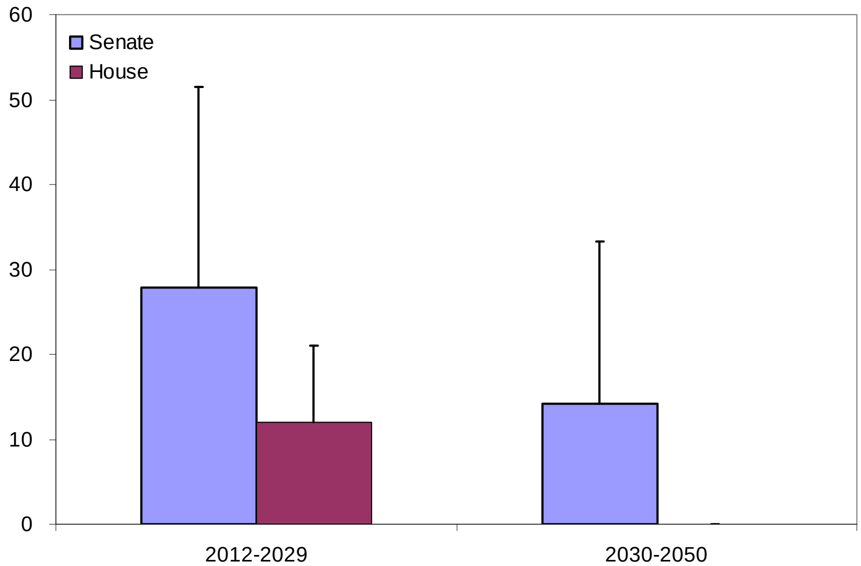
11. Allocations for Transportation

While significant progress in reducing global warming emissions from transportation has been achieved through the 2007 energy bill and President Obama's proposed vehicle emission standards, much more needs to be done to move the nation away from its dependence on oil and the associated emissions. The House and Senate bills both provide funding of about $10 billion to $20 billion to support the development of more advanced vehicle technologies to reduce fuel consumption and shift to electric drive vehicles, though the House bill covers a more limited set of technologies. This funding is made available to automakers and electric utilities and phases out by 2025, as is appropriate for technologies that should be fully commercialized by then.

The Senate bill contains an additional $18-$34 billion from 2012-2029 and $14-$33 billion from 2030-2050 that can be provided to state and metropolitan government agencies for programs that cut global warming emissions linked to transportation systems and infrastructure.

Both the House and Senate bills allocate far less to the transportation sector than needed to support investment in a lower carbon transportation future. In this timeframe, we estimate that the transportation sector will need $1-$2 billion per year to support loan guarantees to automakers for efficient vehicles, nearly $5-10 billion a year to support vehicle electrification, up to $20 billion a year to support expanded transit, and at least $2 billion a year to support low carbon biofuels. We estimate that that the transportation sector will generate $20-$40 billion each year, or about 10 times what would be allocated to the sector through 2029.

Figure 17: Transportation Allocation in the House and Senate EPW Bills, (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

<u>Recommendation:</u> The final bill should significantly expand the transportation technology funds to support the future of the auto industry. The Senate's approach of allocating technology funding to the Department of Energy and inclusion of a broader set of technologies should be preserved in the final bill. The Senate's funding for state and metropolitan government programs to reduce global warming emissions from transportation should be adopted and significantly expanded to provide greater funding. Additional funds should be provided to support low carbon biofuels. Total funds needed for investing in transportation carbon reductions should be on the order of $30-$40 billion per year.

12. Allocations for Clean Energy Research and Development

Funding for clean energy research and development is critical to getting new technologies on-line and to helping achieve the deep emissions reductions needed by mid-century. Investing in these areas will also help the U.S. stay at the forefront of the clean energy revolution that will drive global economic growth in the coming years. Public funding of energy-related research and development (R&D) is necessary because the private sector is often unwilling or unable to take on very large infrastructure projects or projects that have a long time horizon for commercialization. In fact, public funding up-front can often catalyze and multiply private investments later. Unfortunately public investment in clean energy R&D has suffered a significant decline in recent decades.[19] Both the House and the Senate bills take small but important steps to reverse this trend.

