Center for American Progress

Investing in a Green Economy

Using Cap-and-Trade Auction Revenue to Help American Families and Spur Clean Energy Innovation

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The U.S. Senate will soon begin debate on a bipartisan bill to cap and reduce greenhouse gas emissions economy-wide. The Climate Security Act, S. 3036, sponsored by Senators Barbara Boxer (D-CA), Joe Lieberman (I-CT), and John Warner (R-VA), is the first comprehensive piece of climate change legislation with the potential for Senate passage. This is a watershed moment, and a sign of our nation's growing commitment and willingness to address the critical threat of global warming. Regardless of its fate in 2008, the Lieberman-Warner bill will help frame the legislative debate around "cap-and-trade" global warming proposals, and lay a foundation for any future legislation to reduce our nation's greenhouse gas emissions.

Deliberations on cap-and-trade legislation have so far focused principally on reduction targets, timetables, and where to implement the emissions cap. Another critical question is still unfolding: whether emissions permits should be freely allocated or auctioned, and who will benefit from this process.

The Congressional Budget Office estimates that the monetary value of emissions permits created by a cap on global warming pollution in the United States would range between $50 billion and $300 billion generated each year (in 2007 dollars) by 2020.[1] Deciding how many of these permits will be sold and how many will be given away for free is one of the most vital components of a successful cap-and-trade system. The permits' valuable dividends will, if given away, provide massive windfall profits for polluters, or, if auctioned, generate capital for major public investment programs to ensure an effective, equitable, and expeditious transition to a clean energy economy. In this context, capping greenhouse gas emissions is as much landmark economic legislation as it is environmental policy.

The Center for American Progress supports auctioning 100 percent of the greenhouse gas emission permits from day one under a cap-and-trade program, which would require large-scale carbon emitters to purchase a permit for every ton of greenhouse gases they release. The resulting revenue could create a dedicated source of public financing to invest in a just and equitable transition to the low-carbon economy. This would include supporting new investments in green technology and energy efficiency; sheltering American households from any economic dislocations due to shifting energy prices; alleviating higher costs for energy-intensive industries; adapting to some of the effects of global warming that we are already experiencing globally; and creating good, "green jobs" and more vibrant, healthier communities in this process. A 100 percent auction will ensure that large polluters, and not the hardworking Americans least able to foot the bill, are

financing the investments necessary to carry out these vital public projects.

The Climate Security Act gives away approximately 40 percent of the emissions permits to polluting industries—carbon-intensive manufacturing, fossil fuel-powered power plants, petroleum refiners, and natural gas processors—for free. The remainder is auctioned in order to fund programs such as those listed above. Not until 2032 would polluting industries have to purchase 100 percent of the permits to account for their greenhouse gas emissions, although 1 percent of the allowances would still be available as "bonus allowances" for coal-fired power facilities that have installed carbon capture and sequestration.

The good news is that the Climate Security Act now auctions more of the emissions permits than it did in earlier drafts, but we need to continue to push for an even greater percent auction up front. Other proposals are also moving in this direction; Congressman Edward Markey (D-MA) unveiled legislation last week at the Center for American Progress Action Fund, for example, that advocates for a rapid transition to 100 percent auction under an economy-wide cap-and-trade system. It also supports channeling the auction revenue back into the economy for public policy purposes similar to the ones laid out here.

The choice is ours: how policymakers design the transition to a low-carbon economy will either benefit the economy as a whole and provide new jobs and progressive growth for Americans, or it will reward historic emitters for continuing to pollute. We know that the costs of inaction will be enormous. And if we design our response to this transition correctly, the opportunities will be tremendous. It is time to focus on the benefits—not just the costs—to consumers and ratepayers as a result of taking action to avert the climate crisis and of investing in an economic future built on clean energy.

What is Cap and Trade?

The goal: To steadily reduce carbon dioxide and other greenhouse gas emissions from economic activity as part of a larger plan for curbing global warming.

The cap: Each large-scale emitter, or company, will have a limit on the amount of greenhouse gas that it can emit. The firm must have an "emissions permit" for every ton of carbon dioxide it releases into the atmosphere. These permits set an enforceable limit, or cap, on the amount of greenhouse gas pollution that is released. Over time, the limits become stricter, allowing less and less pollution, until the ultimate reduction goal is met.

