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Hearing On
"The American Clean Energy and Security Act of 2009"

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Summary

Coal has fueled economic growth in the world's largest economies. But we cannot solve the climate crisis unless we cut coal's global warming emissions dramatically. We have the tools to do this. Energy efficiency, increased reliance on renewables like wind, solar, and biomass, and capture of carbon dioxide from power and industrial coal plants followed by geologic disposal (CCD or CCS) can play a major role in harmonizing our economic, security and climate protection goals.

But these tools will not be deployed at the required scale unless we enact new laws to cut global warming pollution. The proposed American Clean Energy and Security Act of 2009 (ACES), released by Chairmen Waxman and Markey in March, is a comprehensive program to cut emissions from coal and other sources of greenhouse gases and put America on a path to economic, energy, and climate security. We cannot afford to delay enactment of this program.

The US Climate Action Partnership (USCAP), of which NRDC is a member, has proposed a Blueprint for Legislative Action that combines an economy-wide cap on emissions with performance-based policies focused on reducing CO_2 emissions from coal use. NRDC believes this program can be effective in protecting the climate and managing the transition to a cleaner energy future.

In NRDC's opinion, the ACES proposal would implement most of the USCAP recommendations to modernize the way we use coal in this country. We urge this Committee and Congress to act this year to enact the comprehensive climate protection program we urgently need.

Mr. Chairman and Members of the Subcommittee:

Thank you for your invitation to testify today on behalf of the Natural Resources Defense Council (NRDC) regarding the American Clean Energy and Security Act of 2009. 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 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles and San Francisco, Chicago and Beijing.

Chairman Markey, Ranking Member Upton, thank you for holding this hearing on The American Clean Energy and Security Act (ACES) legislative proposal. The ACES "discussion draft" recently circulated by Chairmen Waxman and Markey, is an excellent starting point for enacting comprehensive energy and climate legislation this year. The draft bill draws heavily on recommendations of the U.S. Climate Action Partnership of which NRDC is an original member.

I would like to repeat some of what NRDC's President, Frances Beinecke, said to the full Committee in her testimony yesterday. Passing effective climate legislation is NRDC's highest priority. It is vital to enact legislation this year—to help deliver, economic, energy, and climate security. As President Obama said last week, the foundation for growth and prosperity in the 21st Century must be built on solid pillars. Clean, sustainable energy is one of those pillars, and promptly enacting comprehensive energy and climate legislation is the way to put that pillar in place.

Action on global warming has already been delayed too long. Every day we learn more about the ways in which global warming is already affecting our planet. 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 reports that it is still possible to stay below this temperature increase if atmospheric concentrations of CO_2 and other global warming gases are kept from exceeding 450 ppm CO_2- equivalent and then rapidly reduced. This will require us to halt U.S. emissions growth almost immediately and then achieve significant cuts continuously for the next several decades.

If we delay and emissions continue to grow, 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.

The Need for Rapid Deployment of Low-Carbon Electricity

Mr. Chairman, this panel has been asked to address the role of low-carbon electricity resources in combating global warming. This is indeed a priority, due to the centrality of electricity in modern life and its large contribution to global warming pollution both in the U.S. and around the world. Electricity is quite miraculous and has made an enormous improvement in the quality of life of every human being lucky enough to have access to

it. We take electricity for granted in the U.S. but there are Americans alive today who know what it was like to grow up without electricity. The hard life of rural families, especially farm women, prior to the enactment of the 1936 Rural Electrification Act is compellingly depicted in Robert Caro's LBJ biographical volume, *The Path to Power:*

> "Washing, ironing, cooking, canning, shearing, helping with the plowing and the picking and the sowing, and every day, carrying the water and the wood, and because there was no electricity, having to do everything by hand by the same methods that had been employed by her mother and grandmother and great-great-great-grandmother before her…"

We meet here today in the building that bears Sam Rayburn's name and before the Committee that succeeds Rayburn's Interstate Commerce Committee, where in 1936 he fought to report out the Rural Electrification Act -- and succeeded by a margin of one vote. Access to electricity--what seems so obviously good policy today -- was fought intensely seventy years ago. And the arguments made then are familiar today as we decide to take another giant step in modernizing our country's use of electricity. Then the opposition argued the technology to bring electricity to rural Americans was simply not available or available only at a ruinous cost. Today, we are told the technology is not available to bring all of us electricity that will not create a disastrous climate or that the technology is available only at an unacceptable cost.