In the Senate bill, R&D funding is allocated to energy innovation hubs and the Advanced Research Projects Agency-Energy (ARPA-E)[20] research effort. These initiatives would get 2 percent of allowances or $13 billion to $25 billion between 2012 and 2029 and 1.7 percent of allowances or $7 billion to $16 billion between 2030 and 2050. These amounts are quite similar to the provisions in the House bill, which allocate 1.5 percent of allowances or $12 billion to $23 billion between 2012 and 2029 and 1.5 percent of allowances or $8 billion to $19 billion from 2030-2050; however, the Senate frontloads slightly more of the funds.

Table 16: Allowance Allocations for Clean Energy R&D

	2012-2029	2030-2050
Average Percentage of Allowances		
Senate Allocation	2 %	1.7%
House Allocation	1.5 %	1.5%
Cumulative Value of Allowances (Billions of 2007 $, discounted at 4%)		
Senate	$13 to $25	$7-16
House	$12 to $23	$8-19

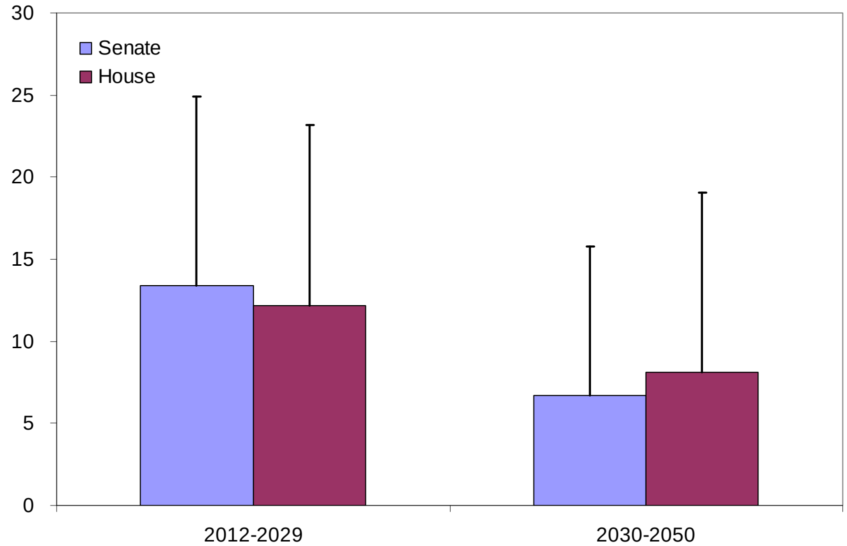
<u>Recommendation</u>: Funding for clean energy research and development must be increased substantially to ensure the United States can reap the economic benefits of innovation and continue to make deep and cost-effective cuts in its emissions. We also need to make these investments to stay competitive with other countries and maintain global leadership in clean technologies. An investment on the order of $15-30 billion per year would be necessary to achieve these goals.[21]

[19] Federal support of energy R&D peaked in the early 1980s at around $8 billion a year (in 2002 dollars). Since then, it has declined sharply and reached a plateau around $3 billion to $4 billion a year—a tiny fraction of the roughly $100 billion of total public research and development funding in the U.S. (Victor, David, and Cullenward, Danny. "Making Carbon Markets Work," Scientific American, September 24, 2007.)

[20] According to its website, ARPA-E's mission is to "fund projects that will develop transformational technologies that reduce America's dependence on foreign energy imports; reduce U.S. energy related emissions (including greenhouse gases); improve energy efficiency across all sectors of the U.S. economy and ensure that the U.S. maintains its leadership in developing and deploying advanced energy technologies." See http://arpa-e.energy.gov/ for more details.

[21] See, for example:

Figure 18: Clean Energy Research Allocation in the House and Senate EPW Bills comparison, (Billions of Discounted 2007 Dollars)



Note: The range of dollar values are based on allowance prices from Scenario 2 of EPA's June 2009 analysis of the House bill and the Basic Case from EIA's August 2009 analysis of the House bill.

13. Conclusions and Overall Recommendations

UCS recommends that the substantial allowance value created under a cap should go to uses that help reduce emissions here and abroad, help in the transition to a clean energy economy, bring benefit to households, help vulnerable communities adapt to climate change, and to reduce emissions from tropical deforestation. While S. 1733 and HR. 2454 do fund these purposes, they do not fund them at the levels that are required. In addition, there are substantial giveaways to the fossil industry that should be reduced and reallocated to the purposes listed above.

