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HEARING ON THE PRESIDENT'S PROPOSED EPA BUDGET FOR FISCAL YEAR 2011

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

FEBRUARY 23, 2010

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ONE HUNDRED ELEVENTH CONGRESS
SECOND SESSION

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C O N T E N T S

HEARING ON THE PRESIDENT'S PROPOSED EPA BUDGET FOR FISCAL YEAR 2011

TUESDAY, FEBRUARY 23, 2010

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The full committee met, pursuant to notice, at 10 a.m. in room 406, Dirksen Senate Office Building, Hon. Barbara Boxer (chairman of the full committee) presiding.

Present: Senators Boxer, Inhofe, Cardin, Carper, Bond, Whitehouse, Vitter, Merkley, Sanders, Barrasso, and Klobuchar.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. The hearing will come to order.

I want to welcome everybody here. Before we get started I want to take a moment to express, on behalf of the full committee, our sincerest condolences to the family of Fish and Wildlife Service Director Sam Hamilton, who passed away suddenly over the weekend at a young age. We were all deeply saddened to learn of his passing, and our hearts go out to his family and his friends.

Mr. Hamilton brought more than 30 years of experience with the Fish and Wildlife Service and a lifelong record as a committed conservationist, and he brought this to his work. His loss will be keenly felt by the dedicated professionals at the Fish and Wildlife Service and frankly by every American who cares about protecting our Nation's wild and natural treasures.

I know Senator Inhofe had written a beautiful letter, put out a beautiful statement, and I think we are certainly united in this feeling.

I also wanted to take a minute, on the public works side, to thank the people who voted to move forward with the Highway Trust Fund yesterday. We all know we needed that vote badly, and I particularly want to thank Senators Voinovich and Bond on this committee for voting to move forward with that jobs bill. I think that vote was very key, and I am very happy about it.

So now I am going to start my comments. I told Senator Inhofe that if I go over my 5 minutes he will get every second that I take up. We have agreed that would be a fair way to proceed.

Welcome, Administrator Jackson. I appreciate this EPA budget's significant commitment to the Nation's clean water and drinking water, to that infrastructure, and the priority funding for the EPA's Office of Children's Health. Children are especially vulnerable to pollution, and we must ensure that they are protected.

I have a couple of concerns about the budget, which I will talk to you about in my question time. The Superfund Program, I do not think we are going to clean up enough sites, and I am concerned. And some of the Clean Air Programs, including the San Joaquin and South Coast Air District Emissions Grants, which again I will bring up to you in the question time.

I would like to note that the President's budget takes important steps that are needed to begin to address global warming. We know, because you wrote a letter, that you will not be enforcing these rules for a year, but you do need to prepare, as the Supreme Court has instructed.

While the world is going green the one place where we cannot seem to address climate change directly by legislation is in the Senate. For example, in Great Britain both political parties, Labor and Conservative, all support strong action on this issue.

Meanwhile, my good friend and colleague, Senator Inhofe, had a great time inviting Al Gore to his very well crafted igloo that he made during Washington's big snowstorm.

Senator INHOFE. That my grandkids made.

Senator BOXER. Well, OK, yes, but I think you oversaw. It was a very good job.

[Laughter.]

Senator BOXER. And I think there was more than a hint there that, because it snowed so much in February in Washington, that that proves that the climate is not warming.

But scientists know that weather and climate are two different things. Here is how NASA explains the difference. They say, this is NASA; in most places weather can change from minute to minute, hour by hour, day to day, and season to season. Climate, however, is the average of weather over time and space.

To illustrate this point, let us look at what happened in other parts of the world while the igloo was being built. In Rio de Janeiro, Brazil, record hot temperatures including 3 days in a row of over 100 degrees, were responsible for 32 deaths. And we will show you a photo of a machine moving snow on grassy Vancouver ski slopes.

[Picture shown.]

Senator BOXER. Also the same week the igloo was being built the organizers of the Winter Olympics were forced to truck in tons of snow because slopes that have seen an average of 8 feet of snow over the past 4 years had a mere 36 inches.

Now, I do not claim that any of these weather events proves or disproves climate change, not the snow here and not the hot weather there, because that is not a scientific approach to this issue. The way to evaluate climate trends is to look at scientific records over time. So, let us do that.

The National Oceanic and Atmospheric Administration tell us that the 2000 to 2009 decade is the hottest in the last 130 years since records were being kept. And here is some more scientific evidence. We have a chart on the melting ice sheets.

[Chart shown.]

Senator BOXER. Every ice front in the southern part of the Antarctic Peninsula has been retreating overall from 1947 to 2009 with the most dramatic changes occurring since 1990. That is the U.S.

Geological Survey, 2010. That just came out. In September 2009 the northern hemisphere sea ice event was the third lowest since satellite records began in 1979. That is also a NOAA report from 2010.

So, these are the facts on the ground. This is not speculation. Thank you for the chart. Scientists tell us that one of the marks of climate change is extreme weather. Let us look at this chart, Extreme Weather in the United States.

[Chart shown.]

Senator BOXER. The amount of rain in the heaviest storms has increased nearly 20 percent in the last century. By contrast, in much of the Southeast and large parts of the West, the frequency of drought has increased over the past 50 years. In the West, both the frequency of large wildfires and length of the fire season have increased substantially in recent decades. And in the last 30 years annual sea surface temperatures in the Main Atlantic Hurricane Development Region increased 2 degrees Fahrenheit, coinciding with an increase in the destructive energy of Atlantic tropical storms and hurricanes.

Now, one of the reasons I am so pleased that EPA is addressing climate change is that when we do so we create millions of jobs. But as the L.A. Times reports just yesterday, jobs are being lost as we allow the rest of the world to surpass us in developing new technologies.

I really urge my colleagues to read this article, Uncertainty Over Proposals in Congress Has Firms Holding Off on Investments, this is the L.A. Times, at stake for Americans, thousands of jobs from low skilled maintenance work to high level engineering that are expected to result as the world transitions away from fossil fuels. At a time when the U.S. economy is desperate for jobs and investment in future growth a slew of clean energy projects are on hold because of political stalemate in Washington. To spur more private investment in job creation the Federal Government must reassure Wall Street that the need for clean energy will grow, experts said.

This is everything that the majority of this committee has been saying for about 2 years. So, Administrator Jackson, I want to thank you for starting to address the threat of global warming and for understanding the need to move to a clean energy economy.

Again, I know that you are putting off enforcement. We understand that you would prefer a legislative solution here. So, my last point is, I am very happy to report that Senators Kerry, Graham and Lieberman are making progress in getting to that 60-vote threshold we need on a comprehensive approach. And Senator Kerry will be briefing you this week on the efforts.

So, budgets are clear expressions of our priorities and the realities that you face as you protect our people from pollution, and I certainly look forward to this hearing.

And with that, I will give Senator Inhofe an extra 1 minute and 46 seconds over his 5.

Senator INHOFE. That is good.

Senator BOXER. Senator.

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. All right. Thank you very much, Madam Chairman.

And I thank you, Madam Administrator, for being here. I am happy to say, in front of all of these people, I really do like you. You know, we have spent time in my office, we have talked about our kids and all that, and I just say that from my heart, and I want you to know that that is true.

And I also want to thank you for what you have done, and your predecessors have done, to the most devastating Superfund site in America, the Tar Creek. And now you have carried the ball through and done even more than they did before, actual relocation of the residents in completing the work at that site. So, I want to thank you very much. That is the good news.

Now, I want to talk about a different topic. This morning, I am releasing an EPW minority report. I think anyone who wants it now, as of this moment, can go to their Web site, or go to the Web site of Inhofe, what is that Web site? Inhofe.Senate.gov. It is a report on the scandal that has become known as Climategate.

The minority staff found that some of the world's leading climate scientists engaged in potentially illegal and unethical behaviors. Many of these scientists have manipulated data to fit preconceived conclusions, obstructed Freedom of Information requests and dissemination of climate data, and colluded to pressure journal editors against publishing scientific work contrary to their own. In other words, they cooked the science.

Now, going back to this obstruction of the Freedom of Information Act, that is one that is pretty serious. That was found to be true in the U.K., and the only reason they cannot prosecute under that is the Statute of Limitations has already run on it. So, the U.K. government found that the scientists from the Climate Research Unit, that is the CRU, who are at the center of this scandal, violated its Freedom of Information Act.

And I know that people—I know it is important for people who have got 15 years of their lives wrapped up in this hoax to come up with, say, well, this is just a miscommunication, or something like that. But if you look and you see what is to happen overseas, the U.K. Telegraph, one of the largest newspapers over there, said this is most significant scientific scandal of our generation.

Also, the minority report shows that many of the scientists involved in this scandal worked for the U.N.'s IPCC. They helped compile the IPCC's Fourth Assessment Report. Now, that is important because this report is a primary basis for the EPA's endangerment finding for greenhouse gases. The media has uncovered several errors and mistakes in the report which undermine the credibility of the IPCC's science. Let us take a closer look.

The IPCC said global warming would—now listen to this because I am going to cover seven, but I could cover a lot a more than this—they said it is going to melt the Himalayas, the Himalayan glaciers by 2035. That is not true; it is a lie, it would destroy 40 percent of the Amazon rainforest; not true; another lie. It would melt mountain ice in the Andes, the Alps and Africa; not true. Drastically increase the costs of climate related natural disasters;

not true. Drive 20 to 30 percent of species to extinction; not true. Slash crop production by 50 percent in Africa by 2020, just flat not true. The Netherlands is 55 percent below sea level; not true.

The EPA accepted the IPCC's erroneous claims wholesale without doing its own independent review. So EPA's endangerment finding rests on bad science.

The EPW minority report provides further proof that the EPA needs to scrap the endangerment finding and start over again. But that is not what the EPA is doing. We have $43 million in new funding to regulate greenhouse gases. This is seed money for the most economically destructive regulatory initiative in this Nation's history. The Nation is mired in an unemployment crisis. People need jobs. Yet, once this effort commences, those fortunate to work will be out of work, and those looking for jobs are not going to find them.

The Obama administration, however, is pressing ahead. We have been told that the science still stands. We have been told that the IPCC's mistakes are trivial. We have been told that Climategate is just gossipy e-mails between a few scientists. Yet, global warming alarmism has been sewed on the very notion that manmade greenhouse gases are causing environmental catastrophes, Himalayan glaciers melting and all that stuff.

But now we know there is no objective basis for these claims that I have just talked about. Furthermore, Climategate shows there is not consensus. The science is far from settled. The Obama administration, then, is moving ahead with a massive job killing tax for no good reason. The minority report shows the world's leading climate scientists acting like political scientists.

The bottom line is this. We—every effort was made going back to even before the McCain-Lieberman bills of 2003, 2005, and then, of course, all the rest of them that came along. They did everything that they could to try to get a majority, or try to get up to 60 Senators to embrace the idea that manmade anthropogenic gases cause global warming. They could not do it. The most votes there are in the U.S. Senate today for a cap-and-trade legislation is maybe 20. And they need 60 the last time I checked. So, it is not going to happen.

So, this Administration has said, all right, we could not do it legislatively, so we are going to do it on our own. We are going to do the damage, inflict the economic damage to this country that would have come under cap-and-trade, the same as if we had been able to pass it. Now, I think that is interesting.

I would like to say this one thing. The Chairman made the statement that the Supreme Court is mandating this stuff. They are not mandating a thing. The Supreme Court said you have three choices. You can either find an endangerment finding, or not find it, or you can say that the science is uncertain. And I think what we are going to be asking you to do during this question and answer time is to find that it is not certain.

You can have an endangerment finding. That can change. Because you did not know at the time that you were basing this on the IPCC flawed science, that the science was flawed. You did not believe that. But nonetheless, that is where we are today.

So, we are going to be making the request, Madam Chairman, that we go back, re-look at this, and also that the EPA have their IG look into this just the same as all the other nations are doing at this time all throughout Europe.

[The prepared statement of Senator Inhofe follows:]

STATEMENT OF HON. JAMES M. INHOFE,
U.S. SENATOR FROM THE STATE OF OKLAHOMA

Madam Chairman, thank you for calling this hearing today to discuss the EPA's fiscal year 2011 budget. I also thank Administrator Jackson for appearing before us today.

I also want to thank Administrator Jackson for working with me to address the Tar Creek Superfund Site in Oklahoma. The relocation of the residents is complete, and we are continuing work on water quality issues as well as selling and removing the chat. I commend your dedication to this important issue and the important work of our friend, Sam Coleman, in the EPA Dallas Office.

Now I want to turn to a different topic. This morning I am releasing an EPW minority report on the scandal known as "Climategate." The minority staff found that some of the world's leading climate scientists engaged in unethical behavior and possibly violated Federal laws.

Many of these scientists appear to have:

- Manipulated data to fit preconceived conclusions;
- Obstructed freedom-of-information requests and dissemination of climate data; and
- Colluded to pressure journal editors against publishing scientific work contrary to their own.

The UK government has already found that scientists from the Climatic Research Unit, or CRU, who are the center of this scandal, violated its Freedom of Information Act.

Also, the minority report shows many of the scientists involved in this scandal worked for the UN's IPCC. They helped compile the IPCC's 2007 Fourth Assessment Report. That's important because this report is a primary basis for the EPA's endangerment finding for greenhouse gases. The media has uncovered several errors and mistakes in the report, which undermine the credibility of the IPCC's science.

Let's take a closer look. The IPCC said that global warming would:

- Melt the Himalayan glaciers by 2035—it's not true;
- Destroy 40 percent of the Amazon rainforest—it's not true;
- Melt mountain ice in the Andes, Alps, and Africa—it's not true;
- Drastically increase the cost of climate related natural disasters—it's not true;
- Drive 20 to 30 percent of species to extinction—it's not true; and
- Slash crop production by 50 percent in Africa by 2020—it's not true.

And yes, the IPCC said the Netherlands is 55 percent below sea level—that's not true either. There's more, but I think I've made my point.

EPA accepted the IPCC's erroneous claims wholesale without doing its own independent review. So EPA's endangerment finding rests on bad science. The EPW minority report provides further proof that EPA needs to scrap the endangerment finding and start over again.

But that's not what EPA is doing. It wants $43.5 million in new funding to regulate greenhouse gases. This is seed money for the most economically destructive regulatory initiative in this Nation's history. The Nation is mired in an unemployment crisis; people need jobs. Yet once this effort commences those fortunate to work will be out of work, and those looking for jobs won't find them.

The Obama administration, however, is pressing ahead. We've been told that the science still stands; we've been told that the IPCC's mistakes are "trivial"; we've been told that Climategate is just gossipy e-mails between a few scientists. Yet global warming alarmism has been sold on the very notion that manmade greenhouse gases are causing environmental catastrophes—Himalayan glaciers melting, the Amazon disappearing, polar bears becoming extinct. But now we know there's no objective basis for these claims. Furthermore, Climategate shows there's no "consensus"; the science is far from settled. The Obama administration, then, is moving ahead with a massive job killing tax for no good reason.

This minority report shows the world's leading climate scientists acting like political scientists with an agenda disconnected from the principles of good science. It shows that the only consensus we have is that there's a lot we don't know. It's time for the Obama administration to recognize this and abandon a policy that will mean fewer jobs, higher taxes and economic decline.

Senator BOXER. Thank you, Senator.

Senator Carper.

Senator CARPER. I think that Senator Cardin might have been here before me.

Senator BOXER. I am so sorry. Senator Cardin. You are correct.

Senator CARPER. That is OK. A lot of people mistake us for one another.

[Laughter.]

OPENING STATEMENT OF HON. BENJAMIN L. CARDIN, U.S. SENATOR FROM THE STATE OF MARYLAND

Senator CARDIN. First, Madam Chair, thank you very much.

And to Administrator Jackson, thank you for your strong leadership at the Environmental Protection Agency. We very much see your influence on the budget that the President has submitted, and we are very pleased to see that this budget advances the priorities that are important for EPA in dealing with the threats of climate change, protecting our great water bodies and in investing in our Nation's water infrastructure.

The President's budget includes three funding streams dealing with climate change, taking action now as required by the Supreme Court on regulatory programs to stem the flow of greenhouse gas pollutants, an investment of $25 million to help our State environmental agencies develop capacity to deal with GHG pollutants, and the further investment of $21 million to support the greenhouse gas reporting rules which will ensure collection of high quality data.

Let me just point out the scientific information concerning global climate change is, I think, pretty convincing. But we can also just take a look at the facts of what is happening around the world.

A third of the perennial arctic ice has melted in the last 30 years. That is a fact. We have lost an area of sea ice equal to the entire United States east of the Mississippi. That is a fact. This past decade was the hottest ever, according to NOAA. That is a fact. And just this month, the Defense Department called climate change an accelerant of instability that could have significant geopolitical impact that may spark or exaggerate future conflicts.

That is where we are today. So, global climate change is real. And I am pleased to see that the Administration's budget reflects a common sense investment in protecting us from greenhouse gas pollutants.

I am also pleased to see the investment the agency plans to protect and restore our great water bodies. Thank you for that. The EPA proposes an additional $300 million in its continuing investment in Great Lakes protection. The Great Lakes are the largest source of fresh water on the planet, and we need concerted long-term investment in restoring this critical ecosystem. And we will have a hearing tomorrow that will deal with the Great Lakes.

Similarly, the agency is proposing a $17 million investment in targeting non-point source pollutants in the Mississippi River Basin in an effort to protect the Gulf of Mexico. And most important of all, as I know the Administrator will recognize, your investment in the Chesapeake Bay, a record $63 million to help implement President Obama's Executive Order on this national treasure.

As your testimony notes the centerpiece of your Chesapeake Bay efforts is the implementation of the Nation's largest and most complex total maximum daily load program. It is a clean up plan to deal with the cumulative impact of more than 17 million people, 88,000 farms, 483 large wastewater treatment plants, thousands of smaller facilities, and many other sources in the 64,000-square-mile watershed. As you know, I have introduced legislation along with my co-sponsor, Senator Carper, to restore the Chesapeake Bay to its rightful status as a national treasure.

This budget request is a good step. But I will be working with my colleagues on the committee in the coming weeks to give you new authority and funding authorization to really get the job done.

And finally, let me take note of the request that you have made in regards to water infrastructure, $2 billion for the Clean Water State Revolving Fund, $1.3 million for the Drinking Water State Revolving Fund. These are—based upon recent history, these are large increases from prior budgets that have been submitted by the previous Administration, and we appreciate the continued commitment that the Administration is making.

I think we could even do better than the Administration's request. A number of my colleagues, including many sitting on this committee, are supporting a request of $5.4 billion in water infrastructure funding for fiscal year 2011. And we look forward to working with you to see whether we cannot get that number even higher than you have submitted, knowing the backlog, knowing how much we need to do in protecting our Nation's water and helping our local subdivisions. But I do compliment this Administration for its continuing commitment to water infrastructure projects.

So, for the climate change, for the great water bodies, for our Nation's water infrastructure, I think the budget that you have submitted sets the right priorities. I look forward to working with you to make sure the budget that passes the Congress carries out these commitments.

Thank you.

Senator BOXER. Thank you.

Let me read the list. On the Republican side, it is Bond, Vitter; on our side it is Carper, Whitehouse, Udall and Merkley. OK? Oh. Hi, Bernie. I did not see you come in. And Sanders.

So, Senator Bond.

OPENING STATEMENT OF HON. CHRISTOPHER S. BOND, U.S. SENATOR FROM THE STATE OF MISSOURI

Senator BOND. Thank you very much, Madam Chair.

Welcome, Madam Administrator.

I appreciate those kind words from my good friend, Senator Cardin. I happen to live in Maryland. I am glad that he could get in today because I was 15 minutes late getting around the mountain of snow that I have never seen before in Maryland to get in. And I realize that a heavy snowfall that canceled one of our global warming hearings is not, in itself, any evidence that, there is some uncertainty in climate change.

Senator CARDIN. If you need constituent service, please let me know.

Senator BOND. If you would, bring a snow shovel down. My wife broke her snow shovel in this third snowstorm.

[Laugher.]

Senator BOXER. Send it up to Vancouver. They need it up there.

[Laugher.]

Senator BOND. The one thing that does concern me a little bit is when Dr. Phil Jones, the head of the Climate Research Unit, told the BBC on February 13th there has been "no statistically significant warming over the last 15 years," and I think that is something that may warrant some discussion. But let me get onto the bipartisan concern over back door EPA carbon regulations to circumvent the stalled cap-and-trade in the Senate.

On February 19th eight Democratic Senators wrote to you, Madam Administrator, with their serious concerns. These are Senators from West Virginia, Alaska, Ohio, Michigan, Missouri, Montana and Pennsylvania. They expressed their "serious economic and energy security concerns." They wrote that "ill-timed or imprudent regulation"—and this was of greenhouse gases—may squander critical opportunities for our Nation, impeding the investment necessary to create jobs.

They are "concerned about the possible impact on American workers and businesses in a number of industrial sectors, along with farmers, miners and small business owners." They feel "they have a responsibility, the workers in the industries" of their States to question their plans, and so do I. And that is the big concern.

During consideration of legislation we learned it would kill millions of jobs, raise energy prices for everyday necessities like heating, power and gasoline, and collect trillions of dollars from American families, farmers and workers for new Big Government programs. And we have seen that some of these programs, wind and solar, are not created, they are bought. And too often they are bought in Asia. They are not bought in the United States to build this equipment.

In many ways back door EPA carbon regulations will be worse because whatever flexibility and cost savings could come from a market-based program would be replaced by Government command and control.

The author—the Democratic author of the Clean Air Act—himself said it was never meant to cover carbon dioxide emissions. He may have realized then, as now, that carbon regulations would eventually drown farms, bakeries, restaurants, schools, churches, hospitals and apartments in expensive and burdensome red tape.

We all know the EPA's vain attempts to make up new law and tailor the Clean Air Act to exempt small emitters will be swept away in the first court challenge. We also know that any legislation to codify a tailoring rule, along with back door EPA regulations, will result in millions of lost jobs and higher energy taxes. It is not a question of if but when.

Madam Administrator, your letter yesterday announcing your decision to implement the rules in 2011 instead of 2010 can be seen as recognition of these concerns, or some have said that it may be a cynical ploy to delay the job killing until after the fall elections. But certainly anyone who supports your proposal is merely saying

they want to start killing jobs and raising energy taxes in 2011 instead of 2010.

Ironically, we do not even need back door EPA regulations. We can get reduction from cars and trucks through congressional and DOT action on CAFE auto efficiency. And the back door EPA carbon regulations will have no effect on the "endangerment" some perceive. Cap-and-trade, without similar actions here, without similar actions by China and India, will have no measurable impact. That provides pain without a purpose.

We have better ways to cut carbon emissions, zero carbon nuclear power, low carbon biofuels, clean coal technology, clean burning natural gas, hybrid and all electric vehicle technology, energy efficiency, and other steps which make economic sense. This is a bipartisan agenda that will create jobs and not hurt families and workers.

Thank you.

Senator BOXER. Thank you so much, Senator.

Senator Carper.

OPENING STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR FROM THE STATE OF DELAWARE

Senator CARPER. Thanks, Madam Chairman.

Let me just say, on the heels of what we have heard from Senator Bond, I am a major proponent of expanding our dependence on nuclear power. I believe in a country where we have more coal than Saudi Arabia has oil that maybe it does make sense—well, it does make sense, to be able to utilize those resources.

I believe that one of the best ways to help fund the expansion of nuclear power and frankly to help fund expanded use of coal but doing it in a way that is clean, is through putting in place a market based system not unlike that which we put in place when George Herbert Walker Bush was President, with respect to sulfur dioxide.

I have, Madam Chairman—let me just ask for unanimous consent to enter into the record a statement from the American Association for the Advancement of Science. Those are the folks who publish the Journal of Science. I will just read the first sentence, if I may. The American Association for the Advancement of Science has reaffirmed the position of the Board of Directors and the leaders of 18 respected organizations who concluded, based on multiple lines of scientific evidence, that global climate change caused by human activities is now underway and it is a growing threat to society.

And it is not just a question of whether or not our planet is growing warmer. Some parts are growing warmer, some less so. But what we are seeing is a distortion of our weather patterns made perfectly clear by the enormous snows that we have had here in the mid-Atlantic and the dearth of snow that they have had in Vancouver where the Winter Olympics are being held.

Senator BOXER. We will put that in the record.

Senator CARPER. Thanks very much.

Administrator Jackson, thanks very much for joining us today. Thank you for your stewardship. Thank you for the Administration's budget proposals. As I understand it you have actually come with a budget that is a little bit under the current budget, the

budget proposal is a little bit under, and you have indicated an interest or willingness or desire to increase funding for portions of the budget that I am especially interested in, and that is how do we clean up our air, how do we provide for healthy air for people in this country. You make, I think, some very good investments in State and local governments to help clean up dirty diesel emissions and to reduce greenhouse gas pollution.

I just want to make one other comment, if I could. We have had testimony before this committee of very smart people, very smart investors. And the guy that always comes to mind is John Doerr, who made a fortune investing in Internet businesses and technology businesses in the 1990s. And he said before this committee, and he said in any other number of audiences that I have been a part of, if we really want to unleash an economic tsunami of jobs and economic opportunity, new jobs and employment in this country, what we need to do is put a price on carbon. He did not say that we needed to put a tax on carbon. He did not say that we had to put in place a market-based system like we did with sulfur dioxide. He said we need to put a price on carbon.

And my preference is to do that, do legislation as opposed to doing it through regulation. But one of the advantages of having the price for the regulation is to encourage the Congress to do what it needs to do, and that is to pass legislation.

Thank you very much for your testimony today.

[The referenced letter follows:]

October 21, 2009

American Association for the Advancement of Science

American Chemical Society

American Geophysical Union

American Institute of Biological Sciences

American Meteorological Society

American Society of Agronomy

American Society of Plant Biologists

American Statistical Association

Association of Ecosystem Research Centers

Botanical Society of America

Crop Science Society of America

Ecological Society of America

Natural Science Collections Alliance

Organization of Biological Field Stations

Society for Industrial and Applied Mathematics

Society of Systematic Biologists

Soil Science Society of America

University Corporation for Atmospheric Research

Dear Senator:

As you consider climate change legislation, we, as leaders of scientific organizations, write to state the consensus scientific view.

Observations throughout the world make it clear that climate change is occurring, and rigorous scientific research demonstrates that the greenhouse gases emitted by human activities are the primary driver. These conclusions are based on multiple independent lines of evidence, and contrary assertions are inconsistent with an objective assessment of the vast body of peer-reviewed science. Moreover, there is strong evidence that ongoing climate change will have broad impacts on society, including the global economy and on the environment. For the United States, climate change impacts include sea level rise for coastal states, greater threats of extreme weather events, and increased risk of regional water scarcity, urban heat waves, western wildfires, and the disturbance of biological systems throughout the country. The severity of climate change impacts is expected to increase substantially in the coming decades.[1]

If we are to avoid the most severe impacts of climate change, emissions of greenhouse gases must be dramatically reduced. In addition, adaptation will be necessary to address those impacts that are already unavoidable. Adaptation efforts include improved infrastructure design, more sustainable management of water and other natural resources, modified agricultural practices, and improved emergency responses to storms, floods, fires and heat waves.

We in the scientific community offer our assistance to inform your deliberations as you seek to address the impacts of climate change.

[1] The conclusions in this paragraph reflect the scientific consensus represented by, for example, the Intergovernmental Panel on Climate Change and U.S. Global Change Research Program. Many scientific societies have endorsed these findings in their own statements, including the American Association for the Advancement of Science, American Chemical Society, American Geophysical Union, American Meteorological Society, and American Statistical Association.

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Senator BOXER. Thank you, Senator.
Senator Vitter.

**OPENING STATEMENT OF HON. DAVID VITTER,
U.S. SENATOR FROM THE STATE OF LOUISIANA**

Senator VITTER. Thank you, Madam Chair, and thank you, Madam Administrator, for being here and for all of your work.

I am happy that at least the great focus and subject of this discussion so far is the uncertainty in the debate about climate change and in particular the recent revelations which are very significant in my mind in terms of questioning the basis of the science. And in that regard I want to underscore two things.

First, you know, we all talk about the science and the facts. Well, it is beyond dispute that the EPA, in reaching its endangerment finding, relied first and foremost and primarily on the IPCC work. And it is also beyond dispute that these recent revelations of the last year raise very serious and very legitimate questions about that IPCC work.

We can cite many things. I will just mention one quote from the Climategate e-mails where one of the parties involved stated, "I cannot see either of these papers as being in the next IPCC report," talking about papers that are inconsistent with the conclusion they want to reach, "Kevin and I will keep them out somehow, even if we have to redefine what the peer review literature is."

Now, I think there is a legitimate spectrum of opinion about what the significance of these revelations is. I think that is still developing, and Climategate is still developing. But I believe this notion that we can simply ignore it, forge ahead simply like it never happened, is not within that reasonable spectrum of opinion. And unfortunately that is the position that I hear from the Administration and too many folks in Congress. Just forge ahead, ignore it like it never happened. It is significant. And I hope, as a first, primary duty of this committee we look hard, and we look long and do the due diligence about these significant recent findings.

I certainly want to echo a concern from a host of members, bipartisan, about the Administration forging ahead administratively with the endangerment finding. I welcome any delay, and so to that extent I welcome your Monday announcement. But I am completely opposed to forgoing ahead on that administratively. I do believe the only proper route for that policy is through Congress and encourage the Administration to focus on that route exclusively.

I look forward to following up on all of these issues both today and in the future.

Thank you, Madam Chairman.

Senator BOXER. Thank you very much, Senator.
Senator Udall.

**OPENING STATEMENT OF HON. TOM UDALL,
U.S. SENATOR FROM THE STATE OF NEW MEXICO**

Senator UDALL. Thank you, Madam Chair, and I really appreciate your holding this hearing.

You know, some of the Senators here today have been very critical of the U.N. climate program. I just want to remind them that

the Los Alamos National Laboratory in New Mexico has done two of the four key models used by the U.S. climate program.

These models use the same supercomputers we use to secure our nuclear stockpile. And when we say secure our nuclear stockpile, every year it has to be certified to the President that the nuclear stockpile is safe, secure and reliable. And it is done with these same supercomputers, and I can tell you that there is very, very extensive scrutiny of these kinds of models, and I believe we should have confidence in them.

Administrator Jackson, reducing pollution—and I know you know this—reducing pollution and protecting public health is one of the key and best investments governments make. And clearly these investments are sorely needed. For example, the budget's $3 billion in Clean Water and Safe Drinking Water Act Revolving Funds is only a small portion of the great need in our Nation. And I think we clearly need to do more on that front.

I am personally familiar with many of the rural and tribal communities in New Mexico with aging or incomplete clean water infrastructure. I commend the President and the Administrator for dedicating relatively small but significant resources to EPA's climate related activities.

Global warming pollution is also one of the greatest threats to public health and the environment, and our reliance on foreign oils is one of the greatest threats to our national security. Any EPA action should be targeted, transparent, and allow for a smooth transition to a lower carbon economy.

Administration Jackson's recent public description of the agency's planned course of action was very helpful, and I look forward to working with the EPA in the coming year. I do not think we should forget that the place we are in America right now, looking in terms of the world, is we are all looking at what is going to be the second industrial revolution. And the competition is going to be for clean energy jobs in this industrial revolution. And the way to get there, as Senator Carper and the Chairman and others have said, is to put a price on carbon and carbon dioxide emissions. That will move us in the right direction.

So, we need to be cognizant of where we are in the world in terms of the kind of competition that is out there. We have countries like China which do not have to go through the democratic processes that we do, that order factories to move to deal with their air pollution. And it happens in a very short period of time.

And so we need to act quickly here; we need to act with deliberation. But we also, I think, need to be careful, and Madam Administrator, I think you showed that in your letter in your approach to this.

So with that, Madam Chair, I would yield back.

Thank you.

Senator BOXER. Thank you so much, Senator.

Senator Barrasso, welcome.

OPENING STATEMENT OF HON. JOHN BARRASSO, U.S. SENATOR FROM THE STATE OF WYOMING

Senator BARRASSO. Thank you very much, Madam Chairman. And thank you, Administrator Jackson, for being with us today.

Under the President's proposed Environmental Protection Agency budget the EPA will continue its unprecedented high funding levels. According to the White House the EPA will receive $10 billion of U.S. taxpayer dollars this year, a substantially higher amount than requested under any previous Administration. The Administration states that this amount will strengthen the EPA's program implementation, research, regulation and comprehensive enforcement activities.

Well, in a time where funding is scarce and other Federal agencies are taking a hit it is clear that the EPA will continue its unprecedented growth. I believe this is a clear signal where this Administration's priorities are as stated on their Web site. The funding goes to the ramp up of EPA's regulatory and enforcement efforts.

The President has always made it clear that expanding environmental regulation is a priority. With this funding EPA will be able to expand its regulations and red tape on small and large businesses, rural and urban towns, hospitals, nursing homes and schools all across America.

These are job killing regulations. They will cost millions of Americans their jobs. It is an Administrative priority, it is the majority's priority, and it is a special interests' priority. Unfortunately it is not an American priority.

Creating jobs is America's No. 1 priority. Unemployment is now at 9.7 percent nationally. Regionally many States have a much higher rate. This does not factor in the unemployed who have simply given up on trying to find a job.

We need jobs. Not just green jobs, but red, white and blue jobs. Unfortunately, the EPA's budget creates jobs on K Street while wiping them out on Main Street. The biggest example is the Environmental Protection Agency's endangerment finding, which starts the process of taxing everything Americans do, from driving their cars to heating their homes to powering their small businesses.

Small business is the key to economic growth and job creation in this country. In the past 15 years small business owners have been responsible for 64 percent of all job created in America.

I just returned from a week in Wyoming meeting with small business owners throughout the State. They are concerned about the reach of Washington, and most especially the EPA, into their lives. They are afraid of what is going on in Washington, that what is going on in Washington will ruin their livelihoods. The EPA's budget says it all. They are right. The only people who are going to benefit from many of these policies are the Washington environmental special interests and their lobbyists, not the American people.

I believe we can protect the environment while still providing for economic growth, the kind of growth that creates the green jobs and the red, white and blue jobs all across the Main Streets of all of this great Nation.

So, let us get this right and get our priorities straight.

Thank you very much, Madam Chairman.

Senator BOXER. Thank you very much, Senator Barrasso.

Senator Merkley.

OPENING STATEMENT OF HON. JEFF MERKLEY, U.S. SENATOR FROM THE STATE OF OREGON

Senator MERKLEY. Well, thank you very much, Madam Chair.

As I am listening to this conversation I am reflecting back on how every single time in this Nation when we have confronted great damage to our air or to our water it is always the same mantra: it will kill jobs. And every single time, when we look back 10 years later or 20 years later, we are so thankful that we actually created jobs by cleaning up our waterways, we created jobs by cleaning our air. And we are going to create jobs by cleaning up carbon dioxide pollution as well.

I can tell you it absolutely infuriates me that we are spending $1 billion a day on oil from the Middle East and countries like Venezuela that do not share our interests. Now, I just came back through Kuwait. And they are building gorgeous towers with our American money. And if you want our dollars to go out of this country and build towers in Kuwait then go on fighting for that policy.

But if you want to create jobs in America let us keep that money here. Let us create red, white and blue jobs in America, creating renewable energy, and keep those dollars in our economy rather than sending them overseas so that dictators in faraway countries can build shiny new towers.

I think we need to have a direct conversation about the damage to our national security of dependence on oil overseas. We need to have an honest conversation about the hemorrhaging of our dollars going overseas rather than creating jobs here in America. And we need to have an honest conversation about the impact of carbon dioxide pollution. And the EPA is right in the middle of that conversation.