Sam Rayburn's Congress knew it was possible to act boldly and that the arguments against acting were exaggerated and simply wrong. And so that Congress acted, helping to build the strongest economy on earth and making a miraculous difference in the lives of millions of families. It is no exaggeration to say that you in this Congress are

embarked on a challenge even more critical than that facing Rayburn's Congress—the stakes are even larger and the payoff will be even greater. But in the end it will come down to the same action taken in this Committee seventy-three years ago—men and women voting for what seems hard today but with the conviction that it is essential to build the future we want.

The American Clean Energy and Security Act

The American Clean Energy and Security Act of 2009 (ACES) will put us on a path to deliver the future electric power system that we and the rest of the world need badly. I will focus my remarks on the impact of ACES on coal-based electric power generation.

As you know, coal fuels about 50% of U.S. electric generation today. U.S. coal capacity is aging: about one-third of U.S. coal capacity is over 40 years old today; in 2025, more than half of U.S. coal capacity will be over 50 years old. I have testified previously before this Committee on the toll from coal as it is mined and burned today and on the need to act now to begin reducing CO_2 emissions from the U.S. coal and global coal fleets and to prevent new coal plant investments that release their CO_2 to the air.

Coal is the most abundant fossil fuel and is distributed broadly across the world. It has fueled the rise of industrial economies in Europe and the U.S. in the past two centuries and is fueling the rise of Asian economies today. Because of its abundance, coal is cheap and that makes it attractive to use in large quantities if we ignore the harm it causes. However, per unit of energy delivered, coal today is a bigger global warming polluter than any other fuel: double that of natural gas; 50 per cent more than oil; and, of course, enormously more polluting than renewable energy, energy efficiency, and, more controversially, nuclear power. 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 reduce 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.

The Need for CCD

Any significant additional use of coal that vents its CO2 to the air is fundamentally in conflict with the need to keep atmospheric concentrations of CO2 from rising to levels that will produce dangerous disruption of the climate system. Given that an immediate world-wide halt to coal use is not plausible, analysts and advocates with a broad range of views on coal's role should be able to agree that, if implemented in a safe and effective manner, CCD should be rapidly deployed to minimize CO2 emissions from the coal that we do use.

Decisions being made today in corporate board rooms, government departments, and congressional hearing rooms are determining how the next coal-fired power plants will be designed and operated. Power plant investments are enormous in scale, more than $1 billion per plant, and plants built today will operate for 60 years or more. The International Energy Agency (IEA) forecasts that more than $5 trillion will be spent globally on new power plants in the next two decades. Under IEA's forecasts, about 1800 gigawatts (GW) of new coal plants will be built between now and 2030—capacity

equivalent to 3000 large coal plants, or an average of ten new coal plants every month for the next two decades. This new capacity amounts to 1.5 times the total of all the coal plants operating in the world today.

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. The ACES bill contains a comprehensive approach to make this happen in the U.S. Modeled closely on the USCAP Blueprint for Legislative Action recommendations, the ACES bill combines a declining cap on greenhouse gas emissions with emission standards that will require new coal plants to capture some fraction of their CO_2 emissions. In addition, to allow CCD to be deployed without significant impacts on individual consumers' electricity rates, the ACES bill provides for a program of direct payments for capture and disposal of CO_2 from the early generations of new coal plants.

USCAP Recommendations

As I have testified previously, the USCAP Blueprint contains a comprehensive proposal for CCD deployment as part of a broad climate protection law. In addition to an economy-wide cap, the Blueprint recommends Congress adopt the following measures:

- requirements for the government to issue needed regulations for siting CO_2 repositories and pipelines;
- government financial support to build 5 GW of CCD-equipped commercial power plants by 2015;
- a transitional program to pay for tons of CO_2 emissions captured and disposed through use of CCD;

- mandatory emission standards for new coal plants that are not already permitted as of January 1, 2009.

ACES CCD Provisions

Subtitle B of the ACES bill provides a strong foundation for the deployment of CCD systems to enable large reductions in emissions from large fossil fuel sources. In NRDC's opinion, proposed sections 111, 112, and 113 of the ACES bill would effectively implement the USCAP recommendation to develop and implement a national strategy to address legal and regulatory barriers to commercial-scale CCD deployment.

USCAP also recommends an early grant program to establish at least 5 gigawatts (GW) of coal fueled facilities equipped with CCD and meeting an emission rate no more that 1100 pounds of CO_2 per megawatthour by 2015, including at least one pulverized coal retrofit project. The ACES bill does not contain a provision that specifically requires deployment of this amount of CCD capacity by 2015. The ACES bill does, in proposed section 114, authorize creation of a corporation to provide grants, contracts and financial assistance for commercial-scale demonstrations of carbon capture or storage technology projects. While NRDC believes the section 114 program can be useful in advancing practical knowledge and experience with CCD, we are concerned that as drafted, it does not appear to have a clear enough focus to assure that the USCAP-recommended 5 GW of CCD projects will be established by 2015. NRDC recommends that the discussion draft be revised to specifically incorporate an objective to achieve this important early

deployment component by 2015. We will be happy to work with the Subcommittee and full Committee on this topic.

