

Cap and Trade v. Cap and Dividend

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It has long been clear that a comprehensive climate policy is needed in this country in order to substantially reduce our carbon emissions that are contributing to global climate change. Although such a policy does not yet exist in the United States, it seems the normative approach to reducing emissions both at home and abroad is through the use of a system known as cap-and-trade. Indeed talk of cap-and-trade has become so widespread that it would seem that there are no alternative solutions to reducing emissions. Other options do exist, however, and one in particular has captured the attention of politicians from both sides of the aisle, scientists, and environmentalists alike. This approach is known as cap-and-dividend, and its mechanisms can be examined through the CLEAR (Carbon Limits and Energy for America's Renewal) Act, which was introduced in 2009 by Washington Senator Maria Cantwell. This paper will explore cap-and-dividend as an alternative to cap-and-trade. I will examine some of the differences between cap-and-trade and cap-and-dividend, using the CLEAR Act and the American Clean Energy and Security (ACES) Act, which is a cap-and-trade bill that was passed by the United States House of Representatives in 2009. Neither of these bills has come into law, but serve as useful examples of what a cap-and-trade and cap-and-dividend program might look like in this country. I will ultimately argue that cap-and-dividend seems to be the most effective and just way of regulating and reducing greenhouse gas emissions in the United States.

Greenhouse Gas Coverage and Reduction Targets

Both cap-and-trade and cap-and-dividend to lower greenhouse gas emissions in this country by putting a limit on carbon and equivalent greenhouse gas emissions and reducing that limit over time. Greenhouse gases included in ACES bill are Carbon dioxide, Methane, Nitrous Oxide, Sulfur Hexafluoride, HFCs, and PFCs (ACES Sec. 711). These gasses that are not

carbon are translated into their carbon-equivalent quantities in order to establish a standard unit for greenhouse gases called the Carbon Dioxide Equivalent (ACES Sec. 712). From hereon forward, “carbon” will be used to refer to all Carbon Dioxide Equivalents unless otherwise stated. The CLEAR Act focuses more on carbon. Studies of these two bills show that the CLEAR Act covers 96 percent of CO₂ and 82 percent of total GHGs under the cap. Coverage improves to 93 percent when 2-4 percent auction revenue, which will be discussed later, goes toward reducing non-CO₂ gases (CLEAR Overview). ACES covers a broader range of gases, however the cap between 2012 and 2013 only covers 66.2 percent of total GHGs, which rises to 75.7 percent in 2014-2015 and 84.5 percent beyond 2016 (CLEAR Overview).

In terms of the emission reductions that will take place under the CLEAR Act and ACES, they appear to be similar. The CLEAR Act maintains 2011 emissions between 2012 and 2015 and begins reducing emissions by .25% after that. In the long term, the CLEAR act seeks emission reductions of 20 percent below 2005 levels by 2020, 30 percent by 2025, 42 percent by 2030 and 83 percent by 2050 (Sec. 3). ACES on the other hand sets targets at 3 percent below 2005 levels by 2015, 17 percent below 2005 levels by 2020, 42 percent by 2030, and 83 percent by 2050 (Sec. 702).

Although these reduction levels appear similar, there are reasons to suspect, as will be elucidated throughout the paper that actual reductions under the CLEAR Act will be more substantial than under ACES. A flaw in both of these bills however should be noted. In the late 1990s when the international community came together to create the United Nations Framework Convention on Climate Change and the Kyoto Protocol, it was determined that the baseline year from which emission reductions should occur was 1990 (Article 3). You will notice that the baseline year in both of these bills is 2005. It is perhaps needless to say that the United States’

carbon emissions rose between 1990 and 2005. Therefore, regardless of whether or not the CLEAR Act more effectively reduces emissions than ACES, it is still possible that the reductions will not be enough to prevent the worst effects of global climate change. An improved version of both bills would contain 1990 as the baseline year instead of 2005, but it seems unlikely that this would change in a future climate bill.