And thank you for putting together a budget that presents a responsible and honest and straightforward approach to taking on this challenge and the challenge of creating jobs here in America. We can create jobs as we work to change the use of carbon dioxide being produced by our vehicles. We can take and produce a tremendous number of jobs as we pursue energy saving retrofits in our buildings. We absolutely have the chance to take and develop energy here so that we are making our energy payments to Americans, not to Kuwaitis.

So, I look forward to your presentation, and let us get on with it.

Thank you.

Senator BOXER. Thank you.

Senator Sanders.

OPENING STATEMENT OF HON. BERNARD SANDERS, U.S. SENATOR FROM THE STATE OF VERMONT

Senator SANDERS. Thank you, Madam Chair, and let me concur with Senator Merkley.

We have the potential to create millions of good paying jobs in energy efficiency, in wind, solar, geothermal, biomass, when we find we have the courage to say there is something absurd about bringing into this country $350 billion worth of foreign oil every single year, which makes us vulnerable from a geopolitical point of

view, does not give us energy independence, and as Senator Merkley said makes the Saudi Royal Family—one of the richest families in the world—even richer.

But I want to get on to another issue. Madam Chair, this country faces many, many problems, not the least of which is we have national leaders who are rejecting basic science. China is growing engineers and scientists, India is growing by the tens of thousands scientists and engineers, and we have national leaders who are rejecting basic scientific work.

I find it incredible, I really do, that in the year 2010 on this committee there are people who are saying there is a doubt about global warming. There is no doubt about global warming. The scientific community is almost overwhelmingly united in saying that global warming is real. In fact, our own National Academies of Science joined with academies in all G8 countries to issue a statement in 2009 that "climate change is happening even faster than previously estimated."

The U.S. Global Change Research Program, led by top scientists and Federal agencies, has stated that "global warming is unequivocal and primarily human induced." An MIT report in 2009 showed that we face an increase of up to 11 degrees Fahrenheit in global average temperature this century, worse than what was predicted only a few years ago.

Yes, among many, many thousands of scientists working on it, people made mistakes. Well, you know what? Sometimes even my Republican colleagues make mistakes. I have heard Republican colleagues, for example, say that the stimulus package created no jobs. That is a mistake, among many other mistakes that my Republican colleagues make. But it is dangerous to reject scientists.

Now, I want to mention, in the State of Oklahoma, I do not know much about Oklahoma, but the Oklahoma Climatological Survey, Oklahoma's State Climate Office published an official statement on climate change in the winter of 2007–2008. This is what they said. Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.

The Oklahoma Climatological Survey has been mandated by the Oklahoma legislature to provide climate information and expertise which could be of value to the public as well as the State policy and decisionmakers. That is what the Oklahoma legislature has mandated.

I frankly think that when we are debating the reality of an issue that can bring devastatingly negative impact to this entire planet we become laughingstocks of the entire world. That is what we become. And I think using, for political reasons, the fact that there are a few mistakes among thousands of scientists, and distorting reality, do this country and the world no good.

If you want to protect the oil interests get up there and say we are protecting the oil interests. You want to protect coal, protect coal. That is not a problem. We understand a lot of campaign contributions come in here. Fine. But let us not argue about what the overwhelming majority of scientists in this country agree on, and let us, in my view, go forward to a clean energy future.

Now, I would say to Lisa Jackson, keep up the very, very good work. Our children and our grandchildren depend on the transformation of this energy system away from fossil fuel, and we have the potential to make huge changes to grow the kinds of millions of jobs that we desperately need if we are prepared to listen to scientists and go forward, I think, on energy efficiency and sustainable energy.

Thank you, Madam Chair.

[The referenced statement follows:]

OKLAHOMA CLIMATOLOGICAL SURVEY

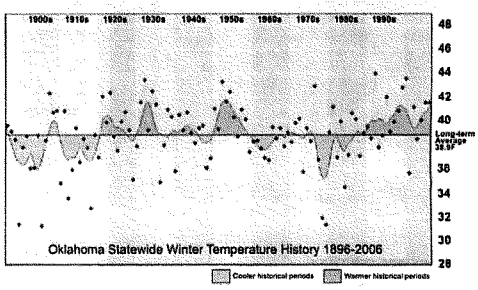
STATEMENT ON CLIMATE CHANGE AND ITS IMPLICATIONS FOR OKLAHOMA

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level."

– the Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC).

That statement reflects the essence of a vast amount of observational data and climate research: the earth's climate has warmed on average during the last 100 years and will continue to warm through the 21st century. Further, ample evidence from observational data and climate modeling studies indicates that this global-scale warming is not attributable to natural variability. The Oklahoma Climatological Survey (OCS) has been mandated by the Oklahoma legislature to provide climate information and expertise which could be of value to the public, as well as to state policy- and decision-makers. In accordance with that directive, OCS has conducted a review of the current assessments of climate change research and concludes the following to be true:

- The earth's climate has warmed during the last 100 years;
- The earth's climate will continue to warm for the foreseeable future;
- Much of the global average temperature increases over the last 50 years can be attributed to human activities, particularly increasing greenhouse gases in the atmosphere;
- Oklahoma will be impacted.



Oklahoma statewide average winter temperatures since 1895. The warming trend evident since the late 1980s has occurred during an extended drought-free period.

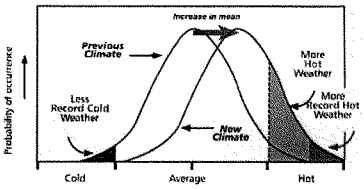
Across the globe, a warming climate will be beneficial to some and detrimental to others. Anticipating how this climatic shift will impact Oklahoma is of vital importance to state decision-makers. One of the greatest impacts will be the exposure of Oklahoma's growing population and economy to water stress. Oklahoma's future requires access to fresh water. Thus, due diligence in protecting our water resources and adapting to future climate variability is paramount if we are to maintain and improve the quality of life and the economy of Oklahoma.

The Science of Global Climate Change

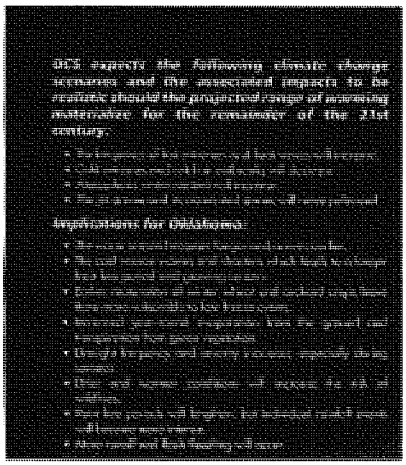
The earth's climate is always changing. Evidence such as tree ring and ice core studies indicates large and sometimes abrupt climate changes have occurred in the earth's distant past, lasting centuries to millennia. These climate swings are attributed to natural variations, such as changes in the output of the sun or shifts in the earth's orbit. Oklahoma has exhibited distinct climate periods attributable to natural variability in the last 100 years, from the decadal-scale droughts of the 1910s, 1930s and 1950s to an extended period of abundant precipitation during the 1980s and 1990s. Mounting evidence continues to indicate, however, that human activities have begun to impact the earth's climate through the release of greenhouse gases. Ice core studies show carbon dioxide and methane are at their greatest levels within the last 650,000 years. Due to the extended periods required for these gases to be removed from the atmosphere, further emissions during the 21st century will cause additional warming for more than a millennium. In fact, even if greenhouse gas concentrations were held steady since the year 2000, the earth is committed to decades of warming from heat already absorbed by the oceans.

Global Climate Change Impacts for Oklahoma

The continued warming of the climate averaged across the globe will create a cascade of climatic shifts which could impact Oklahoma's climate. These shifts will not mean an end of year-to-year natural variability – hot years and cold years will continue, as will wet years and dry years. The projected changes will be seen at time scales averaged over a decade or more. Little is known of the effects climate change will have on severe weather. The ingredients required for severe weather involve complex combinations that do not exhibit clear changes in a warming climate. Further, global climate models are unable to accurately simulate small scale weather events like thunderstorms or tornadoes.



The effect on the frequency of extreme temperatures in a warming climate.

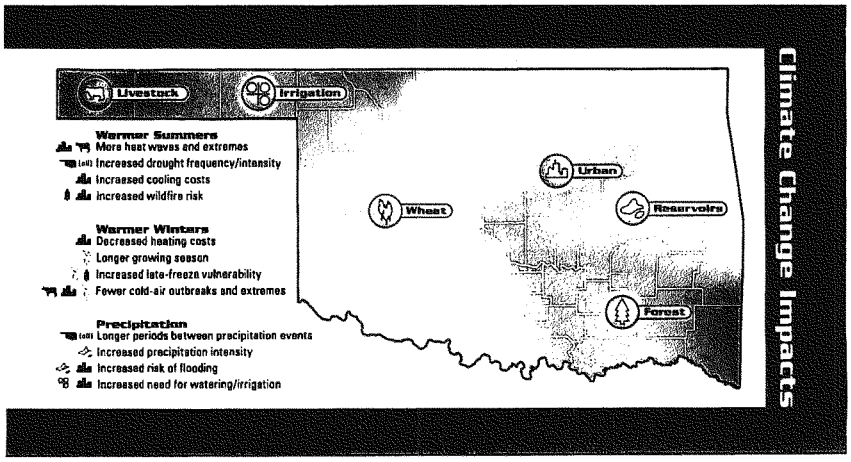


Recommendations

OCS recommends that Oklahoma aggressively pursue four initiatives to address the risks of both climate variability and climate change. First, the state should undertake a comprehensive assessment of Oklahoma's social and economic vulnerability to climate variability as well as climate change. Learning to adapt to nature's extremes now will yield benefits in reduced disaster losses, regardless of the future trajectory of climate change. Climate change may also bring economic opportunities that would be identified in such an assessment. Second, OCS recommends immediate funding of the Oklahoma Water Resources Board's Comprehensive Water Plan study to identify existing as well as projected needs for water. Third, OCS encourages efficiency programs to reduce our growing demand for energy. Fourth, OCS recommends investment in renewable energy technology and production. Oklahoma has already demonstrated the successes of wind energy; similar efforts should be undertaken to advance development of solar and sustainable bio-energy as well as fostering further research and development of wind energy.

Even if climate does not evolve as expected, these steps will yield long-term benefits to Oklahoma's society and economy through reduced losses to existing climate and weather threats and cost-savings through reduced energy use. If climate does evolve as expected, Oklahoma will be better positioned to adapt to those changes without rapid social upheaval. Furthermore, building resilience to climate and weather events will help position Oklahoma at a relative advantage to neighboring states, especially in attracting businesses that are dependent upon a continuous water supply.

This statement is the first in a series issued by OCS which delineates the impacts, both beneficial and detrimental, of a warming climate system on the economy of Oklahoma and the quality of life for Oklahomans. Future statements will illuminate possible impacts to specific industries, such as water management and agriculture.



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OKLAHOMA CLIMATOLOGICAL SURVEY

Senator BOXER. Thank you very much, Senator.

I believe we have gone through our list of Senators. So, Administrator Jackson, you have been very patient. We welcome you, and the floor is yours.

STATEMENT OF LISA P. JACKSON, ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Ms. JACKSON. Thank you, Chairman Boxer. Greetings to you, greetings to Ranking Member Inhofe. I would greet Senator Vitter with a hearty Who Dat, but he stepped out for a second. And please convey, through the Chair, my well wishes to my home State Senator, Frank Lautenberg.

Senator BOXER. I will.

Ms. JACKSON. I always miss his presence and certainly miss him today.

Thank you for the opportunity to appear before you to discuss EPA's budget for fiscal year 2011. To members of this committee, I heard all of your opening statements, and I appreciate the opportunity to present a budget that fully reflects President Obama's and my commitment to environmental protection and to ensuring that all families across the country have access to clean air, clean water, clean land.

Much work has gone into this budget over the last year, and I am proud that it supports my key goals for the Agency. Specifically, this budget is a framework to address climate change, to improve air quality, to assure the safety of chemicals, to clean up our communities, to protect America's waters, to expand the conversation on environmentalism and work for environmental justice, and to continue to build strong State and tribal partnerships.

Let me touch on some of the highlights of this budget that will protect human health and the environment and lay a new foundation for our prosperity.

Let me begin by being direct. The science behind climate change is settled, and human activity is responsible for global warming. Not only have America's top scientific institutions come to that conclusion, but so have numerous other industrialized countries.

That conclusion is not a partisan one. The Senate has twice passed, on a bipartisan basis, a resolution finding that greenhouse gas accumulation from human activity poses a substantial risk of increased frequency and severity of floods and droughts. Many on this committee, including from the minority, supported that resolution.

This budget reflects the science and positions EPA to address this issue in a way that will not cause an adverse impact to the economy. The budget includes a requested increase of more than $43 million for efforts aimed at taking action on climate change. The bulk of this funding, fully $25 million, is for States, specifically for State grants focused on developing the technical capacity to address greenhouse gas emissions under the Clean Air Act.

It also includes $13.5 million in funding for implementing new emission standards that will reduce greenhouse gas emissions from mobile sources such as passenger cars, light duty trucks and medium duty passenger vehicles, a rule that I'm pleased was supported by the States, the auto industry and by many stakeholders.

This budget also requests an additional $3.1 million to promote work on current and future carbon capture and sequestration projects.

While addressing global warming the budget also takes steps to ensure that the local air quality is also good for all, including those with respiratory problems. To improve air quality EPA will continue our support of enhanced monitoring and enforcement efforts. This budget requests $60 million for State grants to address new and expanded national ambient air quality standards as well as air monitoring requirements. Also, this budget provides $6 million to improve air toxics monitoring capabilities and address compliance and enforcement issues in local communities.

But toxins are found in not only our air emissions but in many of the common chemicals that we use every day, and we have an obligation to the American people to ensure these chemicals are safe. At the end of 2009 EPA released the first ever chemical action plans for four groups of substances, and more plans are in the pipeline for 2010.

In this budget EPA proposes $56 million for chemical assessment and risk review, including continued development of chemical management plans to ensure that no unreasonable risks are posed by new or existing chemicals.

This budget also promotes new and innovative strategies for cleaning up communities to protect sensitive populations such as children, the elderly, and individuals with chronic diseases. This budget proposes $215 million for brownfields, an increase of $42 million, to support planning, clean up, job training and redevelopment of brownfields properties, especially in underserved and disadvantaged communities.

In addition this budget proposes $1.3 billion for Superfund clean up efforts across the country. Clean up of contaminated properties takes pollution out of communities and puts economic opportunity, jobs, back in.

Protecting America's waters is a top priority for EPA due to the tremendous impacts water quality has on human health, environmental health and economic health. For 2011 this budget reflects EPA's commitment to upgrading drinking water and wastewater infrastructure with a substantial investment of $2 billion for Clean Water State Revolving Fund and $1.3 billion for the Drinking Water Fund. That will initiate approximately 800 clean water and 500 drinking water projects across America.

Also the fiscal year 2011 budget request supports numerous national ecosystem efforts, $300 million for the Great Lakes, $63 million for the Chesapeake Bay Program. These programs will address critical issues such as contaminated sediments and toxics, nonpoint source pollution, habitat degradation and loss, and invasive species, including the Asian carp.

We have also begun a new era of outreach and protection for communities historically under-represented in environmental decisionmaking. We are building strong working relationships with tribes and communities of color, economically distressed cities, towns, young people and others.

But this is just a start. We must bolster our relationships with our State and tribal partners. These are areas that call for innova-

tion and bold thinking, and I am challenging all of our EPA employees to bring vision and creativity to our programs.

Thank you very much for allowing me to briefly go through these highlights. I am happy to answer any questions you may have.

[The prepared statement of Ms. Jackson follows:]

TESTIMONY OF
LISA P. JACKSON

ADMINISTRATOR
U.S. ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

February 23, 2010

Chairman Boxer and Members of the Committee, thank you for the opportunity to appear before you to discuss the Environmental Protection Agency's proposed budget. Let me first say that I am particularly proud of the Fiscal Year 2011 budget as it reflects President Obama's continuing commitment to providing the environmental protection that keeps our communities healthy and clean and his commitment to fiscal responsibility. Families across America are tightening their budgets; the President has directed us to do the same.

Environmentalism is a conversation that we all must have because it is about protecting people in the places they live, work and raise families. In FY 2011, the Agency is focused on expanding the conversation to include new stakeholders and involve communities in more direct ways. Over the years, EPA has worked to prevent pollution at the source and promoted the principles of responsible environmental stewardship, sustainability, and innovation. EPA works to improve and encourage sustainable practices and help businesses and communities move beyond compliance to become partners in protecting natural resources, managing materials more wisely, reducing greenhouse gas emissions, and improving the environment and public health. Today's challenges require renewed and refocused efforts to address old pollution and prevent new pollution. The $10 billion proposed for EPA in the FY 2011 President's budget will support key

priorities during this time of fiscal challenges. These themes are: taking action on climate change; improving air quality; assuring the safety of chemicals; cleaning up our communities; protecting America's waters; expanding the conversation on environmentalism and working for environmental justice; building strong state and tribal partnerships; and maintaining a strong science foundation.

These themes are aligned with a government-wide effort to identify near-term high priority performance goals. For EPA, such goals include reducing Greenhouse Gas emissions, improving water quality, and delivering improved environmental health and protection to our communities. EPA will work toward meeting these goals over the next 18 to 24 months.

Madam Chairman and Members of the Committee let me touch on some of the highlights of this budget, both the hard choices and the targeted investments that will protect our health and the environment, advance creative programs and innovative solutions, and help build a new foundation for our prosperity.

Taking Action on Climate Change

EPA continues to take meaningful, common sense steps to address climate change. Making the right choices now will allow the agency to improve health, drive technology innovation, and protect the environment; all without placing an undue burden on the nation's economy. The budget includes a requested increase of more than $43 million for additional regulatory efforts aimed at taking action on climate change. It includes $25 million for state grants focused on

developing technical capacity to address greenhouse gas emissions under the Clean Air Act. It also includes $13.5 million in funding for implementing new emission standards that will reduce Greenhouse Gas (GHG) emissions from mobile sources such as passenger cars, light-duty trucks, and medium-duty passenger vehicles, developing potential standards for large transportation sources such as locomotives and aircraft engines, and analyzing the potential need for standards under petitions relating to major stationary sources – all through means that are flexible and manageable for business.

A request of $21 million will support continued implementation of the Greenhouse Gas Reporting Rule to ensure the collection of high quality data. This budget also requests an additional $3.1 million to promote work on current and future carbon capture and sequestration projects.

Improving Air Quality

To improve air quality we'll continue our support of enhanced monitoring and enforcement efforts already underway. We are also requesting $60 million for state grants to address new and expanded National Ambient Air Quality Standards (NAAQS) as well as air monitoring requirements. Through the Healthy Communities Initiative we will provide $6 million to improve air toxics monitoring capabilities and address compliance and enforcement issues in communities. I will have more to say both about the Healthy Communities Initiative and our efforts to improve air quality momentarily.

Assuring the Safety of Chemicals

Assuring the safety of chemicals in our products, our environment and our bodies is of utmost concern, as is the need to make significant and long overdue progress in achieving this goal. Last year, I announced principles for modernizing the Toxic Substances Control Act (TSCA). At the end of 2009, we released our first ever chemical action plans for four groups of substances, and more plans are in the pipeline for 2010. Using our streamlined process for Integrated Risk Information System assessments, we will continue strong progress toward rigorous, peer reviewed health assessments. Additionally, we will continue focus on high-profile IRIS assessments on dioxins, arsenic, formaldehyde, trichloroethylene (TCE) and other substances of concern.. We are proposing $56 million for chemical assessment and risk review, including continued development of chemical management plans, to ensure that no unreasonable risks are posed by new or existing chemicals. Further, this budget invests $29 million in the continuing effort to eliminate childhood lead poisoning. We will implement the Renovation, Repair and Painting (RRP) Rule to address lead hazards created by renovation, repair and painting activities in homes and child occupied facilities with lead based paint. In FY 2011, $6 million would support national efforts to mitigate exposure to high risk legacy chemicals, such as mercury and asbestos.

Cleaning Up Our Communities

Among our highest priorities in this budget are investments in new and innovative strategies for cleaning up communities, especially to protect sensitive populations, such as children, the elderly, and individuals with chronic diseases. We will continue to focus on making safer, healthier communities. To clean up our communities, we're proposing investments that will get dangerous pollution out, and put good jobs back in.

This budget proposes $215 million for Brownfields, an increase of $42 million to support planning, cleanup, job training and redevelopment of Brownfields properties, especially in underserved and disadvantaged communities. EPA encourages community development by providing funds to support community involvement and is adding area wide planning efforts to enhance the positive impacts associated with the assessment and cleanup of Brownfields sites. Through area wide planning, particularly by focusing on lower income communities suffering from economic disinvestment, Brownfield properties can be redeveloped to help meet the needs for jobs, housing, and infrastructure investments that would help rebuild and revitalize these communities, as well as identify opportunities to leverage additional public and private investment. We'll also provide funding for assessment and cleanup of underground storage tanks and other petroleum contamination on Brownfields sites.

In addition, we're proposing $1.3 billion for Superfund cleanup efforts across the country. We will continue to respond to emergencies, clean up the nation's most contaminated hazardous waste sites, and maximize the participation of liable and viable parties in performing and paying

for cleanups. EPA will initiate a multiyear effort to integrate and leverage our land cleanup authorities to address a greater number of contaminated sites, accelerate cleanups, and put sites back into productive use while protecting human health and the environment. The new Integrated Cleanup Initiative represents EPA's commitment to bring more accountability, transparency and progress to contaminated site cleanups.

This budget also requests $27 million for a Healthy Communities Initiative which covers clean, green, healthy schools; community water priorities; sustainability and the air toxics monitoring in at risk communities I mentioned earlier. Six million dollars is requested for the Clean, Green, and Healthy Schools Initiative to support states and communities in promoting healthier school environments, to broaden the implementation of EPA's existing school environmental health programs including asthma, indoor air quality, chemical clean out, green practices, enhanced use of Integrated Pest Management, and safe handling of PCB-containing caulk. The Agency will work in partnership with the Department of Education and the Department of Health and Human Services to accomplish this initiative.

The Healthy Communities Initiative also includes an increase of $5 million for and Smart Growth work, including the Interagency Partnership for Sustainable Communities with the Departments of Transportation and Housing and Urban Development. The Smart Growth program works with federal partners and stakeholders to minimize the environmental impacts of development.

These modest investments will make real, measurable, improvements in a small number of pilot communities. In addition, the strategies that will be developed could be used in communities across the nation.

Protecting America's Waters

Protecting America's waters is a top priority and EPA has an ambitious vision for the nation's waters in the years ahead. Water quality has tremendous impacts on quality of life, on economic potential, and on human and environmental health. In FY 2011, EPA continues its commitment to upgrading drinking water and wastewater infrastructure with a substantial investment of $2 billion for the Clean Water State Revolving fund and $1.3 billion for the Drinking Water State Revolving Fund. EPA, the states, and community water systems will build on past successes while working toward the FY 2011 goal of assuring that 91 percent of the population served by community water systems receives drinking water that meets all applicable health based standards. EPA's partnership investments will allow States and Tribes to initiate approximately 800 clean water and 500 drinking water projects across America, representing a major federal commitment to water infrastructure investment. These investments send a clear message to American taxpayers that our water infrastructure is a public health and environmental priority.

The FY 2011 budget request supports national ecosystem restoration efforts; $300 million is requested for the Great Lakes, the largest freshwater system in the world. This multiagency restoration effort represents the federal government's commitment to significantly advance Great Lakes protection, with an investment of over $775 million over two years. The focus is on

addressing critical environmental issues such as contaminated sediments and toxics, nonpoint source pollution, habitat degradation and loss, and invasive species, including Asian carp.

We're requesting $63 million for the Chesapeake Bay program including increased funding to implement President Obama's Chesapeake Bay Executive Order. We are accelerating implementation of pollution reduction and aquatic habitat restoration efforts to ensure that water quality objectives are achieved as soon as possible. A centerpiece of EPA's FY 2011 Chesapeake Bay activity is the implementation of the nation's largest and most complex Total Maximum Daily Load (TMDL) for the entire Bay watershed. The TMDL will involve interstate waters and the effects on water quality from the cumulative impact of more than 17 million people, 88,000 farms, 483 significant treatment plants, thousands of smaller facilities, and many other sources in the 64,000 square mile watershed

In addition, the budget request includes $17 million for the Mississippi River Basin. EPA will work with the Department of Agriculture and states to target nonpoint source reduction practices to reduce nutrient loadings. EPA will also work with other Federal partners to target two high priority watersheds in the Mississippi River Basin to demonstrate how effective nutrient strategies and enhanced partnerships can address excessive nutrient loadings that contribute to water quality impairments in the basin and, ultimately, to the hypoxic conditions in the Gulf of Mexico.

The budget also proposes $10 million for green infrastructure research, more than doubling research that offers the potential to help us transition to more sustainable water infrastructure systems.

Expanding the Conversation on Environmentalism and Working for Environmental Justice

We have begun a new era of outreach and protection for communities historically underrepresented in environmental decision making. We are building strong working relationships with tribes, communities of color, economically distressed cities and towns, young people and others, but this is just a start. We must include environmental justice principles in all of our decisions. This is an area that calls for innovation and bold thinking, and I am challenging all of our employees to bring vision and creativity to our programs. The protection of vulnerable subpopulations is a top priority, especially with regard to children. Our revitalized Children's Health Office is bringing a new energy to safeguarding children through all of our enforcement efforts. We will ensure that children's health protection continues to guide our path forward. The increased Brownfields investments I mentioned will target underserved and economically disadvantaged neighborhoods – places where environmental cleanups and new jobs are needed.

We're also proposing $9 million for Community Water Priorities in the Healthy Communities Initiative; funds that will help underserved communities restore urban waterways and address water quality challenges.

Furthermore, the FY 2011 President's Budget includes approximately $615 million for EPA's enforcement and compliance assurance program. This request reflects the Administration's strong commitment to vigorous enforcement of our nation's environmental laws and ensures that EPA will have the resources necessary to maintain a robust and effective criminal and civil enforcement program and pursue violations that threaten vulnerable communities.

Building Strong State and Tribal Partnerships

Another hallmark of this budget is strengthening our state and tribal partnerships. The budget requests $1.3 billion in categorical grants for state and tribal efforts. State and local governments are working diligently to implement new and expanded requirements under the Clean Air Act and Clean Water Act. New and expanded requirements include implementation of updated National Ambient Air Quality Standards (NAAQS), for the first time addressing Greenhouse Gas (GHG) emissions, and addressing growing water quality issues, such as nutrient pollution. This increase includes the $25 million for greenhouse gas permitting activities already mentioned, as well as increases of $45 million for core work under air quality management grants and $15 million for air monitors, all of which I mentioned previously.

We are also requesting $274 million, a $45 million increase over 2010, to help states enhance their water quality programs . New funding will strengthen the base state, interstate and tribal programs, address new regulatory requirements, and support expanded water monitoring and enforcement efforts.

The request also includes increased support for our Tribal partners. In order to help tribes move beyond capacity building to implementation of their environmental programs, $30 million is budgeted for a new competitive Tribal Multimedia Implementation grant program. These grants are tailored to address an individual tribe's most serious environmental needs through the implementation of Federal environmental programs, and will build upon the environmental capacity developed under the Tribal General Assistance Program (GAP). To further enhance tribal capacity, this budget also includes an additional $9 million for GAP grants for a total of $71 million. GAP grants develop capacity to operate an environmental program, and support a basic environmental office or circuit rider that can alert the tribe and EPA to serious conditions that pose immediate public health and ecological threats.

Maintaining a Strong Science Foundation

In FY 2011, the range of research programs and initiatives will continue the work of better understanding the scientific basis of our environmental and human health problems We are requesting a science and technology budget of $847 million to enhance – among other things – research on endocrine disrupting chemicals, green infrastructure, air quality monitoring, e-waste and e-design, and to study of the effects of hydraulic fracturing on drinking water. It's important to highlight that most of the scientific research increase will support additional Science to Achieve Results (STAR) grants and fellowships to make progress on these research priorities and leverage the expertise of the academic research community. The $26 million increase for STAR includes $6 million for STAR fellowships in support of the President's priority for Science, Technology, Engineering, and Math (STEM) investments. This reflects a near

doubling of the STAR fellowships program. This budget also supports the study of computational toxicology, and other priority research efforts with a focus on advancing the design of sustainable solutions for reducing risks associated with environmentally hazardous substances.

These are the highlights of a budget that reduces costs while strengthening American communities and boosting the green economy. Responsible, targeted investments will protect our health and the environment, advance creative programs and innovative solutions, and help build a new foundation for our prosperity. Thank you again for inviting me to testify today and I look forward to answering your questions.

Questions Submitted for the Record by Senator Barrasso

HYDRAULIC FRACTURING

Question 1: The Director of EPA's Drinking Water Protection Division, Mr. Steve Heare, said at a recent State water regulator conference that "I have no information that states aren't doing a good job already" with regard to how States are doing overseeing hydraulic fracturing. As you know, hydraulic fracturing is the key process to unlocking our domestic natural gas resources. The Dow Jones Newswire also reported that Heare said that there is no evidence the process of hydraulic fracturing causes water contamination.

Do you agree with Mr. Heare that State regulators are doing a good job overseeing hydraulic fracturing and that there is no evidence the process causes water contamination?

Answer: The FY 2010 House Appropriations Committee Conference Report requested EPA carry out a study on the relationship between hydraulic fracturing and drinking water, using a credible approach that relies on the best available science, as well as independent sources of information. The request stated in part, "The conferees expect the study to be conducted through a transparent, peer-reviewed process that will ensure the validity and accuracy of the data." The Committee also directed the Agency to consult with other Federal agencies as well as appropriate State and interstate regulatory agencies in carrying out the study, which should be prepared in accordance with the Agency's quality assurance principles.

EPA is in the very early stages of designing its study to examine the relationship between hydraulic fracturing and drinking water. To support the initial planning phase and guide the development of the study plan, the Agency is seeking suggestions and comments from the EPA Science Advisory Board (SAB)—an independent, external federal advisory committee. On April 7th and 8th, 2010, EPA met with the Environmental Engineering Committee (EEC) of the SAB and requested that they evaluate and provide advice on EPA's proposed approach. At the SAB meeting, one of the ideas discussed by the SAB was an assessment of the effectiveness of state requirements and enforcement of those requirements in protecting drinking water sources. As part of its efforts to solicit information on hydraulic fracturing, the Agency hopes to receive information that explores this issue.

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Question 2: How many times in EPA's history has your agency asserted primacy over the Wyoming Department of Environmental Quality on Clean Water Act, Clean Air Act and Safe Drinking Water Act issues?

Answer: EPA has not asserted primacy over the Wyoming Department of Environmental Quality on the Clean Air Act. Because the State of Wyoming has never applied for primacy for the public water system supervision (PWSS) program under the Safe Drinking Water Act (SDWA), EPA has maintained primacy for implementing the federal drinking water standards at all Wyoming water systems since passage of the Act (1974). Wyoming is on the only State that has not applied for and received primacy to implement the PWSS program. However, Wyoming has applied for, and been approved for, primacy for the Underground Injection Control (UIC) Program under SDWA. This program was approved for the Wyoming Oil and Gas Conservation Commission with respect to all oil & gas-related, or Class II, injection wells effective December 23, 1982, and for the Department of Environmental Quality with respect to all other (Classes I, III, IV, and V) of injection wells effective August 17, 1983.

Under the Clean Water Act, EPA has not initiated proceedings to withdraw approval of Wyoming's National Pollutant Discharge Elimination System (NPDES) program since the Wyoming Department of Environmental Quality was originally authorized to administer that program effective January 30, 1975. EPA retains responsibility for Clean Water Act pretreatment and biosolids programs in Wyoming, programs for which the state has not sought authorization.

Where the State has primacy or authorization, EPA continues to exercise our oversight responsibilities for these statutes on a regular basis.

SCIENTIFIC RESEARCH

Question 3: Would you tolerate it if scientists within your agency released scientific research to the public and Congress where they:

a) Suppressed data that contradicted their conclusions?
b) Intentionally included false scientific data and conclusions because they wanted to influence policy makers?
c) Intentionally include unpublished, and non-peer reviewed work in an approved public document?

Answer: EPA has repeatedly made a commitment to scientific integrity and the scientific process. Scientific integrity will be the backbone of EPA. The

scientific findings on which EPA's judgments are based should be arrived at independently using well established scientific methods, including peer review, to assure rigor, quality and integrity.

Like other aspects of our programs, environmental science is complex and multifaceted. Able scientists may not always agree on that methodologies should be employed or how studies should be interpreted. EPA is committed to a culture of robust scientific debate and discussion within the agency, recognizing that in the end, senior scientists must take responsibility for resolving differences of opinions using established science polices and their best professional judgment.

SCIENTIFIC CLIMATE DATA

Question 4: Does the EPA rely on scientific climate data from NOAA or NASA to provide justification for taking regulatory action to address climate change?

Answer: First, we note that EPA did not issue the Endangerment and Cause or Contribute Findings to justify regulatory action but rather as a necessary response to the 2007 Supreme Court decision in *Massachusetts v. EPA*, which required that EPA consider the science in deciding whether GHG air pollution is reasonably anticipated to endanger public health or welfare.

The body of literature upon which the Findings are based includes observational data and multiple lines of evidence and types of analyses. A component of this observational data includes global surface temperature data, as analyzed in three datasets generated by the United Kingdom's Hadley Centre, NASA, and NOAA, respectively. All three of these datasets show essentially the same global warming trend over the past 100 years, with the steepest increase in warming in recent decades.

SURFACE TEMPERATURE RECORDS

Question 5: You have stated you were aware of a report released in January entitled "Surface Temperature Records: Policy Driven Deception?" by the Science and Public Policy Institute. The report alleges that U.S. government scientists have skewed global temperature trends by ignoring readings from thousands of local weather stations around the world, particularly those in colder altitudes and more northerly latitudes such as Canada.

The study alleges that NOAA "systematically eliminated 75% of the world's stations with a clear bias towards removing higher latitude, high altitude

and rural locations, all of which had a tendency to be cooler." This includes temperature stations in the United States, Russia and China. The report states that the remaining temperature monitoring stations have been impacted by contamination through urbanization, changes in land use, improper siting, and inadequately-calibrated instrument upgrades. The result according to the report has been a global surface temperature record that is "warmer-than-truthful."

Has your department reviewed this study? What outside scientists, entities, think tanks, lobbyists, special interest groups or others has EPA employees within the Administration communicated with to respond to this report? Please provide the names of entities and individuals with their contact information who your agency has been relying on for input on this matter.

Answer: This report was provided to EPA as part of one or more petitions for reconsideration of the Endangerment and Cause or Contribute Findings. EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We have not contacted any outside entities with regard to this report.

Questions Submitted for the Record by Senator Baucus

CHILDREN'S HEALTH

Question 1: Can you describe the Agency's efforts to ensure the protection of children's health, and the role of the Office of Children's health in clean-up decision-making?

Answer: In FY 2011, EPA will address the potential for and uniqueness of health effects in children during the development of regulations and Agency policies with human-health implications; protect children through safe chemicals management; and coordinate national and international community-based programs to reduce threats to children's health and measure and communicate progress.

