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before the
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Legislative Hearing on S. 1733,
Clean Energy Jobs and American Power Act
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Thank you, Chairman Boxer and Senator Inhofe, for the opportunity to testify today on S. 1733, the Clean Energy Jobs and American Power Act. My name is David Hawkins. I am Director of Climate Programs at the Natural Resources Defense Council (NRDC). NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.3 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles and San Francisco, Chicago and Beijing.

Introduction

The Clean Energy Jobs and American Power Act will put America on the path to clean energy -- a path that will lead to a growing economy with more jobs created here and fewer dollars shipped overseas to chase increasingly insecure supplies of dirty energy. S. 1733 will ensure that we will meet more of our energy needs with home-grown, clean resources: using American technology to waste less energy and to increase our use of wind, energy from the sun, and sustainable sources of bioenergy. We will also

harness America's enormous talent in business, labor and our wealth of resources to shape our future and not just cope with it.

The foundation of the American economy, indeed the foundation of the wealth of all nations, is the global climate system that has allowed agricultural production to increase on a massive scale since the last ice age, feeding a growing global population and creating surpluses that have enabled the growth of commerce and industry. Because we have enjoyed a stable and hospitable climate for as long as our history records, it is easy for us to take it for granted and to assume that nothing humans can do could possibly threaten that stability. But for the past several decades scientists have been telling us were are wrong to take a stable climate for granted. We know now that we are putting our planet's climate at risk, and with it risking the foundation of human well-being.

But we also know now that we have the power to confront this threat. Confronting global warming will require us to apply our ingenuity to a huge task that presents huge opportunities. But American workers and American businesses have the power to build a clean energy future that will enhance our standard of living and protect the earth's climate. We have the power to earn our place anew as a world leader in the creation of new industries that will strengthen our economy, improve energy security, and curb the threat of a disrupted climate. As President Obama said last Friday:

> Today's frontiers can't be found on a map. They're being explored in our classrooms and our laboratories, in our start-ups and our factories. And today's pioneers are not traveling to some far flung place. These pioneers are all around us -- the entrepreneurs and the inventors, the researchers, the engineers -- helping to lead us into the future, just as they have in the past. This is the nation that has led the world for two centuries in the pursuit of discovery. This is the nation that will lead the clean energy economy of tomorrow, so long as all of us remember

what we have achieved in the past and we use that to inspire us to achieve even more in the future.

But to harness that power, the private sector needs a policy framework to reward investment decisions that choose cleaner, low-carbon options over outmoded high-carbon products and practices. We know these cleaner options exist but they will not penetrate the marketplace while policies that reward dirtier options remain in place. When some argue today that these cleaner options are just not economic or competitive what they are really saying is that today's market incentives reward dirty energy choices.

S.1733 would provide a framework to reward clean energy investments while helping consumers and industries that today rely heavily on traditional energy resources transition smoothly to the new path. The framework starts with a broad limit on U.S. global warming pollution that declines steadily over the next four decades. The bill allows each emitter flexibility in meeting its part of the overall limit by creating a system of permits to emit, or "allowances," that can be bought, sold, or saved for later use. This framework rewards firms that find ways to meet our needs for power, heat, light, comfort, convenience and mobility and reduce global warming pollution at the same time. The new allowance market also produces value that can be employed to meet key public policy goals, including consumer protection, preserving competitiveness, worker protection and training, stimulating pioneer investments in promising technologies that are not yet commercially viable, reducing deforestation, and supporting state and local clean energy and adaptation programs.

Additional key elements of the framework for jobs, energy security and climate protection are incentives and performance requirements for low-carbon energy

investments in key sectors of the economy. These provisions complement the overall national limit on pollution by accelerating innovation in the design of vehicles, fuels, electric power, buildings, and appliances. The market signal delivered by the declining limit on overall emissions would drive these changes eventually, but we can make progress faster, and often at lower cost, with a system of well-designed performance incentives and standards that take advantage of each sector's ability to improve performance more rapidly.

The policy framework contained in S. 1733 is overdue. Had we enacted this law a decade ago, America today would be a global leader in climate protection and a model for other countries to emulate; we would be less dependent on foreign oil; and we would have created millions of jobs in the clean energy economy for the 21st Century. We have lost much ground by delay. Indeed, the International Energy Agency estimates that each year of delay in tackling the threat of climate change will cost the global economy about one-half a trillion dollars annually. We cannot regain those lost years but we can avoid losing more time by acting now. For that reason, NRDC strongly supports action by this Committee to report S. 1733 to the full Senate without delay.

I. We Must Act Now

Action on global warming has been delayed far too long. Every day we learn more about the ways in which global warming is already harming our planet, our health, and the natural systems on which our civilization is built. We must act now to begin making serious emission reductions if we are to avoid truly dangerous levels of global warming pollution. Climate scientists warn us that we face extreme dangers if global average temperatures are allowed to increase by more than 2 degrees Fahrenheit from

today's levels (equivalent to 2 degrees Celsius over pre-industrial levels). The Intergovernmental Panel on Climate Change (IPCC) reports that it is still possible to stay below this temperature increase if atmospheric concentrations of CO_2 and other global warming gases are held to 450 ppm CO_2-equivalent and then rapidly reduced.

Staying under this target is very challenging, even with allowance for some period of "overshoot." It cannot be done without the cooperation of both the industrial North and the emerging South. But it can be done, as demonstrated in EPA's analysis of S.1733.[1] And for the United States to secure a claim to leadership in the 21st century, we must be instrumental in forging the necessary coalition. Enacting U.S. legislation is the single most important step we can take to unlock the global negotiating gridlock of the past decade.

If we delay and emissions keep growing, bad investments and business uncertainty will continue and it will become much harder to avoid the worst impacts of a climate gone haywire. In short, a slow start means a crash finish, with steeper and more disruptive emission cuts required for each year of delay or insufficient action.

S. 1733 appropriately establishes a declining cap on emissions of carbon dioxide and other heat-trapping gases. It sets long-term limits that are consistent with the science, reaching a 42 percent reduction by 2030 and an 83 percent reduction by 2050, from 2005 levels. S. 1733's near-term limits are an improvement on legislation in the House. NRDC believes we can and should achieve at least a 20 percent reduction in 2020 in the

[1] EPA, Economic Impacts of S.1733. October 23, 2009. EPA's analysis shows that enactment of S.1733 in conjunction with emission reductions by other countries consistent with the 2009 G8 declaration would limit atmospheric CO2-equivalent concentrations to 485 ppm in 2100 and keep global warming below 2ºC based on the IPCC's best estimate of climate sensitivity.

emissions of capped sources and in total U.S. emissions. We strongly support the inclusion of this target in S. 1733.

According to the Environmental Protection Agency the average per household cost of S. 1733 would be less than $120 per year.[2] NRDC's research shows that under the House bill American households will save $6 per month on their electricity bills in 2020. Similarly, EPA's analysis of the House bill found that household energy expenditures would decrease 7% in 2020. Meanwhile, NRDC's analysis found that the cost of owning and driving a vehicle will decline by $14 per month. Equally important, EPA's analysis shows that average annual household income will increase by more than $7,000 between 2009 and 2020 with or without a climate bill.[3] EPA's analysis of S.1733 concluded that household costs would be very similar to those under the House bill.

In addition, both the House bill and S. 1733 will create more jobs -- a net increase of as many as 1.9 million jobs with effective policies to capture available cost-effective energy efficiency opportunities.[4] These savings and job numbers are detailed on a state-by-state basis in the maps appended to this testimony.

Some will argue that a 20 percent reduction target for 2020 is too aggressive and would place too much pressure on coal-fired electricity or energy-intensive, trade-exposed manufacturing, and on the regions where those industries are most important. A 20 percent reduction in 2020, however, is within the range recommended by the US Climate Action Partnership (USCAP), and EPA's analysis of S.1733 concludes that allowance prices will only be about one percent higher than they would be with a 17

[2] EPA, Economic Impacts of S.1733. October 23, 2009, p. 19.
[3] EPA, 2009. H.R.2454 Data Annex, IGEM model. (adjusted by converting to 2007$, discounted at 5%). http://www.epa.gov/climatechange/economics/economicanalyses.html
[4] D. Roland-Holst and F. Kahrl, October 23, 2009. Clean Energy and Climate Policy for U.S. Growth and Job Creation. http://are.berkeley.edu/~dwrh/CERES_Web/

percent reduction in 2020.[5] The most recent Department of Energy reference case forecast is for U.S. emissions of energy-related carbon dioxide in 2020 to be 1 percent *lower* than 2005 levels, in sharp contrast to the 17 percent increase forecast for 2020 just two years ago.[6] This indicates that achieving a 20 percent reduction by 2020 will actually be far easier than the effort previously anticipated to be required to achieve less ambitious reductions.