Kammen, Daniel M. "Climate Change Technology Research: Do We Need a 'Manhattan Project' for the Environment? Testimony before Congress,September 21, 2006.
Letter from experts on energy and climate to members of Congress, President Bush and the presidential candidates. 2007.
http://dotearth.blogs.nytimes.com/2007/12/03/big-boost-in-energy-science-sought-in-letter-to-elected-and-aspiring-leaders/

APPENDIX A: UCS Category Aggregation of House and Senate Bill Allowance Allocation Categories (with reference to relevant sections in the bills)

UCS Category	Senate Bill Section	House Bill Section
Deficit Reduction		
Deficit Reduction Fund	SEC. 771. (d)(2)	
Deficit Reduction (from leftover allowances)	SEC. 771. (f)(1)	SEC. 782. (q)
Market Stability Reserve Fund		
Market Stability Reserve Fund	SEC. 771. (b)(1) and SEC. 771 (d)(9)	SEC. 726. (b)
Domestic Agriculture and Forestry		
Supplemental agriculture, abandoned mine land, Renewable Energy, and Forestry	SEC. 771. (d)(3)	
Supplemental agriculture, Renewable Energy, and Forestry	SEC. 771. (b)(9)	SEC. 782. (u)
Renewable Energy and Efficiency		
State and local investment in energy efficiency and renewable energy	SEC. 771. (d)(6)	
State and local investment in energy efficiency and renewable energy	SEC. 771. (a)(9)(A)	SEC. 782. (g)(1) and (3)
State and local investment in EE and RE (4 year ahead allocation)	SEC. 771. (a)(9)(B)	SEC. 782. (g)(1)(F)
Natural gas Energy Efficiency	SEC. 771. (a)(2) -> SEC. 773. (c)(4)	SEC. 782. (b) -> SEC. 784. (c)(5)
Home heating Oil Energy Efficiency	SEC. 771. (a)(2) -> SEC. 774. (d)(2)(A)	SEC. 782. (c) -> SEC. 785. (c)
Building code updates	SEC. 771. (a)(10)	SEC. 782. (g)(2)
International Provisions		
International climate change Adaptation and global security	SEC. 771. (d)(8)	
International climate change Adaptation and global security	SEC. 771. (a)(14)	SEC. 782. (n)
Supplemental reductions from reduced deforestation	SEC. 771. (c)(1)	SEC. 781. (a)
International clean energy technology deployment	SEC. 771. (a)(13)	SEC. 782. (o)
Coal		
Merchant Coal Units	SEC. 771. (a)(1)(A) -> SEC. 772. (c)(6)	SEC. 782. (a)(1) -> SEC. 783. (c)(6)
Deployment of carbon capture and sequestration technology	SEC. 771. (a)(6)	SEC. 782. (f)
Electric Generating Units	SEC. 780. (c)(2)	SEC. 786 (f)
Industrial Sources	SEC. 780. (g)(1)(A)	SEC. 786 (f)
Domestic Adaptation		
State programs for greenhouse gas reduction and climate adaptation	SEC. 771. (a)(15)	SEC. 782. (l)(1) -> SEC. 453
Public health and climate change	SEC. 771. (b)(6)	SEC. 782. (l)(2) -> SEC. 467
State programs for natural resource adaptation	SEC. 771. (a)(16)	SEC. 782. (m)(1)
Natural Resources Climate Change Adaptation Account	SEC. 771. (b)(7)	SEC. 782. (m)(2)
Consumer Protection and Rebates		
Consumer Protection - Local Distribution Companies and Sates		