The protection of children's health has been and continues to be a priority at Superfund sites. EPA actions taken regarding children's health include designing sampling programs to first monitor areas within the site where children live and play; identifying pathways of children's exposure to site contaminants; assessing children's health risks from those contaminants; developing cleanup levels to protect children; and cleaning up areas where children live and play before other areas of the site are addressed. As an example, in Libby, Montana one of the first actions taken at the site was to investigate and cleanup site-related asbestos contamination at the schools. Cleanup was also conducted at community baseball fields to eliminate exposure to Little League and other youth players, and contaminated riprap was removed from several creeks at the site because children played in those areas.

The Office of Children's Health Protection is actively working with offices and Regions across the Agency to ensure that risk assessments, risk characterizations, policies and other similar documents are consistent with the Agency's 1995 Policy on Evaluating Health Risks to Children.[1] Specifically, the Office of Children's Health Protection is committed to reviewing risk communication documents related to the cleanup in Libby, and toxicity assessments for Libby amphibole asbestos.

[1] http://yosemite.epa.gov/ochp/ochpweb.nsf/content/policy-eval_risks_children.htm

LIBBY MONTANA STUDIES ON OU-1 AND OU-2

Question 2: The residents of Libby Montana continue to express their concerns about EPA's plan to move forward on final cleanup decisions at OU-1 and OU-2 before toxicity studies and risk assessments are finalized. Please explain why the Agency believes it is necessary to go forward with a record of decision on these properties before such studies are completed?

Answer: EPA completed the risk assessments for OU-1 and OU-2 as part of the remedial investigations. The risk assessments demonstrated remedial action to be necessary to protect public health. Accordingly, EPA determined that it is possible to move forward on a final cleanup decision at OU-1 and OU-2 before toxicity studies and risk assessments are complete because the planned remedy are expected to remove all remaining soil exposure pathways, making the area protective of public health. Implementing cleanup remedies at OU-1 and OU-2 will help ensure that people will not come in contact with Libby amphibole asbestos. The cleanup remedies will be re-assessed at a minimum every five years as the Libby Amphibole toxicity studies and the long-term epidemiological studies are completed to ensure that any remedy decisions previously made continue to protect human health and limit exposure.

ABS SAMPLING ON LIBBY'S SCHOOLS

Question 3: EPA recently conducted activity-based sampling (ABS) at the Libby Superfund Site that detected asbestos, including visible vermiculite, at four schools. Considering these results, and without final toxicity values and risk data, how can EPA ensure that the likely exposures of Libby school children are acceptable?

What process did EPA use to verify the results? For example, did EPA submit the sampling results to peer review by other scientists?

In interpreting these results, the Agency indicated that the detected levels are consistent with levels at other Superfund sites. Given the EPA's determination of a public health emergency at Libby, in large part due to multiple pathways of exposure to asbestos, did the Agency's evaluation of the impact of the detected level in Libby schools evaluate those levels in the context of multiple pathways of exposure before determining that there is an acceptable level of risk?

How does EPA define acceptable level of risk and does the definition in use in Libby include consideration of multiple exposure pathways.

Answer: The ABS sampling results from the Libby Schools were evaluated using currently available toxicity values for asbestos. The draft report states there are uncertainties in the risk estimate that include (but are not limited to) uncertainties in estimating the true long-term average Libby Amphibole (LA) concentration in air, in understanding human exposure patterns, in the cancer exposure-response relationship, in assessing non-cancer hazard, and in estimating cumulative exposures. The draft report also states that the estimate of cancer risk associated with the reported environmental concentrations of LA at the schools, given the stated uncertainties, is within the EPA target risk range.

EPA analytical data undergoes validation that is consistent with methods for laboratory validation at Superfund sites across the United States. The document reporting the ABS sampling results is documentation of environmental sampling and analysis results. The draft report will be reviewed by the EPA Technical Review Workgroup for asbestos prior to public release. When these data are submitted as a part of a remedial investigation (RI) report, the RI report will be available for public comment, as are all RIs for the Libby investigation area.

The draft report on the ABS sampling results from the Libby Schools, as stated, did not include an estimate of risk from multiple pathway exposures. When data collection activities are completed and LA-specific toxicity data are available, a multiple pathway exposure and risk estimate will be included as part of the OU4 RI.

LIBBY'S FIVE YEAR EXPENDITURE SUMMARY

Question 4: Can you provide a summary of the last five years of expenditures in Libby and a summary of projected expenditures from the site special account over the next 5 years?

Answer: The summary of expenditures associated with the last five budget fiscal years is estimated as follows:

2005 $19.5 million
2006 $22.1 million
2007 $28.9 million
2008 $33.5 million (including $15.4 million from site special account)
2009 $34.9 million (including $33.1 million from site special account)

This information is based on an April 13, 2010 report constructed from EPA's Integrated Financial Management System and does not include unliquidated obligations.

Based upon available information, EPA plans to spend $30-35 million per year on response at the Libby Asbestos Superfund Site. Over the next five years expenditures are expected to come mainly from the site's special account.

LIBBY CLEANUP ON COMPUTATIONAL TOXICOLOGY AND INTEGRATED RISK INFORMATION SYSTEMS

Question 5: The President's budget includes increased funding for scientific research and development. Among these proposals, and also included in the FY2010 budget proposal, are for advances in computational toxicology and integrated risk information systems. Can you explain how these programs, or others, develop the science needed to ensure that cleanup of the Libby site is protective of the community, especially children? Will these techniques be used in the ongoing risk assessment for Libby?

Answer: The science of computation toxicology is, generally, an application of mathematical procedures used to estimate or predict toxicological outcomes or mechanisms. As part of the Libby Action Plan, EPA is using available human exposure and health effects data and, additionally, carrying out primary animal dosing experiments using Libby amphibole. EPA will use these data and apply the most current models available (models developed through the EPA Computational Toxicology Program or other peer-reviewed toxicological models) to derive the most scientifically-valid estimates of toxicity and risk that can be used as the foundation for risk-based decision making at Libby.

The Integrated Risk Information System (IRIS) is an EPA program for the derivation of risk estimates for chemicals of concern and the presentation of those data through a publically available database. The research under the Libby Action Plan that will be used to derive Libby specific toxicity and risk estimates will be reviewed by those within the IRIS program to ensure consistency with methods and data quality standards of the IRIS program.

UPPER TENMILE CREEK MINING IN RIMINI, MT

Question 6: With regard to the ongoing clean-up at the Upper Tenmile Creek Mining Area in Rimini, MT, I have several questions. Specifically, can you provide a summary of the clean-up at the Landmark location including time line, funds expended, completion date, and activities conducted.

Answer: The Upper Tenmile Creek Mining Area site is located about 8 miles southwest of Helena, Montana. The Site consists of approximately 53 square miles and includes the Upper Tenmile Creek watershed. The Landmark

location is a small residential subdivision at the mouth of the watershed at the Site. With the exception of the Landmark location, the community of Rimini, and a few recreational cabins, the Site is largely undeveloped land used for recreation.

The Record of Decision (ROD) for the Tenmile Site was completed in 2002. In 2003, EPA began cleanup of residential properties in the Landmark Subdivision from July 2003 to October 2004, disposing of the contaminated waste in the Luttrell Repository. Cleaned up properties were then restored in 2005 and 2006 using clean fill and new plantings and vegetation. Factors influencing the number of properties remediated each year included weather (affecting length of construction season), limited access roads for hauling wastes to the repository, and haul distance to the repository. A total of 11 properties were remediated and restored during this time. As additional areas of contamination were identified, additional landowner access was provided and as funding became available, the cleanup of 2 additional Landmark properties became possible in 2008. EPA plans to complete cleanup of the remaining Landmark properties by September 2010 (this does not include those landowners who choose not to participate). The anticipated cost of cleanup for the additional properties in 2010 is approximately $1.5 million.

Here is a summary of the Landmark cleanup*:

Year	Number of Properties	Activities	Estimated Cost
2003	5	14,000 cubic yards waste removed	$1.24 million
2004	6	5,000 cubic yards waste removed	$0.82 million
2005/2006	11	Maintenance and revegetation	$0.10 million
2008	2	10,000 cubic yards waste removed	$1.00 million

*All waste disposed of in the Luttrell Repository.

Question: Please provide a summary of cost estimates for this clean-up and how they have changed/increased over time.

Answer: The 2002 Record of Decision (ROD) capital cost estimate for cleanup of all Landmark residential yards (excluding Luttrell Repository costs) was $2.1 million. Since 2002, costs have increased due to identification of additional areas of contamination, increase in the volume of waste removed, increase in number of properties remediated, and unit cost escalation. As the extent of contamination from two mill sites, tailings ponds, and wastes distributed via irrigation ditches became better understood, the area of the contaminated Landmark yards expanded over time. Accordingly, properties to be cleaned up have been identified each year with site-specific designs, engineer cost estimates, and bid packages. Cleanup work for each year (multiple properties) was completed within the engineer's estimates and contract budgets. However, unit

costs have increased for materials costs and fuel costs. A recent revised cost estimate suggests cost escalation of the residential yards in the range of 50-100% above the 2002 ROD capital cost estimate is possible.

Question: In addition, can you explain each of the soil sampling/testing, removal/remediation activities that have occurred in the Landmark area and why some sites have been repeatedly visited?

Answer: Preliminary sampling occurred in the Landmark area during the 2001 Remedial Investigation to determine the general nature and extent of contamination. Prior to cleanup, a second round of detailed design samples was conducted to complete the remedy design. After cleanup, confirmatory samples are taken to verify that a property has been cleaned up. In this manner, individual properties may be visited and sampled several times throughout the cleanup process for different objectives. In each case, access and sampling are carefully coordinated with property owners and/or tenants.

Question: In addition, can you explain the liability impacts on property owners in the Landmark location as the clean-up progresses and how those issues are being communicated with property owners?

Answer: Throughout EPA's Superfund response action, the Agency has provided information to the public through public meetings, the administrative record file for the site, fact sheets, and announcements published in local newspapers. EPA also participates in monthly meetings of the Upper Tenmile Watershed Committee and routinely discusses the cleanup plans with area residents and property owners. EPA works with individual landowners on property-specific cleanup designs. Landowners may decide not to grant EPA access to their property for cleanup. Under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), individual owners who do not qualify for or maintain a liability protection may potentially be held responsible for the cleanup of waste that migrates onto an adjoining property. In the Landmark subdivision, for example, irrigation ditches have been a significant mechanism of contaminant transport with the potential to move waste across property boundaries. Each landowner who has provided access to EPA for cleanup is given a map delineating arsenic concentrations. These values are discussed with the landowner regarding EPA's objectives to reduce human health risk. Background regarding CERCLA and any ongoing liability (as previously mentioned) are also discussed with landowners in person and at public meetings.

Questions Submitted for the Record from Senator Bond

U.S. ARMY CORPS OF ENGINEERS POINT SOURCE ACTIVITY

Administrator Jackson, The U.S. Army Corps of Engineers used a pipe at Rush Bottoms, Missouri to discharge phosphorus, nitrogen, silica and carbon rich soil into the Missouri River. At other sites they plan to push soil in the Missouri River with bulldozers, and at all planned sites these nutrients will be dumped into the Missouri River through a channel. The Section 502(14) of the Clean Water Act defines a point source as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." The Corps' activities seem to meet the definition of a point source and yet they are discharging from point sources into the river without appropriate permitting.

Question 1: What will EPA do to uphold the Clean Water Act in the face of the Corps' unpermitted and possibly illegal action?

Answer: The National Pollutant Discharge Elimination System (NPDES) program authorized under section 402 of the Clean Water Act (CWA) deals with the discharge of pollutants from a point source to waters of the United States. NPDES permits are issued by either an authorized State or EPA. The CWA section 404 program provides for the issuance of permits for the discharge of dredged or fill material into waters of the United States. Section 404 permits are issued by the Army Corps of Engineers (Corps) or a limited number of authorized States. Discharges to waters of the United States are covered under either a section 402 or a section 404 permit, but not both. Both types of permits protect water quality under the CWA.

The Corps does not issue itself a CWA section 404 permit to authorize Corps discharges of dredged or fill material into waters of the U.S., such as those described above in the Missouri River. However, Corps regulations at 33 CFR Part 335 specifically require the Corps to apply the CWA 404(b)(1) Guidelines, other substantive requirements of the CWA, and other environmental laws to the review of civil works projects involving the discharge of dredged or fill material into waters of the U.S. The Guidelines (40 CFR Part 230), promulgated by EPA in conjunction with the Secretary of the Army, establish the substantive environmental standards applied in the review of projects proposing to discharge dredged or fill material in waters of the U.S. Among other requirements, the Guidelines state that no discharge of dredged or fill material can be permitted if: (1) the discharge would cause or contribute to violations of any applicable State water quality standard, violate any applicable toxic effluent standard, or

jeopardize the existence of threatened or endangered species, and (2) the discharge would cause or contribute to significant degradation.

If the discharge is not dredged or fill material and pollutants are being discharged from a point source to waters of the U.S, an NPDES permit would be required. If the Corps was the owner or operator of that point source, they would be required to apply for a permit from the State of Missouri who is authorized to administer the NPDES program in that State.

ENVIRONMENTAL VIOLATIONS

Question 2: In August 2009, EPA Region 7 issued a press release touting that they fined Cooper Land Development $513,740 for sediment runoff. The EPA's release also anticipated that by implementing the terms and conditions of the settlement they would keep 8.67 million pounds of soil out of the waters of the United States. If the Corps were to receive for its unpermitted discharges into the Missouri River a fine equivalent to what EPA levied on Cooper Land Development, the Corps would owe over $4 billion dollars in fines a year.

On what basis does EPA support the government committing environmental violations that would otherwise generate a multi-billion dollar fine on private sector actor?

Answer: EPA believes that environmental requirements should apply to Federal agencies, such as the Corps of Engineers, in the same manner and to the same extent as the private sector. Executive Order 12088, *Federal Compliance with Pollution Control Standards*, requires that Federal agencies must comply with all Federal, state, and local environmental laws. The Agency does work with Federal organizations like the Corps to assist them as they develop and implement environmental programs, some of which go beyond compliance and can serve as an example to others regarding environmental stewardship and management.

U.S. ARMY CORPS OF ENGINEERS DUMP PROPOSAL

Question 3: For the past 11 years, EPA has conducted a Scientific Advisory Board study of Hypoxia in the Gulf of Mexico. In 2008, EPA found that the problem was from too much nitrogen, phosphorus, silica and carbon from the Mississippi river basin. Blame was placed on agriculture. However, according to the Geological Society of America Special Paper 451, the U.S. Army Corps of Engineers is proposing to dump deliberately 34 million metric tons of river bottom soil into the Missouri River each year for an anticipated 15 years. What impact does EPA estimate the Corps' dumping of 34 million metric tons of nitrogen, phosphorus, silica and carbon laced soil into the Missouri River will

have on the health of the Missouri and Mississippi Rivers and the Gulf of Mexico?

Answer: The National Academy of Sciences (NAS) is currently conducting a comprehensive study of the U.S. Army Corps of Engineers (Corps) sediment management practices in the Missouri River Basin. The study is focused on the effects of sediment reintroduction into the Missouri River, including impacts on ecology and interactions with nutrients and other contaminants throughout the basin, including effects on coastal Louisiana and the Gulf of Mexico. A final report is expected to be published in summer 2010. EPA looks forward to reviewing the findings of the NAS, and understands that the Corps restoration projects involving sediment reintroduction into the Missouri River are on hold in the state of Missouri until the NAS study is completed.

Questions Submitted for the Record from Senator Boxer

SRF BUDGET

Question 1: The budget proposes to spend $3.3 billion for the Clean Water and Drinking Water Status Revolving Funds, which represents a significant commitment to providing safe drinking water for our communities, keeping our lakes and rivers clean and creating jobs. However, this is a decrease from last year's funding level.

Please describe how the Administration's budget request for the revolving funds will help repair and rehabilitate out nations' ageing infrastructure and address the significant national backlog of projects?

Answer: In the FY 2011 budget request, the Administration continues its commitment to upgrading drinking water and wastewater infrastructure with a substantial combined investment of $3.3 billion for the Clean Water and Drinking Water State Revolving Fund programs. At this investment level, EPA's investment in the Clean Water and Drinking Water State Revolving Funds totals nearly $14.3 billion since FY 2009. This investment will facilitate continued progress toward drinking water and clean water goals, and result in increased job opportunities across the country.

BENEFITS OF CW AND DW GREEN INFRASTRUCTURE RESEARCH INVESTMENTS

Question 2: The EPA has asked for an increase of almost $6 million for green infrastructure research for the drinking and wastewater programs. Green infrastructure projects can improve watershed management practices and facilitate a transition to more sustainable water infrastructure systems.

What types of benefits does EPA expect to see from this investment in researching green infrastructure of the clean water and drinking water programs?

Answer: The goal of green infrastructure research is to provide state and local managers, utilities, engineering firms, and other stakeholders with the tools and information needed to more confidently select and apply green infrastructure options. Green infrastructure is an approach to wet-weather management that is cost-effective and environmentally friendly. It may include natural (e.g., wetlands) and/or engineered features (e.g., rain gardens, green roofs). In the context of water quality, green infrastructure can filter or capture water run-off before it enters the watershed. It can also limit the intensity of run-off during

storms, thereby reducing sewer overflows and the pollution (e.g., oil, chemicals) carried into the watershed by stormwater.

A key effort will be the establishment of a "Chesapeake Bay Sustainability Center" in FY 2011 to conduct research addressing the sustainability of the Chesapeake Bay Watershed using a systems approach—an integrated view reflecting the interconnections between natural and human-influenced processes. The water cycle, particularly in urban areas, consists of engineering and economic activities superimposed on a highly modified watershed. Research is expected to lead to the enhanced application of green infrastructure solutions. The Center will be a "testing ground" for new, scientifically-based tools and engineering approaches to green infrastructure that can enable a sustainable future for the Chesapeake Bay and also inform solutions in other watersheds.

The Agency will also conduct monitoring in several urban locations where green infrastructure best management practices (BMPs) will be implemented as part of consent decrees to reduce sanitary and/or combined sewer overflows. The hydrology of these urban watersheds has been severely modified, and the green infrastructure approaches planned are anticipated to improve water quality, protect drinking water sources, and help support community redevelopment.

These research efforts will benefit the local municipality and inform other municipalities that are considering similar BMP approaches. The research will also advance the development of models and tools for green infrastructure BMPs. Local municipalities need these tools to develop stormwater-management strategies that can reduce sewer overflows and better protect water quality and drinking water sources.

BUDGET COMMITMENT TO ADDRESS GREENHOUSE GAS EMISSIONS

Question 3: Global warming pollutions poses a significant threat, including increasing the risk of devastating storms and tragic wildfires and endangering the health of our families. This budget makes a serious commitment to begin to address greenhouse gas emissions.

Please describe the scope of this budget's commitment to address greenhouse gas emissions and some of the expected benefits from these measures?

Answer: The FY 2011 budget request includes additional funding for steps the Agency can take in the near term to help pave the way to a clean energy future. Most of this funding is focused on assessing and potentially developing new GHG regulations in response to legal obligations, or implementing GHG

regulations completed in FY 2009 and 2010. For example, the Agency will implement the GHG Mandatory Reporting Rule.

The Agency will analyze critical air and climate-related issues relating to carbon capture and sequestration (CCS) technology, and eventually develop a framework for the permitting of the carbon dioxide capture component of the CCS project. This budget request includes an increase of $2.0 million for this work.

The FY 2011 budget request provides an increase of $6 million for analysis, development and implementation of new emission standards that will reduce GHG emissions from transportation sources. This includes the implementation of new standards for light-duty vehicles (passenger cars, light-duty trucks, and medium duty passenger vehicles), covering model years 2012 through 2016. EPA finalized these first ever GHG emission standards on April 1, 2010. EPA also plans to develop heavy-duty vehicle and engine standards to complete its obligation to regulate GHG emissions from motor vehicles in response to the Supreme Court's *Massachusetts v. EPA* decision. In addition, EPA will conduct analyses and technical assessments to support potential development of GHG emission standards for other transportation source categories in response to petitions to regulate GHG emissions of these sources.

New Source Performance Standards (NSPS) regulations could be an effective mechanism to reduce greenhouse gas emissions from major industrial sources. The NSPS program provides the opportunity to begin achieving emission reductions at new facilities through such actions as improvements in energy and industrial process efficiency. The request includes $5 million to assess and potentially develop NSPS regulations for major industrial sectors and seek, where possible, market-oriented mechanisms and flexibilities to provide lowest cost compliance options.

This request includes an additional $25 million to support state permit programs as they prepare to issue permits for large sources of GHGs.

In addition, our FY 2011 President's Budget Request, continues our Voluntary GHG Reducing Programs. For more than a decade, businesses and other organizations have partnered with EPA, through voluntary climate protection programs, to pursue common sense approaches to reducing GHG emissions. Voluntary programs, such as Energy Star and SmartWay Transport, have increased the use of energy-efficient products and practices, spurred investment in clean energy development, and reduced emissions of carbon dioxide, methane, and other GHGs with very high global warming potentials.

EPA will continue to implement the ENERGY STAR program across the residential, commercial, and industrial sectors, with an increase of $2 million. EPA will use the increase in funds to accelerate the rate that product

specifications are updated in terms of stringency; and develop a comprehensive product certification and verification initiative for ENERGY STAR qualifying products. Another focus will be expanding ENERGY STAR programs that improve the installation of products such as heating and cooling equipment whose efficiency is greatly affected by installation practices.

LESSONS FROM OTHER CAA PROGRAMS TO PROTECT THE PUBLIC AND GROW THE ECONOMY

Question 4: There is currently an effort to stop the EPA's Endangerment Finding from taking effect. This effort would undermine the EPA's authority under the Clean Air Act to address climate change.

What can we learn from the other Clean Air Act programs about how emissions reductions have helped protect the public while the economy has grown?

Answer: Experience with the Clean Air Act has proven that cutting pollution and building the economy can go hand in hand. Since 1980, emissions of six principal air pollutants have decreased 54 percent overall, while gross domestic product has grown by 126 percent. This economic expansion occurred despite predictions by opponents that the 1990 Clean Air Act amendments would cripple the economy. In fact, the longest peacetime expansion of the U.S. economy (gross domestic product) in history began in 1991, lasting for 10 years

While critics of environmental regulation often voice concerns about economic impacts, the positive economic impacts receive less airplay. The Clean Air Act avoids millions of lost work days by American workers that would occur each year without the Act's air pollution reductions, according to a 1999 EPA study.[1]

In addition, the Clean Air Act for 40 years has spurred investments in pollution control equipment, cleaner industrial processes, and technology R&D, which have helped to foster new industries. .

The Act has created market opportunities for clean technologies and technology innovation -- and for related jobs in research and development. Over and over again, industry has responded with great success, producing breakthroughs such as alternatives to ozone-depleting chemicals and new super-performing catalysts for automobile emissions. Among numerous other examples are reformulated gasoline, selective catalytic reduction for NOx emissions from power plants, and cleaner-burning wood stoves.

[1] U.S. EPA The Benefits and Costs of the Clean Air Act 1990 to 2010 EPA Report to Congress, November 1999 EPA-410-R-99-001

The Clean Air Act is one of the reasons for the rapid growth since the early 1970s in the U.S. environmental technologies industry, and in its workforce. By 2008 the industry was generating approximately $300 billion in revenues, producing $43.8 billion in exports, and supporting nearly 1.7 million jobs.[2] The Commerce Department defines this industry to include all environmental media, environmental cleanup and resource recovery. Many environmental technology industry jobs are high-tech such as engineering and computer-aided design; others involve traditional manufacturing, transport, and communication. Jobs related to Clean Air Act implementation are widely dispersed throughout the states and occur in many sectors of the economy.

Environmental technology exports help the U.S. balance of trade, generating a $20 billion surplus in 2007. Exports have grown from less than $10 billion in 1990 to about $39 billion in 2007, and the U.S. share of foreign environmental technology markets has been increasing.[3] Export growth in environmental technology to China between 2002 and 2004 was 125 percent.[4] According to the Department of Commerce, "the U.S. is regarded as a world leader in many environmental technology categories including: engineering, design, construction and consulting services; ... stationary and mobile source air pollution monitoring and control equipment; ... and information systems/software for environmental management analysis."[5]

Overall because of the large benefits to public health and welfare, the Administrator believes that investing in clean air is one of the best investments we can make. A congressionally mandated 1999 EPA study, which went through extensive peer review throughout its design and implementation, found that the estimated monetized benefits of Clean Air Act programs 1990-2010 would outweigh the estimated costs by a 4-to-1 margin.[6] These benefits include reducing the incidence of adverse health effects such as premature mortality, chronic respiratory illnesses, hospitalizations and emergency room visits, and other illnesses such as acute bronchitis, respiratory illness, asthma aggravation and asthma attacks, chest tightness and shortness of breath.

WHAT INITIATIVES IS EPA TAKING TO INCREASE SUPERFUND CLEANUPS

Question 5: Superfund is EPA's program that cleans up the nation's most heavily contaminated toxic waste sites. I am concerned that EPA is not cleaning

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[2] U.S. Dept. of Commerce, *Industry Facts*, April 2010.
[3] U.S. Dept of Commerce, *Industry Facts*, March 2009
[4] ICF, The Clean Air Act Amendments: Spurring Innovation and Growth While Cleaning the Air, Oct. 27, 2005
[5] U.S. Dept of Commerce, *Industry Facts*, March 2009
[6] U.S. EPA The Benefits and Costs of the Clean Air Act 1990 to 2010 EPA Report to Congress, November 1999 EPA-410-R-99-001

up enough Superfund sites. Superfund averaged about 80 cleanups a year during the Clinton Administration, 40 a year during this past administration – just 20 sites in 2009, and the EPA expects to clean up only 22 sites in 2010 and 25 sites in 2011.

What new initiatives is the EPA undertaking to increase and accelerate the number of annual cleanups at Superfund sites?

Answer: EPA is developing a multi-year management strategy, the Integrated Cleanup Initiative (ICI), to improve the effectiveness of EPA's cleanup programs, address a greater number of contaminated sites, accelerate cleanups, and put sites back into productive use while protecting human health and the environment. The Superfund Remedial Program is an integral part of this initiative. As a first step, EPA has proposed a new program measure for FY 2011, Superfund NPL Remedial Action (RA) Project Completions, to supplement the existing Superfund Site Construction Completion measure. This is an important step as it focuses program performance management at a more discrete level providing greater accountability for the detailed, incremental actions necessary to bring site cleanups to completion and ultimately site reuse especially now that many of the sites left on the NPL are larger, complex sites that have multiple facets, taking decades to complete.

Further, as part of the ICI, we are looking at ways under our existing statutory authorities, to leverage all of our land-based cleanup programs, increase potentially responsible party (PRP)-led removal and remedial action, continue finding program efficiencies by evaluating EPA contracting strategies, and reduce unnecessary administrative burdens.

HOW WILL NEW SUPERFUND GOAL INCREASE THE PACE OF SF CLEANUPS?

Question 6: The federal Superfund program protects communities by cleaning up toxic waste sites with dangerous contaminants, such as arsenic and benzene, which cause cancer.

The EPA has proposed a new Superfund cleanup goal in addition to its "construction complete" cleanup goal. The agency will count the number of cleanup actions completed that bring a site closer to a final cleanup.

How will the new goal change the EPA's cleanup approach or management to help increase the pace of cleanups?

Answer: In an effort to address accountability, transparency and progress in the cleanup of contaminated sites, EPA committed to implementing an

aggressive management strategy. As a first step in the broader Integrated Cleanup Initiative (ICI), EPA committed to a new program performance measure, "Number of Remedial Action (RA) Project Completions at Superfund National Priorities List (NPL) Sites." This new measure better demonstrates to the public the ongoing progress and risk reduction at our Superfund sites and provides EPA with a better opportunity to manage its Superfund Remedial program.

The RA Project Completion measure supplements the existing Construction Completion measure by better reflecting the large amount of work being done at Superfund sites and focuses program performance management at a more discrete level, providing greater accountability for the detailed, incremental actions necessary to bring site cleanups to completion and ultimately reuse. Additionally, the new RA Project Completion measure will provide valuable and more transparent information to communities by demonstrating incremental progress in reducing risk to human health and the environment at sites. For example, the new measure will allow EPA to clearly articulate when all contaminated soil has been excavated at a site and a parcel may be available for certain reuse, even though the contaminated ground water or sediments may require substantially more time to fully address.

Further, as part of the ICI, we are looking at ways under our existing statutory authorities, to leverage all of our land-based cleanup programs, increase potentially responsible party (PRP)-led removal and remedial action, continue finding program efficiencies by evaluating EPA contracting strategies, and reduce unnecessary administrative burdens.

IS EPA SHIFTING SF FOCUS TO INCREASE SHORT-TERM REMOVAL-BASED ACTIONS?

Question 7: The EPA has proposed to count the number of short-term cleanups conducted by polluters as a performance measure for the Superfund cleanup program. The Agency expects to have 170 such cleanups in 2010 and 2011.

I believe that polluters should cleanup their mess with the EPA oversight to ensure that such cleanups protect public health. I also believe that the EPA should strengthen Superfund's long-term cleanup program. Is the EPA shifting Superfund's focus more to increase the emphasis of short-term removal based actions?

Answer: The Agency has set targets for 170 clean ups for both Superfund-lead and voluntary removal actions by potentially responsible parties (PRPs) with EPA oversight, which is a reflection of EPA encouraging more PRPs to lead cleanup actions, both with and without enforceable instruments. These

targets are consistent with past targets for short term removal-based actions. The short-term removal measures will allow the public to keep apprised of measures taken to remove the contaminants and reduce potential human health exposure pathways while the work towards the long-term end goal of completing the remedy proceeds. By developing these measures, EPA is not shifting its focus from long-term to short-terms goals; it is simply trying to keep the public better informed of EPA's activities.

SUPERFUND ENFORCEMENT

Question 8: The EPA has asked for an additional $3.4 million to enforce the polluter pays principle at the nation's most heavily contaminated toxic waste sites. Superfund is a critically important program that cleans up sites contaminated with cancer causing chemicals, such as arsenic and benzene.

The EPA estimates that it gets $8 from parties at Superfund sites for each $1 invested in enforcement.

Would you please describe where enforcement falls in terms of the EPA's priorities for the Superfund Program?

Answer: The Agency remains committed to an "Enforcement First" approach that upholds the polluter pays principle and preserves Federal funds for use at sites where viable responsible parties may not exist. Enforcement has, and will continue to be, a key component of EPA's Superfund program. To further enhance the implementation of the program, the Agency is building an integrated strategy to leverage its authorities to accelerate cleanups, address a greater number of contaminated sites, and put these sites back into productive use while protecting human health and the environment. An early enforcement approach will continue to be a cornerstone of the Agency's cleanup program under this strategy. Enforcement activities are critical to ensuring that responsible parties pay to clean up sites, preserving appropriated funds for other sites where viable responsible parties may not exist.

The Agency continues to achieve outstanding results in the Superfund Enforcement program. In FY 2009, we secured responsible party commitments exceeding $2.3 billion for future site study and cleanup work, cost recovery, and oversight costs. Since the inception of the program, private party commitments have exceeded $30 billion.

NEW INITIATIVE TO PROTECT CHILDREN'S HEALTH

Question 9: The EPA has requested an increase in funding for the Office of Children's Health protection. EPA established this office to make the protection of children's health a fundamental goal of public health and environmental protection in the United States.

Would you please describe some of the new initiatives that the EPA wants to undertake to focus on protecting children's health?

Answer: In FY 2011, EPA will address the potential for and uniqueness of health effects in children during the development of regulations and Agency policies with human-health implications; protect children through safe chemicals management; and coordinate national community-based programs to eliminate threats to children's health and measure and communicate progress. Additionally, OCHP is working with the Office of International and Tribal Affairs on international programs which help eliminate harmful prenatal and childhood exposures to pesticides and other toxic chemicals.

The requested increase in funding will allow EPA to work with States, tribes, and local governments to effectively incorporate environmental health considerations of children in schools through the Agency's Healthy Communities: Clean, Green and Healthy Schools initiative. EPA will release final voluntary school siting guidelines (described in Section 502 of Subtitle E of the Energy Independence and Security Act of 2007), develop voluntary state school environmental health program guidelines (described in Section 504 of Subtitle E of the Energy Independence and Security Act of 2007), and provide outreach and technical assistance to states, tribes, local government and schools to support the implementation of both sets of voluntary guidelines.

The Office of Children's Health Protection will coordinate efforts across EPA programs and Regions to provide technical assistance to state and local governments, non-governmental organizations and the public; develop and implement tools and support communication and outreach. These efforts will ensure that non-governmental organizations and the public (family members, health care providers, community leaders, etc.) have and use reliable/valid scientific information and exposure prevention techniques, and tools when making decisions that impact the health of children.

ASSESSMENTS: HEALTHY AND SUSTAINABLE COMMUNITIES INITIATIVE

Question 10: I am interested in the EPA's Healthy and Sustainable Communities Initiative. The EPA says that this initiative will help to improve children's health by assessing how noncompliance with safeguards could contribute to health risks in schools, and that such assessments could also trigger enforcement actions to reduce risks.

Could you please describe how the EPA will target these assessments on protecting children's health?

Answer: The Agency will help improve the health of children by assessing how noncompliance contributes to significant health risks in schools. The Office of Enforcement and Compliance Assurance (OECA) will work with other EPA offices that are responsible for conducting the assessments of exposures in communities to ensure that appropriate compliance and enforcement actions are targeted to reduce risks to children. Where violations are found, the enforcement program will work to ensure that noncompliance is addressed and children's health is protected.

AIR QUALITY MONITORING AT SCHOOLS AND COLLABORATION INITIATIVES

Question 11: I understand that the EPA may no longer specifically fund the Agency's recent initiative to monitor air quality at schools across the nation? Can you please describe why the agency is changing this program?

Please also describe whether the Agency's initiative to collaborate with states and communities to identify if and where air toxics pollution is occurring at unsafe levels, and to aggressively reduce air toxics pollution within any at-risk communities, including around schools, is meant to build on EPA's earlier school air quality monitoring initiative?

Answer: In the School Air Toxics initiative, EPA committed to deploying resources to determine levels of toxic air pollution around 65 schools. EPA collected samples of outdoor air near these schools and is analyzing those samples for air toxics of potential concern. Although preliminary results from the schools project have not identified any major air quality problems that were not already being addressed by EPA, state or local agencies, we will continue to work with communities to better protect children where they live, learn and play. The Agency purchased monitors that will remain with the states for their continued use to measure toxic air pollution in other areas of the state. The states can

choose the best ways to leverage these resources to build on the lessons of the school air toxics initiative.

We are releasing individual school reports as they are completed and expect to complete all reports by the end of calendar year 2010. EPA and our partners at state and local agencies will work with communities to help them understand the results and help evaluate actions that may be needed to reduce levels of pollutants of concern. We will take action as needed to ensure that nearby industries are in compliance with clean air regulations.

The Agency's School Air Toxics initiative significantly enhances the understanding of EPA and others about the nature of the air toxics issues near schools. It has also renewed community interest in air toxics. The Agency is learning valuable lessons directly related to the investigation of the air around the schools, as well as lessons that the Agency will take into other analytical efforts in the future. EPA's regulatory efforts (e.g., Risk and Technology Review), voluntary programs (e.g., CARE), compliance efforts (e.g., OECA pilots in FY11) and monitoring programs (Community-scale air toxics monitoring grants) are all important tools to support community-based approaches to reducing air toxics in communities, including at schools. EPA will continue to work with communities and environmental justice areas across the country to help them take full advantage of these tools to understand and reduce air toxics in all communities, of which schools are clearly an important part.