The trade: It will be relatively cheaper or easier for some companies to reduce their emissions below their required limit than others. These more efficient companies, who emit less than their allowance, can sell their extra permits to companies that are not able to make reductions as easily. This creates a system that guarantees a set level of overall reductions, while rewarding the most efficient companies and ensuring that the cap can be met at the lowest possible cost to the economy.

The profits: If the federal government auctions the emissions permits to the companies required to reduce their emissions, it would create a large and dependable revenue stream. These financial resources could be used to achieve critical public policy objectives related to climate change mitigation and economic development. The federal government can also choose to "grandfather" allowances to the polluting firms by handing them out free based on historic or projected emissions. This would give the most benefits to those companies with higher baseline emissions that have historically done the least to reduce their pollution.

Cap, Collect, and Invest

There is a simple formula for achieving the maximum environmental and economic effectiveness of a cap-and-trade system:

Cap: We must cap our current greenhouse gas emissions and reduce them over time.

Collect: We must use market mechanisms to establish a price for global warming emissions and collect this pollution-based revenue to help fund a smart transition to a low-carbon economy.

Invest: We must invest this revenue to accelerate research, widespread commercialization, and adoption of new clean energy and efficiency technologies; ensure that American workers and communities are buffered against near-term price increases; and invest in measures to prepare for and adapt to the effects of global warming that are already locked into the system, both here in the United States and in vulnerable, developing countries.

Capping Greenhouse Gas Emissions

Until now, we have always freely released carbon dioxide and other global warming gasses into the atmosphere and not had to pay a penny for the privilege. The costs from global warming pollution have therefore been externalized—pushed off onto the public at large or left for future generations. The Stern Review on the Economics of Climate Change calls global warming "the biggest market failure the world has ever seen." By capping emissions, we will finally recognize the cost of global warming pollution to our economy, public health, environment, and national security, and make sure these costs are reflected in market prices.

Putting a price on pollution makes sense, and it is a longstanding practice. In the early 1900s economist Arthur Pigou developed the concept of using pollution fees to correct broken markets that pushed the costs of pollution onto the public. The contemporary "polluter pays" principle is based on this notion of a "Pigouvian Tax," and has been widely used to moderate the social costs of pollution: from Superfund sites to landmark legislation like the Clean Air and Clean Water Acts. Establishing a price on global warming pollution at a level consistent with its harmful externalities is long overdue.

Collecting Revenue from Permit Auctions

The Center for American Progress supports auctioning all greenhouse gas emissions permits under cap and trade, rather than giving permits away to polluters for free. An auction would establish a fair market price for these permits, capture the full value of the "pollution dividend" for investment in the public interest, and direct the revenue back to public purposes rather than as windfalls for polluters.

An auction is the most economically efficient mechanism for distributing permits and the most environmentally effective. A full, transparent auction of emissions permits also allows the public—through the actions and oversight of elected government—to serve as the arbiter and reinvestor of fees paid by polluting entities that utilize the public good of the atmosphere.

There is widespread agreement among economists in favor of auctioning permits under a cap-and-trade system. In his testimony before the House Select Committee on Energy Independence and Global Warming, Ph.D. economist and Senior Fellow at Resources for the Future Dallas Burtraw stated: "A majority of economists favor the use of auctions over the free allocation of emissions allowances. One reason is that an auction satisfies the principle of simplicity and transparency. It is administratively simple and precludes regulated parties from seeking a more generous future allocation. The second and equally forceful reason is that it makes available funds that can be used to achieve related goals. Depending on how these revenues are used, they can help reduce the cost of policy significantly."[2]

Giving away emissions permits for free would, in contrast, cause a massive transfer of wealth from consumers and ratepayers to the shareholders and executives of polluting companies, resulting in windfall profits. Emissions permits are a tradable commodity with value in the marketplace. Basic economics therefore tells us that companies will charge consumers for the opportunity cost of the emissions permits that could otherwise be sold. Thus, regardless of whether permits are auctioned or handed out for free, consumers and ratepayers will see the cost associated with emissions reductions reflected in their electricity bills and the purchase of energy-intensive goods. Instead of essentially handing polluters free money, we should instead redirect this money to consumers to help offset any rising costs, and invest in strategies that bring clean alternatives to market.