Covered Entities and Allowances

The reduction targets are about where the similarities between CLEAR and ACES end. The first major difference between these bills is the entities that are regulated under each act. Cap-and-trade regulates all major polluting entities – which includes any electricity source and any stationary source that produces 25,000 tons or more of greenhouse gases, and any entity that imports enough fuel that has the potential to produce 25,000 tons or more of greenhouse gases (ACES Sec. 700). The focus of this cap is therefore on “downstream” sources, and thousands of entities around the country will be subject to this cap. The CLEAR Act, however, takes a dramatically different approach by only putting a cap on “upstream” sources of carbon as they enter the economy (Sec. 2). In other words, the cap is placed at the point of entry which includes “a wellhead, a mine entrance, and any port-of-entry (Sec. 2). What this means is that instead of the *coal plant* being subject to the cap, the *coalmine* is subject to the cap and the very tonnage of fossil fuels entering the economy is limited. Such a method dramatically reduces the number of entities included under the cap to a few thousand (CLEAR Overview 4).

The number of entities included in the cap is important, because under both cap-and-trade and cap-and-dividend, every polluting facility in ACES must hold a permit or allowance for every unit of pollution they produce, and similarly, every point-of-entry in CLEAR must hold a

“carbon share” for every unit of carbon that they bring into the economy (ACES Sec. 721; CLEAR Act Sec. 2). The use of allowances or carbon shares puts a price on carbon. This mechanism is meant to internalize the cost of pollution and raise the price of using fossil fuels. Carbon emissions are currently a negative externality because the costs of the damage caused by these emissions are not figured into the price of polluting. To begin the program, allowances must be distributed in some way to the various entities in order to establish the number of credits on the market and to determine the starting point from which carbon emission reductions will occur. CLEAR and ACES take different approaches to distributing these allowances or shares. The ACES bill includes massive allowance giveaways during the first several years of the program. Through 2026, 75 percent of allowances are freely provided, and over the life of the program, from 2012-2050, a total of 40 percent of allowances would be auctioned and 60 percent would be distributed free of charge (PEW Allowances). These allowances are given on the condition that they will be used to prevent price increases from being passed on to consumers (PEW Allowances). However, such a stipulation would be difficult to regulate. Furthermore, these giveaways reduce the amount of revenue that could be used to fund renewable energy products or directly mitigate the cost burden that falls on consumers. Ultimately, free allowances merely perpetuate the viability of industries that contribute the most to greenhouse gas emissions (Boyce and Riddle 2009, 2).

This brings us to the CLEAR Act, which distributes 100 percent of the available carbon shares through auction. Every month, the few thousand covered entities in the CLEAR act would participate in an auction where they would pay the “market-clearing price for carbon shares for each ton of carbon entering the economy (CLEAR Overview 4).” It should be noted that cap-and-trade also includes an auction mechanism, however, the auction under ACES is not

open only to covered entities but also to all entities, including Wall Street traders who would have the ability to manipulate the price of carbon and cause uncertainty and volatility in the market (CLEAR Overview 4). The auction under the CLEAR act is only open to the few thousand points-of-entry, which results in greater certainty and security for the capped entities. Furthermore, a key component of cap-and-trade is of course the “trade” part. This means that the different entities capped under the bill are able to trade credits with one another. Through this mechanism, firms that take action to reduce their pollutants will be able to sell their allowances to firms that are unable or unwilling to reduce pollution. This reduces the economic viability of polluting and encourages firms to minimize pollution in order to continue existing. Trading is made necessary under ACES due in large part to the allowance giveaways because firms may be given more or fewer allowances than they need. In the CLEAR Act, trading should not be as necessary, but it is allowed between covered entities only (CLEAR Overview 4). The 100 percent auction more fully internalizes the cost of polluting to these industries, reduces market volatility, and generates large amounts of revenue, which will be discussed shortly.