REDUCTION IN CHILDREN'S HEALTH RESEARCH

Question 12: The EPA has proposed to reduce by $3 million funding for EPA's children's environmental health research, $2 million in funding for the EPA's new Centers of Excellence on Children's Environmental Health and $1 million to research the environmental effects of chemicals and toxins on Children. The Centers investigate the effects of environmental exposures, including lead, mercury and PCBs, and their role in childhood disorders such as asthma, autism, and learning disabilities. Why has the agency decided to reduce funding for this type of research?

Answer: EPA places a high priority on children's health research, as evidenced by the long-standing commitment to the Children's Environmental Health Research Centers (co-funded with the National Institute of Environmental Health Sciences), and the addition of a new round of centers in FY 2010. EPA has provided consistent support for the Children's Research Centers for many years, and the President's FY 2011 Budget sustains this commitment, including continued support for the additional centers being established in FY 2010.

RESEARCH AND BENEFITS OF SCIENCE TO ACHIEVE RESULTS (STAR) PROGRAM

Question 13: The EPA has asked for a $7 million increase to conduct research on endocrine disrupting chemicals and other emerging contaminants through the Science to Achieve Results grant program. This program funds research grants and graduate fellowships in environmental science and engineering to help bring top scientists and engineers into the EPA's research program.

Could you please describe the types of research the EPA intends to focus on with these funds, and whether this investment will provide long-term benefits to the EPA's ability to protect public health?

Answer: Since 1995, the Office of Research and Development's (ORD's) Endocrine Disruptor Research Program has provided EPA with the scientific information it needs to reduce or prevent risks to humans and wildlife from exposures to individual pesticides and toxic chemicals and environmental mixtures interfering with the function of the endocrine system. EPA is requesting an additional $7 million in FY 2011 to support the Administrator's priority of managing chemical risk in the environment, which will enable the reinstatement of an extramural Science to Achieve Results grants program for endocrine disrupting chemicals (EDCs), complementing the intramural program. The products of this research will enable EPA's program offices, including the Endocrine Disruptor Screening Program in the Office of Chemical Safety and Pollution Prevention, to apply faster the latest state-of-the-art technologies and innovations to advance the assessment and management of environmental endocrine disruptors and other emerging contaminants of concern to better protect human health and wildlife.

The research conducted through the extramural grants program will complement ORD's internal expertise. It is anticipated that EPA will issue Requests for Applications in several research areas, where there are critical data gaps, such as:

- Developing high throughput screens (HTS) to assess toxicity pathways and/or those that use ecological organisms/cells that are not covered in the suite of HTS already in ORD's ToxCast program,

- Applying green chemistry and green engineering approaches to promote the design of chemicals without endocrine activity .

- Improving engineering processes to mitigate the release of endocrine active chemicals and other contaminants of emerging concern, such as from drinking water and wastewater treatment plants.

EXPLAIN BROWNFIELDS JOB CREATION AND RESOURCE LEVERAGING

Question 14: The EPA is requesting an additional $41 million to help cleanup and redevelop brownfields. According to the EPA, cleaning up and reinvesting in these properties increases local tax bases, facilitates job growth, and improves and protects the environment.

I worked to pass the brownfields law, and am very happy that the Administration is looking to expand its commitment to this important program.

Can you please describe the type of job creation benefits and leveraging of resources that the EPA expects from the brownfields program under this budget?

Answer: Currently the cooperative agreement recipients have reported more than $14.2 billion and 62,856 jobs leveraged directly from the assessment and cleanup of properties using EPA Brownfield funds. The dollars and jobs leveraged are related to cleanup and redevelopment of brownfields properties.

EPA measures the performance of the Brownfields program partially upon the number of jobs leveraged through the Brownfields investment. Based upon previous experience and reporting by cooperative agreement recipients, EPA estimates that an increase of $42 million proposed in the FY 2011 President's Budget request will result in a cumulative increase of more that $452 million and 2,500 jobs leveraged from cleanup and redevelopment of brownfields properties.

While a portion of the direct benefits from the increase in funding will be realized in the out years, EPA anticipates the following achievements in FY 2011:

Measure	FY 2011	Units
Brownfields properties assessed	1,000	Properties
Jobs leveraged from brownfields activities	5,000	Jobs
Billions of dollars of cleanup and redevelopment funds leveraged at brownfields properties	0.9	Billion Dollars
Number of properties cleaned up using brownfields funding	60	Properties
Acres of Brownfields properties made ready for reuse	1,000	Acres

BENEFITS OF CONSOLIDATING COMPLIANCE ACTIVITIES

Question 15: The EPA has proposed to combine funding for compliance activities, such as providing facilities with information on how to meet environmental requirements with the Agency's enforcement program. What benefits does the agency expect to come from consolidating these programs?

Answer: The Agency believes that our compliance activities are vital parts of an integrated strategy that uses all of our enforcement tools (monitoring, assistance, incentives, and traditional enforcement approaches) to improve compliance with environmental laws and vigorously pursue pollution problems that matter most to communities.

We believe the proposed account restructuring will put the emphasis on outcomes - allowing us more flexibility in devising tailored approaches to address the unique characteristics of individual cases. This should result in a more nimble and vigorous program and strengthen the credibility of the threat of Federal enforcement action.

The existing budget structure, which focuses on inputs, hampers flexibility and efficiency in achieving our compliance program goals by emphasizing individual enforcement tools over addressing environmental problems in the most effective way.

TIMEFRAME FOR EPA's HYDRAULIC FRACTURING STUDY

Question 16: The EPA is asking for an addition $2.5 million to conduct research on the potential impacts of hydraulic fracturing on drinking water supplies. The EPA has found that hydraulic fracturing can result in diesel fuel, which contains benzene -- a substance known to cause cancer -- and other chemicals going into the ground.

Last year Congress told the EPA to conduct this type of study using "a transparent, peer-reviewed process..."

What is the EPA's timeline for completing this study? Does the EPA intend to reach out to other federal agencies and stakeholders when conducting this study?

Answer: EPA is in the very early stages of designing its hydraulic fracturing research program. The Agency is proposing that the process begin with (1) defining research questions and identifying data gaps; (2) conducting a robust process for stakeholder input and research prioritization; (3) with this input,

developing a detailed study design that will undergo external peer-review, leading to (4) implementing the planned research studies. The study plan is being developed iteratively, incorporating feedback from the interagency and public meetings being held this summer. As part of this effort, we are reviewing the scientific literature related to hydraulic fracturing and environmental effects, and we are soliciting and reviewing other data and reports that may exist outside the published literature. Finally, we are proceeding with planning for a robust and transparent peer review process for both the study plan as well as our anticipated study products.

To support this initial planning phase and guide the development of its study plan, the Agency sought suggestions and comments from the EPA Science Advisory Board (SAB)—an independent, external federal advisory committee. On April 7th and 8th, 2010, the Agency met with the Environmental Engineering Committee (EEC) of the SAB and requested that they evaluate and provide advice on EPA's proposed approach. At the SAB meeting, a wide range of stakeholder input was offered. Since the meeting, an additional comments were received and posted on EPA's meeting website. Stakeholders making comments included representatives from Federal and State agencies, industry, and environmental groups. The Agency looks forward to the SAB's report and will use this advice and extensive stakeholder input to guide the design of its study.

In addition, the House Appropriations Committee Conference Report requested EPA to carry out a study on the relationship between hydraulic fracturing and drinking water, using a credible approach that relies on the best available science, as well as independent sources of information. The request states in part, "The conferees expect the study to be conducted through a transparent, peer-reviewed process that will ensure the validity and accuracy of the data." The Committee also directed the Agency to consult with other Federal agencies as well as appropriate State and interstate regulatory agencies in carrying out the study, which should be prepared in accordance with the Agency's quality assurance principles.

The Agency hopes to complete its draft Study Plan in September 2010, followed by a peer review of the plan (including an opportunity for public comment); and to initiate research in November 2010. EPA anticipates having initial research products in December 2012.

SUFFICIENT FUNDING FOR UIC RULE ON CARBON CAPTURE PROJECTS

Question 17: The EPA's budget requests an addition $1.1 million to support the EPA's work on geologic sequestration of greenhouse gases to ensure the integrity of underground drinking water aquifers, including completing

guidance to implement the Underground Injection Control (UIC) rule for Carbon Capture and Sequestration projects.

Does the EPA think that it has requested sufficient funding to complete and implement the UIC rule in the 2011 Fiscal Year?

Answer: The budget request is sufficient to complete the final Geological Sequestration Rule and prepare guidance for implementing the rule.

INCREASE DRINKING WATER PROTECTIONS

Question 18: The EPA's budget says that the Agency expects to determine whether to regulate 5 contaminants under the Safe Drinking Water Act.

Media reports have found: "Only 91 contaminants are regulated by the Safe Drinking Water Act, yet more than 60,000 chemicals are used within the United States...Scientists have scrutinized thousands of those chemicals in recent decades, and identified hundreds associated with a risk of cancer and other diseases at small concentrations in drinking water..."

I am glad to see that the EPA is moving forward with protecting drinking water quality. What more can the EPA do to increase the pace of updating drinking water protections for our country?

Answer: EPA is currently in the initial stages of implementing a new Drinking Water Strategy which will be an innovative approach to expand public health protection for drinking water. The Agency is holding a national conversation in 2010 to identify better ways to address contaminants in groups, improve drinking water technology, provide more robust public health protection in an open and transparent manner, and assist small communities to identify cost and energy efficient treatment technologies to give Americans greater confidence in the quality of their drinking water. Potential actions in 2011 and 2012 may include:

- Addressing contaminants as a groups rather than one at a time to enhance drinking water protection cost-effectively;
- Fostering development of new drinking water technologies to address health risks posed by a broad array of contaminants;
- Using the authority of Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) Toxic Substance Control Act (TSCA) and other statutes to ensure that decisions made for new and existing industrial chemicals are protective of drinking water.

- Changing how states report the results of monitoring for PWS compliance with drinking water standards. EPA will take advantage of advances in information technology to facilitate data exchange capability between States and EPA. The Agency will partner with states to explore ways of improving access to state drinking water monitoring data.

EPA plans to conduct a series of stakeholder and public meetings over the course of the next few months as part of the national conversation on this new approach. The specific actions we will be implementing will be determined after we obtain that public input.

DESCRIBE SMART GROWTH PROGRAM COMMUNITY SUSTAINABILITY

Question 19: The EPA has requested an increase of $4.2 million to help integrate its Smart Growth program into the Agency's Sustainable Communities Partnership. This partnership is a collaborative effort between the EPA and the Departments of Housing and Urban Development and Transportation that coordinates housing, transportation, and environmental investments.

Could you please describe some of the ways that the EPA plans to integrate its long-term planning with the planning conducted by the Departments of Transportation (DOT) and Housing and Urban Development (HUD), and how the agency anticipates it will include states in the process.

Please also describe how the EPA expects that the Partnership will make communities more sustainable?

Answer: The Partnership for Sustainable Communities was formed to ensure that Federal programs, particularly infrastructure investment programs, support improved economic prosperity, healthy, environmentally sustainable, and opportunity-rich communities. Recognizing the fundamental role that public investment plays in achieving these outcomes, HUD, DOT, and EPA partnered to minimize the environmental impacts of development activities. Working closely together, the three agencies have made real progress in aligning their programs and policies to advance the goals of the Partnership, embodied in the Livability Principles.[7] HUD, DOT, and EPA have developed a joint plan that will guide their individual and joint efforts.

[7] The Partnership is based on six Livability Principles: 1) provide more transportation choices; 2) promote equitable and affordable housing; 3) enhance economic competitiveness; 4) support existing communities; 5) coordinate and leverage federal policies and investments; and 6) value communities and neighborhoods.

In addition, each agency has clear and defined roles: EPA will provide technical assistance to communities and states to help them implement sustainable community strategies, and develop environmental sustainability metrics and practices. HUD will take the lead in funding, evaluating, and supporting integrated regional planning for sustainable development, and will invest in sustainable housing and community development efforts. DOT will focus on building the capacity of transportation agencies to integrate their planning and investments into broader plans and actions that promote sustainable development, and investing in transportation infrastructure that directly supports sustainable development and livable communities.

The three agencies have also made a commitment to coordinate activities and adopt a common set of performance metrics for use by grantees for their respective grant programs where appropriate. For example, staff representatives from DOT and EPA assisted HUD with development of the Notice of Funding Availability for the $100 million Sustainable Communities Regional Planning Grant program. Staff from all three agencies will also participate in the review of applications and the selection of grantees. Because of this integrated approach, the HUD Regional Planning Grant program not only allows but encourages proposals that create shared elements in regional transportation, housing, water, and air quality plans tied to local comprehensive land use and capital investment plans.

The Partnership has been focused on engaging stakeholders in its work. States have been involved in shaping the Partnership's work already, and we anticipate their involvement to grow as the work progresses. For example, in October of 2009, HUD, DOT and EPA invited officials from all 50 states to a Washington, DC meeting to discuss the goals and approaches of the Partnership and to solicit advice and input from the states. This meeting was attended by more than 70 state agency secretaries, deputy secretaries and gubernatorial policy advisers from more than 30 states. In addition, EPA, HUD and DOT plan to hold smaller regional-focused meetings with states from specific geographic areas to hear region-specific advice from state officials. One of these regional meetings is being scheduled in Phoenix this summer.

BPA REGULATORY PLANS AND DECISIONS RECORDS

The EPA has a key role to play in protecting public form health dangerous chemical exposures. Bisphenol A, (BPA) is a widespread chemical used in the production of plastics and epoxy resins. The National Toxicology Program (NTP) has stated it has "some concern" for BPA's effects on the brain and behavior of infants and children at current levels of human exposures. The federal Food and Drug Administration also stated recently that it has the same concerns as the NTP.

The federal Centers for Disease Control has found BPA in 93% of the people tested in our country.

Media reports and government records indicate that individuals from the chemical industry met with officials from the Office of Management and Budget and EPA officials in an effort to prevent the EPA from increasing its regulation of BPA. These reports indicate that the EPA dropped plans to develop a chemical regulation plan for BPA following the meeting.

Question 20: Please provide all records that the EPA has, including draft documents and correspondence, relating to any past and current EPA plans to develop a chemical regulation plan for BPA and any Agency decision to delay or not move forward with such a plan.

Answer: EPA posted its action plan for Bisphenol A (BPA) on March 29, 2010 [1], in line with the Administrator's September 2009 announcement to complete and post an initial four action plans in December 2009, with additional plans at approximately four-month intervals [2]. On December 29, 2009, EPA made public the first four action plans on phthalates, short-chain chlorinated parraffins, perflourinated chemicals (PFCs), and polybrominated diphenyl ethers (PBDEs).

Media reports erroneously indicating that EPA did not intend to formulate any new plans concerning BPA were not based on interviews with personnel at the Agency and represented conjecture rather than fact. EPA did not publicly release the BPA Action Plan in December 2009 because the Agency was coordinating its activities with FDA and other federal agencies. When EPA posted the first four action plans on schedule in December, FDA had not yet finalized its interim report on the ongoing FDA assessment of BPA. Most human exposures to BPA appear to come from food packaging uses under FDA jurisdiction. Following the FDA announcement on January 15, 2010, EPA's action plan went through the standard interagency review process and was announced after that process was complete.

As the BPA Action Plan indicates, EPA shares the concerns expressed by FDA, and is taking positive steps to resolve the scientific uncertainties and ensure the protection of both human health and the environment. The action plan includes adding BPA to the chemical concern list under TSCA Section 5(b)(4), on the basis of its potential environmental effects, as well as obtaining additional data on its environmental presence and toxicity to environmental organisms.

[1] The BPA Action Plan can be found at:
http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/bpa.html.

[2] The Administrator's September 2009 announcement can be found at:
http://www.epa.gov/oppt/existingchemicals/pubs/Existing.Chem.Fact.sheet.pdf

IMPROVING DRINKING WATER PROTECTION AND ENFORCEMENT

Question 21: Can you elaborate on EPA's plans to improve drinking water protection and enforcement and how you will measure the success of this effort?

Answer: Safe drinking water is a top priority for this Administration. We are particularly focused on ensuring that our children have water that is safe and clean to drink. The Agency's new enforcement approach consists of the Enforcement Targeting Tool (ETT) and the Enforcement Response Policy (ERP), which I announced in December 2009. Together, these new tools provide a comprehensive strategy to target non-complying public water systems and bring those systems back into compliance as quickly as possible.

Since December 2009, EPA has worked diligently to use the new Enforcement Response Policy. We applied the ERP to a subset of schools and child care facilities that are also public water systems. We used the ETT to identify and prioritize schools and child care facilities that had serious violations and the states and EPA have been working to take necessary enforcement action at these systems. Since December 2009, at the subset of schools and child care facilities, states have issued at least 6 formal enforcement actions, 11 formal enforcement actions are pending, and 4 notice of violations have been issued with potential formal enforcement actions to follow. In addition, data verification by the states and regions showed that 194 school and child care facility systems have returned to compliance without formal enforcement actions. We will continue to monitor schools and child care facilities using the ERP to target and return to compliance those systems that are in violation.

EPA is also working on updating and clarifying definitions of violations and other data fields in the Safe Drinking Water Information System (SDWIS) to improve data quality. Since the ultimate goal of the ERP is to correct violations, this aspect of the ERP is vital to its success.

Although schools were a starting point, the application of this new enforcement approach will also apply to all suppliers of public drinking water. EPA will generate the list of noncompliant systems on a quarterly basis. EPA will use this list to discuss with states what needs to be done to return the systems back into compliance. Returning systems to compliance will be the measure of success for our efforts.

TVA KINGSTON STATUS

Question 22: Can you provide an update on EPA's efforts to oversee the cleanup of the TVA coal ash spill?

Answer: Under the terms of the Administrative Order on Consent (AOC), Docket Number CERCLA-04-2009-3766, which became effective on May 11, 2009, TVA has committed to cleaning up the release of coal ash, restoring environmentally sensitive areas, and protecting the health and safety of the public and workers. EPA is providing technical expertise and oversight, which includes designation of an EPA On-Scene Coordinator (OSC) and Remedial Project Manager (RPM) to oversee planning and implementation of time-critical and non time-critical phases of the removal action, respectively, and a Community Involvement Coordinator (CIC) to assist TVA in planning and implementation of community outreach activities.

- As of April 9, 2010, approximately 3.0 million cubic yards of coal ash have been dredged or excavated from the Emory River as part of the time-critical removal action. The total volume to be removed from the River is estimated at about 3.4 million cubic yards.

- May 2010 is the targeted completion date for dredging under the time-critical removal action.

- More than 1.8 million tons of the coal ash has been transported off-site for disposal.

- Approximately 2.4 million cubic yards of coal ash remain in the Swan Pond embayment and the failed dredge cell and will be addressed during the non-time-critical removal action.

- TVA released the Engineering Evaluation/Cost Analysis (EE/CA) Report for the Swan Pond Embayment/Dredge Cell for public comment on January 19, 2010. The EE/CA describes three alternatives for the first phase of the non time-critical removal that vary primarily in the amount of off-site disposal and the method of closure of the failed dredge cell. After an extension of 45 additional days, the comment period for the EE/CA report ended on April 5, 2010. The Responsiveness Summary to public comments on the EE/CA Report and an Action Memorandum specifying the selected Alternative are targeted for finalization in May 2010.

Question 23: When do you anticipate EPA's proposed coal ash regulation will be released for public comment?

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Answer: Review of the proposed coal ash regulation under Executive Order 12866 was completed and announced on May 3, 2010. The proposed rule is currently available on EPA's website (www.epa.gov/coalashrule/) and will be published in the Federal Register for public comment in the near future.

Questions Submitted for the Record from Senator Cardin

CLIMATE

Question 1: While we still have a number of air quality challenges in front of us, the Clean Air Act has long been considered a tremendous success story. Air quality in the United States has improved substantially, and at the same time the cost of compliance has been often less expensive than early predictions. The health and environmental benefits have been extraordinary. A study released last year, for example, found that "Since 1990, emissions of six common pollutants are down 41 %, while gross domestic product has grown 64%."

a) How has the EPA been able to use the Clean Air Act to achieve these kinds of pollution reductions in such a cost-effective manner?
b) Could you, for example, explain how the Acid Rain program has worked and what its benefits have been?

Answer: EPA has been able to achieve these reductions through the smart regulatory strategies combined with the promotion of technological innovation that has brought down pollution control costs. The Act has created market opportunities for clean technologies and technology innovation -- and for related jobs in research and development. Over and over again, industry has responded with great success, producing breakthroughs such as alternatives to ozone-depleting chemicals and new super-performing catalysts for automobile emissions. Among numerous other examples are reformulated gasoline, selective catalytic reduction for NOx emissions from power plants, and cleaner-burning wood stoves.

EPA has used flexible regulatory approaches, such as averaging, banking and trading (AB&T) wherever possible. In regulating mobile sources, AB&T programs allow compliance based on fleet average. This allows manufacturers to develop and use multiple technologies tailored to customer needs while meeting environmental goals. These approaches also encourage new technology developments that are cleaner than EPA standards in order to generate AB&T emission credits. EPA also uses performance-based standards that do not constrain technology selection but encourage innovation to find new and better ways of meeting environmental requirements.

History provides many examples in which technological innovation and "learning by doing" accelerated the pace of reducing air pollution emissions, and/or reduced the costs of those reductions relative to original estimates. Studies have found that costs of some EPA air pollution programs have been lower than originally estimated, and this has been due in part to inadequate ability to predict and account for future technological innovation. There are numerous examples of

low-emission technologies developed and/or commercialized over the past 15 or 20 years, such as:

- Selective catalytic reduction (SCR) and ultra-low NOx burners for NOx emissions;
- Scrubbers which achieve 95% and even greater SO2 control on boilers;
- Sophisticated new valve seals and leak detection equipment for refineries and chemical plants;
- Low or zero VOC paints, consumer products and cleaning processes;
- Chlorofluorocarbon *(CFC)* free air conditioners, refrigerators, and solvents;
- Water and powder-based coatings to replace petroleum-based formulations;
- Vehicles far cleaner than believed possible in the late 1980s due to improvements in evaporative controls, catalyst design and fuel control systems for light-duty vehicles; and treatment devices and retrofit technologies for heavy-duty engines;
- Idle-reduction technologies for engines, including truck stop electrification efforts; and
- Market penetration of gas-electric hybrid vehicles, and clean fuels

As the following studies and examples suggest, technological improvements and learning by doing tend to lower actual control costs over time:

- *NOx Emissions Reduction Technologies*: SCR catalyst costs decreasing from \$11k-\$14k/m^3 in 1998 to \$3.5k-\$5k/m^3 in 2004, and improved low NOx burners reduced emissions by 50% from 1993-2003 while the associated capital cost dropped from \$25-\$38/kW to \$15/kW.

- *Chlorofluorocarbon (CFC) Phase-Out:* EPA used a combination of regulatory, market based (i.e., a cap-and-trade system among manufacturers), and voluntary approaches to phase out the most harmful ozone depleting substances. This was done more efficiently than either EPA or industry originally anticipated. The phaseout for Class I substances was implemented 4-6 years faster, included 13 more chemicals, and cost 30 percent less than was predicted at the time the 1990 Clean Air Act Amendments were enacted.

The Acid Rain Program is already being viewed around the world as a prototype for tackling emerging environmental issues. The allowance trading system capitalizes on the power of the marketplace to reduce SO2 emissions in the most cost-effective manner possible. The permitting program allows sources the flexibility to tailor and update their compliance strategy based on their individual circumstances. The continuous emissions monitoring and reporting

systems provide the accurate accounting of emissions necessary to make the program work, and the excess emissions penalties provide strong incentives for self-enforcement. Each of these separate components contributes to the effective working of an integrated program that lets market incentives do the work to achieve cost-effective emissions reductions. The General Accounting Office recently confirmed the benefits of this approach, projecting that the allowance trading system could save as much as $3 billion per year—over 50 percent—compared with a command and control approach typical of previous environmental protection programs.

Acid deposition has decreased by more than 30 percent in much of the Midwest and Northeast since 1990 under a cap-and-trade program for power plants. This has dramatically reduced fine particle levels with benefits including about 20,000-50,000 incidences of premature mortality avoided (lives saved) annually. Reducing acid rain has significantly reduced damage to water quality in lakes and streams, and resulted in healthier ecosystems and forests. The benefits of the acid rain program outweigh the costs by more than 40-to-1 at the lower avoided mortality estimate.

These benefits have been achieved at costs much lower than originally projected. Cost estimates of the Acid Rain SO2 trading program by Resources for the Future (RFF) and MIT have been as much as 83 percent lower than the costs originally projected by EPA.[1]

Question 2: For more than a decade, many science organizations and others have been pressing for controls of greenhouse gas pollutants under the Clean Air Act. My state of Maryland, for example, approved legislation several years ago to regulate greenhouse gases from cars and trucks.

a) Is it your opinion that Senate Joint Resolution 26 (Murkowski resolution) would essentially nullify EPA's endangerment finding?

b) If the answer is yes, would this stop EPA from moving forward with its light duty vehicles rule?

Answer: If Senator Murkowski's resolution were enacted, EPA would no longer have the authority to issue the rule setting greenhouse gas standards for light-duty vehicles.

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[1] Carlson, Curtis P., Dallas Burtraw, Maureen Cropper, and Karen Palmer. "SO2 Control by Electric Utilities: What are the Gains from Trade?" *Journal of Political Economy*. Vol 108, No. 6: 1292-1326, 2000.
Ellerman, A. Denny. "Lessons from Phase 2 Compliance with the U.S. Acid Rain Program," MIT Center for Energy and Environmental Policy Research, Cambridge, MA, 2003.
Ellerman, A. Denny, Paul L. Jaskow, Richard Schmalensee, Juan-Pablo Montero, and Elizabeth Bailey. *Markets for Clean Air: The U.S. Acid Rain Program*. Cambridge University Press, 2000.

The vehicle greenhouse gas rule is a critical element of the 2009 agreement among states, the auto industry, the United Auto Workers, and the Obama Administration to support a coordinated national program for clean vehicles.

California has stated its intention in the past to implement its own greenhouse gas standards. Therefore, if EPA did not set national standards, California is likely to put in place its own state-specific standards. These standards would apply to about half the national market because thirteen other states and the District of Columbia have already adopted the California standards.

Disapproving the GHG endangerment findings would also amount to ignoring decades of scientific work by America's top scientists on the cause and effects of climate change.

Question: [How] will [this] affect my state as we've already passed the clean cars rule?

Answer: The impacts of that result would be significant. In particular, it would undo an historic agreement among states, automakers, the federal government, and other stakeholders. California and at least thirteen other states that have adopted California's emissions standards, including Maryland, likely would enforce those standards within their jurisdictions, leaving the auto industry without the explicit nationwide uniformity that it has described as important to its business.

Question 3: According to an analysis by Union of Concerned Scientists, EPA's new car rules would save tens of billions of dollars at the pump and reduce U.S. oil consumption by some 1.3 million barrels a day by 2020, nearly as much as what the nation currently imports from Saudi Arabia. This rule is supported by the auto industry, United Auto Workers, environmentalists and 14 states.

a) Could you give us some sense of how other rules you plan to implement could help the economy and improve our national security?

Answer: This Administration is committed to moving forward on transportation policies that can address both the nation's energy security and the environment. In addition to the new greenhouse gas (GHG) emissions rule for new cars you have mentioned, progress can also be made to reduce GHG emissions from heavy duty trucks and buses and nonroad vehicles and engines. EPA has received, and is currently evaluating, seven petitions from states and environmental organizations requesting that the Agency use existing Clean Air Act authorities to set GHG standards for locomotives, marine vessels, other nonroad engines, and aircraft. Together, heavy duty trucks and buses and

nonroad sources comprise 42 percent of all transportation GHG emissions in the United States.

In February of this year, EPA also established new requirements for the Renewable Fuel Standard, which is an important step for the environment, for energy policy, and the U.S. economy. The Energy Independence and Security Act of 2007 mandates our transportation fuel include 36 billion gallons of renewable fuel by 2022. Based on our final analysis, we estimate that in 2022 this program should displace about 7 percent of our annual gasoline and diesel consumption, reducing our dependence on foreign oil by 328 million barrels annually.

Finally, through EPA's SmartWay Transport program, we have joined with over 2,500 partners to reduce fuel consumption in the freight sector. The SmartWay Transport program has been able to assist the freight industry in adopting cost-effective technologies and practices that can significantly reduce GHG emissions while saving truckers money. Our innovative SmartWay Finance grants are also providing lower cost loans and leases to help truck owners – especially smaller trucking firms and owner-operators – purchase cleaner and more fuel efficient vehicles and technologies.

Question 4: What can you tell us about the cost benefit of regulating greenhouse gases and do those benefits include job creation potential from transitioning to a clean energy economy?

Answer: In the recent Economic Report of the President, the Council of Economic Advisors calculated that the House-passed energy and climate bill would result in approximately $1.6 trillion to $2.0 trillion of avoided global damages in present value terms between 2012 and 2050 (in 2005 dollars). It includes such benefits as lower mortality rates, higher agricultural yields, money saved on adaptation measures, and the reduced likelihood of small-probability but high-impact catastrophic events.[2]

EPA does not typically estimate job growth associated with its actions and we have not done so for any of the recent legislative proposals. However, Lawrence Summers, Director of the National Economic Council, recently counted job growth as the first of five ways in which comprehensive energy legislation can contribute to our prosperity.[3] Similar actions taken under ARRA are credited with significant employment impacts. For example, one program announced in January 2010 that established $2.3 billion in tax credits for the clean energy manufacturing sector was credited with potentially creating 17,000 jobs.

[2] Council of Economic Advisors, Economic Report of the President, p 254
[3] Lawrence H. Summers, "The Economic Case for Comprehensive Energy Reform" Remarks to the U.S. Energy Information Administration Conference. April 6, 2010

CHESAPEAKE BAY

Question 5: You note in your testimony that the Agency will be devoting considerable resources in the coming year to finalize and implement the TMDL cleanup plan for the Chesapeake Bay.

a) Is the Agency under a Court-order to implement this TMDL by the beginning of next year?

Answer: EPA is establishing a federal TMDL for the Chesapeake Bay watershed because the water quality goals set forth in the Chesapeake 2000 Agreement will not be met in 2010. The TMDL will satisfy the requirements of both the 1999 Virginia TMDL consent decree settling the lawsuit *American Canoe Association, Inc. v. EPA*, Civil No. 98–979–A (E.D. Va), and a similar 2000 District of Columbia TMDL schedule consent decree. Under the Virginia TMDL Consent Decree, EPA is required to establish a TMDL for the Bay's waters identified on the 1998 Virginia section 303(d) list, including those aquatic life use impairments caused by nutrient and sediment pollutants, by no later than May 1, 2011, provided those waters are not previously removed from the list or Virginia has not already developed a TMDL for those waters.

Under a separate agreement with Maryland, EPA committed to developing TMDLs, on the same schedule, for Maryland's portion of the Bay and tidal tributary waters identified on its current Section 303(d) list as impaired for aquatic life uses caused by nutrient and sediment pollutants. Other tidal tributary segments impaired by nutrients and sediment have been identified on the District of Columbia's and Delaware's section 303(d) lists. The Chesapeake Bay Program's Principals' Staff Committee requested an accelerated schedule for EPA to complete the Chesapeake Bay TMDL by December 31, 2010, although the court order requires completion of the TMDL by May 1st, 2011.

b) Can you tell us what level of involvement the Bay States have had in the drafting of this TMDL?

Answer: EPA has been working very closely with the Bay States, in collaboration with local governments and other stakeholders, to draft the new Bay TMDL. For the past two years, EPA has been coordinating with the States to: develop a strong science-based framework for developing the TMDL; improve monitoring and reporting protocols to support the Bay Model; establish nutrient target loads; develop an adaptive management approach, including contingencies and potential consequences based on two-year milestones; and establish major milestones and possible consequences for failing to meet established expectations.

On November 4, 2009, EPA sent a letter to the six watershed States and the District of Columbia providing the Agency's expectations for the development of Watershed Implementation Plans (WIPs). WIPs will express the specific intentions and commitments of the States, and through the States, the local partners, for achieving the Bay TMDL's nitrogen, phosphorus and sediment loading targets necessary to meet Bay water quality standards. EPA is working closely with each of the States as they develop their Phase One WIPs, scheduled to be submitted by November 2010.

c) Some people have expressed the wish that the TMDL would simply go away. Is that either legally possible or environmentally desirable?

Answer: The Bay TMDL provides the Environmental Protection Agency (EPA) and States with an unprecedented opportunity to accelerate efforts to restore the water quality of the Chesapeake Bay. The Bay TMDL will, for the very first time, provide a detailed nutrient and sediment loading budget for the Bay with accompanying plans for meeting water quality goals in the Chesapeake Bay and its impaired segments. The TMDL and its accompanying implementation plans will drive progress toward clean water and ensure accountability by providing clear expectations, specific timetables for implementation, and backstop measures to ensure accountability. Actions taken in response to the TMDL will complement significant and ongoing work by EPA and its partners to restore the Bay and will have benefits far beyond the Chesapeake itself, helping to clean impaired rivers that support fishing and swimming and often serve as a source of local drinking water.

As noted above, the EPA is required by consent decree to establish a TMDL for the Bay's waters identified on the 1998 Virginia list. In a separate agreement with Maryland, EPA committed to developing TMDLs, on the same schedule, for Maryland's portion of the Bay and tidal tributary waters identified on its current Section 303(d) list. Other tidal tributary segments impaired by nutrients and sediment have been identified on the District of Columbia's and Delaware's section 303(d) lists.

Question 6: You also note in your testimony that EPA's funding for the Great Lake restoration effort is part of a larger, inter-agency commitment by President Obama's administration.

a) Is EPA similarly engaged with other federal agencies in the Chesapeake Bay restoration effort?

Answer: Yes. On May 12, 2009, President Obama issued Executive Order 13508 on Chesapeake Bay Restoration and Protection, the first-ever Presidential directive on the Bay and the first environmental Executive Order by President

Obama. The order established a Federal Leadership Committee, chaired by EPA, and with senior representatives from the departments of Agriculture, Commerce, Defense, Homeland Security, Interior and Transportation. These agencies have been working collaboratively to generate draft reports in September 2009 and a draft strategy in November 2009. The strategy makes recommendations for addressing issues such as water quality, restoration of fish and wildlife populations, habitats, land conservation, climate change, and scientific monitoring. A final strategy for restoring and protecting the Chesapeake Bay will be released by May 2010.

b) Can you give any examples of what other agencies are doing? For example, is USDA helping Bay farmers implement conservation practices on their operations?

Answer: Yes, EPA and its federal partners have committed to taking specific actions to help protect and restore the Chesapeake Bay and its watershed. Examples include:

- The Department of Agriculture (USDA) will launch an aggressive, voluntary partnership effort to accelerate the adoption of conservation practices on the region's farms and forests. USDA and EPA will work together to coordinate and target funding to accelerate nitrogen, phosphorus and sediment reductions in priority watersheds.

- The Departments of Defense and Interior will identify locations where land conservation priorities of military bases, National Wildlife Refuges, National Parks and National Trails overlap and will develop coordinated land conservation strategies.

- The National Oceanic and Atmospheric Administration, under the Department of Commerce and the Fish and Wildlife Service, under the Department of Interior, will prioritize stream barriers that inhibit fish passage; leverage funds to remove barriers, retrofit culverts, install passage structures; and monitor for presence of indicator species.