There is real-world evidence of companies increasing their prices even if they don't have to buy their permits. In Phase I of the Emissions Trading Scheme, the European Union distributed nearly all emission permits for free, and a few European companies reaped billions of dollars in windfall profits by passing on the opportunity costs to consumers instead of reinvesting this money to help keep consumer bills constant. In Phase II of the cap-and-trade program, which runs from 2008 to 2012 and correlates to Europe's Kyoto commitments, the power sector in just five European countries is estimated to collect between 23 and 71 billion euros (nearly 100 billion dollars) in windfall profits.[3] The European Union is now seeking to correct these design flaws in the next stage of its cap-and-trade system by substantially increasing the number of permits that are auctioned, rather than given away for free.

Industry and utilities will experience the same windfall profits in captive markets for energy-intensive consumer goods and in deregulated energy markets here in the United States if permits are given away for free.[4] A recent Environmental Protection Agency report substantiates this point, saying, "Freely allocating allowances [permits] to the entities required to hold allowances can create a windfall gain for those entities as they receive a valuable asset and pass the costs associated with abatement downstream to consumers."[5] Regulated energy markets present a slightly different set of considerations with less ability to reap windfalls, but these differences can be addressed to ensure fairness to ratepayers and electricity generators during the revenue distribution phase after a 100 percent permit auction takes place.

The United States must act wisely and learn from Europe's costly mistake. Several states under the 10-state Regional Greenhouse Gas Initiative—including Massachusetts, Rhode Island, Connecticut, and New York—have already indicated they plan to auction 100 percent of the emission permits under this multistate utility sector cap-and-trade program and plan to use the revenue for public purposes. Our national cap-and-trade program must follow suit.

It is not necessary to give emissions permits away for free in order to protect jobs and businesses—a common misconception. Mainstream economic literature has shown that energy-intensive companies would only need about 10 percent of the auction revenue to protect their shareholder value and ensure that the company does not suffer.[6] Once again, any handouts above this amount would simply result in windfall profits, even though allocation proposals have routinely suggested giving away far greater quantities of emissions credits. Companies can instead be protected by directing a small portion of the auction revenue to those businesses operating in energy-intensive areas of the economy to compensate shareholders, employees, and communities in those sectors.

The environmental effectiveness of the cap-and-trade system is also affected by how emissions permits are allocated. If companies expect permits to be distributed gratis based on historic emissions, they may actually be encouraged to increase emissions levels in the run-up to the launch of the cap-and-trade system in anticipation of being rewarded extra permits. Even more concerning, free allocation of permits will secure greater profits for high-emitting energy providers, and extend the lifespan of America's fleet of aging, inefficient, carbon-intensive coal-fired power plants, delaying the implementation of new technology. A large majority of these plants have paid off their capital costs and are reaping hefty profits. Windfalls from free permit allocation would only allow plant operators to continue polluting profitably—albeit inefficiently—even as the cost of emissions rise over time.

To demonstrate exactly how much money is at stake for American communities in making the decisions of how to distribute the costs and benefits of pricing emissions, we present a state-by-state analysis here detailing what the auction revenue could mean, looking at each state on a per capita basis. A cap on emissions will affect different parts of the United States in different ways. Americans who get their power primarily from coal will see different electricity price changes from those who rely primarily on hydropower or nuclear power. In-depth proposals are being devised to account for these differences, and capturing the value of emissions credits for public purposes through an auction will help to respond to these

regional equity concerns as we navigate a clean-energy transition.

This exercise of looking at auction revenue distributed to states based on population is a *simple* example to help demonstrate the potential amount of revenue and investment that is up for consideration in a climate bill—revenue that could benefit each and every American. This is *not* meant as a prescription for the best allocation of these funds. See the table on page 7 for the amount of money potentially available to each state on a per-capita basis. An interactive map displaying this data will also be available on the Center for American Progress website.

The Congressional Budget Office estimates that the monetary value of emissions permits created by a cap on global warming pollution in the United States would range between $50 billion and $300 billion generated each and every year (in 2007 dollars) by 2020, depending on the reduction levels required by the cap.[7] This figure translates to between $175 and $1,052 per person, per year, by 2020. This is an enormous resource that can be used for a variety of economically and socially beneficial undertakings.