USCAP also calls for a program of direct payments on a dollar per ton of CO_2 avoided basis for the first ten years of operation of CCD systems. Payments would be based on two sliding-scales. Higher payments per ton avoided would be provided for earlier projects to reflect estimated higher costs and to provide an added incentive for early operation of CCD projects. The payment schedule would be highest for the first 3 GW of projects in the program, with successively smaller payments for later projects. In addition, a separate sliding scale would provide higher dollar per ton payments for projects with higher capture rates. This would reflect the expected higher costs for high capture rate systems and would provide an incentive to achieve lower emission rates than the minimum mandatory emission standard. For example, for a project in the first 3 GW of the program that achieved a high level of capture (85-90%), the payments for the expected incremental costs are estimated to be on the order of $90 per ton avoided. USCAP recommends that the total size of the financial incentive program should be large enough to support on the order of 72 GW of CCD projects.

Section 115 of the ACES bill includes a direct payment program for captured and stored CO_2. This provision includes a requirement for payments to be made based on sliding scales with higher payments provided for early projects and for projects employing higher levels of capture. In NRDC's opinion, this approach is consistent with the USCAP recommendations. The duration of the payment program and the total program size are not specified in the discussion draft version of the ACES bill. We understand

that these provisions will be included as the bill moves through committee and NRDC urges the adoption of the USCAP recommended amounts for these provisions.

USCAP recommends a mandatory emission standard of 1100 pounds per megawatt hour (lbs/MWh) for coal plants permitted between January 1, 2009 and 2020 and an 800 lbs/MWh mandatory standard for plants permitted after the start of 2020, with authority for EPA to establish tighter standards as justified by technical and economic feasibility considerations. Compliance with the initial emission standard would be required upon startup for plants permitted after January 1, 2015. For plants permitted between now and January 1, 2015, compliance would be required within four years after either 2.5 GW of commercial scale CCD power plants are operating in the U.S. or 5 GW of such plants are operating globally. This recommendation guarantees that any proposed coal project not already permitted today must meet an emission standard that requires the operation of CCD, either upon startup or early in its operating life.

Section 116 of the ACES bill adds a new section 812 to the Clean Air Act that does, in NRDC's opinion, implement the USCAP emission standard recommendations.[1]

These provisions of the ACES bill will help speed the deployment of CCD here at home and set an example of leadership. 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. As other witnesses will testify, the first CCD projects are technically ready for deployment today but the lack of a policy framework means there are regulatory and

[1] There may be a need for some technical clarification of certain of the definitions in section 812.

economic barriers that are difficult to overcome. The ACES bill would correct this problem by directing the adoption of required 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.

Conclusions

To sum up, since we will almost certainly continue using substantial amounts of coal in the U.S. and globally in the coming decades, it is imperative that we act now to deploy CCD systems. Commercially demonstrated CO_2 capture systems exist today and competing systems are being researched. Improvements in current systems and emergence of new approaches will be accelerated by requirements to limit CO_2 emissions. Geologic disposal of large amounts of CO_2 is viable and we know enough today to conclude that it can be done safely and effectively. EPA must act without delay to revise its regulations to provide the necessary framework for efficient permitting, monitoring and operational practices for large scale permanent CO_2 repositories.

A cap and trade program for greenhouse gases is essential to change the way we use coal but it does not assure in its early years the deployment of CCD technology. To achieve that objective, we need complementary policies that require minimum emission standards from new investments and incentives to deploy CCD broadly. The ACES bill contains the needed provisions and its enactment would make CCD a reality soon.

Finally CCD is an important strategy to reduce CO_2 emissions from fossil fuel use but it is not the basis for a climate protection program by itself. Increased reliance on low-carbon energy resources is the key to protecting the climate. The cleanest energy

resource of all is smarter use of energy; energy efficiency investments will be the backbone of any sensible climate protection strategy. Renewable energy will need to assume a much greater role than it does today. With today's use of solar, wind and biomass energy, we tap only a tiny fraction of the energy the sun provides every day. There is enormous potential to expand our reliance on these resources. Accordingly, NRDC supports the other provisions of the ACES bill that would encourage greater reliance on these home-grown energy resources.

We have no time to lose to begin cutting global warming emissions. Fortunately, we have technologies ready for use today that can get us started.

Mr. Chairman, that completes my testimony, I will be happy to take any questions you or other members of the subcommittee may have.