Furthermore, S. 1733's allowance distribution gives the local electricity distribution companies and energy-intensive, trade-exposed manufacturers a large fraction of the allowances they will need for compliance well past 2020. And the bill provides generous incentives for investing in power plants and other industrial facilities equipped with carbon capture and storage. The bill also allows the use of up to two billion tons of offsets per year to further cushion these concerns. A twenty percent reduction by 2020 is both needed and do-able.

II. S. 1733 Relies on a Proven Approach

To meet the climate protection challenge, S.1733 employs a fundamentally sound architecture. It establishes a declining cap between 2012 and 2050, covering approximately 85 percent of U.S. emissions of carbon dioxide and other heat-trapping gases. The cap directly attacks the pollution that drives global warming by setting a specific limit on the total quantity of dangerous pollution emitted each year, creating certainty that our environmental goals will be achieved.

[5] EPA, Economic Impacts of S.1733. October 23, 2009, p.3.
[6] DOE/EIA Annual Energy Outlook 2009 with ARRA (SR/OIAF/2009-03) compared to the Annual Energy Outlook 2007.

S.1733 uses proven methods to achieve this pollution cap at minimum cost. Instead of specifying exactly what every source must do to help meet the cap, it creates a defined number of carbon pollution allowances. Covered sources must surrender an allowance for each ton of carbon emissions at the end of each year. The opportunity to purchase allowances at auction, or to buy and sell them in the marketplace, creates clear economic rewards for investing in energy efficiency and clean energy innovation and allows each covered source to find its lowest cost way to comply – thereby minimizing the cost for the entire economy. Additional cost management flexibility comes from the ability to bank allowances into future years, to borrow them in limited circumstances, and to accelerate investment in low-carbon technologies using allowance allocations as a form of bankable collateral.

For further market stability and predictability, S. 1733 creates a strategic reserve of allowances that can be sold into the market should there be a period of unusually high prices. The reserve created under S. 1733 is much larger than the one provided by the House-passed bill, and S. 1733 provides simpler and sounder operating rules. The very existence of this large reserve should deter speculative activity in the compliance market as it has the potential, during the first twenty years of the program, to release more than 3.5 times the maximum annual change in U.S. carbon emissions during the last twenty years.[7]. To avoid market prices so low that innovation could be stifled, the bill also establishes a minimum price for sales of allowances from the legislation's regular auction.

[7] NRDC calculation based on EIA data. The maximum annual emissions increase in the last twenty years was 186 million tons in 1996. The maximum release form the market stability reserve in 2012, for example, is 15 percent of the 2012 cap, or 694 million allowances, which is 3.7 times the 1996 emissions increase.

S. 1733 builds on the cost-containment structure in the House bill but modifies it in several ways to improve its ability to prevent excessively high allowance prices and price volatility. In essence, S.1733 creates a very large reservoir of allowances that all market participants know will be released into the market should prices rise above defined levels. In S.1733 (unlike in H.R.2454) this "trigger" price is clearly defined in advance. The size of the reserve and the number of allowances that can be released from the reserve in any given year are also substantially larger in S.1733 compared to H.R.2454, leading EPA to conclude that S.1733 will provide better price certainty. This will deter speculation and create confidence in the system's performance.

S. 1733 also provides for very large amounts of domestic and international offsets – up to two billion tons per year of reductions achieved outside the capped sectors – to further reduce costs. S. 1733 creates a preference for domestic offsets, with flexibility to increase use of international offsets should the supply of domestic offsets be constrained. With a reasonable limit on the total number of offsets, and with strong safeguards to assure that offset credits are earned only for real reductions that would not have happened anyway, offsets can be a valuable component of climate legislation.

S. 1733 includes important principles about the need to transparently and effectively regulate the market for trading greenhouse gas allowances, as well as futures and other derivatives. Given recent experience on some other trading markets, the American people have a right to demand that rules for regulating carbon trading be clear and transparent, and effective in preventing speculative manipulation. NRDC recommends incorporating provisions similar to those included in the Feinstein-Snowe bill, S.1399.

In addition, NRDC recommends including three additional safeguards:

First, the Senate should consider requiring all trading in allowances and in futures to take place on regulated exchanges to provide the greatest possible transparency to trading activity and prices, and to reduce counter-party risk – the risk that one of the contract participants will fail to perform when the contract is due. At a minimum, the bill should require the reporting to regulators of all non-standardized trades greater than a specified amount – for example, above $10 million – that take place in the "dark" or unregulated markets. As a further safeguard against manipulation, Congress should set tighter "position limits" on the fraction of allowance futures that any one participant can hold in the carbon market. We recommend that no one be allowed to have more than a 5 percent (not 10 percent as in H.R. 2454) position in the market for the most actively traded futures (for example, the market for contracts to deliver allowances at the end of the next compliance year). This is roughly twice as large as the speculative position limits established under the Commodity Exchange Act for agricultural commodities. It would be more than sufficient for hedging and trading purposes and would deny any single market participant the market power to meaningfully influence prices. Congress should also direct the administration to work with other nations to provide comparable safeguards as a condition of linkage to the U.S. carbon market.

Is there a viable alternative to this cap and trade architecture? Comprehensive cap bills like S. 1733 have been attacked from two contradictory flanks. First, there are those who mischaracterize cap and trade proposals as tax bills, and oppose them for that reason. S. 1733 is not a tax any more than any of the nation's other air and water pollution control laws are. Rather, it is a smart method for guaranteeing a firm overall limit on

carbon pollution, directly tied to protecting us from the worst effects of global warming, while allowing individual sources a great deal of flexibility to find the lowest cost pathway to compliance.

At the opposite extreme, there are opponents of cap and trade legislation who say it *should be* a tax, and oppose it because it is not. Beyond the obvious political obstacles to this approach, NRDC does not support a carbon tax first and foremost because it would not guarantee achievement of the emissions reductions necessary to limit cumulative emissions over time to a level compatible with a stable climate. A carbon tax would represent, at best, a congressional guess at the imposed cost needed to induce myriad covered sources to limit their emissions enough to meet desired annual emissions targets for the country as a whole. That guess could be wrong on the high or low side – most likely on the low side given the aversion of many political actors to charges of raising taxes. It would require Congress to constantly reconsider the tax rate – or to adopt some form of automatic adjustment.

Some carbon tax proponents claim a tax would be a lot simpler than cap and trade. But this is the fallacy of comparing an idealized concept to a flesh and blood bill. When was the last time Congress wrote a simple tax bill? There would be just as many pressures for exemptions, exceptions, offsets, and other special treatment as we have seen regarding emission cap bills. In short, a carbon tax would be neither environmentally effective, simple, nor politically appealing. The architecture of S. 1733 is proven to work and is a far better alternative.

Other opponents of this legislation have argued for a "New Manhattan Project" like the substitute offered on the House floor that would have authorized a grab-bag of

goals, prizes, and grants for new technologies. While most of the goals are laudable, and while prizes and grants have their place, there are two fatal flaws to the call for a grand-scale research and development program as an alternative to a comprehensive cap and invest approach. First, the proponents of the Manhattan project have identified no viable means of providing the funding they advocate – without an allowance system created by an emissions cap, they would have to rely entirely on ever-more-difficult annual appropriations. Second, government-sponsored research and prizes, while useful, cannot remotely hope to create private sector incentives for clean energy innovation on the necessary scale. In marked contrast, S. 1733 does create incentives on this scale by establishing an ever tighter cap on emissions that tells every innovator large and small that there is a predictable, expanding market for low-carbon products and services.

The primary barrier to a clean energy economy is not a shortage of American ingenuity or even a shortage of financial resources to apply to the task; it is the lack of a powerful and sustained set of predictable market rewards that are needed to motivate private sector innovators to invest in bringing low-carbon options to market rather than products and services where the carbon footprint is ignored. In addition to the market signal created by the declining cap itself, S. 1733 uses some allowances strategically to invest in efficiency and clean energy technology. As I explain below, S. 1733's allowance allocation can be further improved to more fully seize the cost-saving energy efficiency opportunity and save American households and businesses even more.