Union of Concerned Scientists

Electric Local Distribution Companies	SEC. 771. (a)(1)(A) -> SEC. 772. (b)(1)	SEC. 782. (a)(1) -> SEC. 783. (b)(1)
Small LDCs		SEC. 782. (a)(2) -> SEC. 783. (e)
Natural gas Benefit of Retail Ratepayers	SEC. 771. (a)(2) -> SEC. 773. (c)(1)	SEC. 782. (b) -. SEC. 784. (c)(1),(2),(3) and (4)
Home heating Oil Rebates or other direct financial assistance	SEC. 771. (a)(3) -> SEC. 774. (d)(1)(B)	SEC. 782. (c) -> SEC. 785. (c)
Rural electric cooperatives, consumer or publicly owned Small LDCS	SEC. 771. (d)(7)	
Consumer Protection - Energy Refunds	SEC. 771. (b)(2)(B)	SEC. 782. (d)
Consumer Protection - Consumer Rebates	SEC. 771. (f)(2)	SEC. 782. (r)
Transition Assistance and Training for workers		
Worker transition	SEC. 771. (b)(5)	SEC. 782. (k)(1)
Energy efficiency and renewable energy worker training	SEC. 771. (b)(4)	SEC. 782. (k)(2)
Nuclear worker training	SEC. 771. (b)(8)	
Transition Assistance for Industry		
Industrial emissions	SEC. 771. (d)(5)	
Industrial emissions	SEC. 771. (a)(5)	SEC. 782. (e)
Small LDCs	SEC. 771. (a)(1)(B) -> SEC. 772. (e)	
Long Term Contract Generators	SEC. 771. (a)(1)(A) -> SEC. 772. (d)(2)	SEC. 782. (a)(1) -> SEC. 783. (d)(2)
Cogeneration facilities at industrial parks		SEC. 782. (a)(2)
Domestic petroleum refineries	SEC. 771. (a)(4)(A)	SEC. 782. (j)(1)
Small Business Refiners	SEC. 771. (a)(4)(B)	SEC. 782. (j)(2)
Transportation		
Transportation Greenhouse Gas Reduction	SEC. 771. (d)(4)	
Transportation Greenhouse Gas Reduction	SEC. 771. (b)(10)	
Investment in clean vehicle technology	SEC. 771. (a)(8) and (b)(3)	SEC. 782. (i)
Clean Vehicle Technology	SEC. 201. (c)	SEC. 124.(c)
Plug in Electric Drive Vehicles	SEC. 201. (f)(1)	SEC. 124.(c)
Manufacturing facilities for Advanced Technology Vehicles	SEC. 201. (d)	SEC. 124.(d)
Other allocations of interest		
Energy Innovation Hubs	SEC. 771. (a)(11)	SEC. 782. (h)(1)
ARPA–E research	SEC. 771. (a)(12)	SEC. 782. (h)(2)
Early action recognition	SEC. 771. (a)(7)	SEC. 782. (t)

APPENDIX B: Allowance Allocations in Percentage and Billions of Discounted 2007 dollars

Table B.1. Allowance allocation in Percentage and Billions of Discounted 2007 dollars for the Senate bill in 2012 to 2029

UCS Category	EPA		EIA	% after haircut	% of total	Part of the haircut
Deficit Reduction	**81**	**to**	**155**	**0.0%**	**10.0%**	
Deficit Reduction Fund	81		154		10.0%	Yes
Deficit Reduction (from leftover allowances)	0		0	0.0%	0.0%	No
Market Stability Reserve Fund	**21**	**to**	**40**	**0.0%**	**2.5%**	
Market Stability Reserve Fund	21		40		2.5%	Yes
Domestic Agriculture and Forestry	**9**	**to**	**17**	**0.2%**	**1.1%**	
Supplemental agriculture, abandoned mine land, Renewable Energy, and Forestry	8		15		1.0%	Yes
Supplemental agriculture, Renewable Energy, and Forestry	1.0		1.7	0.2%	0.1%	No
Renewable Energy and Efficiency	**65**	**to**	**121**	**9.0%**	**8.0%**	
State and local investment in energy efficiency and renewable energy	4		8		0.5%	Yes
State and local investment in energy efficiency and renewable energy	34		62	5.1%	4.3%	No
State and local investment in EE and RE (4 year ahead allocation)	4		10	0.6%	0.5%	No
Natural gas Energy Efficiency	14		27	2.0%	1.7%	No
Home heating Oil Energy Efficiency	5		9	0.7%	0.6%	No
Building code updates	3		6	0.5%	0.4%	No
International Provisions	**56**	**to**	**109**	**8.0%**	**6.9%**	
International climate change Adaptation and global security	2		3		0.2%	Yes
International climate change Adaptation and global security	13		26	1.8%	1.5%	No
Supplemental reductions from reduced de forestation	31		58	4.6%	3.9%	No
International clean energy technology deployment	11		21	1.5%	1.3%	No
Coal	**47**	**to**	**91**	**6.9%**	**5.8%**	
Merchant Coal Units	22		41	3.3%	2.8%	No
Deployment of carbon capture and sequestration technology	25		50	3.6%	3.0%	No
Electric Generating Units	21		42	3.1%	2.6%	No