A complete list of EPA's and its federal partners' many actions and commitments for restoring and protecting the Bay will be included in the final Chesapeake Bay Strategy scheduled for release in May 2010.

Question 7: In the President's budget, EPA is slated to receive $63 million for the Chesapeake Bay Program. How much will be reserved for the small watershed grants program that has so successfully engaged local watershed organizations and local governments in the restoration effort?

Answer: The Chesapeake Bay Program plans to fund the Small Watershed Grant program at its historical level of $2 million in FY 2011. The program's experience is that this level of funding supports a broad range of projects throughout the watershed.

WATER ISSUES

Question 8: The Agency has made an unprecedented investment in water infrastructure since you became Administrator of EPA. I congratulate you on that achievement. But I think we all recognize that the water infrastructure needs in this nation are enormous.

a) Based on the most recent needs survey conducted by the Agency, can you tell the Committee what the outstanding needs are for wastewater and drinking water infrastructure in this country?

Answer: In 2007, EPA conducted the fourth Drinking Water Infrastructure Needs Survey and Assessment. The results indicate a 20-year capital investment need of $334.8 billion for public water systems that are eligible to receive funding from state Drinking Water State Revolving Fund (DWSRF) programs -- approximately 52,000 community water systems and 21,400 not-for-profit non-community water systems (including schools and churches). The assessment covers costs for repairs and replacement of transmission pipes, storage and treatment equipment, and other projects required to protect public health and to ensure compliance with the Safe Drinking Water Act (SDWA). EPA uses the assessment results to allocate DWSRF funds to the states and tribes as required by SDWA.

The 2004 Clean Watersheds Needs Survey Report documents an estimated national need of $202.5 billion. This figure represents documented needs for up to a 20 year period. The estimate includes $134.4 billion for wastewater treatment and collection systems, $54.8 billion for combined sewer overflow corrections, and $9.0 billion for stormwater management. The national needs in this Report represent a $16.1 billion (8.6 percent) increase (in constant 2004 dollars) in investment needs over the 2000 report. The increase is due to a combination of population growth, more protective water quality standards, and aging infrastructure. Nonpoint source control needs of $38,3 billion are included in the appendix of the Report. EPA will transmit to Congress the 2008 Clean Watersheds Needs Survey Report as soon as it is completed.

Question 9: The Agency has been working with States to make sure that they use a modest portion of their infrastructure funding for so-called "green infrastructure". Can you tell us what that term means?

Answer: In the context of the Green Project Reserve associated with the Clean Water and Drinking Water State Revolving Funds, the Agency uses the term green infrastructure to refer to stormwater management practices that maintain or restore natural hydrology by infiltrating, evapotranspiring (the process through which plants return water to the atmosphere) and/or harvesting and using stormwater. Green infrastructure technologies include bioretention cells, expansion of the urban tree canopy, green roofs, permeable pavements, rain cisterns, and other stormwater controls that retain and treat stormwater near its source.

Question: Why has the Agency been encouraging states to invest in green infrastructure?

Answer: The Agency is encouraging states to invest in green infrastructure in order to better address the water quality impairments associated with stormwater. By implementing stormwater controls that retain and treat stormwater throughout the built environment, green infrastructure can reduce the delivery of pollutants to receiving waters and reduce the frequency of erosive flows. Green infrastructure also serves a greater diversity of functions than conventional approaches to stormwater management, as described in the following section. The language in the American Recovery and Reinvestment Act and the FY 2010 Appropriations Bill has allowed the agency to include specific terms and conditions in SRF Capitalization grants to address green infrastructure.

Question: What are the benefits to both clean water and the bottom line for these kinds of projects?

Answer: Green infrastructure enhances water quality by a) reducing the delivery of runoff containing dissolved and suspended pollutants to receiving waters, b) allowing soils and vegetation to treat infiltrated stormwater before that stormwater enters receiving waters, and c) reducing the frequency of erosive flows in receiving channels. Green infrastructure also offers a diversity of environmental, social, and economic benefits. Additional environmental benefits include improved air quality, reduced urban heat island effect, provision of habitat, sequestration of carbon dioxide, and, in some cases, increased groundwater recharge. Social benefits include improved public health, ecosystems, and watersheds more pedestrian-friendly neighborhoods, and traffic calming. Economic benefits and savings may include reduced expenditures on curbs and subsurface stormwater pipes, reduced land requirements to accommodate stormwater detention/retention ponds, maintained quality of groundwater resources and reduced water imports, reduced energy use to treat and distribute water, and reduced energy use to cool and heat buildings.

Question 10: How much does the budget anticipate spending on the WaterSense program?

Answer: The FY 2011 budget requests $3.5 million for the WaterSense program.

Question: Based on that figure, how many product or other kinds of specifications does the agency expect to be able to issue in the coming year?

Answer: In FY 2011, EPA expects to issue a final specification for weather-based irrigation controllers and a draft specification for commercial kitchen pre-rinse spray valves. The program continues to carry out research on other products, including water softening systems and sensor-based irrigation controllers, and will issue notices of intent if sufficient research is completed to warrant such action. The program also expects to carry out a review of the existing specification for irrigation professionals to determine if it is appropriate to strengthen the specification.

To encourage and support the adoption of WaterSense programs it is important that the Agency focuses on education and outreach, information management and oversight of our third party certification systems that protect the integrity of the Water Sense brand.

In FY 2011, EPA also will continue to support implementation of the new homes specification, carry out marketing efforts to enhance public awareness of the need for water efficiency, and work with the increasing number of program partners that accompany the release of each new specification.

Question 11: In the last several years there have been literally thousands of violations of Clean Water Act and Safe Drinking Water Act permits across the country. Last year two of your top managers came before this Committee and testified that they would bring a much stronger sense of importance to enforcement as well as a new targeting approach to these water violations.

a) Does this budget contain the necessary resources for EPA's enforcement and compliance assistance operations?

Answer: Yes, the FY 2011 President's Budget includes $615.2 million for EPA's enforcement program, the highest enforcement budget ever, and an $18.5 million increase over the FY 2010 Enacted level. More specifically, the budget supports the targeting, information management, and analysis efforts the Agency is undertaking pursuant to the Clean Water Act Action Plan released last year.

The budget request reflects this Administration's strong commitment to vigorous enforcement of our nation's environmental laws and ensures that EPA will have the resources necessary to maintain a robust and effective criminal and civil enforcement program and pursue violations that threaten vulnerable communities.

b) Will the American people see stronger enforcement of water permits this year?

Answer: Yes. As part of the Clean Water Act Action Plan, EPA has initiated improved targeting, information management, and analysis efforts to strengthen Clean Water Act enforcement that matters to communities. We will focus on taking effective enforcement against serious polluters violating the Clean Water Act, including actions to get raw sewage out of our nation's waterways, cut pollution from animal waste, and reduce polluted stormwater run-off. EPA is also strengthening the accountability of EPA and state regulators authorized to implement and enforce the Clean Water Act by establishing a new model for shared accountability and strengthened oversight.

CLEAN WATER RESEARCH AND RELATED ISSUES

Question 12: I am pleased to see that funding levels for the Clean Water Research program have increased, and especially that over $4 million are requested for research on hydraulic fracturing. As you know, a number of pollution and contamination incidences have been associated with hydraulic fracturing, and as such, this study is incredibly important.

a) Can you provide more details as to how this study will be carried out and how the results might help EPA to protect drinking water?

Answer: EPA is in the very early stages of designing its hydraulic fracturing research program. The Agency is proposing that the process begin with (1) defining research questions and identifying data gaps; (2) conducting a robust process for stakeholder input and research prioritization; (3) with this input, developing a detailed study design that will undergo external peer-review, leading to (4) implementing the planned research studies. The study plan is being developed iteratively, incorporating feedback from the interagency and public meetings being held this summer. As part of this effort, we are reviewing the scientific literature related to hydraulic fracturing and environmental effects, and we are soliciting and reviewing other data and reports that may exist outside the published literature. Finally, we are proceeding with planning for a robust and transparent peer review process for both the study plan as well as our anticipated study products.

To support this initial planning phase and guide the development of the study plan, the Agency sought suggestions and comments from the EPA Science Advisory Board (SAB)—an independent, external federal advisory committee. On April 7th and 8th, 2010, the Agency met with the Environmental Engineering Committee (EEC) of the SAB and requested that they evaluate and provide advice on EPA's proposed approach. The Agency looks forward to the SAB's report and will use this advice and extensive stakeholder input to guide the design of its study.

Question 13: The President is taking major steps in his budget to protect some our nation's greatest waters, like the Chesapeake Bay. This large iconic water is critical not only to health of communities that live around them, but also the economies afforded by them. But at the end of the day, wouldn't you agree that legislation restoring the Clean Water Act to its fullest protections, which have included protecting smaller streams, wetlands, and headwaters of the Chesapeake, would make the money your agency is spending on cleaning up our water bodies go further and be more efficiently used?

Answer: EPA agrees that restoring the jurisdiction of the Clean Water Act to that which existed prior to the Supreme Court decisions in 2001 (SWANCC) and 2006 (Rapanos) would allow EPA to more effectively and efficiently administer the Act's programs. On May 20, 2009, EPA joined the Chair of the Council on Environmental Quality, and senior leaders from the Departments of Agriculture, Interior, and the Army in expressing this sentiment in writing to Senator Boxer and Congressman Oberstar.

Questions Submitted for the Record from Senator Inhofe

EMPLOYMENT - IMPACTS

Question 1: Ms. Jackson, the Agency is now working on several potentially costly rules that could significantly impact the economy and US employment.

a) Does EPA conduct an analysis of the potential employment impacts of EPA regulations costing over $100 million? If not, why not?

b) Given the number of people who remain jobless and predictions of prolonged unemployment, can you commit to including an analysis of potential employment impacts in future regulations expected to cost more than $100 million?

c) Can you also commit to considering direct and indirect employment changes as part of that analysis, and whether any employment gains result in productive gains to the economy?

Answer: EPA is committed to fashioning rules in a manner that minimizes any job losses and enhances the U.S. economy's potential for job growth to the maximum extent allowed by law. In this regard, EPA complies with all applicable analytical requirements, including economic and employment analyses. For example, EPA provides an analysis of the costs, economic impacts, and benefits of regulatory actions in conjunction with the proposed and final rules that establish regulatory standards or requirements under the Clean Air Act. Executive Order 12866, Regulatory Planning and Review (58FR51735, September 30, 1993), requires a full economic analysis, including impacts on employment, for all rules with economic impacts exceeding $100 million. We understand the need to protect and create jobs, and we will look for opportunities to both reduce pollution and create incentives for job growth here in the U.S. In particular, we will focus on job growth opportunities in the clean energy and manufacturing sectors.

CLEAN AIR SCIENTIFIC ADVISORY BOARD – OZONE STANDARD

Question 2: In your recent proposal to further lower the 2008 eight hour ozone standard to a range between 0.060 to 0.070 ppm, you cite the recommendations from the Clean Air Scientific Advisory Board (CASAC) as a major factor in your decision.

a) Do you consider CASAC's recommendations strictly science based or a mixture of science and policy?

Answer: The Clean Air Act (CAA) requires CASAC to advise EPA on both scientific and policy matters. Under section 109(d), the committee is charged with reviewing the air quality criteria published for each pollutant under section 108 of the CAA. This same section also requires CASAC to review the air quality standards, and to recommend to the Administrator any new standards and/or revisions of existing criteria and standards as may be appropriate under the law. CASAC's charter outlines additional responsibilities, including identifying gaps in knowledge and research efforts necessary to provide required information. Thus, CASAC's suite of responsibilities encompasses both science and policy advice.

b) Which office within EPA produces the initial recommendations on new CASAC panel members?

Answer: As required by the Clean Air Act (CAA), members of the chartered CASAC are appointed by the Administrator. The Science Advisory Board (SAB) Staff Office considers public nominations of experts and input from EPA offices, and makes recommendations to the Administrator for her decision. CASAC is frequently augmented with additional experts to form panels. The director of the SAB Staff Office appoints consultants to augment the expertise of CASAC. SAB staff considers public nominations of consultants and input from EPA offices, and makes recommendations to the SAB Director for her decision.

c) Do you perceive any potential conflict of interest for scientists on CASAC panels who have received EPA funding for related research work?

d) Do you perceive a potential conflict of interest for scientists who have conducted research on the pollutant in question and who may in essence be reviewing their own work as part of their CASAC review function?

Answers: All chartered CASAC members and consultants are required to file *EPA Form 3110-48: Confidential Financial Disclosure Form for Special Government Employees Serving on Federal Advisory Committees at the U.S. Environmental Protection Agency*. The ethics information is collected by the SAB Staff Office and focused on financial conflicts of interest and the appearance of a lack of impartiality as defined by Federal regulation.

Conflict of interest as defined under 5 C.F.R. 2635 subpart D: A particular matter must have a direct and predictable effect on a financial interest in order for there to be a conflict of interest as defined by regulation. A particular matter will not have a direct effect on a financial interest if the chain of causation

is attenuated or is contingent upon the occurrence of events that are speculative or that are independent of, and unrelated to the matter. A particular matter will have a predictable effect if there is a real, as opposed to speculative, possibility that the matter will affect the financial interest.

Appearance of a lack of impartiality as defined under 5 C.F.R. 2635 subpart E: Where an employee knows that a particular matter involving specific parties is likely to have a direct and predictable effect on the financial interest of a member of his household, or knows that a person with whom he has a covered relationship is or represents a party to such matter, and where the employee determines that the circumstances would cause a reasonable person with knowledge of the relevant facts to question his impartiality in the matter, the employee should not participate in the matter unless he has informed the agency designee of the appearance problem and received authorization from the agency designee in accordance with 5 C.F.R. 2635.502(d).

Many CASAC members and consultants conduct research on air pollution issues and receive competitive research grants from EPA and other funding organizations. This and other ethics information is reviewed by the SAB Staff Office for every member and consultant for every advisory activity to determine whether a member or consultant has a conflict of interest or the appearance of a lack of impartiality. The SAB Staff Office documents the panel formation process and ethics review for all CASAC panels in memoranda available on the SAB Web site. The SAB Staff Office has determined that current CASAC members and consultants do not present a conflict of interest or a lack of impartiality.

e) Do you believe you are bound by CASAC's recommendations? If not, why not?

Answer: CAA section 109(d) specifies that periodically "*the Administrator* shall complete a thorough review of the criteria ... and the NAAQS ... and shall make such revisions ... as may be appropriate in accordance with section 108 ... and [109(b)]" (emphasis added). CAA section 109(b) provides for the establishment of "ambient air quality standards the attainment and maintenance of which *in the judgment of the Administrator*...are requisite to protect the public health" (emphasis added). This phrasing clearly establishes that the decisions about whether to establish or revise a NAAQS, including decisions about the appropriate form and level of such standard, must be made by the Administrator. Thus, although the Administrator places great weight on the advice of CASAC, she is not required to follow their recommendations in making the necessary NAAQS decisions. The CAA requires that the Administrator exercise her judgment. She does this after receiving and carefully considering CASAC's recommendations, but it is her decision not CASAC's.

However, if the decision differs from CASAC's advice, the Clean Air Act does require the Administrator to provide an explanation. Specifically, CAA section 307(d)(3) requires that the notice of proposed rulemaking for any NAAQS decision must "set forth or summarize and provide reference to any pertinent findings, recommendations, and comments by the Scientific Review Committee established under section 109(d)...and, if the proposal differs in any important respect from any of these recommendations, *an explanation of the reasons for such differences*" (emphasis added). The same requirement applies when EPA issues the final rule. The U.S. Court of Appeals for the D.C. Circuit relied on this provision in a recent case in which it remanded the particulate matter NAAQS to the Agency in part because "EPA failed adequately to explain its reasons for not accepting the CASAC's recommendations." See *American Farm Bureau Federation and National Pork Producers Council v. EPA*, 559 F.3d 512, 521 (D.C. Cir. 2009).

STATIONARY SOURCE – TAILORING RULE

Question 3: According to your recent testimony, you are now considering raising the stationary source threshold in the proposed Tailoring Rule for GHGs from 25,000 tons per year to as high as 100,000 tons per year.

a) What is prompting your current consideration of a three to four- fold increase in the stationary source threshold proposed in the Tailoring Rule, as well as a six month delay in the triggering of the stationary source requirements?

Answer: The agency has received many thoughtful comments and useful data on the proposed Tailoring Rule – from citizens, States, localities, industry representatives and environmental groups. The agency's final action will reflect and incorporate valuable information and constructive suggestions that EPA received during the public comment period, which will improve the initial proposal.

In the proposed Tailoring Rule, EPA states: "At both the 50,000- and 100,000-tpy C02e thresholds, however, we do not believe that the potential level of permit activity would fill the capacity of permitting authorities to properly administer the title V program, and similar to PSD considerations, we believe it would potentially exclude some high-emitting facilities within key GHG source categories.

b) " What new information has caused you to change this conclusion?

Answer: The agency has received many thoughtful comments and useful data on the proposed Tailoring Rule – from citizens, States, localities, industry

representatives and environmental groups. The agency's final action will reflect and incorporate valuable information and constructive suggestions that EPA received during the public comment period, which will improve the initial proposal.

c) Do the estimates of the number of new and existing facilities in Table VIII-) of the Tailoring Rule still reflect EPA's best estimates?

Answer: No – those are the numbers used in developing the proposal, but we are revising them in response to the valuable information and suggestions we got in comments. We will provide our current best information in the final Tailoring Rule.

d) Is there any other example in the history of EPA's implementation of the Clean Air Act where the Agency has deviated so significantly from the Act's prescribed emission thresholds?

Answer: In the proposed rulemaking, EPA acknowledged that it was proposing to depart from a literal reading of the PSD and title V applicability thresholds in order to give effect to underlying congressional intent for the PSD and title V programs. In the preamble to the proposed rulemaking, EPA cited some of the extensive caselaw in which the courts have upheld deviations from the literal terms of a statute on the same basis, that is, in order to give effect to underlying congressional intent. 74 *Fed. Reg.* 55,306/2. In one of those cases, the D.C. Circuit upheld an EPA regulation that deviated from the literal meaning of the conformity provisions in the Clean Air Act, CAA section 176(c)(1). *See Environmental Defense Fund v. EPA,* 82 F.3d 451, 468-69 (D.C. Cir. 1996) (although Clean Air Act requires that a Federal action conform to the State implementation plan that is currently in place, EPA may instead require conformity to a revised implementation plan that State commits to develop; "[t]his is one of those rare cases ... [that] requires a more flexible, purpose-oriented interpretation if we are to avoid 'absurd or futile results.'" (citation omitted)).

e) Does this suggest that the rule is potentially legally vulnerable?

Answer: EPA would not have issued the initial tailoring rule proposal if I did not believe that it was lawful. It is our view that the final rule will survive any legal challenges, if they are filed. I would not promulgate the Tailoring Rule if I believed otherwise.

Question 4: If climate change legislation is enacted, do you support preempting PSD and NSPS for sources that are covered by a cap and trade program? If not, why not?

Answer: I support Congress passing a new statute to reduce greenhouse-gas emissions. The greenhouse-gas reduction bills that have received votes to-date in this Congress would reduce greenhouse-gas emissions through a combination of a cap and trade program and certain existing Clean Air Act programs. The extent to which the existing PSD and NSPS programs should be employed for greenhouse-gas emissions control following enactment of a new cap-and-trade program depends heavily on the particulars of that cap-and-trade program. The Clean Air Act provides a number of effective and flexible tools for achieving emission reductions.

a) Under what specific circumstances do you believe PSD or NSPS should continue for sources that are covered under a legislative program?

Answer: It is impossible to answer that question without knowing the precise language of the legislative program.

STATIONARY SOURCES STAKEHOLDERS

Question 5: In developing the National Fuel Efficiency Plan in May 2009 to set new motor vehicle fuel economy standards under the Energy Policy and Conservation Act and new standards under Section 202 of the Clean Air Act, what stakeholders were consulted?

a) Please provide a list.

Answer: EPA had discussions with a variety of stakeholders, ranging from limited discussions with some to in-depth discussions with others. The following is a list of stakeholders that provided commitment letters supporting the President's May 2009 plan, and represent the stakeholders with which we had the most extensive discussions:

a. California Air Resources Board
b. California Governor Schwarzenegger
c. California Attorney General
d. Alliance of Automobile Manufacturers
e. Association of International Automobile Manufacturers
f. BMW
g. Chrysler
h. Daimler
i. Ford
j. General Motors
k. Honda
l. Mazda

m. Toyota
n. Volkswagen

b) How prominently, if at all, were stationary source impacts considered in developing a plan that would make CO2 subject to regulation under the Clean Air Act?

Answer: EPA has carefully considered for the past three years the implications for stationary sources impacts of moving forward with Clean Air Act regulation of GHGs from light-duty vehicles. Our consideration of this issue began as soon as the Supreme Court determined in early 2007 that determined that GHGs fit within the definition of air pollutants under the Clean Air Act and that EPA must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, and if so, issue emissions standards applicable to emissions of GHGs from new motor vehicles. Stationary source considerations have been a major focus point of agency deliberations from that time through the present, and have led to the development of the Tailoring Rule and related actions.

c) Please provide a list of all stationary source stakeholders that were consulted in developing the plan and the dates and times of the meetings. Please also provide copies of the briefing papers that discussed the potential stationary source impacts in the context of the decision to go forward with EPA regulation under Section 202 as part of the National Fuel Efficiency Plan.

Answer: EPA has had broad consultations with stakeholder on stationary source implications of moving forward with vehicle rules, including requests for comment in three different Federal Register notices. In 2007, EPA published a major notice requesting comment from all stakeholders, states and the public on the potential use of the Clean Air Act for GHGs, including the implications of an initial vehicle rule on the regulation of stationary sources under the Prevention of Significant Deterioration Program. EPA received numerous and diverse comments on this question. EPA also published Federal Register notices seeking comment from all stakeholders and states on stationary source issues involved with regulating GHGs under the Prevention of Significant Deterioration Program in its reconsideration of the Johnson Memo and in proposing the Tailoring Rule. EPA received many constructive comments in response to both notices. In response, EPA revised its initial position regarding the timing of PSD applicability to GHGs in final action on the Johnson Memo. In addition, the recently completed Tailoring Rule thoroughly addressed issues raised by public commenters.

d) If stationary sources stakeholders were omitted from the discussions, please explain why the Administration went forward with such a significant regulatory program without consulting stationary source stakeholders that would be impacted?

Answer: Please see the response to Question immediately above.

STATIONARY SOURCES – GREENHOUSE GASES

Question 6: a) Do you support the legislation developed by Senator Rockefeller to delay by two years from date of enactment the trigger of PSD and Title V for stationary sources? If not, why not?

Answer: I would support Congress passing a new statute to reduce greenhouse-gas emissions. All the greenhouse-gas reduction bills that have received votes to-date in this Congress would reduce greenhouse gas emissions through a combination of cap and trade program and certain existing Clean Air Act authorities.

The Clean Air Act provides a number of effective and flexible tools for achieving emission reductions that make sense considering available technology, costs and energy impacts.

b) In your review of the draft legislation, would States be allowed to regulate GHGs as part of a BACT decision during the two years if the legislation is enacted?

Answer: Under current law States can take energy impacts into account in making BACT decisions.

c) In your view, could citizens still sue States and force the regulation of GHGs as part of BACT decision under the legislation?

Answer: The language in the statue is ambiguous and if passed we would do our best to interpret it.

d) Do you believe the Agency could still move forward with developing rules under the proposed legislation as long as they are not finalized?

Answer: The language in the statue is ambiguous and if passed we would do our best to interpret it.

e) Would the legislation prohibit any permitting of methane sources for non-GHGs purposes?

Answer: The language in the statue is ambiguous and if passed we would do our best to interpret it.

NATIONAL PETROLEUM RESERVE -- ALASKA

Question 7: The recent decision by the Corps of Engineers to deny a permit to construct three bridges in order to access what's known as CD5, which would have been the first oil well drilled in Alaska's National Petroleum Reserve, was surprising. This project has been in the works since 2001 to bring all stakeholders into alignment, and the decision truly surprised many who have pointed to NPRA as the logical alternative for drilling in the North Slope.

a) Does the EPA support developing NPRA' s oil and gas resources?

Answer: EPA's view is consistent with the White House Comprehensive Strategy for Energy Security, which includes the environmentally responsible exploration and development of oil and gas resources in the National Petroleum Reserve-Alaska (NPR-A) on the North Slope.

b) How will the remaining 23 million leasable acres in NPRA ever be accessed if the Administration insists that bridges are not an acceptable alternative to burying pipelines below rivers and flying in all necessary equipment?

Answer: The permit decision by the U.S. Army Corps of Engineers (Corps), Alaska District, focuses exclusively on the specific Colville River Delta 5 (CD-5) development project. The decision reflects the Corps' conclusion that there are reasonable alternatives available to the proposed construction of a vehicle and pipeline bridge across the Nigliq Channel of the Colville River that would allow access to the CD-5 project with fewer impacts to the Nigliq Channel and its subsistence resource values.

In this decision, the Administration designated the Colville River Delta area in question as an "Aquatic Resource of National Importance" without any public comment or information as to what that term really means, much less any Congressional influence on what seems to be an effective withdrawal of the land.

c) Can you help me understand this designation's process and meaning, and what impact this will have on any future efforts to develop the NPRA?

Answer: An Aquatic Resource of National Importance (ARNI) is a resource threshold used to determine whether specific individual permit cases can be elevated for resolution at a higher level at EPA. The procedures for elevating individual permit decisions are established in the 1992 Memorandum of Agreement (MOA) between EPA and the Department of Army. Factors used in identifying ARNIs may include, but are not limited to, economics, rarity or uniqueness, and/or importance of the aquatic resource to the protection, maintenance, or enhancement of the quality of the Nation's waters.

An ARNI threshold does not preclude permitting of the least environmentally damaging practicable alternative under the CWA Section 404(b)(1) Guidelines. EPA believes there are other alternatives to a vehicle and pipeline bridge over the Nigliq Channel that would allow oil and gas development of the NPR-A to occur in an environmentally responsible manner.

d) Can you describe the process of designating?

Answer: Based on the 1992 Memorandum of Agreement between the EPA and the Department of Army regarding Section 404(q) of the Clean Water Act, the Regional Administrator notifies the District Engineer for the U.S. Army Corps of Engineers that a project will result in substantial and unacceptable impacts to an ARNI. This determination is based on site-specific information and related to matters within EPA's authority and expertise.

e) Does this decision reach the desk of the Administrator?

Answer: This decision was made by the Acting Region 10 Administrator, Michelle Pirzadeh. As is standard practice, this letter was coordinated with the Office of Water in EPA Headquarters.

ENDANGERMENT FINDINGS

Question 8: Administrator Jackson, your endangerment finding states that it is EPA's view that, "the scientific assessments of the IPCC represent the best reference material for determining the general state of knowledge on the scientific and technical issues of climate science." Do you still agree with that statement?

Answer: The Administrator stated in the Findings, and we state again here, that it is EPA's view that the scientific assessments of the USGCRP, NRC and the IPCC represent the best reference materials for determining the general state of knowledge on the scientific and technical issues before the agency in making an endangerment decision. Our view is based upon review of the best available scientific information, as well as review of the information provided in the more than 380,000 public comments received on the Proposed Findings. EPA's Response to Comments document provides extensive discussion surrounding this issue. EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

FIFRA – STAFF AND RESOURCES

Question 9: Within OPPTS, what resources are being directed or are needed to ensure that the Office of Pesticide Programs has all the staff and resources needed to bring FIFRA programs into compliance with ESA?

Answer: OPP intends to direct sufficient resources (21.5 FTE and $1.4M in mission support contracts) through the registration review program to support ecological effects work necessary for ESA compliance in FY 2011. In addition, OPPTS is working with the U.S Fish and Wildlife Service and National Marine Fisheries Service (the "Services") to reach agreed-upon scientific methods to initiate and complete consultations to support a resource-efficient approach for EPA and the Services.

COAL COMBUSTION RESIDUES (CCRs)

Question 10: If Coal Combustion Residues (CCRs) are regulated as a hazardous waste, some have argued that these de minimis releases would constitute improper hazardous waste disposal and subject power plant facility owners/operators to the specter of a perpetual state of RCRA non-compliance. If the disposal of CCRs at coal-fired power plants is regulated under Subtitle C, would the de minimis releases of these CCRs (otherwise destined for disposal) during normal power plant operations constitute the improper disposal of a hazardous waste?

Answer: EPA's proposal regarding coal combustion residuals proposes two options. Under one option, EPA would list coal combustion residuals as special wastes subject to regulation under subtitle C of RCRA when they are destined for disposal in landfills or surface impoundments. Under the second option, EPA would regulate the disposal of coal combustion residuals under subtitle D of RCRA by issuing national minimum criteria. Under both alternatives, release of these wastes into the environment may constitute the improper disposal of these wastes. It is not clear what is meant by your reference to de minimis releases, but under either option, such releases may require the power plant to take appropriate action.

SUBTITLE C DISPOSAL REQUIREMENTS

Question 11: Assuming that such de minimis releases constitute improper disposal, would power plant owners/operators face the potential of being in non-compliance with the Subtitle C disposal requirements whenever one of these de minimis releases occurred at a power plant?

Answer: As a general matter, hazardous wastes are subject to the RCRA hazardous waste regulations, which impose requirements from their point of generation to their ultimate disposal. As discussed in our other response regarding your question concerning de minimis releases, under either proposed option, improper disposal and release of these wastes into the environment would result in non-compliance with regulatory requirements whether under subtitle C or subtitle D of RCRA.

Question 12: The handling of CCRs prior to their placement in a disposal unit at a power plant involves a series of upstream management/storage units. If CCRs destined for disposal are regulated under RCRA Subtitle C, would the upstream units used to handle the CCRs prior to disposal be subject to RCRA Subtitle C design standards for tanks, containers or miscellaneous units?

Answer: As a general matter, hazardous wastes destined for disposal are regulated under RCRA subtitle C from their point of generation to their ultimate disposal.

Question 13: If the answer to the above is yes, what information does EPA have demonstrating that the management of CCRs in these upstream management units poses a risk to human health or the environment warranting regulation under RCRA Subtitle C and what would be the cost of retrofitting these upstream management units in your regulatory impact analysis?

Answer: Like all wastes subject to subtitle C regulation under RCRA, the statute requires that they be regulated from the point of generation to their ultimate disposal (cradle-to-grave). Thus, if EPA determines, after the proposal's comment period, that coal combustion residuals should be regulated under subtitle C of RCRA, they will be subject to the existing management framework. To the extent that comments are submitted during the comment period that suggest current requirements should be modified, EPA will consider those comments prior to a final decision by the Agency.

CCRS – HAZARDOUS WASTE

Question 14: The Association of State and Territorial Solid Waste Management Officials ("ASTSWMO") (in a letter to Matt Hale 11/4/2009) cautioned EPA about this shortfall and disruption to the nation's hazardous waste disposal capacity if CCRs are regulated as a hazardous waste, even with an exclusion for qualified CCR beneficial uses.

Does EPA agree that, as a result of regulating CCRs as a hazardous waste, on-site utility CCR disposal capacity will be reduced due to a combination of factors, including (1) the phase-out of existing CCR surface impoundments, (2) the inability of other remaining CCR disposal units to obtain Subtitle C operating permits, and (3) greater volumes of CCRs requiring disposal due to a prohibition on certain existing CCR beneficial use practices?

Answer: EPA recognizes the concerns that our state partners, through ASTSMWO, have brought to our attention about the potential effect that regulating CCRs as a hazardous waste may have on disposal capacity However, EPA believes that existing landfills can meet the various requirements, including the installation of ground water monitoring. In addition, under RCRA, facilities that begin to receive newly listed wastes are eligible for "interim status" which means that by fulfilling certain permit notification requirements, they can continue to operate until they are fully permitted under RCRA subtitle C regulations. Thus, most landfills should be able to operate under subtitle C regulations. Finally, because regulation under subtitle C would make disposal more costly, and because the beneficial use of CCRs would retain the statutory Bevill exemption, it is likely that the beneficial use of CCRs will increase, thus reducing the disposal of CCRs.

Question 15: If EPA does not agree that utility CCR disposal capacity will decline under a rule regulating CCRs as a hazardous waste, please explain why, including why EPA disagrees with the reasons articulated above suggesting that there will be a shortage in on-site utility disposal capacity.

Answer: EPA discusses these issues in the response to your question numbered 55.

CCRS – REGULATIONS

Question 16: Does EPA agree with the cautions of the Environmental Council of the States (ECOS) and ASTSWMO that regulating CCRs as a hazardous waste, even with an exclusion from hazardous waste regulations for qualified beneficial uses, will nonetheless result in overwhelming the Subtitle C commercial disposal market?

Answer: EPA appreciates the concerns that ECOS and ASTSWMO have brought to our attention on the effect that regulating under Subtitle C would have on disposal markets and disposal capacity. However, as discussed in the response numbered 55, since many landfills could likely qualify for "interim status" they could continue to operate until they are fully permitted under RCRA subtitle C. Thus, EPA believes that there will be sufficient capacity to dispose of CCRs. Further, because disposal under subtitle C would make disposal more costly, and because the beneficial use of CCRs would retain the statutory Bevill exemption, it is likely that the beneficial use of CCRs will increase, thus reducing the disposal of CCRs.

CCR – DISPOSAL CAPACITY SHORTFALL

Question 17: a) If EPA does not agree with the CCR disposal capacity shortfall concerns of ECOS and ASTSWMO, please explain why?

b) Can EPA ensure there is sufficient Subtitle C landfill capacity for up to 134 million tons of CCRs on an annual basis?

Answer: EPA recognizes the concerns that our state partners, through ASTSMWO, have brought to our attention about the potential effect that regulating CCRs as a hazardous waste may have on disposal capacity. However, EPA believes that existing landfills can meet the various requirements, including the installation of ground water monitoring. In addition, under RCRA, facilities that begin to receive newly listed wastes are eligible for "interim status" which means that by fulfilling certain permit notification requirements, they can continue to operate until they are fully permitted under RCRA subtitle C regulations. Thus, most landfills should be able to operate under subtitle C regulations. Finally, because regulation under subtitle C would make disposal more costly, and because the beneficial use of CCRs would retain the statutory

Bevill exemption, it is likely that the beneficial use of CCRs will increase, thus reducing the disposal of CCRs.

c) How long does it take to site a hazardous waste landfill?

Answer: Siting and zoning are generally local matters, not state or federal functions. However, our data base shows that the typical time it takes to obtain a permit for a hazardous waste landfill from the time of submittal of the application to issuance of the permit generally ranges between 2 and ¾ to 5 ½ years.

d) How long, on average, does it take to obtain a RCRA treatment, storage, and disposal permit?

Answer: RCRA requires anyone who owns or operates a facility where hazardous waste is treated, stored, or disposed to have a permit. Obtaining a hazardous waste permit is a multi-step process. RCRA establishes a procedure for obtaining interim status which allows existing facilities to continue operating until a final hazardous waste permit is obtained. For an existing disposal unit, the first step in the process is to send an interim status (Part A) permit application to the regulatory authority within 6 months of publication of a final regulation. The Part A application requires information about a facility and the processes to be used for treatment, storage, and disposal of hazardous wastes, the design capacity of such processes, and the specific hazardous wastes to be handled at the facility. At that time, the facility is subject to the hazardous waste interim status standards. The facility would then have to submit a Part B permit application when required by the regulatory authority. The Part B permit application requires substantially more information to be submitted concerning how the facility will comply with hazardous waste permitting requirements. The regulatory authority reviews the permit application and, typically, after communications with the owner/operator, issues a draft permit. The public has the opportunity to participate by reviewing the draft permit and attending public meetings and can submit its views to the regulatory authority. Ultimately, when everything is in order, a final permit is issued. It can take up to several years to obtain a treatment, storage, and disposal permit.