Other opponents of this legislation are touting a collection of worn-out ideas that have been stitched together under the catchy name "All of the Above." The list includes massive subsidies and free rides for all the old energy technologies, with just enough

window-dressing on efficiency and renewables to support a talking point or two. In the simplest terms, this is a recipe for *increasing* our carbon pollution, *increasing* our energy bills, *reducing* our energy security, and doing *nothing* to help re-power the American economy. A program that lacks a cap on carbon pollution, and pursues every energy option regardless of merit, just lets global warming keep getting worse and makes our energy and economic challenges worse.

Effective answers for climate protection, energy security, and economic vitality can be found only by wasting less and investing serious sums in clean energy resources, all within the framework of clear limits on global warming pollution. Of all these approaches, only comprehensive legislation like S. 1733 will create the clarity and drivers for the investments we need to shift to the low-carbon economy.

III. Complementary Standards and Policies to Enhance Emission Reductions and Adaptation to Climate Change

A key element of comprehensive clean energy and climate protection legislation is provision for complementary energy efficiency, renewable electricity, and carbon pollution control standards. Strong energy efficiency standards for buildings, appliances, vehicles, and other equipment are crucial to meeting our carbon pollution goals effectively and at the lowest cost. In fact, still-untapped energy efficiency opportunities can save thousands of dollars per household. We encourage this Committee to work with the Energy and Natural Resources Committee to include such measures in the bill that goes to the floor so we can achieve the maximum gains in these areas.

In areas within this Committee's jurisdiction, S. 1733 contains important carbon pollution performance standards for vehicles and power plants. With regard to light-duty vehicles, it appropriately leaves in place the current requirements of the Clean Air Act under which California and EPA are setting greenhouse gas standards and the Department of Transportation is setting mileage standards. Under the historic agreement announced by President Obama in May, and the standards proposed by EPA and DOT in September, these three regimes will be coordinated and will deliver the benefits of the California program nationwide. S. 1733 includes specific mandates to use existing Clean Air Act authority to set greenhouse gas standards for other classes of vehicles and equipment. Further improvements can be made in these areas to deliver more emission reductions – and fuel savings – from a wide range of mobile sources, including aircraft.

The role of carbon capture and disposal

S. 1733 also includes new standards and incentives to deploy carbon capture and disposal technology at scale. Because of the importance of these provisions in shaping future investments in coal both in the U.S. and globally, I will discuss these coal sections in some detail.

To reduce the contribution to global warming from coal use, we can pursue efficiency and renewables to limit the total amount of coal we consume but to cut emissions from the coal we *do* use, we must deploy and improve systems that will keep the carbon in coal out of the atmosphere, specifically systems that capture carbon dioxide (CO_2) from coal-fired power plants and other industrial sources for safe and effective disposal in geologic formations. These systems are referred to as carbon capture and storage (CCS) or carbon capture and disposal (CCD), which is the term I will use.

If we decide to do it, the U.S. and the world could build and operate new coal plants so that their CO_2 is returned to the ground rather than polluting the atmosphere. S. 1733 contains a comprehensive approach to make this happen in the U.S. Modeled closely on the USCAP Blueprint for Legislative Action recommendations, the bill combines a declining cap on greenhouse gas emissions with emission standards that will require new coal plants to capture a substantial amount of their CO_2 emissions. In addition, to allow CCD to be deployed without significant impacts on consumers' electricity rates, S. 1733 provides for a program of direct payments for capture and disposal of CO_2 from the early generations of new coal plants.

CCD provisions in S. 1733

S. 1733 provides a strong foundation for the deployment of CCD systems that can achieve substantial reductions in emissions from large fossil fuel sources. In NRDC's opinion, proposed sections 121, 122, and 123 of S. 1733 would effectively implement the USCAP recommendation to develop and implement a national strategy to address legal and regulatory barriers to commercial-scale CCD deployment. However, we believe that it would be better to meld proposed sections 121 and 123 together in a manner that coordinates the timelines for action. We also recommend that proposed section 122 (a) specifically state that the regulations promulgated by the Administrator will apply at a minimum to hydrocarbon reservoirs and deep saline formations.

Section 124 of S. 1733 creates a new section 812 to the Clean Air Act that establishes a vital carbon dioxide emission standard for new coal power plants initially permitted after January 1, 2009. The mandatory emission standard in S. 1733 is expressed as a minimum percentage reduction in annual CO_2 emissions produced by the

unit: for units permitted after January 1, 2009 and before January 1, 2020, a 50% minimum reduction is required; for units permitted on or after January 1, 2020, the unit must achieve a 65% minimum reduction or meet any more stringent requirement established by EPA.

In S. 1733, the mandatory emission standard compliance dates for units permitted before 2020 are somewhat delayed compared to the USCAP recommendations but as discussed below, the CCD financial incentives program is structured to provide a strong economic incentive for earlier compliance. Units permitted on or after January 1, 2020 must meet the minimum emission standard upon initial operation. In general, new units permitted before 2020 must comply within four years after a minimum amount of electric generating capacity equipped with CCD systems is in commercial operation in the U.S. but in no event later than 2020.[8] Compared to the House bill, S.1733 increases the CCD capacity trigger from 4 gigawatts to 10 gigawatts (GW) but establishes 2020 as the outside compliance date, rather than 2025. NRDC does not believe that operation of 10 GW of capacity is required to prove that CCD is commercially viable but we do support advancing the mandatory compliance date to 2020.

Section 780 of S. 1733 creates a program for direct payments for CO_2 captured from power plants and other industrial sources and disposed of in permanent geologic repositories. The CCD program is structured to reward early projects and projects that achieve greater reductions than the minimum emission standards set in new CAA section 812. In contrast to traditional government R&D grant programs, the earliest projects do not apply for grant approval. Rather, they are paid for performance with a statutory

[8] There is provision for a case-by-case 18-month extension of the 2025 date upon a showing of technical infeasibility for the unit.

schedule of payments in dollars per ton of CO_2 avoided[9] through the use of CCD systems. The CCD bonus program is technology neutral, with no capture system favored over another. The Chair's Mark for S. 1733 includes a provision for receipt of advance payments for CCD projects. This should ease financing for such projects but will have to be carefully designed to assure that the objective of paying only for actual performance is achieved in practice.

As I mentioned, S. 1733 provides an incentive for earlier compliance by reducing or eliminating the amount of CCD payments available to units that fail to meet minimum standards upon startup. However, a technical correction to the Chair's Mark is required to address a conflict between the allowance eligibility conditions and the advance payment provisions. While subsection 780(f)(3) bars post-2105 units from receiving any bonus allowances unless they meet the minimum emission limits on startup, subsection (f)(4) does not include an express provision for immediate recovery of all advance payments previously made to a unit if it fails to comply on startup.

The provisions of S. 1733 will help speed the deployment of CCD here at home and set an example of leadership globally. That leadership will help reconcile coal and climate protection; it will bring us economic rewards in the new business opportunities it creates here and abroad; and it will speed engagement by critical countries like China and India.

The first CCD projects are technically ready for deployment today but the lack of a policy framework means there are regulatory and economic barriers that are difficult to overcome. S. 1733 would correct this problem by directing the adoption of required

[9] Technically, the provision awards allowances, not dollars. But the number of allowances is prescribed to equal a specified dollar per ton value.

siting rules and providing both the financial incentives and clear standards for emission performance that are needed to make CCD a reality in a timely manner.

Clean Air Act and State program provisions in S. 1733

In constructing a new program to cap and reduce carbon pollution, we should build on, not replace, the existing Clean Air Act. We strongly support the fact that S. 1733 recognizes and retains this approach.

S. 1733 preserves the New Source Performance Standards authority of the Clean Air Act for sources covered by the bill's cap and preserves the current Act's New Source Review (NSR) provisions for major sources, capped or not. NRDC believes this approach correctly maintains the government's ability to establish reasonable and affordable performance requirements that would complement the cap and contribute to achieving the goals of S. 1733 in an efficient and cost-effective manner.

Since the first comprehensive federal clean air law enacted in 1970, Congress has recognized the value of providing complementary approaches to achieving our air quality and emissions objectives, rather than relying exclusively on a single instrument. Thus, Congress coupled an air quality management program focused on ambient air concentrations of pollutants and state implementation plans (sections 108-110) with technology-based programs to continuously reduce emissions from motor vehicles (section 202) and large stationary air pollution sources (section 111). Congress created this dual system because it recognized that without emission reductions from these sources as technology evolves, there would be too much strain placed on the ambient air quality standards program. In the 1977 amendments to the Act, Congress established a

case-by-case process under the NSR Program in order to assure a more rapid updating of improvements in pollution control technology as new plants were built and old ones modernized.