Industrial Sources	4		7	0.5%	0.5%	No
Domestic Adaptation	**19**	**to**	**38**	**2.7%**	**2.3%**	
State programs for greenhouse gas reduction and climate adaptation	7		13	1.0%	0.8%	No
Public health and climate change	0.7		1.3	0.1%	0.1%	No
State programs for natural resource adaptation	4		9	0.6%	0.5%	No
Natural Resources Climate Change Adaptation Account	7		14	1.0%	0.9%	No
Consumer Protection and Rebates	**354**	**to**	**672**	**51.5%**	**43.6%**	
Consumer Protection - Local Distribution Companies and Sates	224		417	33.2%	27.9%	
Electric Local Distribution Companies *Small LDCs*	192		355	28.5%	23.9%	No
Natural gas Benefit of Retail Ratepayers	28		54	4.0%	3.4%	No
Home heating Oil Rebates or other direct financial assistance	5		9	0.7%	0.6%	No
Rural electric cooperatives, consumer or publicly owned Small LDCS	4		7		0.5%	Yes
Consumer Protection - Energy Refunds	102		194	15.0%	12.6%	No
Consumer Protection - Consumer Rebates	24		54	3.3%	2.8%	No
Transition Assistance and Training for workers	**6**	**to**	**11**	**0.9%**	**0.7%**	
Worker transition	5		9	0.7%	0.6%	No
Energy efficiency and renewable energy worker training	0.7		1.2	0.1%	0.1%	No
Nuclear worker training	0.4		0.6	0.1%	0.1%	No
Transition Assistance for Industry	**110**	**to**	**209**	**15.6%**	**13.6%**	
Industrial emissions	4		8		0.5%	Yes
Industrial emissions	82		156	12.0%	10.1%	No
Small LDCs	3		6	0.5%	0.4%	No
Long Term Contract Generators Cogeneration facilities at industrial parks	10		18	1.4%	1.2%	No
Domestic petroleum refineries	6		12	0.9%	0.8%	No
Small Business Refiners	5		10	0.8%	0.6%	No
Transportation	**28**	**to**	**52**	**2.9%**	**3.5%**	

Transportation Greenhouse Gas Reduction	8		15		1.0%	Yes
Transportation Greenhouse Gas Reduction	10		18	1.4%	1.2%	No
Investment in clean vehicle technology	10		18	1.5%	1.3%	No
Clean Vehicle Technology	2		4	0.3%	0.3%	Mixed
Plug in Electric Drive Vehicles	2		4	0.3%	0.3%	Mixed
Manufacturing facilities for Advanced Technology Vehicles	6		11	0.9%	0.8%	Mixed
Other allocations of interest	**15**	**to**	**27**	**2.2%**	**1.9%**	
Energy Innovation Hubs	4		7	0.5%	0.4%	No
ARPA–E research	10		18	1.5%	1.2%	No
Early action recognition	1.4		2.2	0.2%	0.2%	No
Total of Haircut	**131**	**to**	**250**		**16.2%**	
Total of Remainder	**679**	**to**	**1291**	**100.0%**	**83.8%**	
Total	**811**	**to**	**1541**	**100.0%**	**100.0%**	

Table B.2. – Allowance allocation in Percentage and Billions of Discounted 2007 dollars for the Senate bill in 2030 to 2050

	EPA		EIA	% after haircut	% of total
Deficit Reduction	**129**	**to**	**304**	**0.0%**	**23.1%**
Deficit Reduction Fund	129		304		23.1%
Deficit Reduction (from leftover allowances)	-		-	0.0%	0.0%
Market Stability Reserve Fund	**17**	**to**	**39**	**0.0%**	**3.0%**
Market Stability Reserve Fund	17		39		3.0%
Domestic Agriculture and Forestry	**6**	**to**	**13**	**0.0%**	**1.0%**
Supplemental agriculture, abandoned mine land, renewable energy, and forestry.	6		13		1.0%
Supplemental agriculture and forestry greenhouse gas reduction and renewable energy	-		-	0.0%	0.0%
Renewable Energy and Efficiency	**21**	**to**	**49**	**4.6%**	**3.7%**
State and local investment in energy efficiency and renewable energy	3		7		0.5%
State and local investment in energy efficiency and renewable energy	16		38	4.1%	2.9%
State and local investment in EE and RE (4 year ahead allocation)	-		-	0.0%	0.0%
Natural gas Energy Efficiency	-		-	0.0%	0.0%
Home heating Oil Energy Efficiency	-		-	0.0%	0.0%
Building code updates	2		5	0.5%	0.4%
International Provisions	**40**	**to**	**93**	**10.1%**	**7.1%**
International climate change Adaptation and global security	-		-		0.0%
International climate change Adaptation and global security	20		46	5.0%	3.5%
Supplemental reductions from reduced de forestation	8		19	2.1%	1.5%
International clean energy technology deployment	12		28	3.0%	2.1%
Coal	**20**	**to**	**46**	**5.0%**	**3.5%**
Merchant Coal Units	-		-	0.0%	0.0%
Deployment of carbon capture and sequestration technology	20		46	5.0%	3.5%
Electric Generating Units	17		39	4.3%	3.0%
Industrial Sources	3		7	0.8%	0.5%
Domestic Adaptation	**25**	**to**	**58**	**6.3%**	**4.4%**
State programs for greenhouse gas reduction and climate adaptation	9		20	2.2%	1.5%
Public health and climate change	0.4		0.9	0.1%	0.1%