Investing Auction Revenue to Build a Stronger America

The transformation of our aging energy infrastructure around the platforms of efficiency and reduced greenhouse gas emissions represents perhaps the greatest engine for American innovation, productivity growth, and job creation in the coming decades.

Any cap-and-trade proposal that comes before the U.S. Congress must fully recognize the importance of utilizing auction revenues from emissions permits to drive public investment in the clean-energy economy and safeguard American consumers from any regressive impacts (see sidebar on potential uses of auction revenue, page 8). Proposals that are overly generous in their giveaway of emissions permits will result in a massive transfer of wealth to polluting companies, instead of investing this revenue back into in the American economy. Thus, they will ultimately fall short of the objective of creating a prosperous, fair, and low-carbon economy. The scale of the global warming and energy challenges we face will require proactive federal leadership in both policymaking and investment, and in public private partnerships, requiring a level of national leadership perhaps not seen since the New Deal.

Promoting capital investment, increasing research and development funding, and reducing financial risk through smart public policies like loan guarantees, will leverage more rapid technological breakthroughs and encourage commercialization, helping private industry to achieve economies of scale and lowering the costs of clean energy and energy-efficient products and services for consumers. The EPA concurs, arguing that "[S]ubstantial cost savings could be achieved by combining direct emissions policies (e.g. cap-and-trade or carbon tax) with technology push policies (e.g. technology and R&D incentives) that correct for the market failure associated with the fact that the inventor of a new technology can not appropriate all of the associated social benefits."[8]

Revenue from a permit auction could create a large new stream of resources to invest in these "technology push policies," including: clean energy research, devel-

RANGE OF POTENTIAL AUCTION REVENUE DISTRIBUTED TO STATES BASED ON POPULATION
2007 Dollars, by 2020

STATE	2000 POPULATION	% OF US POPULATION	AUCTION REVENUE DISTRIBUTED TO EACH STATE	
			$50 BILLION NATIONAL AUCTION	$300 BILLION NATIONAL AUCTION
Alabama	4,447,100	1.55%	$779,562,000	$4,677,375,000
Alaska	626,932	0.21%	$109,899,000	$659,395,000
Arizona	5,130,632	1.79%	$899,383,000	$5,396,301,000
Arkansas	2,673,400	0.93%	$468,638,000	$2,811,831,000
California	33,871,648	11.87%	$5,937,593,000	$35,625,551,000
Colorado	4,301,261	1.50%	$753,997,000	$4,523,984,000
Connecticut	3,405,565	1.19%	$596,985,000	$3,581,908,000
Delaware	783,600	0.27%	$137,363,000	$824,175,000
District of Columbia	572,059	0.20%	$100,280,000	$601,681,000
Florida	15,982,378	5.60%	$2,801,660,000	$16,809,959,000
Georgia	8,186,453	2.87%	$1,435,059,000	$8,610,355,000
Hawaii	1,211,537	0.42%	$212,379,000	$1,274,271,000
Idaho	1,293,953	0.45%	$226,826,000	$1,360,955,000
Illinois	12,419,293	4.35%	$2,177,062,000	$13,062,375,000
Indiana	6,080,485	2.13%	$1,065,890,000	$6,395,338,000
Iowa	2,926,324	1.02%	$512,975,000	$3,077,852,000
Kansas	2,688,418	0.94%	$471,271,000	$2,827,627,000
Kentucky	4,041,769	1.41%	$708,509,000	$4,251,055,000
Louisiana	4,468,976	1.56%	$783,397,000	$4,700,383,000
Maine	1,274,923	0.44%	$223,490,000	$1,340,940,000
Maryland	5,296,486	1.85%	$928,457,000	$5,570,743,000
Massachusetts	6,349,097	2.22%	$1,112,976,000	$6,677,859,000
Michigan	9,938,444	3.48%	$1,742,178,000	$10,453,065,000
Minnesota	4,919,479	1.72%	$862,369,000	$5,174,214,000
Mississippi	2,844,658	0.99%	$498,659,000	$2,991,957,000
Missouri	5,595,211	1.96%	$980,823,000	$5,884,936,000
Montana	902,195	0.31%	$158,152,000	$948,911,000
Nebraska	1,711,263	0.59%	$299,979,000	$1,799,874,000
Nevada	1,998,257	0.70%	$350,288,000	$2,101,728,000
New Hampshire	1,235,786	0.43%	$216,629,000	$1,299,776,000
New Jersey	8,414,350	2.95%	$1,475,009,000	$8,850,052,000
New Mexico	1,819,046	0.63%	$318,873,000	$1,913,238,000
New York	18,976,457	6.65%	$3,326,512,000	$19,959,074,000
North Carolina	8,049,313	2.82%	$1,411,019,000	$8,466,113,000
North Dakota	642,200	0.22%	$112,576,000	$675,454,000
Ohio	11,353,140	3.98%	$1,990,170,000	$11,941,015,000
Oklahoma	3,450,654	1.20%	$604,889,000	$3,629,332,000
Oregon	3,421,399	1.19%	$599,760,000	$3,598,562,000
Pennsylvania	12,281,054	4.30%	$2,152,830,000	$12,916,978,000
Puerto Rico	3,808,610	1.33%	$667,637,000	$4,005,823,000
Rhode Island	1,048,319	0.36%	$183,767,000	$1,102,602,000
South Carolina	4,012,012	1.40%	$703,293,000	$4,219,757,000
South Dakota	754,844	0.26%	$132,322,000	$793,930,000
Tennessee	5,689,283	1.99%	$997,313,000	$5,983,879,000
Texas	20,851,820	7.31%	$3,655,258,000	$21,931,545,000
Utah	2,233,169	0.78%	$391,467,000	$2,348,804,000
Vermont	608,827	0.21%	$106,725,000	$640,353,000
Virginia	7,078,515	2.48%	$1,240,841,000	$7,445,047,000
Washington	5,894,121	2.06%	$1,033,221,000	$6,199,324,000
West Virginia	1,808,344	0.63%	$316,997,000	$1,901,982,000
Wisconsin	5,363,675	1.88%	$940,235,000	$5,641,411,000
Wyoming	493,782	0.17%	$86,558,000	$519,350,000