The argument has been made that with an overall cap or budget on greenhouse gas emissions, we should simply not care about the amount of emissions from individual sources or even entire sectors. But Congress rejected that approach in the 1990 amendments when it enacted a cap on sulfur dioxide emissions from the electric power sector to combat acid rain. Congress retained the NSPS and NSR programs for the sources covered under the acid rain program, and those programs have continued to function well to minimize emissions from new sources, thereby reducing pressure on the sulfur dioxide cap and demonstrating improved and less expensive means of emission reduction that can be used to reduce emissions from existing sources as well.

As for acid rain, in this case the cap on total greenhouse gas emissions is a core element of an effective greenhouse gas reduction strategy. It creates a market for the many innovations that will be required to achieve the deep reductions we need to protect the climate. But we should not rely on this alone. The RECLAIM program in Southern California is an example of overreliance on the cap mechanism alone: there exclusive reliance on a cap program led to long delays in reducing emissions from major sources, and to a totally avoidable compliance crisis when the final deadline arrived.

For these reasons, NRDC believes it is important to preserve EPA's authority to set reasonable emission standards under Section 111 for major industrial sources, even those that are subject to the cap. We also recommend retention of NSR provisions for large sources of greenhouse gas emissions. Critics have complained that applying NSR

to carbon pollution would result in burdensome coverage of barbecues and donut shops. That concern is easily addressed by raising the NSR threshold to a level that would cover only truly large industrial sources, such as 25,000 tons per year of CO_2-equivalent emissions. EPA has proposed a rule to make this change in the NSR threshold, and we recommend including it in this legislation.

New legislation should also retain important provisions of the current Clean Air Act that protect the rights of states to go beyond federal minimum requirements. During past periods of federal abdication, states pioneered control of greenhouse gas emissions from vehicles, and they developed effective programs to deploy energy efficiency and renewable energy resources. States, and entities that states regulate (such as local distribution companies) have program delivery capabilities that the federal government cannot match. If the federal program should fall short of what is needed at some point in the future, it is extremely important that states be able to pick up the slack once again.

Recognizing the potential value of integrating state programs into a suitable national program, NRDC recommends a means through which states can voluntarily suspend the adoption or enforcement of state caps so long as the national program provides a strong national cap but which retains other state authorities and adequately supports state energy efficiency, renewable energy, and transportation efficiency programs.

The bill also should provide a means to assure that the carbon reduction benefits of state energy efficiency and renewable energy deployment programs will not be lost when we have a national carbon cap. The bill should allow states to obtain a reduction in the national cap by an appropriate amount if they demonstrate that their in-state programs

have reduced emissions beyond the national program and in a way that does not raise allowance prices in other states.

Natural Resources Adaptation to Climate Change

We must ensure that we provide for society and for our natural resources to adapt to the ongoing impacts of climate change. We are very supportive of Title III, particularly Subtitle C, which establishes programs, plans and activities to oversee public health and natural resource adaptation in the face of climate change. However, we are concerned about the lack of an established relationship between Title III, Subpart C, which establishes a Natural Resources Adaptation Policy and Strategy for the country, and Title III Subpart D, which initiates four new funding programs for adaptation projects. We recommend that language be inserted before Section 381 that clarifies that each of the four funding programs established by Subpart D must not undermine any strategies, activities or actions within the state natural resources adaptation plans approved under Subpart C.

Furthermore, we note that the State Climate Change Response Plans approved under Section 210, which distributes auction proceeds deposited in the State Climate Change Adaptation Fund to the States for general adaptation projects, should be held to this same standard. Therefore, we recommend the inclusion of language in Section 210 that says that State Climate Change Response Plans must not undermine the state natural resource adaptation plans approved under Subpart C.

With regard to the natural resources adaptation plans required of Federal agencies and States under Subpart C, we recommend that the deadline for their development be expanded from 1 year to 18 months from enactment of the National Adaptation Strategy.

It is vital that these plans be done well, without shortcutting the agencies' duties under existing law. Good adaptation is not an "off-the-shelf item"; understanding how best to invest in it will require careful study. Investing more time up front will increase the likelihood of strong and enduring plans that agencies can confidently turn to for guidance in the future. Along these lines, it is also imperative that explicit direction be included in Subpart C that requires natural resources adaptation plans to minimize the collateral adverse environmental impacts associated with adaptation activities. Proper and careful study and clear direction to minimize collateral damage to natural resources can improve upon the natural resources adaptation plans and ultimately move us closer to achieving the goals of the National Adaptation Strategy.

Finally, we note several deficiencies regarding the Wildfire Program (Section 383) and the Coastal and Great Lakes State Adaptation Program (Section 384) under Subpart D. Section 383 as written would potentially fund a broad array of active forest management activities. Some of these activities fall outside the scope of reducing community wildfire risk, and could increase net carbon emissions and have other undesirable side effects. At a minimum, we recommend that Sec. 383 (e)(2)(E) be edited to read "Fuels reduction that reduces serious risks to homes and other structures." In the same regard, we recommend that Fire Risk Mapping activities in Sec. 383 (d)(2) be amended to apply only to "water supply systems." These suggested changes will ensure that funding associated with this program treats the real problem of reducing fire impacts within communities.

With regard to Section 384, we recognize that important environmental criteria (d)(1)(B)(i-ii) exist to safeguard against funding harmful adaptation projects, but it is

essential that these safeguards apply to all actions under this program, including those referenced in (d)(1)(A). We also think it is essential that projects proposed for funding by the States under Section 384 be submitted in advance to the Administrator for review and approval. This offers some level of oversight to ensure accountability of the proposed projects with the environmental criteria contained in this subsection.

These changes, taken together, will strengthen Title III and Section 210, and will significantly increase the overall effectiveness of climate change adaptation efforts.

IV. Using Allowance Value for Public Benefit, Not Private Enrichment

The distribution of the carbon allowances is one of the fundamental decisions that Congress must make. This choice is often debated by using the shorthand "auction versus free allowance giveaway." However this shorthand misses the following important policy point: more important than whether allowances are sold at auction or distributed for free is the question of what purposes the allowance value must be used for. Congress can assure that specific public purposes are achieved either by allocating a free allowance with conditions on how its value must be used or by auctioning the allowance and directing how the proceeds must be used. While S. 1733 allocates most allowances without charge in the early years, most of those free allowances are required to be used for public purposes and an increasing number – eventually effectively all of them – are auctioned over time. Nevertheless, significant improvements can be made. Here are the most significant categories:

Consumer protection for utility customers.

S. 1733 distributes the largest fraction of allowances, at least through 2025, to electric and natural gas local distribution companies. While the bill requires LDCs to use the value of these allowances to benefit their customers, it leaves it to utility regulatory commissions to define "public benefit."

Amending this provision to require LDCs and regulators to maximize consumer benefits by promoting investment in all cost-effective energy efficiency is the single most important step Congress can take to reduce the nation's energy bill and ensure that S. 1733 reduces global warming pollution at the least possible cost. While several states and utilities have demonstrated the enormous potential of efficiency to reduce consumer energy bills, the majority have done little or nothing to capture this resource due to a host of market and regulatory barriers, and absent such a requirement there is no reason to suppose they will begin now. As a result, we will come nowhere near capturing the $1.2 trillion worth of energy savings that McKinsey & Co. has determined we can achieve by 2020 if we adopt a serious effort to redirect the nation's energy investments towards efficiency.[10]

Why are efficiency investments so important? First, residential, commercial and industrial energy consumers who install efficiency measures will enjoy that $1.2 trillion in energy bill savings. Second, all consumers benefit when we lower the nation's energy bill by investing in efficiency whenever it is cheaper than investing in power plants – the resulting overall reduction in demand for energy puts downward pressure on electricity rates, fuel prices and the cost of allowances. Third, by shifting our energy dollars from

[10] McKinsey & Company (2009): "Unlocking Energy Efficiency in the U.S. Economy". Available for download at http://www.mckinsey.com/USenergyefficiency/

one of the least labor-intensive activities in our economy – operating power plants – towards a set of more labor-intensive activities – including retrofitting existing homes and office buildings and installing high efficiency lighting, equipment and appliances in all of them – we can create hundreds of thousands of new jobs that can never be sent overseas. .

If energy efficiency is so cheap and the opportunities so prevalent, why isn't everyone already investing in it? The answer is a host of persistent market barriers such as split incentives (e.g. landlord vs tenant), high internal rates of return, and a lack of information about or access to efficient products. But the primary barrier is regulatory: we don't buy energy efficiency because no one is in the business of selling it to us and no one is in the business of selling it to us because in most states we have adopted a perverse regulatory framework that ties utility profits and the recovery of their fixed costs to sales. This makes helping their customers improve efficiency very unattractive to their shareholders, even when doing so is substantially cheaper than generating and delivering electricity and natural gas. Given this regulatory context, Congress cannot give LDCs and regulators a blank check and expect them to deliver that $1.2 trillion in energy bill savings to American consumers; it must require a hard look at efficiency as an integral part of the allocation provisions.