State programs for natural resource adaptation	6		14	1.5%	1.1%
Natural Resources Climate Change Adaptation Account	10		23	2.5%	1.7%
Consumer Protection and Rebates	**267**	**to**	**628**	**67.5%**	**47.9%**
Consumer Protection - Local Distribution Companies and Sates	-		-	0.0%	0.0%
Electric Local Distribution Companies	-		-	0.0%	0.0%
Small LDCs					
Natural gas Benefit of Retail Ratepayers	-		-	0.0%	0.0%
Home heating Oil Rebates or other direct financial assistance	-		-	0.0%	0.0%
Rural electric cooperatives, consumer or publicly owned Small LDCS	-		-		0.0%
Consumer Protection - Energy Refunds	73		172	18.5%	13.1%
Consumer Protection - Consumer Rebates	194		456	49.0%	34.7%
Transition Assistance and Training for workers	**4**	**to**	**9**	**1.0%**	**0.7%**
Worker transition	4		9	1.0%	0.7%
Energy efficiency and renewable energy worker training	-		-	0.0%	0.0%
Nuclear worker training	-		-	0.0%	0.0%
Transition Assistance for Industry	**9**	**to**	**21**	**1.7%**	**1.7%**
Industrial emissions	3		7		0.5%
Industrial emissions	6		15	1.7%	1.2%
Small LDCs	-		-	0.0%	0.0%
Long Term Contract Generators	-		-	0.0%	0.0%
Cogeneration facilities at industrial parks					
Domestic petroleum refineries	-		-	0.0%	0.0%
Small Business Refiners	-		-	0.0%	0.0%
Transportation	**14**	**to**	**33**	**2.2%**	**2.5%**
Transportation Greenhouse Gas Reduction	6		13		1.0%
Transportation Greenhouse Gas Reduction	9		20	2.2%	1.5%
Investment in clean vehicle technology	-		-	0.0%	0.0%
Clean Vehicle Technology	-		-	0.0%	0.0%
Plug in Electric Drive Vehicles	-		-	0.0%	0.0%
Manufacturing facilities for Advanced Technology Vehicles	-		-	0.0%	0.0%
Other allocations of interest	**7**	**to**	**16**	**1.7%**	**1.2%**
Energy Innovation Hubs	2		4	0.5%	0.3%
ARPA–E research	5		12	1.3%	0.9%
Early action recognition	-		-	0.0%	0.0%

Total of Haircut	**163**	**to**	**383**		**29.1%**
Total of Remainder	**395**	**to**	**928**	**100.0%**	**70.9%**
Total	**558**	**to**	**1312**	**100.0%**	**100.0%**

Table B.3. Allowance allocation in Percentage and Billions of Discounted 2007 dollars for the House bill (2012 to 2029)

UCS Category	EPA		EIA	% after haircut	% of total	Part of the haircut
Deficit Reduction	**11**	**to**	**18**	**1.5%**	**1.4%**	
Deficit Reduction Fund						
Deficit Reduction (from leftover allowances)	11		18	1.5%	1.4%	No
Market Stability Reserve Fund	**13**	**to**	**25**	**0.0%**	**1.5%**	
Market Stability Reserve Fund	13		25		1.5%	Yes
Domestic Agriculture and Forestry	**1**	**to**	**1**	**0.1%**	**0.1%**	**No**
Supplemental agriculture, abandoned mine land, Renewable Energy, and Forestry						
Supplemental agriculture, Renewable Energy, and Forestry	0.6		1.0	0.1%	0.1%	No
Renewable Energy and Efficiency	**76**	**to**	**142**	**9.3%**	**9.2%**	
State and local investment in energy efficiency and renewable energy						
State and local investment in energy efficiency and renewable energy	43		79	5.4%	5.4%	No
State and local investment in EE and RE (4 year ahead allocation)	6		13	0.7%	0.6%	No
Natural gas Energy Efficiency	17		32	2.0%	2.0%	No
Home heating Oil Energy Efficiency	6		11	0.7%	0.7%	No
Building code updates	4		8	0.5%	0.5%	No
International Provisions	**65**	**to**	**126**	**8.0%**	**7.9%**	
International climate change Adaptation and global security						
International climate change Adaptation and global security	14		28	1.7%	1.6%	No
Supplemental reductions from reduced de forestation	37		70	4.6%	4.6%	No
International clean energy technology deployment	14		28	1.7%	1.6%	No
Coal	**57**	**to**	**109**	**6.9%**	**6.8%**	
Merchant Coal Units	27		50	3.3%	3.3%	No
Deployment of carbon capture and sequestration technology	30		59	3.6%	3.6%	No
Electric Generating Units	25		51	3.1%	3.0%	No
Industrial Sources	4		9	0.5%	0.5%	No
Domestic Adaptation	**28**	**to**	**56**	**3.3%**	**3.3%**	
State programs for greenhouse gas reduction and climate adaptation	13		26	1.6%	1.5%	No