Offsets

In addition to free allowances, the use of offsets in cap-and-trade has the potential to greatly reduce the effectiveness of the ACES program and that of any subsequent climate bill by further reducing the price of emitting to industries. Offsets require some explaining as to how they work, and why they are ineffective and therefore *not* used in the CLEAR Act. To reiterate, cap-and-trade works by forcing a set of polluting industries to have an allowance or permit for every unit of pollution that they emit. Offsets allow these entities to gain carbon *credits* by paying industries or entities NOT regulated by the cap to reduce their carbon emissions instead.

An allowance or permit is used to emit a unit of pollution, which can be monitored and verified. A credit is received for *not emitting* a unit of greenhouse gas or for pulling a unit out of the air (Environment America 32). Depending on the price of reducing their own carbon emissions, it will be vastly cheaper for many industries to pay someone else to reduce their emissions instead. In ACES, 2 billion tons of offsets are allowed over the life of the program – 1 billion from domestic sources and 1 billion from international sources (H.R. 2454 Sec. 722). This amount is so great that offsets potentially could account for all of the emission reductions through about 2040 (Environment America 32). Between free allowances and cheap offsets, carbon-emitting industries have a strong disincentive to reduce their own emissions.

On the positive side, offsets can be seen as a way of encouraging emission reductions in non-regulated areas of the economy such as agriculture and forestry. The problems with offsets however can be numerous and may greatly reduce the effectiveness of the climate bill and will certainly delay the transition to renewable and clean energy sources. In order to be effective offsets need to be “real, additional, verifiable, enforceable and permanent” (Environment America 32). It is relatively simple to determine how many units of pollution a smokestack is emitting and to require that entity to obtain a permit for every unit. It is much more difficult to determine if a cornfield is *not* emitting a unit of pollution that they *would have emitted* if not for the offset program. In order for offsets to work, one needs to establish a baseline – how many units of pollution would have been emitted in a business as usual situation (Environment America 32). Furthermore, one needs to ensure that the unit of carbon being reduced this year is not going to be replaced by two new units of pollution next year. It is true that ACES establishes oversight procedures to verify and assign credit for offsets, and develops a list of possible offset projects for industries like agriculture (H.R. 2454 Title V). The implementation costs of such a

program would likely be substantial, however, and *international* offsets for planting a forest or not cutting one down will be even harder to monitor and verify. In addition, the reality is that EPA modeling actually shows that due in large part to offsets, reductions in domestic emission from ACES may be only half as much as the emission reduction targets suggest due in large part to these international offsets and because of the lack of verifiability of offsets on the whole (Hansen 214, CLEAR Overview 2).

Even if it became possible to fully account for the amount of carbon actually being reduced through offsets, the fact still remains that the vast quantity of allowable offsets gives incredible license for large polluting industries that are responsible for the overwhelming majority of greenhouse gas emissions to continue existing long past their time. The thing that most all politicians and many environmentalists will not say to you (at least in a public forum) is that ultimately, the goal of cap-and-trade or any climate policy should be to eliminate or at least greatly downsize or hugely transform the coal and oil industries. James Hansen in his book *Storms of My Grandchildren* argues that we must immediately halt the construction of coal plants and rapidly decommission existing plants if we are to reduce are emissions sufficiently to avert the worst effects of climate change (205). Without offsets, these industries can gradually make the transition to renewables or adopt carbon capture and storage and eventually be phased out. With the offsets under the cap-and-trade program, industries will rely on them until late into the program, and the transition to clean energy will be made much more difficult.