S. 1733 includes a host of important provisions to promote energy efficiency, but collectively they do not approach the $50 billion/year investment that McKinsey estimates is needed to capture all net present value (NPV) positive.[11] To do that it is necessary to shift LDC investments from more expensive supply resources whenever cheaper efficiency options are available. S.1733 does this for of natural gas, home

[11] Ibid

heating oil and propane, directing LDCs and states to invest one-third to one-half of the value of their emissions allowances to cost-saving energy efficiency investments. Congress should do the same for electricity LDCs.

If local electric companies invested a third of their allowances in efficiency, national energy efficiency investments would increase by about $10 billion per year. This would lower consumers' electricity bills and lower carbon allowance prices significantly for all sources.

Several states and LDCs are already investing at this level or have adopted policies and efficiency targets that will move them in this direction and Congress should make clear that current investments would count towards the one-third requirement. The policy goal is to get LDCs to invest in all cost effective efficiency opportunities, so it also makes sense to clarify that if any LDC can deliver all such opportunities by investing a smaller amount, their regulatory commission should be authorized to reduce the percentage requirement.

Low-Income Consumers.

About 15 percent of total allowances are devoted every year to protecting low-income consumers, who spend a higher percentage of their income on food, transportation, and other necessities. In its analysis of a similar provision in the House bill the Congressional Budget Office concluded that these provisions will be effective in assuring that the legislation is progressive, with the lowest income fifth of the population being better off under the bill by about $40 per year.

Preserving Domestic Competiveness.

The bill provides approximately 15 percent of total allowances to energy-intensive manufacturers of products such as steel, aluminum, cement, and chemicals that are subject to strong international competition. The rebates are intended to counter pressures to shift production, jobs, and emissions to countries without comparable carbon reduction programs. Rebates are based on an industry average emission rate (e.g., tons of CO_2 per ton of cement) and facility-specific output data (e.g., tons of cement produced) and phase out by 2035. The President can accelerate the phase-down of allowances after 2025 if he finds that other countries have acted appropriately to curb their own emissions. The bill also has broad authority for a border adjustment provision taking effect after 2020. This provision should be elaborated on as the bill moves forward. Refinements are needed to assure that firms are not overcompensated and that the competitiveness measures are applied only to the extent that other countries have not stepped up to the plate.

But preserving competitiveness should not mean creating domestic emissions loopholes through our treatment of exports. In its current form, the bill exempts producers of energy sources such as petroleum and liquid coal from holding allowances if those products are exported and combusted elsewhere. The language should clarify that only combustion emissions outside of the United States, and not domestic emissions associated with the production of that fuel, qualify for such an exemption. Any ambiguity risks opening a substantial loophole for domestic upstream emissions that are rightly covered under the program.

Oil Refiners and Merchant Coal Generators.

Oil refiners and merchant coal plants do not qualify for allowances either as LDCs or energy-intensive, trade-exposed manufacturers. Nevertheless, under S. 1733 these sources initially receive significant allowances for free. The bill contains an important provision for reducing the merchant coal allocation if EPA finds it will lead to windfall profits. The same provision to avoid windfalls should be attached to any allocation to oil refiners.

Energy efficiency and renewable energy deployment.

Section 202, Division B of the bill provides a substantial share of allowances to states, local governments, Indian tribes, and large scale renewable generation companies to promote the deployment of energy efficiency and renewable energy technologies.

The states are directed to use the allowances for programs such as building efficiency retrofits, low-income housing weatherization, thermal energy efficiency projects, and renewable energy deployment incentives. About 10 percent of the allowances allocated to states under Section 202 are to be awarded according to how well they perform in promoting energy efficiency, which is an innovative approach that will help encourage greater attention to overall efficiency performance within a state. Local governments are to use their allowances for implementing the Energy Efficiency and Conservation Block Grant Program.

State and local governments are allocated about 85 percent of the Section 202 allowances after the initial distribution to Indian tribes. EPA is to allocate the remaining 15 percent to large scale renewable energy generation companies. This renewable energy

allocation, which is the only federally administered energy efficiency or renewable energy deployment allocation in the bill, is not large enough. The amount of allowances Section 202 allocates to federal efficiency and renewable energy programs should be increased to a total of about 45 percent.

Federal programs are critical for the ramp up of energy efficiency and renewable energy resources that will achieve deep global warming pollution reductions. Such programs provide the uniform incentives and national scale that manufacturers and developers need to implement major initiatives. The programs also enable more allowance value to flow to states that have significant renewable energy resource potential, but would receive relatively little funding pursuant to the state and local government allocation formulas specified by Section 202.

The allocation provided to renewable generation companies should be increased to at least 35 percent of the Section 202 allowances and the scope of the program should be expanded to include distribution scale technologies. These changes would create a program that will help scale up a range of emerging renewable energy technologies. The allowances also need to be awarded for renewable energy generation in quantities that equal a fixed price per amount of electricity generated that is established prior to a facility being placed in service. Such an incentive structure would provide greater certainty to investors and help avoid over-subsidization.

Building energy efficiency code.

The bill provides allowances to states for implementation of the building energy efficiency code provision in the bill. The provision directs EPA, or another agency

designated by the President, to establish a national building energy efficiency code and gives the agency discretion to include provisions for state adoption and enforcement of the code. The allocation would provide the states funding needed for these activities, which could achieve dramatic energy savings and pollution reductions depending on what efficiency levels are specified in the national code. The bill does not currently specify these levels.

Energy efficiency and renewable energy RD&D.

The bill allocates allowances toward Energy Innovation Hubs and the Advanced Research Projects Agency – Energy (ARPA-E) for research, development and demonstration projects that reduce global warming pollution and dependence on fossil fuels. This allocation will help support the innovation that is needed to create the next generation of energy efficiency and renewable energy technologies, which is essential to achieving substantial pollution reductions.

Improved transportation planning.

The transportation sector represents nearly a third of US GHG, and the Chair's Mark appropriately increases the focus on this growing source of emissions. The legislation would set up a framework under which states and large metropolitan regions can begin to plan for transportation sector emissions reductions, and monitor progress over time. The bill would also offer states and regions a new set of tools, as well as access to federal grants, to assist them in developing and implementing low-carbon transportation plans. This approach to reducing transportation sector emissions will

provide states and regions a high level of flexibility in meeting aggressive but achievable goals through local infrastructure investments.

There are several key elements of the transportation efficiency provisions of which NRDC is particularly supportive. Foremost, we are pleased to see that the Chair's Mark recognizes the importance of transportation emissions reduction with increased investment. The bill's transportation efficiency grants represent direct investment in our communities that will create jobs and reduce emissions. We are also pleased that the bill recognizes the joint role that DOT and EPA can play in overseeing transportation emissions reduction. This will ensure that states and regions have access to a wide variety of resources and assistance, leading to balanced plans that reduce emissions and enhance the convenience and affordability of local transportation. Finally, the legislation's focus on data and modeling improvements will allow states and regions maximum flexibility in reducing emissions by prioritizing the most effective strategies.

Domestic adaptation and public health programs.

Allowances are also dedicated to domestic public health and natural resources adaptation programs. Natural resources adaptation programs, along with adaptation programs for water systems, are critical to ensuring that our nation's water resources remain healthy and resilient. Climate change is predicted to damage aquatic ecosystems, infrastructure, and water supplies as it causes more frequent heavy rainfall events, intensified water pollution, longer droughts and shortages, higher water temperatures in sensitive habitats, and salt water intrusion into aquifers due to sea level rise. Adaptation programs with dedicated funding will enable federal, state, and local governments to

prepare for these impacts, ensuring that communities across the country will continue to enjoy safe and adequate water resources.

S. 1733 also provides funding to develop a comprehensive action plan to help health professionals prepare for and respond to the impacts of climate change on public health. Some of these impacts include: more heat-related illnesses and premature mortality; increasing air pollution and allergens; expanding infectious diseases; increasing flood risks; mental and behavioral health impacts; and displaced communities. Public health preparedness is strengthened by measures to target, prioritize and protect the most vulnerable communities.

Funding for additional agriculture and forestry activities.