ASTSWMO SURVEY

Question 18: ASTSWMO provided you with the results of survey responses from all fifty states and the District of Columbia. Most states are authorized to implement the RCRA so they are EPA's co-regulators of hazardous wastes and are the principal regulators of nonhazardous wastes. Is it true that based on ASTSWMO's survey that all states oppose the regulation of CCRs as a

hazardous waste except for one state that has no CCRs and one state that does not regulate CCRs currently as a solid waste?

Answer: Based on our understanding of the results of the survey, the great majority of states oppose the regulation of CCRs as a hazardous waste.

CCRS – LANDFILL CAPACITY

Question 19: Has EPA considered that states have reported to EPA that even if 43 percent of CCRs continues to be beneficially reused (which is highly unlikely) state's 2013 hazardous waste landfill capacity will be consumed in six months? Is lack of landfill capacity of concern to the Agency?

Answer: EPA appreciates the concerns that have been raised to us on the effect that regulating CCRs as a hazardous waste may have on landfill capacity. However, as previously indicated, EPA does not believe that will be an issue because CCR landfills could qualify for "interim status" under RCRA which would allow them to continue to operate. In addition, EPA believes the amount of CCRs used for beneficial uses will increase, thus reducing the disposal of CCRs.

CCRS - RISKS

Question 20: Has EPA considered the increased risks to human health and the environment from consuming hazardous waste landfill space for high volume/low toxicity waste like CCRs and leaving no safe management options for existing hazardous wastes, which generally are far more toxic? Is the Agency concerned about these increased risks?

Answer: EPA appreciates the concerns raised over the effect that regulating CCRs as a hazardous waste may have on landfill capacity and on the capacity for the disposal of other hazardous wastes. Based upon the record, including the risk assessment and damage cases, as well as apparent gaps in state regulatory programs, EPA believes that the types of controls required under RCRA subtitle C are appropriate to address the risk from the management of CCRs. However, the Agency proposal also asks for comment on a RCRA subtitle D approach for the management of CCRs, and if based upon comments to the proposal, EPA determines that CCRs can be appropriately managed under this national criteria, EPA could finalize this approach. Under either approach, EPA believes that sufficient engineering controls, including liners, groundwater monitoring, and structural stability requirements, are necessary to address risks posed by the disposal of CCRs.

CCRS – STATE CAPACITY

Question 21: a) Has EPA considered ASTSWMO's concern that the state resources required to manage up to an additional 134 million tons of CCR's will divert resources from the proper management of existing hazardous wastes (which are likely far more hazardous)?

b) Is the Agency concerned about the state capacity to continue to properly manage existing hazardous wastes if by rule EPA adds an additional 134 million tons to the volume state programs must manage?

Answer: EPA appreciates the concerns that ASTSWMO has raised regarding the state resources required to manage CCRs as a hazardous waste. EPA's April 2010 regulatory impact analysis (RIA) for the proposed rule (available in the docket), presumes that state governments will individually implement varying levels of the technical standards and administrative requirements proposed under the non-federally enforceable Subtitle D option. Therefore, the RIA estimates a wide range in state implementation costs between $54,000 per year to $12.3 million per year. For the federally enforceable Subtitle C option, the RIA presumes that the 48 RCRA authorized state government programs would adopt all of the proposed technical and administrative requirements, resulting in a higher average annual implementation cost to state governments of $25.6 million per year. EPA is aware of the additional costs that may be incurred by states and is requesting comment on this issue in the rulemaking, as well as on the mechanisms states could use to recoup costs from potentially regulated entities.

As to state capacity issues, EPA expects both on-site and off-site facilities, in the case of a hazardous waste regulation, were such a rule promulgated, would seek RCRA interim status to continue to operate while seeking hazardous waste permits. To the extent that new capacity is needed, the implementation of hazardous waste regulations, if the subtitle C alternative were selected, would take place over a number of years, providing time for industry and state permitting authorities to address the issue.

EMISSIONS RELATED TO CCRS

Question 22: a) Has EPA considered the increased greenhouse gas emissions and other emissions from the trucks that will have to transport up to an additional 134 million tons of hazardous waste, often out of state?

b) Please provide me with an estimate of those emissions, and explain the assumptions that went into that estimate.

c) Has EPA considered the increase in greenhouse gas emissions if CCRs are no longer beneficially reused?

d) What is the increase in emissions if there is no beneficial reuse or if the current level of beneficial reuse is cut in half?

Answer: EPA did consider the potential greenhouse gas impacts of the co-proposed options and the impacts are described in our regulatory impact analysis. This analysis is available in the docket for the rulemaking. You may go to http://www.regulations.gov and use the search function for docket EPA-HQ-RCRA-2009-0640.

HAZARDOUS WASTE PROGRAMS - GRANTS

Question 23: EPA's budget for grants to States to run hazardous waste programs has been flat for years at a little over $100 million (resulting in a reduction in spending power). If EPA is prepared to increase the volume of hazardous waste managed in the United States by sixty-seven times, is EPA also willing to increase State Hazardous Waste Financial Assistance Grants by a corresponding amount?

Answer: EPA cannot speculate on future congressional appropriations for EPA's hazardous waste financial assistance categorical grants.

CCRS - RULEMAKING

Question 24: a) Has all factual information provided to EPA by the Department of Energy been placed into the docket for the CCR rulemaking?

b) Does that include factual information about de minimis releases of CCR from normal power plant operations?

c) Does that factual information include information on the need to retrofit CCR handling units, including units upstream of any impoundment or landfill, to meet subtitle C requirements?

d) Does that factual information include data on the need for reliable supplies of electricity and impacts of power plant closures on those supplies?

Answer: All of the factual information provided to EPA by the Department of Energy has been placed into the public docket for the CCR rulemaking. Review of the proposed coal ash regulation under Executive Order 12866 was completed and announced on May 3, 2010.

Questions Submitted for the Record by Senator Lautenberg

SIGNIFICANT PROGRAMS TO CREATE NEW JOBS

Question 1: Our nation is facing an economic crisis and an environmental crisis at the same time. Fortunately, many of the items in this budget would address both challenges by creating jobs while working to clean up the environment. Which programs in this budget request have the most potential to create a significant number of new jobs?

Answer: EPA does not collect jobs data for its programs and has not performed a macro-economic modeling or projection of the number of jobs recipients its grant programs will create. The American Recovery and Reinvestment Act (ARRA) of 2009 provided funding for six EPA programs for the dual purpose of cleaning up the environment and retaining or creating jobs. From January 1, 2010 through March 31, 2010, approximately 9,848 jobs were created or retained, as reported by recipients to Recovery.gov, through funding for EPA's ARRA programs. Those six programs were: Diesel Emissions Reduction Grants, Clean Water State Revolving Fund, Drinking Water Revolving Fund, Superfund, Leaking Underground Storage Tanks, and Brownfields Grants. The President's FY 2011 Budget includes total funding for all six of these programs as identified below.

1. Diesel Emissions Reduction Grants: $60.0 M
2. Clean Water State Revolving Fund: $2,000.0 M
3. Drinking Water State Revolving Fund: $1,287.0 M
4. Superfund – Remedial: $605.4 M
5. Leaking Underground Storage Tanks: $127.0 M
6. Brownfields: $215.1 M

REFORM OF THE TOXIC SUBSTANCES CONTROL ACT

This budget proposes a significant funding increase for programs to help keep the public safe from dangerous chemicals. I applaud this increase, but I am concerned that the EPA does not have the legal authority needed to fully address the risks posed by industrial chemicals.

Question 2: Do you still believe that the Toxic Substances Control Act needs to be reformed in order to fully address the risk from toxic chemicals?

Answer: EPA believes the existing authority under TSCA does not provide the tools to adequately protect human health and the environment as the

American people expect, demand and deserve. The Administration believes it is important to work together with Congress and stakeholders to quickly modernize and strengthen the tools available in TSCA to increase confidence that chemicals used in commerce, which are vital to our nation's economy, are safe and do not endanger public health (with special consideration to sensitive sub-populations such as children) or the environment. The Administration's *Essential Principles for Reform of Chemicals Management Legislation* was provided to help inform efforts underway in this Congress to reauthorize and significantly strengthen the effectiveness of TSCA. The *Principles* presents Administration goals for updated legislation that will give EPA the mechanisms and authorities to better identify chemical risks and take effective action to eliminate harmful chemical exposures.

FUNDING CUT FOR SUPERFUND WASTE SITES

Question 3: I am pleased that the budget proposes reinstating the polluter pays principle so that polluters-not taxpayers-pay to clean up hazardous Superfund waste sites. But EPA cut funding for the program in the budget and estimates completing cleanup at only 22 sites in FY2011. What is EPA doing to speed the pace of cleanup?

Answer: The FY 2011 budget request for the Superfund program includes a slight increase in budget authority for the Removal program and the same budget authority for the Remedial program as was appropriated by Congress for FY 2010. With this budget authority, EPA has set a goal to complete construction at 25 sites. Many of the sites that remain on the NPL are large, complex sites that require a multi-faceted response, taking years, and sometimes decades, to complete to EPA's satisfaction. As such, in order to keep the public informed of on-going work being performed by EPA, EPA has proposed a new program measure for FY 2011, Superfund NPL Remedial Action (RA) Project Completions, to augment the Superfund Site Construction Completion measure. This is an important step as it focuses program performance management at a more discrete level providing greater accountability for the detailed, incremental actions necessary to bring site cleanups to completion and ultimately site reuse.

Further, EPA is developing a multi-year management strategy, the Integrated Cleanup Initiative (ICI), to improve the effectiveness of EPA's cleanup programs, address a greater number of contaminated sites, accelerate cleanups, and put sites back into productive use while protecting human health and the environment. The Superfund Remedial Program is an integral part of this initiative. As part of the ICI, we are looking at ways under our existing statutory authorities, to leverage all of our land-based cleanup programs, increase potentially responsible party (PRP)-led removal and remedial action, continue finding program efficiencies by evaluating EPA contracting strategies, and reduce unnecessary administrative burdens.

GREENHOUSE GAS ON PROTECTING HEALTH AND
STIMULATING JOB GROWTH

Question 4: This budget proposes $43 million in new funding for the EPA to take legally required steps to regulate greenhouse gas emissions. How will this funding both protect the health of our citizens, and stimulate job growth and technology innovation for our twenty-first century clean energy economy?

Answer: The FY 2011 budget request includes additional funding for steps the Agency can take in the near term to help pave the way to a clean energy future. Most of this funding is focused on assessing and potentially developing new GHG regulations in response to legal obligations, or implementing GHG regulations completed in FY 2009 and 2010. For example, the Agency will implement the GHG Mandatory Reporting Rule.

The Agency will analyze critical air and climate-related issues relating to carbon capture and sequestration (CCS) technology, and eventually develop a framework for the permitting of the carbon dioxide capture component of the CCS project. This budget request includes an increase of $2.0 million for this work.

The FY 2011 budget request provides an increase of $6 million for analysis, development and implementation of new emission standards that will reduce GHG emissions from transportation sources. This includes the implementation of new standards for light-duty vehicles (passenger cars, light-duty trucks, and medium duty passenger vehicles), covering model years 2012 through 2016. The finalized these first ever GHG emission standards on April 1, 2010. EPA also plans to develop heavy-duty vehicle and engine standards to complete its obligation to regulate GHG emissions from motor vehicles in response to the Supreme Court's *Massachusetts v. EPA* decision. In addition, EPA will conduct analyses and technical assessments to support potential development of GHG emission standards for other transportation source categories in response to petitions to regulate GHG emissions of these sources.

New Source Performance Standards (NSPS) regulations could be an effective mechanism to reduce greenhouse gas emissions from major industrial sources. The NSPS program provides the opportunity to begin achieving emission reductions at new facilities through such actions as improvements in energy and industrial process efficiency. The request includes $5 million to assess and potentially develop NSPS regulations for major industrial sectors and seek, where possible, market-oriented mechanisms and flexibilities to provide lowest cost compliance options.

This request includes an additional $25 million to support state permit programs as they prepare to issue permits for large sources of GHGs.

CLEAN ENERGY FUTURE ON BROWNFIELD'S CLEANUP

Question 5: I am pleased to see that funding for Brownfields assessment and clean up has increased this year, from $100 million enacted in FY 2010 to $138 million requested in the President's Budget. How will your agency work to ensure that Brownfields cleanups prioritize final uses that get us to the clean energy future, such as siting renewable energy on Brownfields?

Answer: In September 2008, EPA launched the RE-Powering America's Land initiative to promote the development of renewable energy on potentially contaminated land and mining sites, including brownfields. EPA partnered with the Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) to do an initial screening to determine sites that may be used for renewable energy projects. EPA has developed a number of tools, and is currently working to expand those tools, to provide information on the advantages and opportunities for using contaminated sites for renewable energy. EPA recently held a series of meetings across the country with renewable energy and contaminated land stakeholders to learn more about the barriers to using these sites for renewable energy. Based on that feedback, EPA is currently developing a management plan on ways to overcome those barriers. EPA is also working with DOE/NREL to conduct pilot projects on siting renewable energy on contaminated lands. In addition, EPA supports final uses that encourage clean energy use, by encouraging sustainable redevelopment of sites cleaned up with our grant funding. This is one of the criteria that is evaluated as part of the grant funding competition.

Questions Submitted for the Record by Senator Vitter

WATER VAPOR ENDANGERMENT

Question 1: With water vapor absorbing more than one thousand times the amount of IR radiation as CO2, and water vapor more than a hundred times more abundant in the atmosphere, and the industrial emissions of water vapor exceeding the industrial emissions of CO2, why didn't the EPA write an endangerment finding for water vapor?

Answer: EPA has addressed this issue in the Endangerment and Cause or Contribute Findings, as well as in supporting documentation. For example, as stated in the Findings, section IV.A.6.b, "Direct anthropogenic emissions of water vapor, in general, have a negligible effect and are thus not considered a primary driver of human-induced climate change." For additional information, please see the Findings, as well as Volumes 2 and 9 of the Response to Comments document.

Question 2: Leaked e-mail from CRU East Anglia University:

Subject: Proxy Temperature Data derived from Tree Rings near the Arctic Circle
From: Rashit Hantemirov <rashit@xxxxxxxx.xxx>
To: Keith Briffa <k.briffa@xxxxxxxx.xxx>
Subject: Short report on progress in Yamal work
Date: Fri, 9 Oct 1998 19:17:12 +0500

Reply-to: Rashit Hantemirov <rashit@xxxxxxxx.xxx>

Dear Keith,

I apologize for delay with reply. Below is short information about state of Yamal work.

Samples from 2,172 subfossil larches (appr. 95% of all samples), spruces (5%) and birches (solitary finding) have been collected within a region centered on about 67030'N, 70000'E at the southern part of Yamal Peninsula. All of them have been measured.

Success has already been achieved in developing a continuous larch ring-width chronology extending from the present back to 4999 BC. My version of chronology (individual series indexed by corridor method)attached (file "yamal.gnr"). I could guarantee today that last 4600-years interval (2600 BC -

1996 AD) of chronology is reliable. Earlier data (5000 BC - 2600 BC) are needed to be examined more properly.

Using this chronology 1074 subfossil trees have been dated. Temporal distribution of trees is attached (file "number"). Unfortunately, I can't sign with confidence the belonging to certain species (larch or spruce) of each tree at present.

Ring width data of 539 dated subfossil trees and 17 living larches are attached (file "yamal.rwm"). Some samples measured on 2 or more radii.

First letter means species (l- larch, p- spruce, _ - uncertain), last cipher - radius. These series are examined for missing rings. If you need all the dated individual series I can send the rest of data, but the others are don't corrected as regards to missing rings.

Residuary 1098 subfossil trees don't dated as yet. More than 200 of them have less than 60 rings, dating of such samples often is not confident. Great part undated wood remnants most likely older than 7000 years.

Some results (I think, the temperature reconstruction you will done better than me):

Millennium-scale changes of interannual tree growth variability have been discovered. There were periods of low (5xxx xxxx xxxxBC), middle (2xxx xxxx xxxxBC) and high interannual variability (1700 BC - to the present).

Exact dating of hundreds of subfossil trees gave a chance to clear up the temporal distribution of trees abundance, age structure, frequency of trees deaths and appearances during last seven millennia. Assessment of polar tree line changes has been carried out by mapping of dated subfossil trees.

According to reconsructions most favorable conditions for tree growth have been marked during 5xxx xxxx xxxxBC. At that time position of tree line was far northward of recent one. [Unfortunately, region of our research don't includethe whole area where trees grew during the Holocene. We can maintain that before 1700 BC tree line was northward of our research area. We have only 3 dated remnants of trees from Yuribey River sampled by our colleagues (70 km to the north from recent polar tree line) that grew during 4xxx xxxx xxxx and 3xxx xxxx xxxxBC.]

This period is pointed out by low interannual variability of tree growth and high trees abundance discontinued, however, by several short xxx xxxx xxxxyears) unfavorable periods, most significant of them dated about 4xxx xxxx xxxxBC. Since about 2800 BC gradual worsening of tree growth condition has begun. Significant shift of the polar tree line to the south have been fixed between 1700

and 1600 BC. At the same time interannual tree growth variability increased appreciably.

During last 3600 years most of reconstructed indices have been varying not so very significant. Tree line has been shifting within 3-5 km near recent one. Low abundance of trees has been fixed during 1xxx xxxx xxxxBC and xxx xxxx xxxxBC. Relatively high number of trees has been noted during xxx xxxx xxxxAD.

There are no evidences of moving polar timberline to the north during last century.

Please, let me know if you need more data or detailed report.

Best regards,
Rashit Hantemirov

The last line of this report means that the lack of northward migration of the Polar Timberline gives a strong indication of no significant warming over the last 100 years. This report was part of the body of data that the Inter-Governmental Panel on Climate Change (IPCC) reviewed. However, this conclusion was not included in the final report.

Given the above e-mail is evidence showing that significant data was ignored by the scientists compiling the IPCC's Fourth Assessment Report (AR4), is it reasonable to concluded that the report on which the endangerment finding was based is flawed and therefore the endangerment finding is flawed?

Answer: EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

Question 3. IPCC Statement

The role of the IPCC and key elements of the IPCC assessment process
Issued on 4 February 2010

GENEVA, 4 February 2010

- Materials relevant to IPCC Reports, in particular, information about the experiences and practices of the private sector in mitigation and adaptation activities, are also found in sources that have not been published or peer-reviewed (e.g., industry journals, internal organizational publications, non-peer reviewed reports or working

- Authors who wish to include information from a non-published/non-peer-reviewed source, are requested to critically assess and review the quality and validity of each source before incorporating results into an IPCC Report.

MELTING OF HIMALAYAN GLACIERS:

IPCC statement Issued on 20 January 2010

It has, however, recently come to our attention that a paragraph in the 938-page Working Group II contribution to the underlying assessment refers to poorly substantiated estimates of rate of recession and date for the disappearance of Himalayan glaciers. In drafting the paragraph in question, the clear and well-established standards of evidence, required by the IPCC procedures, were not applied properly.

Question: Given the above admission of errors in the IPCC AR4, on which the endangerment finding was based, what actions are the agency taking to reassess the validity of the IPCC report? And what reassessment of the Endangerment Finding is currently on going in light of these admitted errors?

Answer: The Fourth Assessment report is a vast body of work contained in three volumes and a synthesis report comprising almost 3,000 pages. It cites thousands of references and bases its collective insights from this comprehensive literature. EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

Question 4: What office in the EPA is in charge of analyzing the leaked e-mails from the Climate Research Unit (CRU) at East Anglia University? Will that Office be making an analysis available for the public record?

Answer: The CRU emails were raised in one or more petition for reconsideration on the Endangerment Finding, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy

to provide this to you when it is complete. The Office of Air and Radiation is the office primarily responsible for the Technical Support Document for the Endangerment and Cause or Contribute Findings, and reviewing the petitions for reconsideration.

Question 5: IPCC AR4:

"Changes in proxy records, either physical (such as the isotopic composition of various elements in ice) or biological (such as the width of a tree ring or the chemical composition of a growth band in coral), do not respond precisely or solely to changes in any specific climate parameter (such as mean temperature or total rainfall), or to the changes in that parameter as measured over a specific 'season' (such as June to August or January to December). For this reason, the proxies must be 'calibrated' empirically, by comparing their measured variability over a number of years with available instrumental records to identify some optimal climate association, and to quantify the statistical uncertainty associated with scaling proxies to represent this specific climate parameter. All reconstructions, therefore, involve a degree of compromise with regard to the specific choice of 'target' or dependent variable."

Given that the IPCC AR4 admits to a "degree of compromise" in compiling the reconstructed temperature data why did the report omit the inaccuracy of the specific types of proxy data? Why is the proxy data plotted out to a tenth of a degree Celsius when some of the proxy data listed is only accurate to within several degrees Celsius?

Answer: We note that no specific examples are provided where "the report omit[s] the inaccuracy of the specific types of proxy data" or where "proxy data [is] plotted out to a tenth of a degree Celsius when some of the proxy data listed is only accurate to within several degrees Celsius." Furthermore, examples are not provided of proxies that are only accurate to within several degrees.

The IPCC transparently discusses uncertainties in specific types of proxy data and refers readers to studies where additional discussion of these uncertainties can be ascertained. It states:

The use of different statistical scaling approaches (including whether the data are smoothed prior to scaling, and differences in the period over which this scaling is carried out) also influences the apparent spread between the various reconstructions. Discussions of these issues can also be found in Harris and Chapman (2001), Beltrami (2002), Briffa and Osborn (2002), Esper et al. (2002), Trenberth and Otto- Bliesner (2003), Zorita et al. (2003), Jones and Mann (2004), Pollack and Smerdon (2004), Esper et al. (2005) and Rutherford et al. (2005).

The considerable uncertainty associated with individual reconstructions (2-standard-error range at the multi-decadal time scale is of the order of ±0.5°C)

is shown in several publications, calculated on the basis of analyses of regression residuals (Mann et al., 1998; Briffa et al., 2001; Jones et al., 2001; Gerber et al., 2003; Mann and Jones, 2003; Rutherford et al., 2005; D'Arrigo et al., 2006). These are often calculated from the error apparent in the calibration of the proxies. Hence, they are likely to be minimum uncertainties, as they do not take into account other sources of error not apparent in the calibration period, such as any reduction in the statistical robustness of the proxy series in earlier times (Briffa and Osborn, 1999; Esper et al., 2002; Bradley et al., 2003b; Osborn and Briffa, 2006).

IPCC also provides in depth discussions pertaining to tree-ring proxies on pages 474-476 of the Working Group I report.

EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

Question 6: Leaked e-mail from CRU East Anglia University:

Subject: Re: HadCRUT2v
From: "Tim Osborn" <t.osborn@xxxxxxxxx.xxx>
Date: Tue, December 13, 2005 1:07 pm
To: P.Jones@xxxxxxxxx.xxx
"Tom Wigley" <wigley@xxxxxxxxx.xxx>
Cc: "Ben Santer" <santer1@xxxxxxxxx.xxx>

Dear all,
attached is a plot of the monthly anomalies from the only box with non-missing data in the bottom row of Phil's grid (centred at 87.5 S). This is from HadCRUT2v that I picked up from the CRU data store in June this year.

Clearly the dates Tom listed are missing in my version too. Furthermore, the values from 1xxx xxxx xxxxare abnormal. They are not all identical, but are all near zero. Perhaps multiplied by 0.1? Similar problems are apparent in HadCRUT and CRUTEM2v too.

But CRUTEM2 has no gaps and no abnormal periods at the South Pole, so perhaps CRUTEM2 is fine? Tom - if it's urgent, you could extract the South Pole time series from CRUTEM2 and use it to overwrite the other 3 data sets until Phil corrects them.

Regarding the weighting issue...

Given that the grid doesn't have equal-area boxes, there are always going to be compromises with weighting. Even if you do something to sort out the problem at the S. Pole, how about the isolated boxes around the coast of Antarctica, which will be given much less weight than an isolated box in the tropics which might also have only 1 station in. This is partly reasonable because of differences in spatial correlation of temperatures between tropics and high latitudes, but I'm sure that they don't compensate exactly.

Specifically for the poles...Putting the temperature data into a single box will clearly underweight its contribution in area averages (is it significant from a practical point of view once you get to hemispheric or global scales though?). Replicating it into all boxes in the bottom row will, on the other hand, gives it too much weight. If the area weighting is calculated simply as cos(latitude) then the South Pole data will be given this weighting:

72*cos(87.5) = 3.14

whereas one box on the equator (or just off) will be given this weighting:

1*cos(2.5) = 1.00

so, if replicated around all boxes at 87.5 S, the South Pole would have three times the

weight of a single tropical box (compared with 23 times less weight if South Pole data

appears in only one box). Perhaps put it in every fourth box, giving a weighting of 0.79 (bit less than tropical, which is reasonable for spatial correlation reasons)?

Cheers
Tim 14

In this leaked e-mail from CRU, the highlighted portions are discussing statistically weighting Antarctic station data differently with respect to tropical data to produce the IPCC AR4. Given that this e-mail states an intent for tropical data to have more statistical weight, despite the fact that there has been a demonstrated cooling over the Antarctic continent, as represented by increased annual sea ice, is it realistic to give more statistical weight to tropical stations? Was this selective statistical manipulation designed to achieve a predetermined

outcome? Can you provide the exact statistical methods used to reconcile all of the different data sets?

Answer: EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

CAA REGULATION OF CO2

Question 7: Please discuss your plan for "phasing in" small emitters to CAA regulation of CO2 beginning in 2016. Please provide several examples of what kind of facilities would be phased in starting in 2016. Is the long-term goal to meet the requirements of the plain language of the CAA to regulate entities emitting over 250 tons?

Answer: The Tailoring Rule provides a phase-in plan that will not require small sources to undergo permitting for CO2 *any earlier* than 2016. That does not mean that EPA has decided that small sources *will* need to undergo permitting for CO2 starting in 2016. By the end of April 2015, EPA will complete a study on remaining GHG permitting burdens that would exist if we applied the program to smaller sources. We will consider the results of the study in developing a rule to be completed by April 30, 2016 that will further address Clean Air Act permitting for these facilities. In that rule we may decide that successful streamlining will allow us to phase in more sources, but we may also consider permanent exclusions from permitting for certain smaller sources.

FEBRUARY 4, 2010 EPA RESPONSE LETTER

Question 8: The below questions are in regards to EPA's response letter to me dated February 4, 2010.

> You decline to provide projections of future temperatures using a climate sensitivity of 0.6, in accordance with published papers by Dr. Roy Spencer and also by Lord Monckton, who additionally took account of the fact that CO2 concentrations, on present trends, will rise only by half as much as the IPCC predicts during this century. I regret that we must press you for the projections that we have requested, taking a climate sensitivity of 0.6 K at CO2 doubling as your reference. We say

> this because our attention has been drawn to the fact that it has been determined theoretically (*e.g.* Lindzen, 2007; Schwartz, 2007; Monckton, 2008) and confirmed empirically by direct measurement of outgoing radiation from the Earth's characteristic-emission level (*e.g.* Lindzen and Choi, 2009; Covey, 1995; Chen *et al.*, 2002; Cess & Udelhofen, 2003; Hatzidimitriou *et al.* 2004; Clement & Soden, 2005); and by consideration of clouds (e.g. Spencer and Braswell, 2008); and by direct measurement of ocean temperatures in the mixed layer (Lyman *et al.*, 2006 as amended, Gouretski & Koltermann, 2007, Willis, 2008, and Loehle, 2009, all show ocean cooling; Willis *et al.*, 2009, show no ocean warming, and Douglass & Knox, 2009, show no ocean warming for 68 years); and even by testing the forecasting skill of a zero-sensitivity CO2 assumption compared with high-sensitivity CO2 (Armstrong *et al.*, 2008) that the IPCC's current central estimate of climate sensitivity to atmospheric CO2 enrichment may be exaggerated, perhaps by as much as an order of magnitude.

I am of course aware that there are other papers suggesting the high climate sensitivity favored by the IPCC, including papers that respond to those we have cited here. However, it is plain that there is a flourishing and substantial low-sensitivity strand in the literature, and this strand impresses me because so many distinct methods to evaluate climate sensitivity, relying not so much on modelling as on measurement and real-world observation, all appear to reach a broadly similar conclusion, satisfying the scientific coherence criterion.

During the 19 years 1983-2001 there was an increase of approximately 0.45 K in global mean surface temperature. During that period, some 0.45 W m^{-2} of CO2 radiative forcing appears to have occurred, if the IPCC's radiative-forcing formula is used. Also, perhaps 0.35 W m^{-2} of non-CO2 anthropogenic forcing occurred over the period. However, Pinker *et al.* (2005), in a paper that impresses me because it does not concern itself with "global warming" at all and is thus not partisan in either direction, find that during the same 19 years there was 3.04 W m^{-2} of radiative forcing from a naturally-occurring and probably cyclical reduction in cloud cover.

From this one may determine climate sensitivity to CO2 doubling as follow:

$$\Delta T_{2x} = (5.35 \ln 2)[0.45 / (3.04+0.45+0.35)]$$
$$= 0.4 \text{ K}$$

This again suggests the low sensitivity adumbrated in the various papers we have cited. Naturally it would be desirable to test more than just one 19-year period; and to take account of very-long-acting temperature feedbacks that might

not become evident over so short a period; and to attempt a verification of Pinker's result by independent methods. Nevertheless, this illustration shows that there is plainly a statable case that climate sensitivity is low – a case that, with respect, the EPA has insufficiently considered. For these reasons, I must ask you to reconsider your decision not to model the low-sensitivity case.

Answer: As EPA stated in our previous response we find that such a calculation would not be an appropriate use of EPA staff time or budget as this climate sensitivity is inconsistent with the bulk of scientific literature and historical data sets. Indeed, an Interagency group was recently formed to generate U.S. Government estimates of the Social Cost of Carbon. This Interagency group determined that the Roe and Baker (2007) distribution of climate sensitivity was an appropriate representation of the current state of scientific understanding surrounding this parameter (see page 13 of the "Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866," Interagency Working Group on Social Cost of Carbon, United States Government, February 2010, available in the docket for the joint EPA/NHTSA light-duty vehicle rulemaking (document ID EPA-HQ-OAR-2009-0472-11457) at http://www.regulations.gov/search/Regs/home.html#documentDetail?R=0900006480ac9d2c). Under this distribution, the approximate probability associated with a climate sensitivity of 0.6 or lower is less than 1.5 E-18. EPA continues to hold that this is not appropriate climate sensitivity under which to conduct model runs.

Question: Your letter says that EPA projects 415-417 ppm CO2 equivalent by 2015. We should be grateful for your clarification of how the EPA evaluates CO2 equivalence. At present there is 388 ppmv CO2 in the atmosphere, rising at 2 ppmv/year (NOAA global deseasonalized CO2 concentration data, 2000-2010), implying 398 ppmv CO2 by 2015. Are you suggesting that CO2 equivalence is near-identical to CO2 concentration itself, so that by 2015 only 17-19 ppmv CO2 equivalence is attributable to all other anthropogenic greenhouse gases?

Answer: As EPA stated in its previous letter, CO_2e concentrations are not projected to reach 450 ppmv until 2025. The CO_2e concentrations cited in the original analysis are based on total anthropogenic forcing, including a number of negative forcing agents, such as aerosols. The 17-19 ppmv noted in this question correctly captures the net anthropogenic forcing from non-CO_2 substances.

Question: Your letter says your scenarios "were designed to stabilize greenhouse-gas emissions, not CO2-equivalent concentrations". Yet you go on to make it plain that it is CO2e concentrations that you are targeting. Please clarify, and confirm that it is concentrations, not emissions, that you use in evaluating the radiative forcing from anthropogenic influences on the climate.

Answer: Concentrations are used to evaluate radiative forcing. Concentrations are the net of emissions and uptake by terrestrial systems (e.g. oceans, forests). A scenario was designed to have constant emissions after 2050 and these emissions were modeled with projections about terrestrial uptake to generate concentration levels.

HISTORICAL TEMPERATURES AROUND THE GLOBE

Question 9: There seems to be some confusion about historical temperatures around the globe. We would appreciate your thoughts on the following:

a. Is it accurate that for part of the past 550 million years mean tropical surface temperature has been some 4 Celsius degrees (7.2 F) warmer than the present (e.g., Veizer et al. 2000, Nature, vol. 408, 698-701)?

b. Is it accurate that each of the past four interglacial warm periods, occurring at approximately 100,000-year intervals, was warmer than the present by at least a few degree Celsius (e.g., Jouzel et al. 2007, Science, vol. 317, 793-796)?

c. Is it accurate that some 7500 of the past 11,400 years of the Holocene interglacial warm period have been warmer than the present by 2-3 C (3.5-5.5 F) around Greenland (e.g., Dahl-Jensen et al. 1998, Science, vol. 282, 268-271)?

d. Is it accurate that the Holocene, Minoan , Roman, and Medieval warm periods were also warmer than the present for large areas around the globe (Kvavadze and Connor (2oo5); Dansgaard et al. (1969); Schonweise (1995); and Cuffey and Clow (1997))?

e. Is it accurate that the rates of "global warming" from 1860-1880, 1910-1940, and 1980-2001 were approximately identical? If, as we have reason to believe, these values are correct, then would not today's temperature fall within the natural variability of the climate.

Answer: EPA has addressed the fact that the Earth has been warmer in the past in its Response to Comments document. For example, as we state in Volume 3, "The fact that Earth's climate has never been static and that in the past the Earth has experienced significant temperature change without anthropogenic emissions of GHGs in no way contradicts the robust conclusion that the global average net effect of human activities since 1750 has been one of warming." With respect to warming in the instrumental record, our Technical Support Document states "The warming rate in the last 10 30-year periods (averaging

about 0.30°F [0.17°C] per decade) is the greatest in the observed record, followed closely by the warming rate (averaging about 0.25°F [0.14°C] per decade) observed during a number of 30-year periods spanning the 1910s to the 1940s." For further information, please see Volume 2 and 3 of our Response to Comments document.

Some of the petitions for reconsideration raise issues broadly related to the issues raised here. EPA is carefully and diligently reviewing these petitions and preparing its decision(s) on them.

GREENHOUSE GAS WARMING EFFECT

Question 10: Reported results (e.g. Pinker et al.,2005, Science, vol, 308, 850-854) suggest that from 1983-2001, during the only two decades of "global warming" that we could in theory have influenced, the radiative forcing from a naturally-occurring reduction in cloud cover was responsible for almost six times as much radiative forcing as all human greenhouse-gas emissions over the same period. Are we, therefore, correct in assuming that the warming effect of greenhouse gases is minuscule in comparison to natural forcings, and that climate sensitivity to all forcings is approaching an order of magnitude less than the value lambda=0.9 K/W/m2 implicitly assumed by the IPCC as its central estimate in the 2007 climate assessment report?

Answer: EPA has addressed the issue of global dimming and subsequent brightening in its Response to Comments document. As stated in Volume 3, "The IPCC agrees that the trend of global dimming seems to have reversed in the early 1990s, possibly due to both direct and indirect (cloud interaction) effects of the reductions in anthropogenic aerosols. Dimming is discussed in Hegerl et al., Denman et al., Trenberth et al., and CCSP 2.3 (CCSP, 2009a). The changes in anthropogenic aerosol emissions and associated uncertainties are addressed in detail in the IPCC, CCSP, and USGCRP attribution studies, which serve as the basis for the TSD's discussion of attribution. Because these aerosol effects are already included in all the IPCC studies, we conclude that the scientific literature on global dimming does not alter any of the conclusions from the assessment literature, as summarized in the TSD."

EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

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CLIMATEGATE

Question 11: Have you been made aware whether the Climategate emails were hacked by an outsider or leaked by a whistleblower?

Answer: No. We have no more information than that generally available through the media.

Question 12: Given your thorough investigation of the "Climategate" emails, can you please explain what is meant by this email from Michael Mann (in particular that highlighted in yellow):

> "We demonstrate (through comparining [sic] an exatropical [sic] averaging of our nothern hemisphere patterns with Phil's more extratropical series) that the major discrepancies between Phil's and our series can be explained in terms of spatial sampling/latitudinal emphasis (seasonality seems to be secondary here, but probably explains much of the residual differences). But that explanation certainly can't rectify why Keith's series, which has similar seasonality *and* latitudinal emphasis to Phil's series, differs in large part in exactly the opposite direction that Phil's does from ours. This is the problem we all picked up on (everyone in the room at IPCC was in agreement that this was a problem and a potential distraction/detraction from the reasonably concensus viewpoint we'd like to show w/ the Jones et al and Mann et al series. So, if we show Keith's series in this plot, we have to comment that "something else" is responsible for the discrepancies in this case."

Answer: EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

MEASURING RADIATIVE FORCING OF CO2

Question 13: Given that the CO2 radiative forcing has been reduced by some 15% by the IPCC compared with its value imagined in the 1995 report, and given that the author of the paper that enshrines the IPCC's current central

formula has said that further downward revision of this important parameter may be necessary, what function would you now recommend for use in determination of climate sensitivity?

How can you confidently claim that the effects of climate change are increasing, when the mathematical equation used by the scientific community for measuring radiative forcing of CO2 has over time decreased?

Answer: The reasoning behind the decrease of 15% in the estimate of total radiative forcing due to a doubling of CO_2 was clearly discussed in the IPCC Third Assessment Report (Chapter 6.3.1). The TAR suggests that the change was due to better incorporation of stratospheric temperature adjustments. Both the Third Assessment Report, and the Fourth Assessment Report, found that there was still an uncertainty of 10% around the new value of 3.7 W/m^2 for a doubling of CO_2. We are unaware of what statement by an author you are referring to suggesting that this number should be decreased, and therefore suggest that 3.7 W/m^2 continue to be used as the best estimate of forcing due to doubled CO_2 concentrations. In any case, regardless of whether the constant is 3.7 or 3.6 or 3.8, for example, increasing CO_2 concentrations will lead to an increasing effect on radiative forcing.

WARMING PROJECTIONS

Question 14: Please confirm that for the past ten years, notwithstanding the exponential increase in CO2 emissions to levels some 40% above the Kyoto Protocol's reference level, CO2 concentration has risen not exponentially, as predicted by the IPCC's A2 scenario, but merely linearly at a rate close to 2 ppmv/year. Please discuss the implications for the IPCC's warming projections over the 21st century, given that on the present trend CO2 concentration will reach no more than 570 ppmv by 2100, rather than the central estimate of 836 ppmv on the IPCC's A2 scenario, Would we be right in assuming that, if the present trend continues, the central estimate of warming compared with the year 2000 based on IPCC (2007) will be 4.7 ln (570/368), or just 2.1 Celsius degrees, compared with the 3.9 Celsius degrees that the UN predicts will occur?

Answer: The observed growth rate in atmospheric CO_2 concentration is non-linear, with significant interannual variability. This can be seen by examining the full Mauna Loa CO_2 growth rate observations, which begin in 1959 and can be found at http://www.esrl.noaa.gov/gmd/ccgg/trends/#mlo_growth. We also note that the IPCC's warming projections for the 21st century are based upon socioeconomic projections and carbon-cycle models, not on exponential fits. Additionally, as noted in Response 2-11 of the EPA Response to Comments document, both http://www.ipcc-data.org/ddc_co2.html and Rahmstorf et al. (2007) show that observed concentrations are approximately in the middle of

IPCC projections from the 2001 Third Assessment Report. Some of the petitions for reconsideration raise issues broadly related to the issues raised here. EPA is carefully and diligently reviewing these petitions and preparing its decision(s) on them.

COPENHAGEN ACCORD

Question 15: Supposing that the West accounts for half of the world's emissions, and that the countries of the West will notify the Secretariat of the UNFCCC by 31 January in accordance with the Copenhagen Accord that they will cut emissions stepwise to achieve a 30% mean reduction in Western emissions (15% of global emissions) by 2010, which—allowing for stepwise progress over the decade towards universal compliance—would amount to 7.5% of global emissions, and that the IPCC is right in saying that there would be no immediate reduction in CO2 concentrations even if we were no longer emitting CO2, is it correct to calculate that the warming forestalled over the next decade by universal compliance with Copenhagen on the optimistic basis we have described would be 4.7 ln (408/406.5), or less than 0.02 Celsius, or just 0.03 Fahrenheit?

Answer: Several issues are relevant to this question:

First, the calculation of CO_2 concentration change is incorrect. In the short term, any reductions of human CO_2 emissions below the current net uptake will in fact lead to reductions in CO_2 concentrations. Reductions of CO_2 emissions will lead to no temperature reductions in the short term because of the inertia of the system, which is more likely to have been the IPCC statement. Ideally, a carbon cycle model would be used to calculate the change in concentration, but as an approximation, in the short term, reducing 2 gigatons of carbon should lead to a reduction of about 1 ppm of CO_2 compared to the reference case.

Second, the calculation of the reduction resulting from an implementation of the Copenhagen Accord should be done with respect to a business as usual scenario, and not 2010 or 1990 emissions (it is unclear which target the question is referring to).

Third, the calculation of temperature from CO_2 concentrations is incorrect. 4.3 times $LN([CO_2]_0/[CO_2])$ might give an approximate equilibrium temperature change result from a change in CO_2 concentration assuming a climate sensitivity of 3, but it would be better to show the 95% bounds of possible temperature changes using a simple climate model.

Finally, calculating temperature in 2020 from CO_2 reductions from 2010 to 2020 does not show that these reductions also reduce temperature for many decades and centuries after 2020.

IPCC

Question 16: In December 2008, President Obama stated that "the truth is that promoting science isn't just about protecting resources---it's about protecting free and open inquiry. It's about ensuring that facts and evidence are never twisted or obscured by politics. It's about listening to what our scientists have to say even when it's inconvenient---especially when it's inconvenient." Are you of the position that the IPCC has met these exacting standards?

Answer: The Fourth Assessment report is a vast body of work contained in three volumes and a synthesis report comprising almost 3,000 pages. It cites thousands of references and bases its conclusions on the collective insights from this comprehensive literature. It went through numerous rounds of review and was ultimately cleared by all federal agencies and the White House Office of Science and Technology Policy. EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

MEDIEVAL WARMING PERIOD

Question 17: Did the Medieval Warm Period Exist? And can you please share which continents you have or have not found proxy data for in determining the existence or non-existence of the Medieval Warming Period?

a. Was Dr. Phil Jones accurate in stating that if the Medieval Warm Period did exist then current temperatures would not be unprecedented?

Answer: EPA has addressed this issue in its Response to Comments document for the Endangerment and Cause or Contribute Findings. For example, in Volume 2 of the Response to Comments document, EPA states that "We do not dispute the existence of a [Medieval Warm Period] in some regions, but do not find strong evidence that it was global in nature and comparable (or larger), in magnitude, to the global-scale warming unequivocally observed in the last century." For additional information, please see Volume 2 of the Response to

Comments document. Furthermore, some of the petitions for reconsideration raise issues broadly related to the issues raised here. EPA is carefully and diligently reviewing these petitions and preparing its decisions on them.

GREENLAND BORE HOLE DATA

Question 18: According to the Greenland bore hole data is it accurate to say that during the Ordovician period carbon dioxide concentrations were twelve times what they are now at roughly 4400 ppm CO2, and the temperature was lower?

Answer: Many factors are important in controlling the average surface temperature of the Earth, including carbon dioxide, solar luminosity, albedo, distribution of continents and vegetation, orbital parameters, and other greenhouse gases. Though temperatures during the Ordovician period may have been lower than today despite higher carbon dioxide levels, the solar constant (a measure of solar luminosity) was 4% lower than today (Royer, 2006).[1] Furthermore, a recent study by Young (2010) indicates CO_2 trends tended to track glacier cycles (and hence temperature) during the Ordovician period which would suggest CO_2 was a strong driver of climate.[2]

SEA ICE ACCUMULATION

Question 19: Using National Ice Center Data, since 2007 can you confirm that the trend of sea ice accumulation in the Northern Hemisphere is increasing and by how much per year? Is the very recent trend consistent with earlier global climate model predictions?

Answer: EPA has addressed this issue in its Response to Comments document for the Endangerment and Cause or Contribute Findings. For example, in Volume 2 of the Response to Comments document, EPA states "September Arctic sea ice extent reached a minimum in 2007, its second lowest on record in 2008, and third lowest on record in 2009. The implication, therefore, is that there has been some recovery since the minimum. The key conclusion however, is not that there has been a very modest recovery, but rather that the 2009 September low was still 1.68 million square kilometers (649,000 square miles) below the

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[1] Royer DL. CO_2-forced climate thresholds during the Phanerozoic. Geochim Cosmochim Acta 2006; 70: 5665-5675. Available at http://droyer.web.wesleyan.edu/PhanCO2(GCA).pdf

[2] Young, S.A., et al., Did changes in atmospheric CO_2 coincide with latest Ordovician glacial–interglacial cycles?
Palaeogeography, Palaeoclimatology, Palaeoecology (2010), doi:10.1016/j.palaeo.2010.02.033.
Available at http://www.geology.ohio-state.edu/~saltzman/young_2010.pdf

1979 to 2000 September average." For additional information, please see Volume 2 of the Response to Comments document.

ACCURACY OF IPCC CLAIMS

Question 20: Since you cite the IPCC as the gold standard in science, and at the time of your citing the IPCC for moving forward with the endangerment finding these claims of the IPCC were included in their most recent report, do you still believe the following are accurate?

1. That the Himalayan glaciers will melt by 2035?
2. That global warming endangers 40 percent of Amazon rainforests?
3. That global warming will deplete water resources for 4.5 billion people by 2085?
4. That global warming will lead to rapidly increasing costs due to extreme weather events?
5. That global warming will slash crop production by 50% in North Africa by 2020?

Answer: EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

CLIMATEGATE

Question 21: Specific ClimateGate Emails. From your comprehensive review of the Climategate emails I was hoping you could help me understand the following emails:

1. This 2004 email/statement from Dr. Jones: **"I can't see either of these papers being in the next IPCC report. Kevin and I will keep them out somehow – even if we have to redefine what the peer-review literature is!"** Does the tone of the email in question indicate an environment which promotes the good practice of the scientific method and the exercise of ethical standards that are present at EPA?

2. This email by Dr. Keith Briffa, the Deputy Director of the CRU, and lead author of the IPCC's Fourth Assessment Report, who wrote, **"I tried hard to balance the needs of the science and the IPCC,**

On May 29, 2008, Dr. Phil Jones went beyond "hiding behind" data by encouraging colleagues to delete emails related to work produced for the IPCC's Fourth Assessment Report (AR 4). In an email to Dr. Michael Mann, Jones wrote:

3. **"Can you delete any emails you may have had with Keith re AR 4? Keith will do likewise...Can you also email Gene and get him to do the same?** I don't have his new email address. We will be getting Caspar to do likewise." Would similarly deleting data be tolerated at the EPA? Are these statements evidence of a corrupted scientific method? And if not why?

4. This email by Dr. Keith Briffa when he stated: "**I know there is pressure to present a nice tidy story** as regards '**apparent unprecedented warming in a thousand years or more in the proxy data but in reality the situation is not quite so simple**" and further stated "**I am not sure that this unusual warming is so clear in the summer responsive data. I believe that the recent warmth was probably matched about 1000 years ago.**" Is Dr. Keith Briffa identifying the Medieval Warm Period? If not what "warmth" is he referring to? Is this statement consistent with the CRU public claim that there was no global Medieval Warm Period?

5. In one 2009 email Mike McCracken stated: "...**In any case, if the sulfate hypothesis is right, then your prediction of warming might end up being wrong. I think we have been too readily explaining the slow changes over past decade as a result of variability--that explanation is wearing thin. I would just suggest, as a backup to your prediction, that you also do some checking on the sulfate issue, just so you might have a quantified explanation in case the [warming] prediction is wrong.**" It is clear that Mike McCracken is calling into question the accuracy of the global climate models (GCMs). Has the EPA or any other organization performed confidence evaluations of these models? Have the GCMs been able to hindcast known climatic events such as the little ice age or the medieval warm period? Can the EPA assign a confidence factor to the models used in the clearly questionable results? Do the GCMs performance standards meet operational forecast models standards such as those used at the National Hurricane Center?

6. What did Dr. Phil Jones mean by this email sent in July of 2005: "**The scientific community would come down on me in no uncertain**

Answer: EPA takes seriously any allegations of scientific misconduct associated with data supporting the agency's Endangerment Finding. One or more petitions for reconsideration on the Endangerment Finding have raised the issue of scientific misconduct, and EPA is carefully and diligently reviewing those petitions and preparing its decision(s) on them. We will be happy to provide this to you when it is complete.

IPCC CITATIONS

Question 22: How many times is the IPCC cited as a source by the EPA in its CO2 "Endangerment Finding" and in all applicable documents produced by the EPA supporting the Endangerment Finding?

Answer: The Endangerment Findings, Technical Support Document, and Response to Comments document include over 850 total entries in the Reference sections of the collective documents and thousands of citations to those references. These citations point to any number of scientific assessment reports and peer-reviewed literature. However, the IPCC continues to be one of the several overarching scientific assessment reports, along with USGCRP/CCSP and NRC, which collectively represent the best reference materials for determining the general state of knowledge on the technical and scientific issues of climate change. In turn, those assessment reports themselves also contain thousands of references and citations to other peer-reviewed literature.

Question Submitted for the Record by Senator Voinovich

GREAT LAKES RESTORATION INITIATIVE

Question 1: The EPA proposed funding for the second year for the Great Lakes Restoration Initiative (GLRI). These funds are needed to address a wide variety of threats to the Great Lakes. Though only the Fiscal Year 2010 funds have actually been appropriated, I am concerned that GLRI funds should be devoted to Great Lakes-specific restoration needs and are being used in lieu of regular agency budgeting practices. For example, the Administration has proposed using $13.5 million of Fiscal Year 2010 GLRI funding to address Asian carp issues. While the Asian carp has moved faster towards the Great Lakes than expected, why haven't agencies budgeted for some of the Asian carp work that is now being done through the GLRI?

Answer: GLRI funding allowed EPA and its federal partners to take swift, decisive action to address the Asian carp threat . This was an appropriate and necessary use of GLRI funding in the short term, as addressing invasive species is a high GLRI priority. The GLRI provided federal agencies the opportunity to deal with the short-term threat of Asian carp, while retaining the ability to execute long-term plans for Great Lakes Restoration.

Question: Additionally, I have heard reports that agencies such as the EPA and the Coast Guard are intending to use substantial portions of the GLRI funds which are channeled to them for national program priorities, such as EPA Environmental Technology Verification Program protocol development generally, and construction or improvement of ballast test facilities outside the region. While these are meritorious objectives, they should be funded from sources outside the GLRI. How much GLRI money is currently being programmed for national program development across agencies?

Answer: Agencies participating in GLRI are carefully using that funding for programs and projects which directly support Great Lakes priorities articulated in the Great Lakes Restoration Initiative Action Plan. We note that Interagency Agreements specified that "Funding ...shall not be used to supplant base programs funding of the recipient or sub-recipients." Addressing some of the Great Lakes priorities does involve work with national programs; in those cases EPA uses GLRI funding for work which directly and specifically benefits the Great Lakes. One example is a project by the Coast Guard to develop detection and response techniques for oil spills in ice in fresh water systems to develop appropriate recovery techniques. The ballast water example cited in the question also involves work with national programs. Ballast water is a high-priority in the Great Lakes, but because ocean going ships that operate in the Great Lakes have

been identified the source of several recent introductions of invasive species, ballast water cannot be addressed solely from a Great Lakes perspective. These ships spend most of their time in brackish or salt water ports outside of the Great Lakes; consequently, most ballast management techniques and technologies are being developed for the brackish/salt water environment. GLRI funding can ensure that the needs of freshwater ecosystems like the Great Lakes are considered in ballast water management and that the ETV program will ensure that ballast water technology will be appropriately tested so that it is verified to be protective of freshwater ecosystems.

Question: There is considerable need for GLRI funding, and the President even committed to spending $5 billion over 10 years on Great Lakes restoration. While the need for restoration funding certainly exceeded the Fiscal Year 2010 GLRI request of $475 million, the EPA has not spent all of the Fiscal Year 2010 funds. Can you explain why the Fiscal Year 2010 money has not been allocated as quickly as planned?

Answer: EPA is making good progress toward making awards. The full appropriation was announced in November and made available to EPA in January. EPA has been working to establish this new program, including completion of the 5-year Great Lakes Restoration Initiative Action Plan for the program, requiring accountability for awards of funding through a new accountability system which will link funding to goals, objectives, and measurable targets; and establishing interagency accountability and funding mechanisms. Throughout the development of the Action Plan, the participating agencies have sought to provide transparency to the process and allow for broad public input in order that a plan would be in place to provide appropriate strategic direction.

To further advance the progress of the GLRI, EPA has:

- Issued a complex, multi-program $120 million competitive Request for Proposals within a month of the announcement of the appropriation, but before EPA had funds in hand. To support the Request for Proposals, EPA and other federal agencies engaged some 200 reviewers in more than 3,000 individual evaluations of over 1,000 proposals. Proposal selection is expected in May.

- Negotiated with States and Tribes for non-competitive State and tribal awards. These non-competitive awards provide States and Tribes with needed capacity to support Great Lakes restoration, including participation in the coordinated implementation of Lakewide Management Plans and Remedial Action Plans.

- Engaged in intense development and negotiation of Interagency Agreements with the other federal agencies. Through May 3, EPA has obligated or transferred $210 million (85%) of the $247.2 million in GLRI funding expected to be used in Interagency Agreements with other Federal Agencies.

Questions Submitted for the Record by Senator Whitehouse

UNIVERSE OF REGULATED ENTITIES

Question 1: In 2005, the GAO reported that EPA cannot identify the full universe of "regulated entities" subject to the federal environmental statutes, and that this limited knowledge impedes the EPA's efforts to determine compliance with these statutes. Please describe EPA's efforts to determine the universe of regulated entities, and identify any resources needed to make this determination.

Answer: EPA efforts vary and are constrained by the underlying statutory authority. For example, under the Resource Conservation and Recovery Act (RCRA) universe, EPA requires tracking - via a RCRA Identifier - of all hazardous waste generators and transporters which is key to developing a complete inventory of sources. However, there is no existing requirement for RCRA-regulated facilities to notify EPA or the states when hazardous waste activities cease. This makes it difficult to distinguish between active and inactive handlers. This is especially difficult for smaller handlers (larger handlers must report overall waste amounts every 2 years, which assists EPA in identifying businesses that may have closed).

In the Clean Air Act (CAA) universe, EPA focuses its data collection efforts on the larger emissions sources, as outlined in the GAO report. EPA has a good inventory of Title V CAA sources, and of synthetic minors. Smaller area sources are not always completely populated in EPA's databases.

In the National Pollution Discharge Elimination System (NPDES) universe, EPA's original focus was on the compliance status of NPDES major dischargers. As a result, EPA currently has comprehensive facility-specific information, provided by the states to EPA, regarding the major dischargers regulated under the NPDES program. However, information regarding non-major dischargers, "wet weather" dischargers, concentrated animal feeding operations (CAFO's), and others is far less complete.

In 2006-2007, EPA met with the states in an effort to develop a new policy that would address requirements for states to provide NPDES information for the full scope of the NPDES program to EPA. That effort led to the development of a draft Integrated Compliance Information System (ICIS) NPDES Policy Statement in April 2007. However, several states indicated that they would not comply with these reporting requirements unless they were contained in a Federal regulation.

EPA is currently developing a proposed rule to require the timely, accurate and nationally consistent submission of NPDES information by NPDES

permittees and by states to EPA. The key focus of this rule is to require electronic reporting of specific information by the NPDES permittees to EPA, with additional information required from the states.

The FY 2011 President's Budget includes additional resources to assist EPA in developing the necessary functionality in ICIS/NPDES to enable the electronic transfer of NPDES data and to assist states in their efforts to electronically flow their data to ICIS-NPDES. In addition, the budget requests a substantial increase in CWA section 106 grants that support the full range of state water quality responsibilities, including data related functions.

While the rulemaking process moves forward, EPA is considering options for gathering summary information from the states. This is already done for some universes, but could be expanded as an interim way to have more complete information.

REPORTING CRIMINAL REFERRALS TO DOJ

Question 2: In FY 2005, EPA's enforcement office (OECA) discontinued reporting criminal referrals to the Department of Justice (DOJ). In FY 2004, OECA had referred 168 cases to DOJ. How many cases did OECA refer to DOJ in FY 2005 – FY 2009? Will OECA resume reporting its criminal referrals under this Administration? Why or why not?

Answer: EPA does not intend to resume reporting criminal referrals. The criminal enforcement program stopped reporting its number of referrals in FY 2004 due to definitional differences between civil and criminal referrals and the potential for misinterpretations.

A civil referral is a formal request for DOJ to file a complaint against an alleged violator. A criminal referral is a request for prosecutorial assistance during the course of an investigation to determine if potential criminal violations have occurred. It is an investigative tool to gather evidence to see whether potential violations have actually occurred and whether potential defendants should, in fact, be formally charged (e.g., development of a search warrant or convening a grand jury to issue subpoenas for documents or testimony of witnesses). Some investigations will lead to formal criminal indictments; others will be closed without prosecution.

Therefore, criminal referrals, as they were called, simply are not a meaningful measure of the number of criminal enforcement cases for which EPA ultimately asks the DOJ to file charges. More meaningful measures (and more analogous to a civil referral) are the number of charged criminal cases and the

total number of defendants charged in a fiscal year, both of which are reported in our annual accomplishment reporting.

MERGING COMPLIANCE ASSISTANCE AND ENFORCEMENT

Question 3: In its FY 2011 budget, EPA proposes to merge its Compliance Assistance and Incentives activities into its Civil Enforcement program. Please describe how merging these activities will help the agency prevent and address violations of environmental laws so as to more effectively safeguard human health and the environment. Please also indicate whether reporting will likewise be merged, or whether reporting will clarify which tools were used to achieve compliance at any given source.

Answer: The Agency believes that the Compliance Incentives and Compliance Assistance and Centers programs are vital parts of an integrated strategy that uses all of our enforcement tools (monitoring, assistance, incentives, and traditional enforcement approaches) to improve compliance with environmental laws and vigorously pursue pollution problems that matter most to communities.

The existing budget structure, which focuses on inputs, hampers flexibility and efficiency in achieving our compliance program goals by emphasizing individual enforcement tools over addressing environmental problems in the most effective way.

We believe the proposed account restructuring will put the emphasis on outcomes - allowing us more flexibility in devising tailored approaches to address the unique characteristics of individual cases. This should result in a more nimble and vigorous program and strengthen the credibility of the threat of Federal enforcement action.

The Agency's proposal is also consistent with our renewed focus under the Government Performance and Results Act (GPRA) on environmental outcomes. In FY 2010, the Agency revised its GPRA annual measures to focus on environmental problems solved rather than enforcement tools used. The proposed restructuring aligns the budget with this approach.

INSPECTING FACILITIES AT HIGH RISK OF TOXIC RELEASES

Question 4: In February 2009, when reviewing EPA's Clean Air Act Section 112(r) program (which governs the risk of toxic releases from stationary sources), EPA's Office of Inspector General found that EPA spent a

disproportionate amount of time and resources inspecting low risk facilities, while more than half of the nation's 493 "high risk" facilities had never been inspected or audited. EPA has primary responsibility for determining compliance at about 80% of these facilities (states have primary responsibility for the balance).

How does EPA decide to inspect or audit facilities? What changes could be made to the process, to ensure that high risk facilities are given inspection priority? How often can EPA pledge to inspect every high-risk facility in the United States?

Then, please identify the 296 high-risk facilities that have never been inspected or audited, including the county and state where they are located, and whether EPA or the state has primary oversight responsibility.

Answer: On March 18, 2010, EPA submitted a Report to Congress on our action plan to improve the chemical facility risk management program as required in Senate Report 111-38 accompanying the FY 2010 Department of the Interior, Environment, and Related Agencies Appropriation Act (P.L. 111-88).

As part of our action plan, EPA has further refined the high-risk facility criteria established in FY 2007 to remove redundancy and include new criteria which better measure the overall hazard and complexity of a facility. The revised criteria include:

- Facilities whose reported Risk Management Plan (RMP) worst-case scenario population exceeds 100,000 people;
- Facilities that have had one or more significant accidental releases within the previous five years; and
- Any RMP facility with a hazard index greater than or equal to 25.

Application of these criteria to the RMP database identified approximately 2,100 facilities as high-risk (out of a total of 13,099 RMP facilities), only 280 of which are in states and counties that have been delegated the responsibility to perform inspections (the remaining 1,820 facilities are inspected by Federal inspectors)[1]. In order to address concerns that high-risk facilities were being overlooked, the Agency set an annual inspection target focused specifically on these facilities. Each year, EPA will conduct 400 inspections and of these inspections, 80 must be at high-risk facilities. Therefore the Agency is inspecting approximately 3% of all the RMP facilities and 4% of the high-risk facilities on an annual basis (delegated state employees carry out additional inspections in their states). While high risk facilities reflect approximately 20% of the number being inspected each year, the burden associated with inspecting high risk

[1] There are nine delegated States and 5 delegated local agencies. The nine delegated States are Delaware, Florida, Georgia, Kentucky, Mississippi, North Carolina, New Jersey, Ohio, and South Carolina. The five local agencies are Allegheny County (Pennsylvania), Buncombe County (North Carolina), Forsyth County (North Carolina), Jefferson County (Kentucky), and Mecklenburg County (North Carolina).

facilities requires approximately 60% of the available inspection resources. EPA also conducts validation checks on all RMPs submitted to the Agency and requires facilities to correct erroneous submissions. More thorough reviews of RMPs are also conducted prior to conducting inspections and during desk audits.

EPA does not maintain a separate database to track high-risk facility inspections. At the beginning of each fiscal year (starting with FY2010), EPA extracts a list of high-risk facilities from the RMP national database and distributes it to each EPA Regional Office (to date, EPA has not requested that delegated state implementing agencies place a higher priority and separate target on high-risk facility inspections). EPA's National Program Managers Guidance is developed each year to guide the Regions in implementing the various EPA programs, including general guidance on selecting high risk facilities to inspect. At the end of the fiscal year, each Regional office will report to EPA headquarters the number and identity of RMP facilities inspected using the Integrated Compliance Information System (ICIS) database. EPA headquarters then compares the ICIS inspection data to the list of high-risk facilities, and updates the list of high-risk facilities to include facility inspection status.

Since the Regional Offices generally do not report which RMP facilities have been inspected until after the end of each fiscal year, EPA does not yet have a fiscal year 2010 list of the high-risk facilities that have never been inspected or audited. EPA has compiled a list of high-risk facilities (based on the current criteria) that have been inspected through FY 2009. However, this information would need to be protected in accordance with Public Law 106-40, the Chemical Safety Information, Site Security, and Fuels Regulatory Relief Act, which limits distribution of certain RMP information to "covered persons" (i.e., government officials and government contractors whose official duties require the information), and restricts public distribution of the information.

ENVIRONMENTAL RISKS TO COMMUNITIES

Question 5: EPA also plays an important role in assessing risks of chemical/pollutant exposure to individuals and communities. Please confirm that the 493 high risk facilities discussed in Question 4 have been entered into EPA's database for tracking such facilities. Then, please identify which communities are impacted by those high risk facilities, by location, size, and demographics.

Answer: More than 13,000 facilities with Risk Management Plans have all been entered into EPA's Risk Management Program (RMP) database. The RMP database includes information on the location of facilities and the revised criteria used to identify high-risk facilities. High-risk facilities include RMP facilities that have reported an RMP worst-case scenario population exceeding 100,000 people, RMP facilities that have had one or more significant accidental

releases within the previous five years; and any RMP facility with a hazard index greater than or equal to 25 (hazard index accounts for the number and quantity of RMP-regulated chemicals on site). Therefore, the approximately 2,100 high-risk facilities are included in the RMP database.

EPA has not conducted a demographic analysis of high-risk facility communities and the RMP national database does not contain demographic information on communities near regulated facilities. Rhode Island contains a total of 15 RMP facilities, 3 of which are considered high-risk under EPA's criteria.

EPA can provide a list of high-risk facilities with state and local locations. However, this information would need to be protected in accordance with Public Law 106-40, the Chemical Safety Information, Site Security, and Fuels Regulatory Relief Act, which limits distribution of EPA off-site consequence analysis (OCA) information to "covered persons" (i.e., government officials and government contractors whose official duties require the information), and restricts public distribution of the information.

Questions 6: Awaiting response.

STATE/FEDERAL DATA SHARING

Question 7: The Environmental Council of States ("ECOS") reported that in FY03, states conducted 136,000 inspections to determine compliance with federal environmental laws. Yet much of the inspection data were not shared with EPA, because states don't report the results to EPA, or because they report in formats which are incompatible with EPA's databases. Moreover, in response to the *New York Times'* 2009 series on Clean Water Act enforcement, ECOS observed that data reported in state and EPA databases are often inconsistent.

Describe EPA's efforts to harmonize electronic data about source compliance and inspections. For instance, in EPA's FY2011 Budget, EPA proposes an additional $2 million to OECA, to support state water program data transfers to its Integrated Compliance Information System. Please describe how these funds would be used.

Answer: EPA is currently developing a new capability for states that have their own data systems supporting management of their Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) program that will enable states to electronically transmit their NPDES data to EPA's Integrated Compliance Information System (ICIS). ICIS is EPA's modernized information

system supporting the CWA/NPDES program. ICIS tracks facilities, permitting, inspections, enforcement actions, and compliance information.

This new capability, currently under development, is scheduled to be implemented in 3 distinct releases. The first release, scheduled for April 2011, will provide functionality for the transmittal of Permit and Facility information. Release 2, scheduled for January 2012, will provide functionality for the transmittal of Inspection information. Release 3, scheduled for March of 2013, will provide functionality for the transmittal of remaining NPDES data families to include Enforcement Actions, Single Event Violations, and Program Reports.

Before a state can transmit their NPDES data to ICIS, they must migrate from EPA's legacy system, the Permit Compliance System (PCS), to ICIS. This requires a significant amount of work on the part of the state and/or EPA region. The data in PCS must be cleaned up and mapped to the data fields in ICIS. Once a state commits to migrating from PCS to ICIS, they join a Data Migration Workgroup, led by EPA that assists both the state and their EPA region, to successfully migrate the state data from PCS to ICIS. The $2 million dollars requested in FY 2011 President's Budget is to support both the development of the electronic software and migration of state data from PCS to ICIS. The funds will be used by EPA to speed up software development for ICIS and for a grant program to assist the states in moving to the new ICIS.

Question: Please also describe efforts to reconcile data reported in state and EPA databases, and whether EPA needs any additional authority or resources for this effort.

Answer: Data reconciliation and verification can help EPA ensure that the data entered by states into national databases are correct. In fact, there are many procedures, both old and new, that seek to ensure data quality. EPA has an extensive State Review Framework process designed to review state data completeness. EPA also has a Data Verification Process to ensure annual summary statistics are accurate. Lastly, EPA has an error correction process that allows users to flag possible problems. Even if the information in the databases is of high quality, errors of omission continue to be the biggest issue. Errors of omission (e.g. the facility has a permit, but is not noted in the system, or the facility is in non-compliance, but data not entered, or the facility received an enforcement action and penalty which is not reflected in the database) occur because for the vast majority of NPDES-regulated facilities, core information is not required to be entered by the states. Many states will not provide information beyond the minimum requirements – which leaves significant data gaps.

As states transition from EPA's Permit Compliance System to EPA's ICIS-NPDES as the NPDES data system, efforts are undertaken to resolve discrepancies and improve the data prior to any system migration.

Most importantly, EPA's continuing development of the NPDES Electronic Reporting Rule, currently moving toward proposal, should address the significant data gaps that currently exist regarding NPDES sub-programs, such as pretreatment, biosolids, storm water, concentrated animal feeding operations (CAFOs), sewer system overflows (CSOs or SSOs), and others. Furthermore, the rule should have the effect of improving data quality as well.

INFORMAL ENFORCEMENT TOOLS

Question 8: ECOS also noted in response to the *New York Times'* 2009 series on Clean Water Act enforcement, that enforcement databases indicate "no action" when in fact informal enforcement tools were used by states and EPA to bring a source back into compliance with the Clean Water Act. Is this true?

Answer: State and EPA regions may use informal actions to resolve some less serious violations. To help reduce their reporting burden and allow them to focus on taking actions rather than data entry, state and EPA regions are not required to enter these actions into databases.

Question: If so, why are informal enforcement tools not tracked in enforcement databases?

Answer: Because the information on informal actions is not required to be reported by states, it is difficult to draw firm conclusions about the frequency and effectiveness of these activities. EPA is currently developing a proposed rule that would require this information to be reported to its enforcement databases which subsequently would be made available on EPA's website.

Question: What steps are being taken to change this practice, so that the enforcement databases more accurately reflect actions taken to bring a source into compliance?

Answer: EPA plans to propose informal enforcement actions as a required data element for the proposed NPDES Electronic Reporting Rule. EPA has significantly revised its approach to this rule from its initial rulemaking effort. Also, EPA conducted an economic analysis for the initial rulemaking effort and the analysis showed that the cost of implementing and complying with that version of the rule would be far more than states could bear in this economic environment. Therefore, EPA decided to revise its approach to the rule by using 21st century technologies to obtain the necessary information directly from permitted sources wherever possible, which would be more beneficial across the board. This will allow EPA to get more accurate, timely, and complete

information about the NPDES program; save permittees, states, and EPA time and money; give the public more beneficial information about sources of water pollution in their communities; and target enforcement to the most serious problems.

Senator BOXER. Thank you very much.

I wish that Senator Vitter was here because he said he was very pleased, and I am quoting him, that we focused on "the uncertainty over climate change." His words. And I just want to make it clear for the record that "uncertainty about climate change" is coming from some colleagues on the Republican side, and not one colleague on the Democratic side has expressed in any way any feeling of uncertainty. On the contrary they feel very certain about it. And we have voted out a very strong bill on this committee which I am very proud of.

And I want to say to Senator Inhofe, who is very eloquent in his denying global warming is happening, that in my opening statement I did not quote one international scientist or IPCC. I quoted the National Oceanic and Atmospheric Administration, NOAA, I quoted NASA, the National Aeronautics and Space Administration, I think they know what they are talking about, and the AAA, in this case the American Association of the Advancement of Science. And of course in the past we continue to quote the defense establishment, the CIA, the DOD and many retired military people who tell us that this is a great threat.