This assumes:

1. Changes in population will be uniform across states from 2000–2050.
2. Each state is allocated auction revenue solely based on population.

opment, and deployment; advancing low-carbon transportation choices including mass transit, vastly more fuel-efficient vehicles, and low-carbon sustainably produced biofuels; training a new clean-energy workforce able to rebuild our communities and the country; and preparing for and adapting to the effects of global warming. While auction revenue is just one source of funding for these key national priorities, it represents a major pool of public resources, and should not be allowed simply to result in windfall profits and wealth transfers to polluting corporations and their shareholders.

Auction funds can also provide the resources required to offset any potential energy price increases for middle- and low-income families. The Center on Budget and Policy Priorities estimates that it would only require a modest 14 percent of the total value of emissions permits to completely offset any increased energy costs for the bottom fifth of the income spectrum.[10] And, according to the Congressional Budget Office, "lawmakers could more than offset the price increases experienced by low-income households or the costs imposed on workers in particular sectors by providing for the sale of some or all of the allowances and using the revenue to pay compensation. Conversely, giving all or most of the allowances to energy producers to offset the potential losses of investors in those industries as was done in the cap-and trade program for sulfur dioxide emissions would exacerbate the regressivity of the price increases."[11]

How to Use Auction Revenue to Ensure an Effective, Equitable, and Expeditious Transition to a Clean-Energy Economy

Reduce energy costs for low- and middle-income Americans by providing direct rebates to the lowest income households using mechanisms such as the Earned Income Tax Credit and existing electronic benefit transfer systems[9] and increasing funding for the Low Income Home Energy Assistance Program and home weatherization programs.

Lower emissions from the transportation sector by investing in mass transportation infrastructure and smart growth; offer incentives to U.S. auto manufacturers to produce more fuel-efficient vehicles and increase production and the availability of alternative low-carbon transportation fuels; dramatically increase vehicle fuel economy beyond the recently established 35 mile per gallon standard by 2020; and give tax credits to consumers for purchasing more fuel-efficient vehicles, including plug-in electric hybrid vehicles powered primarily by electricity.