S. 1733 contains a new section 155 that seeks to find additional climate benefits in the agriculture and forestry sectors. New funding to advance section 155 would come from allowance auctions, as directed by section 214. NRDC supports maximizing the contribution of agriculture and forestry sectors to the overall goal of climate mitigation. As the bill moves forward, section 155 will need refinement to assure that outcome.

Essential to ensuring additionality at the programmatic level and effective use of auction proceeds will be clarifying that none of section 155 applies to projects that receive offsets or would otherwise occur anyway. Subsections (a)(3)(A) – (C) by their terms create eligibility only for projects that are not offset-eligible. However, subsections (a)(3)(D) – (F) lack such an explicit proviso. Moreover, none of subsection (a)(3) has an express programmatic additionality design objective, raising the possibility that business as usual practices could be eligible. Subsection (a)(3)(C), for instance, could pay for non-till practices that would be adequately incentivized by the marketplace. These

potential weaknesses would be largely addressed by strengthening subsection (a)(4) to rule out, explicitly, support for projects that would likely occur, or have occurred, without that support.

Section 155 as currently drafted is also so broadly applicable that some care will be needed to ensure it does not incentivize serious collateral environmental damage or overall emission increases. Sensitive lands should be protected by incorporating standards utilized for sustainable biomass production in section 102 of the bill (creating a subsection 700(46) for Title VII of the Clean Air Act).

Similarly, section 155's anti-reversal protections, found in subsection (a)(8), need to be tightened to cover projected carbon losses after the contract or easement term. This is in part a concern because as drafted the section would support forest thinning operations. The best available science indicates that most and maybe all forest thinning, whatever its merits from other perspectives, results in net carbon emissions.[12] Thus, for instance, if thinning were successful in reducing near-term intense fire emissions, it would also – fire ecologists tell us – initiate a long-term regime of less intense but much more frequent ground fires that collectively emit more carbon than one large burn. Section 155 should not promote net carbon emissions. Editing subsection (a)(8) as suggested above will help ensure against that, as will dropping the current gaping exclusion from subsection (a)(4)'s additionality requirement for "activities that provide adaptation benefits."

[12] Net emissions are likely even accounting for the oil-displacement potential of the resulting biomass. *See* Mitchell, R.M., M.E. Harmon, and K.E.B. O'Connell. 2009. *Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems*. Ecological Applications, 19(3): 643-655.

Green jobs and worker transition.

S. 1733 creates a program of worker training, education, and transition for clean energy jobs. It also provides transition assistance to qualifying workers who may be displaced by the effects of the legislation.

International objectives.

A critical portion of the S. 1733 allowances is devoted to international objectives, including reducing deforestation, helping the most vulnerable countries adapt to climate change impacts, and promoting clean technology exports. NRDC urges this Committee not only to include these allocations for international purposes, but to enlarge them. The 5 percent of allowances dedicated to reducing tropical forest loss is one of the key provisions of S. 1733, simultaneously tackling the devastating loss of forests and helping to demonstrate that the U.S. is taking action on a scale comparable to other developed countries. NRDC joined in supporting this deforestation allocation with a strong coalition of business, environmental, and conservation groups including American Electric Power, Environmental Defense Fund, Duke Energy, the Sierra Club and others. Even greater support has recently emerged from a bipartisan group of leaders from business, government, advocacy, conservation, global development, science and national security – the Commission on Climate and Tropical Forests.[13]

S. 1733 importantly increases the allocations for helping the poorest countries cope with unavoidable climate impacts. We urge the Committee to retain and expand the

[13] Specifically the Commission called for public sector investments to increase gradually to $5 billion annually by 2020 to unlock the cost savings of deforestation offsets and reduce deforestation in nations that cannot attract private capital. This is an amount roughly equivalent to that produced through the deforestation set aside in H.R. 2454 and in S. 1733. For more information on the Commission see: http://www.climateforestscommission.org/

allocation to promote market opportunities for U.S. clean technology. These provisions are in our national interest. Global warming impacts can significantly increase threats to our national security. These allocations are critical to U.S. credibility and engagement with other countries providing our climate negotiators with important tools to secure strong international commitments as Special Climate Envoy Todd Stern stressed in his recent testimony before the House.[14] The clean energy export provision also provides an important tool to help secure a strong commitment from all major emitters as they are made available only to countries that take significant action to reduce their pollution. At the same time, this provision helps create and support the demand for U.S. clean energy technologies, thereby further expanding the benefits of this bill to American workers and companies.

V. Market Risks from Subprime Offsets and Biofuels

NRDC supports the development of offset and bioenergy incentives but it is critical that these provisions be designed to assure positive environmental outcomes. As I testified to this Committee in July, NRDC believes that the agricultural offsets and bioenergy provisions incorporated into in the House bill would create grave threats of negative environmental outcomes for both of these programs. The changes made in the House bill run the risk of creating a subprime market in both offsets and biofuels. They seriously damage the environmental integrity of the bill, and they will undermine public confidence in the markets for both products. S. 1733 addresses some of our concerns but it leaves a number of important domestic agriculture offset rules undefined and fails to

[14] Testimony available here: http://globalwarming.house.gov/files/HRG/091009Roadmap/stern.pdf.

close a huge loophole in how bioenergy emissions are accounted. Improvements to these provisions are needed as the bill proceeds through the Senate.

Fixing the offset rules

S. 1733 allows a very large number of offset credits – up to two billion tons per year. Domestic offset credits can be earned by reducing or sequestering emissions from agricultural sources and smaller industrial sources that are not subject to the emissions cap. International offset credits can be earned by reducing rates of deforestation, as well as by measures taken in the electricity and industrial sectors, and agricultural, and reforestation sectors if certain thresholds are met. In order to turn offset use into an engine for making net reductions in carbon pollution, S. 1733 provides that capped sources acquire 1.25 tons of reductions or sequestrations from international offsets for each ton of extra emissions they wished to emit. Thus, with every international offset transaction, net global emissions were to be reduced by a quarter of a ton of CO_2. In this way, using international offsets would not merely let us run in place. Rather, the more international offsets we use, the faster we would make progress reducing overall emissions. This is a win-win: while offset users would benefit from reduced compliance costs, the world would benefit from additional emission reductions.

A key design objective for any offset program is to assure the *quality* of all offsets as this is essential to the integrity of any carbon pollution reduction targets. If an offset credit is not backed by a real reduction, or if that reduction would have happened anyway, then total system emissions actually increase above required levels when that credit is used to enable a capped source to emit an extra ton of carbon.

Ensuring offset quality through the development and implementation of sound rules should be in the common interest of business, environmentalists, farmers, foresters, ranchers, and the American public. Otherwise, we run the risk of creating a subprime asset. If offsets do not actually reduce emissions as promised, they will quickly lose public trust and support. The loss of public trust will penalize the good actors by reducing confidence in the offset market, while simultaneously damaging our environment. That result isn't in the interest of anyone. As we have seen in the financial markets, loss of confidence in market instruments can have broad and costly ripple effects.

It is no secret that poor offset quality has been a serious problem in implementation of the Clean Development Mechanism under the Kyoto Protocol. That is why S. 1733 focuses attention on creating a reliable framework for ensuring the reality and additionality of each ton of reductions or sequestrations claimed under an offsets program.

First, S. 1733 establishes a science-driven process for developing the offset system's rules by creating an Offsets Integrity Advisory Board consisting of experts with the relevant backgrounds and experience, drawn from public, private sector, and university settings. This Board is critical to ensure that regulators are given strong, independent, and scientifically driven guidance on the rules.

Second, it is important that a single agency is responsible for operating the offset system, ensuring that the environmental integrity of the system is upheld and that the rules are applied in a uniform manner across different offset types. EPA has responsibility for the overall system of compliance with the emissions cap and it is

important that Congress places primary responsibility for ensuring offset quality in EPA. Since offsets are alternate compliance instruments, the agency Congress charges with assuring overall compliance with the cap should bear primary responsibility for determining the quality of offsets that will accepted for compliance purposes. However, we do support robust provisions to assure an substantial role for USDA on aspects of the domestic agriculture and forestry systems. We need to retain strong environmental oversight while assuring that USDA's expertise is brought to bear on relevant program design issues. S. 1733 leaves open the question of how this objective will be resolved.

Third S. 1733 requires that offset credits be based on standardized performance-based methodologies, rather than case-by-case reviews that have proved so problematic under the Clean Development Mechanism.

Fourth, S. 1733 requires independent third-parties to play an essential role in certifying that offset projects meet the quality standards established by the regulator.

Fifth, S. 1733 provides for random audits of projects and mandated a full program review every five years, as well as the creation of a new Office of Offset Integrity to oversee investigations into offset quality.