Public health and climate change	0.8		1.5	0.1%	0.1%	No
State programs for natural resource adaptation	5		11	0.6%	0.6%	No
Natural Resources Climate Change Adaptation Account	9		17	1.0%	1.0%	No
Consumer Protection and Rebates	**423**	**to**	**803**	**52.0%**	**51.2%**	
Consumer Protection - Local Distribution Companies and Sates	272		507	33.7%	33.2%	
Electric Local Distribution Companies	229		425	28.5%	28.1%	No
Small LDCs	4		7	0.5%	0.4%	No
Natural gas Benefit of Retail Ratepayers	33		65	4.1%	4.0%	No
Home heating Oil Rebates or other direct financial assistance	6		11	0.7%	0.7%	No
Rural electric cooperatives, consumer or publicly owned Small LDCS						
Consumer Protection - Energy Refunds	122		232	15.0%	14.8%	No
Consumer Protection - Consumer Rebates	29		65	3.3%	3.2%	No
Transition Assistance and Training for workers	**6**	**to**	**12**	**0.8%**	**0.8%**	**No**
Worker transition	6		11	0.7%	0.7%	No
Energy efficiency and renewable energy worker training	0.6		1.0	0.1%	0.1%	No
Nuclear worker training						No
Transition Assistance for Industry	**122**	**to**	**231**	**15.0%**	**14.7%**	
Industrial emissions						
Industrial emissions	96		184	11.8%	11.6%	No
Small LDCs						
Long Term Contract Generators	12		21	1.4%	1.4%	No
Cogeneration facilities at industrial parks	0.1		0.2	0.0%	0.0%	No
Domestic petroleum refineries	12		23	1.5%	1.5%	No
Small Business Refiners	2		3	0.2%	0.2%	No
Transportation	**12**	**to**	**21**	**1.5%**	**1.5%**	
Transportation Greenhouse Gas Reduction						
Transportation Greenhouse Gas Reduction						
Investment in clean vehicle technology	12		21	1.5%	1.5%	No
Clean Vehicle Technology	2		3	0.2%	0.2%	No

Plug in Electric Drive Vehicles	2		3	0.2%	0.2%	No
Manufacturing facilities for Advanced Technology Vehicles	9		16	1.2%	1.1%	No
Other allocations of interest	**13**	**to**	**24**	**1.6%**	**1.5%**	
Energy Innovation Hubs	4		7	0.5%	0.4%	No
ARPA–E research	9		16	1.1%	1.0%	No
Early action recognition	0.4		0.6	0.1%	0.1%	No
Total of Haircut	**13**	**to**	**25**		**1.5%**	
Total of Remainder	**813**	**to**	**1544**	**100.0%**	**98.5%**	
Total	**825**	**to**	**1569**	**100.0%**	**100.0%**	

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Table B.4. Allowance allocation in Percentage and Billions of Discounted 2007 dollars for the House bill (2030 to 2050)