Carbon Revenue

The CLEAR Act deals with the problem of offsets by eliminating them. All of the reductions in carbon emissions from CLEAR will occur directly from domestic sources and from

the biggest sources of carbon. What about all those unregulated industries like agriculture, which could have reduced their emissions through offsets? We will get to that soon because now we have come to the beautiful part of cap-and-*dividend*. The 100 percent auction of carbon shares would generate a very large quantity of money. To whom should that money go? Cantwell's answer is that 75 percent of it should be distributed equally on a per capita basis to you, and to me, and to every single (legal) American, adult and child alike. Every month each of us would get a non-taxable check through the new Carbon Refund Trust Fund (CLEAR Act Sec. 5). In terms of the logistics, it would take coordination, but the government sends out checks all the time through Social Security and Medicare. The costs of such a distribution would be very minimal (CLEAR Overview 6). And imagine the benefits. The beauty of the dividend is that no one is shielded from the inevitable (and purposeful) rise in energy prices, yet the majority of American families will be able to fully offset higher prices with their monthly check (Boyce and Riddle 2010, 3). A study done on the CLEAR Act show that by 2020, when emission reductions will be capped at 20 percent below 2005 levels, or at about 5.4 billion tons, a price of \$25 dollars/permit will result in \$135 billion in revenue from the permit auction (Boyce and Riddle 2010, 3). Assuming that entities will pass on the cost of the permits to consumers, every individual will be receiving a dividend of about \$297/person (Boyce and Riddle 2010, 4). A family of four would receive \$1,188. How much of that dividend each person would be able to keep would depend on his or her carbon use. Nationwide, the annual cost to a *median* household of higher fossil fuel prices is about \$232 (Boyce and Riddle 2010, 4). The average net benefit is therefore \$65. About 70 percent of the U.S. population would end up with a *net benefit* from this policy in simply monetary terms. The top 30 percent of households may be putting out some extra money to cover the costs of fossil fuels. These costs, however, encourage everyone, and

particularly high-end energy users to make lifestyle changes, which are both necessary and the point of the dividend. You and I will see our gas and electric bills rise, and then we will see a monthly check. Our response will be: how can we keep more of that check? This mechanism contains the necessary economic incentive to drive our society toward a more sustainable lifestyle that is fueled by renewable and clean energy.

Doesn't ACES have clean energy refund credits for consumers and encourage companies to pass on the price breaks they get through free allowances to consumers? Yes, however, a study done in 2009 by Boyce and Riddle shows that the top 20 percent of Americans would receive 38 percent of carbon revenues (17). The middle 20 percent and the bottom 20 percent would receive about 15 percent of carbon revenues each. Under cap-and-dividend, each quintile receives 20 percent of the revenue. In terms of distributional impact, cap-and-dividend also provides the more equitable solution. With an upstream cap and no offsets, the possibility that one area of the country will see prices rise more dramatically than others is lessened (CLEAR Overview 8). With ACES, because each individual source is regulated, it may be that power plants in Minnesota are able to acquire more offsets through agriculture, but power plants on the east coast are not resulting in a differentiated price impact for these two regions of the country. The upstream cap will better ensure a uniform nation-wide rise in prices, and the equal dividend will offset those rises for the majority of American families, and reward those that cut their carbon footprint (Boyce and Riddle 2009, 13).

The CLEAR Clean Energy Reinvestment Trust (CERT)

The CLEAR Act puts 75 percent of the revenue back into the hands of people. The other 25 percent of the revenue is put into the Clean Energy Reinvestment Trust (CLEAR Act Sec. 6).