Lastly, S. 1733 provides for implementation of the international offsets program in a manner that creates strong guidance to the implementing agencies to: ensure that these offsets produce a net environmental outcome by requiring that countries take action on their own before they can sell offsets into the US carbon market; send a clear signal that offsets can only be generated for major emissions sources if the entire emissions within a sector are reduced; and design the other rules to avoid the mistakes of the Clean Development Mechanism. In addition to ensuring that these offsets produce a net

environmental outcome, properly designed international offsets can also serve as an important lever to secure stronger commitments from major emerging economies. The combination of rules that encourage net emissions reductions and clear rules for gaining access to the US carbon market can then be used as a tool to encourage greater action from others that help reduce overall global emissions.

One constructive provision included in the House bill, which S. 1733 expands (the Supplemental Agriculture, Renewable Energy, and Forestry Fund), is for a domestic program administered by USDA to provide incentives, outside the offsets program, for supplemental farm-based emission reductions and carbon sequestration. This program provides an avenue to encourage practices that are beneficial but would have difficulty demonstrating, on a project by project basis, that the strict measurement, verification, and additionality requirements needed for offsets would be met. This concept provides a leading role for USDA in promoting farm-based practices to reduce emissions and store carbon without presenting any risk to compliance with the cap. We look forward to working with other Committees and Members to ensure that the rules for this provision are designed in a manner to support beneficial agriculture and forestry activities.

Well-designed domestic agriculture and forestry projects can play an important role in solving global warming, and so we look forward to working with all Members to ensure that agriculture and forestry offset provisions are designed to create an offset system which preserves environmental integrity and secures the public trust..

Appropriate treatment of bioenergy

Sustainably produced biomass feedstocks, processed efficiently and used in efficient

vehicles or burned to generate electricity, can reduce our dependence on fossil fuels, cut emissions of heat-trapping carbon dioxide, and contribute significantly to a vibrant rural economy. Based on its potential, bioenergy has benefited from tremendous public investment in the form of production mandates and tax dollars.

Pursued without adequate environmental safeguards, however, bioenergy production can damage in significant ways our lands, forests, water, wildlife, public health and climate. There are three critical legs to the stool of a sustainable biofuels policy that will help avoid these unintended consequences.

1) Climate policy must recognize biofuel and bioenergy emissions;

2) EPA must consider indirect land use change when administering the Renewable Fuel Standard; and

3) Biomass sourcing safeguards that protect federal forests, sensitive ecosystems, and wildlife habitat must be preserved.

S. 1733 properly maintains the latter two legs of this stool, but leaves the first critical issue – biomass emissions accounting – unaddressed. Without all three legs in place, ramped up biofuels production would significantly undermine the achievement of the carbon pollution reduction targets in climate and energy legislation, harm on our natural resources, and undermine the market for bioenergy.

Climate Policy Must Recognize Biofuel and Bioenergy Emissions

Both S. 1733 and the House bill contain a large biomass loophole in carbon accounting by ignoring the global warming emissions related to biomass production and combustion when determining if the bills' emissions caps are met. The loophole could

dramatically diminish the emission reductions achieved by these bills, undermining actual reductions in 2020 achieved by capped sources by as much as 6 percentage points.[15]

Getting the accounting wrong means that more CO2 is going into the air than is being acknowledged; and that worsens global warming. The atmosphere doesn't care if CO2 came from burning coal, burning trees, or grasslands plowed up because of expanded biofuels production. It all has the same effect whether we count it or not but we can't reduce emissions that we don't admit are happening. Global warming is too serious a problem for us to use incomplete balance sheets.

The loophole is created by not requiring covered sources to account for the life-cycle emissions of biomass and biofuels. In other words, if a coal power plant replaces half of its coal with biomass, under the bill as written it is required to hold carbon allowances for only half of its carbon emissions. This makes sense only on the assumption that 100 percent of the carbon dioxide released when the biomass is burned was taken up from the atmosphere during its production. That assumption is true when biomass is grown in a sustainable, low-carbon manner. It is not true if biomass is taken from long-established forests or using other practices that result in large releases of sequestered carbon into the atmosphere before the fuel reaches the power plant.

[15] Drawing on several independent scientific analyses, NRDC estimates that under H.R. 2454 uncounted bioenergy emissions in 2020 could be 45-354 million metric tons greater than in 2005. Our best estimate is 193 million metric tons, based on results of a preliminary analysis of H.R. 2454 using a version of the Department of Energy's NEMS model and land-use-related emission factors from EPA's RFS2 proposal. This would erode the effective 2020 emission reductions to only 14 percent using our best estimate, and to as little as 11 percent using the high end of the scientific range.

A group of prominent ecologists and climate scientists underscored the importance of this issue in a study that recently was published in the journal *Science*, writing,

> This accounting erroneously treats all bioenergy as carbon neutral regardless of the source of the biomass, which may cause large differences in net emissions. For example, the clearing of long-established forests to burn wood or to grow energy crops is counted as a 100% reduction in energy emissions despite causing large releases of carbon.… The potential of bioenergy to reduce greenhouse gas emissions inherently depends on the source of the biomass and its net land-use effects.[16]

The article goes on to warn that this accounting error, if applied globally, "could displace 59% of the world's natural forest cover."[17] And finally, it concludes that,

> Under any crediting system, credits must reflect net changes in carbon stocks, emissions of non-CO2 greenhouse gases, and leakage emissions resulting from changes in land-use activities to replace crops or timber diverted to bioenergy (*1*).[18]

A rational, environmentally sound market for bioenergy would account for upstream carbon emissions. The marketplace would then favor sustainable, low-carbon sources of biomass, and shun those that make our climate problem worse. The biomass loophole will encourage ineffective "junk" biomass, disadvantaging and punishing providers of sound biomass. It also punishes providers of other low-carbon energy – wind and solar, for example – and even hurts providers of fossil energy who have to incur the cost of carbon allowances, while no allowances would be required if the source switched to bioenergy.

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[16] Searchinger et al, *Fixing a Critical Climate Accounting Error* Science, Vol 326, p. 527-528 (October 23, 2009).
[17] Ibid
[18] Ibid

Fortunately, in the other body, Chairmen Waxman and Peterson recognized in a letter that this issue must be addressed.[19] The common sense solution is to close the loophole now by ensuring that covered entities that burn or process biomass report the full net carbon impacts of that fuel, capturing net emissions reduction benefits from the most sound biomass sources and accounting for emissions increases associated with other types of biomass.

We have to get biofuels right to get the pollution reductions the clean energy bill is designed to achieve. Full carbon accounting for biomass is essential to this goal. Without it, bioenergy production will incentivize forest clearing and other land use that not only reduce climate benefits but could actually increase net emissions higher than continuing to burn fossil fuels.

EPA must consider indirect land use change when administering the Renewable Fuel Standard.

We applaud the decision to preserve current law regarding full life-cycle accounting in carrying out the renewable fuel standard.

As this Committee is well aware, the expanded RFS mandate established in EISA 2007 included life-cycle greenhouse gas performance requirements for new biofuels. EISA's amendments to the Clean Air Act required EPA to conduct a full life-cycle analysis of emissions associated with producing biofuels – including the emissions from market driven impacts like deforestation and land conversion in other countries. The amendments specifically defined life-cycle emissions to include "direct and significant

[19] Letter from Chairmen Waxman and Peterson to Speaker Nancy Pelosi (June 24, 2009).

indirect emissions such as significant emissions from land-use changes." Upholding this provision as S. 1733 does is essential to getting biofuels right.

Emissions from market-driven deforestation and land use change are large. In the California Air Resources Board's adopted rule and in EPA's proposed RFS rule, expert agencies have found that the emissions from the biomass-generated incentive for clearing land equal between 31 percent and 66 percent of the life-cycle greenhouse gas emissions of gasoline.[20]

As the USDA stated in recent testimony to Congress: "There is little question that increased biofuel production will have effects on land use in the United States and the rest of the world."[21] The USDA testimony also noted: "EPA's proposal reflects considerable input, guidance, and data from USDA. EPA's proposal also utilized many of the same data and assumptions that USDA uses regularly in near-term forecasting agricultural product supply, demand, and pricing."[22]

Ignoring market-driven emissions from land-use change in other countries would allow world-wide emissions to increase as carbon is released from forests and soils, worsening global warming instead of abating it. To be sure, calculation of the emissions associated with market-driven land-use changes is complex. But a sound scientific basis already exists for these calculations. EPA is tasked with using the best science and peer-reviewing its proposal.