	EPA		EIA	% after haircut	% of total	Part of the haircut
Deficit Reduction	**0**	**to**	**0**	**0.0%**	**0.0%**	
Deficit Reduction Fund					0.0%	No
Deficit Reduction (from leftover allowances)	-		-	0.0%	0.0%	No
Market Stability Reserve Fund	**17**	**to**	**39**	**0.0%**	**3.0%**	
Market Stability Reserve Fund	17		39		3.0%	Yes
Domestic Agriculture and Forestry	**0**	**to**	**0**	**0.0%**	**0.0%**	**No**
Supplemental agriculture, abandoned mine land, renewable energy, and forestry.						No
Supplemental agriculture and forestry greenhouse gas reduction and renewable energy	-		-	0.0%	0.0%	No
Renewable Energy and Efficiency	**27**	**to**	**64**	**5.0%**	**4.9%**	
State and local investment in energy efficiency and renewable energy						
State and local investment in energy efficiency and renewable energy	25		58	4.5%	4.4%	No
State and local investment in EE and RE (4 year ahead allocation)	-		-	0.0%	0.0%	No
Natural gas Energy Efficiency	-		-	0.0%	0.0%	No
Home heating Oil Energy Efficiency	-		-	0.0%	0.0%	No
Building code updates	3		6	0.5%	0.5%	No
International Provisions	**54**	**to**	**128**	**10.1%**	**9.8%**	
International climate change Adaptation and global security						
International climate change Adaptation and global security	22		51	4.0%	3.9%	No
Supplemental reductions from reduced de forestation	11		26	2.1%	2.0%	No
International clean energy technology deployment	22		51	4.0%	3.9%	No
Coal	**27**	**to**	**64**	**5.0%**	**4.9%**	
Merchant Coal Units	-		-	0.0%	0.0%	No
Deployment of carbon capture and sequestration technology	27		64	5.0%	4.9%	No
Electric Generating Units	23		54	4.3%	4.1%	No
Industrial Sources	4		10	0.8%	0.7%	No
Domestic Adaptation	**43**	**to**	**102**	**8.0%**	**7.8%**	
State programs for greenhouse gas reduction and climate adaptation	21		50	3.9%	3.8%	No
Public health and climate change	0.5		1.3	0.1%	0.1%	No
State programs for natural resource adaptation	8		20	1.5%	1.5%	No

Natural Resources Climate Change Adaptation Account	13		31	2.5%	2.4%	No
Consumer Protection and Rebates	**368**	**to**	**866**	**68.0%**	**65.9%**	
Consumer Protection - Local Distribution Companies and Sates	-		-	0.0%	0.0%	
Electric Local Distribution Companies	-		-	0.0%	0.0%	No
Small LDCs	-		-	0.0%	0.0%	No
Natural gas Benefit of Retail Ratepayers	-		-	0.0%	0.0%	No
Home heating Oil Rebates or other direct financial assistance	-		-	0.0%	0.0%	No
Rural electric cooperatives, consumer or publicly owned Small LDCS						
Consumer Protection - Energy Refunds	81		191	15.0%	14.6%	No
Consumer Protection - Consumer Rebates	287		675	53.0%	51.4%	No
Transition Assistance and Training for workers	**5**	**to**	**13**	**1.0%**	**1.0%**	**No**
Worker transition	5		13	1.0%	1.0%	No
Energy efficiency and renewable energy worker training	-		-	0.0%	0.0%	No
Nuclear worker training						No
Transition Assistance for Industry	**7**	**to**	**17**	**1.4%**	**1.4%**	
Industrial emissions						
Industrial emissions	7		17	1.4%	1.4%	No
Small LDCs						
Long Term Contract Generators	-		-	0.0%	0.0%	No
Cogeneration facilities at industrial parks	-		-	0.0%	0.0%	No
Domestic petroleum refineries	-		-	0.0%	0.0%	No
Small Business Refiners	-		-	0.0%	0.0%	No
Transportation	**0**	**to**	**0**	**0.0%**	**0.0%**	
Transportation Greenhouse Gas Reduction						
Transportation Greenhouse Gas Reduction						
Investment in clean vehicle technology	-		-	0.0%	0.0%	No
Clean Vehicle Technology	-		-	0.0%	0.0%	No
Plug in Electric Drive Vehicles	-		-	0.0%	0.0%	No
Manufacturing facilities for Advanced Technology Vehicles	-		-	0.0%	0.0%	No
Other allocations of interest	**8**	**to**	**19**	**1.5%**	**1.5%**	
Energy Innovation Hubs	2		6	0.5%	0.4%	No
ARPA–E research	6		13	1.1%	1.0%	No
Early action recognition	-		-	0.0%	0.0%	No
Total of Haircut	**17**	**to**	**39**		**3.0%**	
Total of Remainder	**541**	**to**	**1272**	**100.0%**	**97.0%**	
Total	**558**	**to**	**1312**	**100.0%**	**100.0%**	

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