This 25 percent can be used for a variety of programs. Because an industry such as agriculture is not included in the cap, except through rising fossil fuel costs, some of the extra money can go towards helping agriculture to reduce their emissions. Such an approach includes agriculture in the process of reducing emissions, creating *additional* emission reductions instead of relying on this sector to provide billions of tons of offsets for the energy sector. It can also target greenhouse gases that do not fall under the cap (CLEAR Act Sec. 6). The 25 percent is also slated to go towards job retraining assistance and transition assistance for workers and industries that are most heavily affected by the cap (CLEAR Act Sec. 6). Money will go toward research and development and particular carbon capture and storage (CLEAR Overview 9). Finally, this money can also go toward trade-exposed industries, and the CLEAR Act paves the way for World Trade Organization-approved import fees on products from other countries that are being produced in an economy with no carbon limits (CLEAR Overview 9). This extra money will provide greater incentive to develop alternative forms of energy and create some semblance of a safety net as the country makes the transition to a fossil-fuel free economy. This dedicated stream of funding is quite different from the free allowances and offset program that are written in to the ACES bill. The CLEAR Act places a much stricter cap on the amount of carbon being emitted in the United States, and these funds will smooth the transition to cleaner forms of energy *without* weakening the effectiveness of the cap.

The Political Scene

In terms of political viability, one can only speculate as to the potential for cap-and-dividend to replace cap-and-trade as the preferred method of reducing carbon emissions, and its potential to be attractive to those who have pushed back against carbon limits for decades. In the

current political climate, it is difficult to see how any comprehensive climate legislation has a chance for passage. I think, however, that if politicians begin supporting this policy and the public is educated about it, its attractiveness will grow. Of course the biggest pushback will come from industry and rightly so, however, the extra 25 percent of revenue is meant to help these sectors with transition assistance. A positive sign for the bipartisan potential of this bill is the fact that it was co-sponsored by Senator Susan Collins of Maine who is a Republican. It is true that she is one of the more liberal Republicans, but nonetheless, her support of the bill is encouraging. Ultimately, I have hope for this legislation primarily because of the dividend component. It really does not seem like you could invent an easier policy to sell: Would you like an extra \$1,000 from the government every year? It seems difficult to argue against a policy that fully offsets the rising cost of carbon for 70 percent of Americans. After all, who likes tax breaks better than Republicans?

Social and Environmental Justice

On a more serious note, from an environmental and social justice standpoint, it is clear the cap-and-dividend has many advantages over cap-and-trade. The United States Environmental Protection Agency defines environmental justice as: “Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” As the Boyce and Riddle study shows, carbon revenues from cap-and-trade will be distributed quite unevenly across income levels, and more problematic, they will flow mostly to the top 20 percent of incomes. The equal dividend from cap-and-dividend results in a progressive rate of payment for rising energy prices. In addition,

cap-and-dividend better embodies the “polluter pays” principle by auctioning permits and not allowing for offsets. Finally, the very fact that when modeled, cap-and-trade results in only a 40 percent reduction of carbon emissions from the United States raises questions about the environmental integrity of this policy. The United States is the second largest emitter of carbon dioxide, but we have only taken that second place spot to China in the past few years. Our per capita emissions are enormous compared to China’s. We have a responsibility as a nation to reduce our carbon emissions substantially in order to lead the way in preventing the worst effects of climate change, effects that will most greatly harm the poor and vulnerable in our world. Environmental and social justice calls us to create both a more effective policy, and a more equitable one. Cap-and-dividend offers this alternative, and it should be recognized as such.

The climate situation demands action on the part of the United States and countries across the world. The normative approach of cap-and-trade fails to effectively and substantially reduce our carbon emissions while equitably distributing the costs of doing so. The use of free allowances, offsets, and the skewed distribution of revenue fails to fully internalize the cost of fossil fuels for the biggest emitters, diminishing the effectiveness of the program and allowing the burden of higher prices to fall on those who cannot afford them. This examination of cap-and-dividend as an alternative to cap-and-trade shows the benefits that can be gained if we adopt the dividend approach. The 100 percent auction puts the price of emitting on the largest emitters, the dividend protects those in our country who would be most hurt by the rising costs of energy, Most importantly perhaps, this policy will drive the creation of new and clean energy sources to replace fossil fuels. As the dangers of climate change increase and calls for comprehensive climate policy continue to grow stronger, it is hoped that cap-and-dividend will come to the fore as the preferred approach to reducing greenhouse gas emissions in the United States.

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