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[20] California Air Resources Board (CARB), "Staff Report: proposed Regulation to Implement the Low Carbon Fuel Standard - Initial Statement of Reasons (ISOR), Volume 1," March 5, 2009. Table IV-5, p. IV-15 and Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program (Notice of Proposed Rulemaking). Federal Register 74:99 (May 26, 2009) p. 25041.

[21] USDA, Statement of Joseph Glauber, Chief Economist, U.S. Department of Agriculture Before The House Agriculture Committee, Subcommittee on Conservation, Credit, Energy, and Research, May 6, 2009, Pg. 15.

[22] *Id*. at 2.

In fact, EPA is relying on the same peer-reviewed models that Congress has relied on for years to assess the impacts of the farm bill. These are the same models the corn ethanol industry has pointed to arguing that ethanol subsidies are good because they raise the price of corn and thus lower agricultural subsidies. The main difference in how EPA is using these models is that it is including the economic ripple effect that those higher corn and crop prices have around the world. If these models are good enough to make the case for ethanol subsidies, it is difficult to argue they are not good enough to assure that ethanol actually provides emissions benefits in return for those subsidies.

Addressing this issue, more than 170 scientists wrote to the California Air Resources Board saying:

> As scientists and economists with relevant expertise, we are writing to recommend that you include indirect land use change in the lifecycle analyses of heat-trapping emissions from biofuels and other transportation fuels. This policy will encourage development of sustainable, low-carbon fuels that avoid conflict with food and minimize harmful environmental impacts.[23]

NRDC believes if EISA's requirement for full life-cycle analysis were postponed, then it would be necessary to delay further implementation of the Renewable Fuel Standard as well. If a "time-out" is called, it should extend to all the players on the field, including a time-out for all increased volume requirements under the RFS. Anything less than keeping the accounting and the volume requirements on the same schedule amounts to cooking the books.

Preserving Land and Wildlife Safeguards

[23] Matson et al., letter to Mary Nichols, Chair, California Air Resources Board (Apr. 21, 2009).

Through its definition of renewable biomass, S. 1733 includes important biomass sourcing guidelines. This third leg of the biofuels policy stool is critical for two reasons. First, it is essential to protecting sensitive federal forests and other important ecosystems and wildlife habitat from unsustainable biomass harvesting. Second, it acts as an additional backstop against increased carbon emissions by directing biomass sourcing away from high-carbon ecosystems and towards low-carbon sources.

Safeguards like those included in S. 1733 help to provide vital protections for wildlife, native grasslands, old-growth, natural forests, and federal forests, while making available a wide range of high-volume biomass materials, assuring diverse opportunities for landowner participation and a wide diversity of feedstocks. These types of minimum safeguards should be retained for all policies that promote bioenergy. In contrast, proposals to use only the portion of the Farm Bill's criteria for eligible biomass that does not include any sourcing safeguards should be rejected.[24] Part of getting biofuels right is ensuring biomass programs do not lead to plowing up grasslands, deforestation, or loss of important wildlife habitat.

The definition of renewable biomass in S. 1733 helps protect against the bill's significant incentives for bioenergy from encouraging the destruction of sensitive wildlife habitat, and also protects against the loss of native grasslands and old-growth and late

[24] It is important to recognize that the Farm Bill definition of renewable biomass contained in the 2008 Farm Bill Energy Title contains no sourcing safeguards on non-federal lands and was not designed to provide sourcing guidelines for fuel and electricity mandates. The only Farm Bill Energy Title program designed to incent biomass for energy production, the Biomass Crop Assistance Program, contains its own set of eligibility criteria to promote sustainability. These criteria include a prohibition on all food crops, as well as protections against conversion and other environmental impacts. The very fact that different programs in the Farm Bill include their own set of criteria designed to meet the goals of that specific program indicates that extracting only the Farm Bill definition and applying it as a sourcing guideline makes little sense.

successional forest. The protected ecosystems are home to many of our most threatened, and imperiled wildlife.

The bill's definition also properly discourages the conversion of natural forests to other uses. These forests are under severe threat from unsustainable logging practices, global warming, and real estate development. While outright deforestation is the most dramatic example, equally critical is the conversion of natural forests to single-species tree plantations. Plantations may look like "forests," but they are biological deserts compared to the natural forests they replace – lacking the carbon content, diversity of species, structure, and ecological functions that make natural forests so important. While tree plantations and young forests are increasing in parts of the United States, older forests that provide critical wildlife habitat and store tremendous amounts of carbon are disappearing faster than they are being re-grown, both nationally and globally. Loss of native habitat is the greatest threat to biodiversity here and abroad. Loss of forests is one of the greatest threats to biodiversity worldwide and a huge contributor to global warming.[25]

The sourcing safeguards also protect critical areas on our federal forests. Federal lands are held in trust for the American public. Freed from immediate market pressures, their core purpose is a set of values and services largely unavailable from private lands. In the climate context, their highest functions are as carbon sinks, measures of U.S. credibility globally, and ecological refuges. Additionally, these forests represent unique reservoirs of genetic and other biologic diversity, provide many other ecological services like drinking water and flood control, and stand to play a critical role in the face of global

[25] Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report Summary for Policymakers*, pg. 5. Available at http://www.ipcc.ch/pdf/assessment_report/ar4/syr/ar4_syr_spm.pdf

warming's growing impacts on biodiversity, ecosystem resilience, and the spread of invasive species.[26]

Old growth forests and native grasslands store vast amounts of carbon. Most private and many state lands are managed with an intensity that greatly reduces carbon sequestration. United States national forests and Department of Interior lands are the exception. Their undisturbed areas can be kept intact; those damaged can be guided back to carbon-rich status. No other land use decision within Congress' direct control has so much potential to mitigate global warming.

Some logging enthusiasts optimistically argue that restoration of federal lands is actually enhanced by opening them to biomass sourcing. However, it has proven very difficult to create biomass incentives for these lands that provide reliable greenhouse gas benefits but do not jeopardize their core functions and values. Generally, the more wood removed, the greater the adverse impact on net sequestration and ecologic functioning. Thus, while light thinning may in some cases help remedy past abuses, allowing industrial demand to drive restoration decisions is a recipe for disaster. Not only does industrial sourcing damage natural forest values, the best available science indicates that most and maybe all forest thinning results in net carbon emissions.[27]

Conservation of these public lands is also essential to our ability to persuade other nations to protect their forests. Climate change cannot be managed without halting native forest loss worldwide. To press that point credibly, we must practice what we preach. Putting our own house in order requires preserving intact federal forests and increasing the carbon storage of others.

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[26] See, for example, Lovejoy, Thomas, *Climate Change and Biodiversity*, Yale University Press, August 2006.
[27] *See* note 12, above.

These public lands are also vital to climate adaptation. Large undisturbed tracts, like national forest roadless areas, enjoy high ecological health. They are better positioned than altered systems to accommodate warming with their essential processes in place. As America's flora and fauna suffer the stress of climate change, these are the landscapes in which many can best survive. Intact public lands will preserve our natural heritage and biological diversity, and thereby help lessen pressure on private lands.

In sum, in order to get biofuels right it is critical that all three legs of the biofuels stool be upheld. Removing any legs of the biofuels policy stool fundamentally threatens the foundation of sound bioenergy policy by pitting environmental objectives and bioenergy production objectives against each other. NRDC and many other environmental organizations have championed bioenergy in the past and NRDC wishes to continue to support this potentially clean and sustainable source of energy. However, if bioenergy is sourced and produced in a manner that irreconcilably conflicts with solving global warming and safeguarding natural resources, the basis for such support will be destroyed.

In order to capture the potential of clean biofuels and ensure the full carbon reduction goals of climate legislation are met, the biomass emissions loophole needs to be addressed and floor amendments like those included in the House bill must be rejected so that American agriculture may reap the benefits of bioenergy without damaging our natural resources and worsening climate change.

VI. Conclusion

Chairwoman Boxer and members of the Committee, the time for action to address the triple threat of overdependence on insecure energy resources, a weakened economy, and an imperiled climate is long overdue. S. 1733 has the right broad architecture: a comprehensive limit on greenhouse gases that gets tighter over time, a set of complementary policies to spur rapid improvements in emission performance in key sectors of the economy, a balanced approach to allowance value distribution that addresses the different transition challenges for different regions and economic sectors and provides needed resources for clean energy deployment, well-designed provisions to manage program costs without weakening the program's environmental performance, and modest but important support for forest protection in other countries. We urge the Committee to report this bill, with the improvements we have suggested, to the full Senate. While time is obviously short, with prompt action a bill to secure a beneficial economic, energy and climate future could still be presented to the President for his signature this year.