Improve the efficiency of electricity generation, transmission, and consumption. Work to convert the U.S. electricity grid into a "smart grid" with integrated technology to help improve energy security, encourage distributed generation, and increase efficiency of transmission and energy efficiency in buildings and appliances through incentives and upgraded standards.

Increase the production of renewable electricity by passing a long-term extension of the production and investment tax credits for wind, solar, geothermal, and other renewable energy sources. This will help these low-carbon energy sources achieve commercial scale so they can compete on a level playing field with traditional generation.

Dramatically increase funding for federal research into low-carbon technology, as well as the demonstration and deployment of new technologies.

Establish green job training and job transition programs to ensure the availability of the skilled workforce needed to implement these strategies.

Dedicate funding for global warming preparedness and domestic and international adaptation to the current and future effects of global warming.

See our report, "Capturing the Energy Opportunity" for more detailed information on these policy proposals.

Conclusion

A full auction of cap-and-trade emissions permits—with corresponding reinvestment in public benefits and improved socioeconomic equity—would create a transparent new source of public revenue, while avoiding rewarding polluters or penalizing early adopters of clean or efficient technologies. Auctioning 100 percent of the emissions permits will give companies a strong incentive to more rapidly reduce pollution and increase the efficiency of their operations. It will also ensure that hardworking American families won't bear the brunt of the costs of reducing our nation's global warming pollution.

A diverse suite of policies will have to be employed to ensure the gains in efficiency and technology innovation that will be necessary to transition to a low-carbon economy. In the early years of a cap-and-trade program, the market price for emissions permits would probably not be enough to quickly deploy our most advanced technologies in a number of vital sectors, such as high-efficiency vehicles and carbon capture and storage for coal-fired electricity generation. Any strategy to rein in carbon emissions through prices must therefore be matched with complementary policies to spur innovation and accelerate the economic transition.

Complementary policies will include new requirements, and importantly, new investments. Auction revenue can support incentives for rapid adoption of renewable energy and energy-efficiency technology, matched by emission and efficiency performance standards, and increased research dollars to develop and deploy new low-carbon technologies. In this context, public investment and the resources to embark on a major transition are essential, and permit auction revenues are one critical tool for funding this major national undertaking. In the face of this pressing national imperative, allowing windfall profits to historical polluters represents a betrayal of the public interest.

As cap-and-trade legislation moves to the floor of the Senate this summer and new measures are taken up in the House, we must work to increase the percentage of auctioned emission permits so that polluters have to purchase 100 percent of the permits they need to account for the emissions they generate. We must also guarantee that auction revenues are invested in spurring an equitable and rapid clean-energy transition.

Congress should also implement a series of complementary policies to transform our economy to a low-carbon model—beginning with passage of provisions left out of the Energy Independence and Security Act of 2007. These include a federal renewable electricity standard and extending tax incentives for renewable energy technolo-

gies; building a far-reaching agenda for proactive investment in modernized clean-energy infrastructure; technology research, development, and deployment funding; and worker training for the green jobs of tomorrow. Together, these pieces of legislation and proposed strategies offer a greatly expanded clean-energy investment agenda that can put America on course to capture the economic opportunities associated with a low-carbon energy transition, protect the concerns of consumers, workers and industries, and fight global warming.

The atmosphere is a limited dumping ground, and it's filling up fast. Our window for action is rapidly closing to avert the worst effects of global warming. The head of the Intergovernmental Panel on Climate Change, Dr. Rajendra Pachauri, has said, "If there's no action before 2012, that's too late. What we do in the next two to three years will determine our future. This is the defining moment."[12]

The time is ripe to take action to avert a climate crisis and invest in transforming and modernizing our economy around the platforms of efficiency and low-carbon energy. This action can revitalize American technology innovation, restore our manufacturing base, increase investment in our built environment, and foster the resurgence of a healthy middle class, all at the same time. We can do all of this even as we protect consumers, but only if we use the tremendous resources generated by an auction wisely. Auctioning 100 percent of the greenhouse gas emission credits available under a cap-and-trade system to fund smart public investments and consumer protections will be a powerful step in the right direction.

Endnotes

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Center for American Progress

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