I want to really point that out. I think it is very fair that we disagree on whether or not there is climate change. That is fair. But the facts are the facts. I am quoting American scientists, No. 1. No. 2, I also quoted what is happening on the ground, and that is crucial. I mean we have been keeping records for 130 years, and we have had the longest decade in that time. And we can track the ice.

So, I think there are two things I wanted to dispel. We are quoting the American scientific community here, and we are talking about facts on the ground, what has been observed over the last decade, because climate change is about decade to decade, not day to day.

I appreciated this opportunity on both sides to express our views. But let me be very clear. The majority of this committee, in strong numbers, believes that we must act, and in fact we have acted.

I also want to say how much I miss Senator Lautenberg being here. I know he is on the mend, and I know that I speak to everyone in sending him our very, very best.

Administrator Jackson, the San Joaquin and South Coast Air Quality Management Districts in California have some of the most polluted air in the Nation. I believe you know that. And this pollution worsens asthma attacks, cardiovascular diseases and other illnesses, and our children are especially vulnerable.

EPA cut funding for Federal grants to reduce pollution in these areas. Has anything changed with pollution levels in these areas that it should not be treated as a top priority?

Ms. JACKSON. The air pollution in those areas, Chairman, is certainly a priority as reflected in the work that has gone on. There have been changes, there has been good work funded by previous earmarked grants for those air districts, and yes, you certainly are right in noting that this budget does not propose to continue those earmarks.

Senator BOXER. Well, but there are earmarks for other areas, and they are pointed out here. For example, Alaskan native villages. There are a number of earmarks in here. Can I just further

this conversation and write to you about this? Because we are worried. There is infrastructure assistance for the Mexico border, there are certain areas that are named. And this area, because it is a valley, is really hit hard. And I am disturbed.

Now, I want to ask you about the Superfund. We are going from 22 clean ups to 25 clean ups, and I am a little concerned that we are not being aggressive enough. Can you explain to me why that is the case here? We are only going from 22 to 25 clean ups.

Ms. JACKSON. The additional money provided to the Superfund program, in the American Recovery and Reinvestment Act, the stimulus funding, as well as the straight line funding that we see in this proposed budget, does not allow for a huge increase in the number of Superfund sites that will be completed.

I share your concern, Chairman, that what this program needs is money. This is certainly a year of tough choices, however, and in working with the White House to craft this budget what we did was try to find a level of funding that allowed the program's clean ups to continue, realizing that certainly more money would be great. But we had tough choices to make.

Senator BOXER. OK. Well, let me say I am going to be talking with you about some of those choices. And another one I have been working with you on, and I appreciate your staff, is that we have got arsenic that has been found in the water in some of our poorest communities in California. And my concern is while they get ready to do a regional water quality control and all the rest of it we are just not helping these communities right now. They cannot drink the water. It is 100 percent more arsenic, doubling of the allowable amount.

So, can we continue to work together to see if we can find a solution while we clean up the source and the problem? We need clean water for these kids to drink, and these are our poor communities. Can we work together on that and——

Ms. JACKSON. Chairman, I would look forward to working with you on that.

Senator BOXER. I know other communities may have this as well.

Senator Inhofe.

Senator INHOFE. Thank you, Madam Chairman. I have sat here for years now listening to this, and I know the distinguished Senator from Vermont wants so badly to believe that the science is settled and that anthropogenic gases cause global warming, and the science is not settled.

I mean, Phil Jones is the scientist at IPCC. He is the top guy. He was the one at East Anglia, it is kind of the clearinghouse for all of the scientists. He is the one who is under investigation right now. And he said 2 weeks ago, "I do not believe the vast majority of the climate scientists think the debate is over." This is a clear statement by the guy that is in charge of all of this stuff. So, you know, you can want to believe something so badly that you just go ahead and believe it. And I guess that is all right.

Now, because of the short time, I am going to ask two questions that require just a yes or no answer or I do not know or I do not want to answer. I do not care, either way. One of your quotes, Madam Administrator, was the EPA's view that "the scientific assessments of the IPCC represent the best reference material for de-

termining the general state of knowledge on the scientific and technical issues of climate science." Do you still agree with that statement?

Ms. JACKSON. I think it is out of context, Senator. The IPCC is certainly important. It represents multiple lines of evidence and much data.

Senator INHOFE. OK, well, this was a statement. I want to ask you one other question. Over the past several weeks, as I have noted in my opening statement, the media has uncovered significant errors and non-peer reviewed material in the IPCC's Fourth Assessment Report including mistakenly claiming that global warming would melt the Himalayan glaciers by 2035, endanger 40 percent of the Amazon rainforest, slash crop production by 50 percent and others that are on this that I used in my opening statement.

Now, do you still believe, as you have stated before, that the IPCC is the gold standard for climate change science?

Ms. JACKSON. The primary focus of the endangerment finding was on climate threat risk in this country. I notice that all of the things listed on that sign are international events. So, the information on the glaciers and other things does not weaken or undermine the science that EPA reviewed to look at the endangerment to human health and welfare——

Senator INHOFE. OK. Administrator Jackson, many in the media, and the media has been by and large almost entirely on their side of this issue all the time because that is where they can sell the stuff, but the media and the scientific community have called on the IPCC to launch a full investigation or to institute reforms on how it reviews scientific work.

Now, I would think at least we would agree that if everyone else in the country, and the magazines like Time Magazine, Newsweek, New York Times, Chicago Tribune, the Financial Times and almost all publications in Europe, are calling on investigations and are doing investigations. Would you be willing to ask your—the EPA IG, to investigate the IPCC science?

Ms. JACKSON. The investigations that are ongoing mirror reviews that EPA scientists did in making the endangerment finding. It is incumbent on me as Administrator to review any new information as it comes out, and if anything changes the multiple lines of evidence from many, many sources, Senator, not just the IPCC, then certainly I would call for a review of the finding. But I have not seen that.

Senator INHOFE. Well, I would say that no, I do not think that is totally accurate. The statement that you said in response to me in a letter, and this was, I do not have the date on it but it was just a short while ago, where's the chart? Hold that chart up. That one.

[Chart shown.]

Senator INHOFE. This is the chart where we were showing during the last hearing or one of the last hearings, we had about 40 hearings on this, that U.S. action alone will not impact the CO_2 levels. Your quote was, I believe, that central parts of the EPA chart, this chart right here, are that the U.S. action alone will not impact world CO_2 levels.

Now, that is a statement that I think we all agree on, and it complicates this. Because when you talk to normal people, now I am talking about people outside of Washington, and you point out to them that even if we were willing to have passed some kind of cap-and-trade legislation or do it legislatively or do it through the Administration, that it is going to cost all the jobs, and you know people will deny this on the other side, but MIT, the Wharton School, CRA, all of them agree that this would constitute something like a $300 billion to $400 billion tax increase on the American people, that it would destroy our economy.

And with all of that in mind I would just say this. Now I am going to save this for the second round of questions, but I want you to be thinking about it. How in the world can we justify doing something administratively that the Congress overwhelmingly rejected, the U.S. Senate did, and saying defiantly, we do not care what you say, Congress, we are going to go ahead and do it under the Clean Air Act, we are going to make the endangerment finding in spite of the fact that the endangerment finding by your own admission is due to the science from the IPCC. Now that is what I am going to be talking about in the next round of questions.

Ms. JACKSON. Do you want me to answer now or wait for the next round?

Senator INHOFE. Sure.

Senator BOXER. Go ahead.

Ms. JACKSON. Senator——

Senator BOXER. I think you should answer the question.

Ms. JACKSON. I will be brief, and we will talk about it in the next round, Senator. But just to be clear, the Supreme Court, the law of the land, found that greenhouse gases are pollutant. They ordered EPA to make a determination as to——

Senator INHOFE. They did not order. They said you have three choices. Is that not correct?

Ms. JACKSON. They said that EPA can, must make a determination whether or not——

Senator INHOFE. Can. You said it right the first time.

Ms. JACKSON [continuing]. Must make a determination whether or not greenhouse gases endanger human health and welfare, and rather than ignore that obligation I chose as Administrator, and I believe I had no choice but to follow the law.

Senator INHOFE. Well, the three choices they gave you were to go ahead and find an endangerment, do not find an endangerment, or review the science. And that, obviously, well, those were the three choices that were there.

Ms. JACKSON. And I believe we reviewed the science, Senator. We do not agree on what the science says, but in my mind, the conclusions we have drawn are based on the best science we have and are backed up by numerous bodies that are a lot smarter on these things than I am.

My favorite quote on this is actually by Senator Alexander who, sadly, is not here. He said 11 academies in industrialized countries say that climate change is real and humans have caused most of the recent warming. If fire chiefs of the same reputation told me my house was about to burn down I would buy some fire insurance.

Senator INHOFE. And that is the debate that has been going on here for 7 years now. I recognize that it was 7 years ago that I made the statement that the idea that the anthropogenic gases are causing catastrophic global warming is probably the greatest hoax ever perpetrated on the American people. I think that is proven to be true today.

Senator BOXER. OK, we clearly have given you extra time.

Senator INHOFE. I appreciate it.

Senator BOXER. And it is interesting that you still hold to your greatest hoax ever perpetrated, because I would like to hear you debate it with NASA and NOAA and all of these scientists. I think it is incredible.

I would like to call on Senator Cardin now.

Senator CARDIN. Thank you, Madam Chair.

Administrator Jackson, one of the things that might be helpful in this debate is the cost-benefit analysis because we can argue as to the science on climate change, I think it is pretty clear, but one point is indisputable, and that is investing in clean energy in ways that will reduce greenhouse gases is going to be good for economy and create jobs.

The No. 1 issue right now facing the American people, the American economy, is creating jobs. There was an article in today's paper that showed that the United States is falling well behind China, for example, in green technologies and green jobs. This will not only help us with energy independence, it will not only help us with dealing with the issue that you must deal with, greenhouse gas emission reductions, but will also help us create jobs in America, which I think we all want to do.

So, I think the cost-benefit analysis is something that is going to be very helpful for us. But I hope you do it in a broad context as to if we do this right. And that is what the Chairman has been working on very strongly with other members of the U.S. Senate, developing legislation that is done right that will create jobs in this country, put America back to work and at the same time be responsible as far as our greenhouse gas climate change commitments are concerned.

I want to just at least get on the record the water infrastructure budget which I think is very important to our commitment. I just really want to get the numbers out. The budget requests would actually be a slight reduction over the current year from $3.5 billion to $3.3 billion in the two programs, but it is significantly greater, in fact, it still more than doubles what the program received in fiscal year 2009.

And as I think the Administration has pointed out there has been $6 billion made available in the American Recovery and Reinvestment Act.

So, I just want to get your reaction to the importance to continue our investment in the water infrastructure projects. We have a bipartisan bill that has been reported out of this committee that would reauthorize these programs at the higher levels. I think there is strong bipartisan support. We understand the importance for investment in America's future and how we need to make sure we have proper wastewater treatment as well as safe drinking water.

Ms. JACKSON. Thank you, Senator. Maybe I will let the States' actions speak for themselves. The recent $6 billion in the Recovery Act had to be under contract by February 17th of this year. And I am proud to report, as you already know, that 100 percent of the States and territories made it. Not one dime of the $6 billion that went for drinking water and sewage infrastructure had to be reallocated. That is because there is such a need out there.

And States did it different ways, whether it was to help rural communities where a couple of hundred thousand dollars makes all the difference or large cities that are facing ongoing concerns about antiquated sewer systems or drinking water systems. The money is there, the need continues to be real, and I was never so proud of our partners in the States and also our own staff in making sure that money, along with the money we get in this year's budget, heads out the door.

Senator CARDIN. Well, thank you. And that is good work. And you are absolutely right. If we had more money in the ARRA we would have gotten more money out there. Believe me, the demand is there and we need to move forward. It also helps us, of course, in so many different areas including, by the way, in cleaning up the Chesapeake Bay with the wastewater treatment moneys that are being used.

I want to get on the record one other issue here which is similar to the debate on greenhouse gas emissions which the Supreme Court ruled on. The TMDL Program for the Chesapeake Bay is as a result of a court case in 1999, and the dates are coming pretty soon that these programs must be implemented under current law.

The legislation that Senator Carper and I have introduced is an effort to give additional tools so that it makes it a little bit easier to accomplish these goals and sets up an orderly process. But could you just review for us why the TMDL is being implemented now in reaction to the 1999 court case?

Ms. JACKSON. Well, you know, we could talk lofty regulatory action, but I think the truth of the matter is that both popular media and scientists have reported that the Bay, while some strides have been made, really is not being cleaned up at the rate that Congress foresaw when we first started paying attention to the Chesapeake Bay Program. That is why President Obama issued an Executive Order for the Chesapeake Bay. It is why that order fully contemplates that EPA will remain steadfast in promulgation and finalization of the TMDL as well. And we simply must restore that national treasure.

Senator CARDIN. Thank you.

Thank you, Madam Chairman.

Senator BOXER. Thank you very much, Senator.

Senator Barrasso.

Senator BARRASSO. Thank you very much, Madam Chairman.

Administrator Jackson, you made the newspaper today. This was the Washington Post, Tuesday, February 23rd, EPA Chief Lays Out Timetable for Regulating Greenhouse Gas Emissions. Last year, in California, you spoke at the California Governor's Global Climate Summit in Los Angeles. You stated, in regards to your proposed Tailoring Rule, you said, by using the power and authority of the Clean Air Act, we can begin reducing emissions from the Na-

tion's largest greenhouse gas emitting facilities without placing an undue burden on the businesses that make up the vast majority of our economy.

You went on to say this is a common sense rule that is carefully tailored to apply to only the largest sources, those from sectors responsible for nearly 70 percent of the U.S. greenhouse gas emission sources.

This—now you say the EPA does not intend to subject the smallest sources to Clean Air Act permitting for greenhouse gas emissions any sooner than 2016. Well, is there a discrepancy here? Are small emitters such as hospitals, schools, nursing homes, other small businesses going to be captured after all in just a few short years by going beyond your tailoring rule to now incorporating this and capturing others?

Ms. JACKSON. I am not sure I understand the question, Senator, but I will try. Let me know if I do not get your question, if I do not understand the gist of it.

Senator BARRASSO. Well, the gist of it is that in the past you said we are only going after the big emitters, we are not going after the small emitters, we are just going after the big guys because that is 70 percent of the problem. And now it seems that you are saying well, we are only going to go after the big guys now, but come 2016 we are going after everybody.

Ms. JACKSON. I see. I would refer you, Senator, to the rule proposal, the actual tailoring rule proposal, which talks about phasing in, about moving toward large sources at first and then phasing in the implementation of the Clean Air Act.

I think that a very important thing to remember is that the U.S. Supreme Court told us that we had to follow the law under Mass. v. EPA, specifically the Clean Air Act. I acknowledge that we have to do that.

The other thing is to recognize that one of the things that has happened as a result of public comment is we have received very good and numerous comments, especially from the States who would have to implement the Clean Air Act, States who frankly want to implement the Clean Air Act for greenhouse gases, about how administratively they would do it, how much time they need, and how to avoid an absurd result. All of those things are reflected in the information I included in the letter yesterday, and of course will be reflected in the final rule when——

Senator BARRASSO. So, I take it as a yes that you do plan to then go after small emitters after 2016——

Ms. JACKSON. What we plan is to use the Clean Air Act in a reasonable and step-wise approach with lots of time so people will know it is coming——

Senator BARRASSO. So it is still a yes, though? It is still a yes.

Ms. JACKSON. Well——

Senator BARRASSO. I have got to get onto another question. That is how I am hearing your answer.

We have heard from the Chairman about how you used NOAA and NASA to provide justification for taking regulatory action to address climate change. I wonder if you are aware of a report released in January entitled Surface Temperature Records, Policy Driven Deception by the Science in Public Policy Institute. The re-

port says that the U.S. Government scientists have skewed global temperature trends by ignoring readings from thousands of local weather stations around the world, particularly those in colder altitudes and more northerly latitudes such as Canada.

The study alleges that NOAA systematically eliminated 75 percent of the world stations with a clear bias toward removing higher latitude, high altitude and rural locations, all of which have a tendency to be cooler. This includes temperature stations in the United States, Russia and China.

The report states that the remaining temperature monitoring stations have been impacted by contamination of urbanization, changes in land use, improper siting and inadequately calibrated instrument upgrades which have further overstated global warming over the last two decades. The result has been a global surface temperature record that is warmer than truthful.

I want to know if your department has reviewed this data, and if not would you be willing to review the study and consider it in making any future decisions based on climate change?

Ms. JACKSON. I believe, Senator, that my colleagues at NOAA and NASA have received this study. I certainly heard about in the press and am planning to respond to it. We will certainly work with them as we have as part of the U.S. Global Change Research Program to ensure that the data upon which our endangerment finding is based remain valid. That is my obligation as EPA Administrator.

Senator BARRASSO. I believe you would not tolerate it if scientists within the agency released scientific data to the public and to the Congress which was suppressed data, suppressed data that contradicted their study and their conclusions, that intentionally included false scientific data, intentionally included unpublished and nonpeer reviewed work in a finished work product, and I am not going to ask you yes or no on that.

I think that you are looking for scientific integrity, and I am going to just submit a couple of additional studies and questions as well to make sure that we really are basing this on sound science and not on what has been more agenda driven that scientific reality driven.

Thank you very much.

Thank you, Madam Chairman.

Ms. JACKSON. Thank you, Senator.

Senator BOXER. Thank you very much, Senator Barrasso.

Next is Senator Carper.

Senator CARPER. Thank you, Madam Chairman.

I just want to say to my colleagues, whether you buy the science or not, I think we are all agreed—what can we agree on? I think we can agree on the idea that we have this huge dependence on fossil fuels, and it is not a good thing for our country. I think we can agree on the idea that we use all of this petroleum from other countries, they use our money to hurt us in many cases, and that is not a good thing for our country. I think the idea that we are not energy independent, not even close to it, in fact we are going the wrong way, is not a good thing for our country.

And let us see if we can figure out, set aside all this other discussion, and just figure out what we can agree on to reduce our de-

pendence on foreign oil, reduce our dependence on fossil fuels, create a lot of new jobs, technologies and innovation. Let us see if we could figure out how to do that. That would be a wonderful thing. And I think the people in this country would find it heartening.

Administrator, thanks again for being with us today. In this year's budget I was happy to see additional money to help States and local air control programs meet new, stronger air pollution standards.

As you may recall Senators Alexander, Klobuchar and I, along with about nine other colleagues, have recently introduced multi-pollutant legislation that provides aggressive targets for sulfur dioxide, nitrogen oxide and mercury emission for our Nation's fossil fuel powered plants. Our bill will save, we are told, over 215,000 jobs, save over $2 trillion in health care costs, and help States to meet new air quality standards, largely from air that blows to them from other States where they are putting all kinds of pollution up into the air.

So, I want to know if you have taken a look at our legislation and have any preliminary thoughts you could share with us today.

Ms. JACKSON. Thanks, Senator. The agency has not finished its full review of the legislation. But I can say that I share your desire to significantly reduce emissions of SO_2, NO_x, mercury and other pollutants from power plants. I also respect, frankly, your ability to work with various stakeholders to bring them and keep them at the table and realize that this is a threat to our health and our children's health that is not going to go away. So, thank you.

Senator CARPER. Give us a time line, if you will please, just a rough time line, I understand that you have begun a review and will that end this year? Will they end next year?

Ms. JACKSON. This year? I think I feel comfortable with this year, but how about if I get back to you with a complete time line?

Senator CARPER. Would you? I will look forward to that. Thank you.

In your experience, does legislation provide more legal certainty than rulemaking with regards to emissions from these utility plants?

Ms. JACKSON. Well, I believe we can, and I think history shows that we have achieved real meaningful reductions through our regulatory efforts. I have to admit that legislation certainly adds some certainty to the process. That is true of climate; it is true of any pollutant.

Senator CARPER. Good. I would agree.

Next question. In the budget, there is $13.5 million to help implement the new mobile source emission standards for greenhouse gases. That should be finalized, I think, by March. These new standards are supported by our Nation's car companies and are stronger than the CAFE standards that Congress put into place in 2007. Is that correct?

Ms. JACKSON. That is right, yes.

Senator CARPER. Without the greenhouse gas endangerment finding can the EPA implement this new mobile source rule? Let me say that again. Without the greenhouse gas endangerment finding can the EPA implement this new mobile source rule?

Ms. JACKSON. The answer is no, Senator. The endangerment finding is predicated, the actual rules are predicated on a finding of endangerment. That is the way the Clean Air Act is written.

Senator CARPER. If the mobile source rule cannot be implemented does that mean that the California waiver will go forward? And I believe that since the waiver only applies to manufacturers that sell a certain threshold of cars in California, most American manufacturers would be required to meet emission standards in certain States. But the waiver would exempt some manufacturers outside this country. Is that correct?

Ms. JACKSON. That sounds correct to me as well, Senator.

Senator CARPER. Do you have concerns about that?

Ms. JACKSON. I have great concerns about losing the deal that everyone embraced around cars including a road map for automobile manufacturing for this country that takes us through the year 2016. And I do have great concerns about competitiveness and about regulatory certainty at a time when that industry continues to need as much certainty as it can as it attempts to rebound and grow.

Senator CARPER. OK. The last thing, I understand that in the President's budget there is $60 million for the Diesel Emission Reduction Act. We thank you for that, I believe. The funding for this program has been very successful. We are told that for every dollar that we spend we get $13 in benefits. And I have heard that there is a $1 billion backlog on applications for the Diesel Emissions Reduction Act.

I just want to know, why does the Administration not provide additional funding for this successful program? And having said that, I would say the stimulus package provided a lot. Go ahead.

Ms. JACKSON. It did, sir, and I do not disagree with any of the numbers you cite. It is a wonderful program. It has bipartisan support. The amount in the budget is simply again a reflection of the tough choices that have to be made in terms of where we spend our hard-earned environmental dollars.

Senator CARPER. Good. Thanks so much.

Senator BOXER. OK. Just because we have got people coming in and out, I want to see if this is OK. Sanders, Whitehouse, Klobuchar. Is that all right?

Senator WHITEHOUSE. I would yield to Senator Klobuchar since I just got here 2 seconds ago.

Senator BOXER. All right. We will reverse it. That is fine.

Senator Sanders, you can have 5 minutes. Please go ahead.

Senator SANDERS. Thank you.

Let me begin by reading an editorial in not one of my favorite papers, a paper with a very conservative editorial page, and that is the Washington Post. This is what is says. This is yesterday, February 22nd. The Earth is warming. The chief cause is the increase in greenhouse gases accumulating in the atmosphere. Humans are at least in part responsible because the oil, gas and coal that we burn release these gases. If current trends persist, it is likely that in the coming decades the globe's climate will change with potentially devastating effects for billions of people.

Contrary to what you may have heard lately there are few reputable scientists who would disagree with anything in the first

paragraph. Yet suddenly we are hearing that climate change is in doubt and that action to combat it is unlikely. What is going on?

And there is another paragraph that is interesting, let me get to the last part, that is what I want to read. Politicians, nonetheless, have seized on both the trivial mistakes, trivial mistakes, and the complexity of the science, to cast doubt on the underlying and unrefuted truth of human caused greenhouse gas accumulation. In many cases it is hard to know whether they are being obtuse or dishonest and hard to know which would be worse. End of quote.

The reason that this debate is so important is that it reminds me in some ways of the debate taking place in this country and around the world in the late 1930s. And during that period with Nazism and Fascism growing, a real danger to the United States and democratic countries all over the world, there were people in this Congress, in the British Parliament, saying do not worry, Hitler is not real. It will disappear. We do not have to be prepared to take it on.

Fortunately there were other people in this country, Roosevelt Republicans, who said, you know, we are going to have to be prepared for a war. Winston Churchill in England led the effort there. But because we were as slow as we were millions of people probably died unnecessarily.

Global warming is real. If we do not get our act together there will be devastating impacts for our kids and our grandchildren, causing among other things trillions of dollars in order to repair that damage if it is repairable at all. And the longer we delay, the longer we have this senseless debate, the less prepared we will be.

From an economic perspective China is not delaying. They are going forward in wind, they are going forward in solar. Spain is—countries all over the world are investing heavily in energy efficiency and in sustainable energies and creating, in the process, millions of jobs. And I suggest that if we do not act and act boldly it will be harmful for our people and our kids and harmful for our economy as well.

Having said that, let me just ask the Administrator about an issue which is of real concern in the State of Vermont. We are downstream, so to speak, from the coal burning plants in the Midwest which emit a lot of very harmful pollutants. And our kids in Vermont and in other States in New England are coming down with asthma and other health problems. What are you going to do about that?

Ms. JACKSON. Well, Senator, I am going to continue to keep up the work we are doing to put in place a replacement rule for the Bush administration version of the CAIR Program, the Clean Air Interstate Rule, overturned by the courts during the Bush administration.

So, in essence while we have been operating with a holdover CAIR Rule much of the pollution—ozone pollution in places like Vermont—is from out of State. It is interstate transport. And EPA—the court found that EPA had not put forth a rule that would really protect people on the downwind end of that kind of pollution.

Senator SANDERS. All right. All I can tell you is when I go into schools and I speak to school nurses they take out inhalators be-

cause a lot of our kids—and I suspect it is not different in New Jersey and in many parts of this country, and I would urge you to do everything that you can to help us clean up our air and prevent our kids from getting asthma and other very serious diseases.

Thank you, Madam Chair.

Ms. JACKSON. Thank you, Senator.

Senator BOXER. Thank you very much, Senator.

Senator Klobuchar.

Senator KLOBUCHAR. Thank you very much, Madam Chair.

Good to see you again, Administrator Jackson. I first want to thank you for the work that you are doing on the Renewable Fuel Standard. You know that this has taken a lot of modifications based on science, and we have worked very hard on it. I truly believe, as I know Secretary Chu does, that while we are in the infancy for biofuels that there is a lot more to be done here in terms of where we can go with this. And we do not want to pull the rug out from under this developing industry.

I wanted to actually—after touring my State last week and talking to a lot of local municipalities I talked a little bit about water infrastructure, something that Senator Whitehouse and I have both focused on in the past. And we are facing an investment gap. The President's budget requests $3.3 billion for Clean Drinking and Water State Revolving Funds. Could you talk about how this investment will narrow our current water infrastructure investment gap?

We have been having some issues in our State where the EPA has told very small towns that they had to get a new water treatment plant, and then the Congress did not authorize the money. Or we authorized the money, but then the money was never paid out. And it is becoming very difficult for them, very small communities, 5,000 people, to pay for these water treatment plants to comply with the mandates from the EPA.

So, I can show you some of these specific examples, but could you talk about what you see as the future of the water infrastructure investment?

Ms. JACKSON. Certainly. The estimated need for water infrastructure investment really has not decreased. We are chipping away at a pretty big mountain. Our needs survey for both clean water and drinking water infrastructure indicated needs at over $500 billion; others have estimated $500 billion to $600 billion depending on who is conducting the analysis.

So, although we are seeing substantial amounts of money this past fiscal year, because of the way the budget works we spent well over $10 billion on water infrastructure between AARA and our appropriations. And yet when you are looking at hundreds and hundreds of billions of dollars' worth of need you are still chipping away.

I do want to point out is that one of the things AARA did, and what we saw in money last year, was increased loan forgiveness for small communities on the clean water side, the sewage side, following the model of the Drinking Water Program.

So, although there is not enough money to help all the small communities in your State—or any State, Senator, the idea being that for those where there really is an inability to pay, there are

opportunities for States to decide how to give out this money, to really provide assistance to small communities, and that money can be in the form of grants, essentially, rather than loans.

Senator KLOBUCHAR. OK. Well, we will continue to work, and we have some specific projects that I am concerned about.

I am also glad to see your announcement of the Great Lakes Restoration Action Plan this last weekend. I am a co-sponsor of the Great Lakes Legacy Act, and it would focus on clean up and removal of contaminated sediments in the Great Lakes.

Could you talk about how EPA is going to address these concerns and maybe also mention what is happening with Asian carp?

Ms. JACKSON. I would be happy to. On the toxics area first, one of the things the President asked us to focus on in forming the Great Lakes Initiative in last year's budget was on toxics in the legacy contamination that serves as a continuing source of pollution. Even if you stop everything new there is still pollution in the Lakes.

So, with this money we focused on actions, not more studies, and we estimate that we will be able to clean up four or five toxic hot spots completely just with the initial round of money and projects that we are looking at. Those are the kind of action oriented outcomes that the President is demanding from our investment in the Great Lakes, and I think we will be able to deliver, and we intend to ensure that we do.

Carp and invasive species more generally are covered as part of the Great Lakes Restoration Initiative, and certainly we would like to see a decline in the increase of invasive species and eventually reverse that trend. And as you know EPA has taken about $58 million of money from the Great Lakes Restoration money, $475 million, to put specifically toward items to address the Asian carp issue which is more immediate.

Senator KLOBUCHAR. OK. Yesterday, a report was released highlighting the rapidly growing problem of discarded electronics common known as e-waste. Senator Gillibrand and I have a bill that lays out some groundwork for research in this area. It is, you know, billions and billions of new products have been bought that have advanced our lives, but so many of them are difficult to recycle or they are not being recycled.

So, part of this is—like our home town company Best Buy is doing encouraging creating incentives to have customers bring in their old recycled products. But the other piece of this is getting that research going so that we can develop products that will have less environmental hazards when they are put into landfills or when they are discarded.

Could you talk about any e-waste solutions coming out of EPA or any research going on there?

Ms. JACKSON. I am happy to. Obviously there is a domestic issue, and there is also the international issue. There are also States that are increasingly taking matters into their own hands. And so I think industry is seeing this sort of patchwork of different ideas for how to deal with a problem that no one denies, which is the problem with disposal. There are an increasing number of devices. They pose a serious risk.

The fiscal year 2011 budget includes $1 million for a new research effort to do some fundamental redesign of electronic devices to try to get at the pollution prevention side of this problem, and we will continue to do that research. And I will continue to work with my solid waste and hazardous waste regulatory arm to see where we can help to guide the industry to follow smart companies, companies that have already stepped up to really steward their electronic waste.

Senator KLOBUCHAR. Thank you very much.

Ms. JACKSON. Thank you.

Senator BOXER. Senator Whitehouse.

Senator WHITEHOUSE. Thank you, Chairman. Thank you very much for holding this hearing.

Administrator Jackson, thank you for your important work. I hope that you do not take away from this particular room any new doubts about the quality of the science that supports, I think, highly legitimate concerns about climate change. When organizations such as NOAA and NASA and our entire intelligence community and our U.S. Department of Defense all are aligned I think it is pretty safe to say that that is pretty mainstream science.

I will not do it again, because I have done it repeatedly, but there is also a letter from all of America's major scientific organizations, the vast majority of them anyway, laying out very clearly that the science on this is essentially undisputed, and it is their uniform view of this.

Set against that science, unfortunately, is an industry. There was a book called Merchants of Doubt written about the public relations and propaganda effort to raise doubt in order to create political maneuvering room for these industries. And I think very much that that is what we are seeing in the specter of doubt that some are attempting to raise about the validity of science that, unless you want to throw out scientific method entirely, it is just about as solid as it gets.

With respect to my learned colleague's comparison to the 1930s, I think Neville Chamberlain's Willful Blindness has justly earned the opprobrium of history. But nobody accused him of having an ulterior motive. And I think the judgment of history about efforts to derail what needs to be done in the face of this threat may be harsher because of the special interest overlay of the industries that have made themselves merchants of doubt when the science is actually very secure.

One of the problems that we face in Rhode Island on a bright clear summer day is that the radio, in the morning as people drive into work, will announce that this is a bad air day for Rhode Island and that the elderly, people with breathing difficulties, young children, infants, should be kept indoors.

If you look at the source of it, it is not from within Rhode Island. There is not much we can do about it in the State. It is coming from other States. It is coming from the Midwest. One of the sort of starkest admissions of this problem is the height of some of the smokestacks that have been built in other States in order to take the effluent from those smokestacks and get it high enough into the air column that it will not land in their State any longer, that

it will be transported. And it comes down in Rhode Island in the form of these bad air quality days where warnings are required.

I would urge you to be as energetic as you possibly can in enforcement in those areas because by exporting the pollution to other States these companies have taken themselves out of the loop of local consequence. Some of them actually have better air quality nearby the smokestacks that we do in Rhode Island because they are sending it up to land on us.

So, we really depend on our Federal agencies where there are these interstate pollution export, if you will, problems, to defend us. I would like to ask you to say a few works about that problem and your role and what we can expect.

Ms. JACKSON. Thank you, Senator. I will just repeat my commitment to seeing a proposed Clean Air Interstate Rule promulgated and then eventually finalized this year, hopefully in the coming months, earlier in the year, not later in the year, because we are without a way to protect against interstate transport. The previous rules were, frankly, found to be illegal.

Also, I think you know we have out a proposal now to lower the National Ambient Air Quality Standard for ozone. That was not a happy day to admit to the American people that the science as we know it says that even lower levels of ozone are unsafe. And we have to start by being honest with the American people and telling it like it is even when we know that means it is going to be even harder to get to.

But in my opinion the Clean Air Act remains one of the greatest success stories out there, internationally, when it comes to fighting pollution. And although we have challenges we also know the lesson of the Clean Air Act is if we squarely face those challenges, technology intervenes, and we find cost effective, job creating ways to address them. So, we will continue to do our job with respect to air pollution, sir.

Senator BOXER. Thank you very much.

I am going to build the case that this endangerment finding that you have made was built on the findings and the work of the Bush administration. And I am going to read you some evidence of that and ask if in fact you did build on a lot of their work.

And I am going to put into the record, without objection, a letter sent to us by Jason Burnett, who was the Associate Deputy Administrator of the EPA under George W. Bush, and he made his—his department made the endangerment finding that is being so attacked. And he sent it to the White House.

He received a call, and this is directly from his letter, asking us "not to send the finding." When we explained the document had been sent, he says, I was asked to send a follow up note saying the e-mail had been sent in error. I explained I could not do this because it would not be true. I want to put this letter into the record. So, that is clear that they made the endangerment finding.

And then I am going to ask to put into the record a couple of pages of Julie Gerberding, she was the head of the CDC, the Center for Disease Control, under George W. Bush. And her testimony to this committee was redacted in part, and I am going to read from the redacted part because we got this from a whistle blower, and I am assuming you got this document.

She said scientific evidence supports the view that the Earth's climate is changing. A broad array of organizations, she talks about Federal, State, local, multilateral, faith-based, private and non-governmental, is working to address it. Despite this extensive activity the public health effects remain unaddressed. CDC considers climate change a serious public concern.

And she goes on, Julie Gerberding, George W. Bush, CDC. Direct effects of heat, health effects related to extreme weather, air pollution, which Senator Whitehouse has talked about, allergic diseases, water- and food-borne infectious diseases, vector-borne diseases, food and water scarcity, mental health problems and long-term impacts of climate disease.

So, I am going to put those two pages into the record. And I am going to ask you if in fact your endangerment built on the work of the former Administration and perhaps other Administrations before that.

Ms. JACKSON. Yes, Chairman, it did. The endangerment finding was done in large part when I walked in the door at EPA. A draft, the one you referenced, we did update it. We did review the science. We did broaden the finding to include human health and welfare. But we relied essentially on the same science moving forward.

And I do believe it is incumbent to constantly be looking at the science at is evolves. Science changes, but as someone said earlier, I think you have to look at the mountain of evidence that says that the climate is changing and that there are manmade causes and realize the every time one of these issues comes up we owe it to the American people to say we will look at it and then——

Senator BOXER. Sure, yes.

Ms. JACKSON. And then reach a conclusion.

Senator BOXER. Yes. And that is essential. So, as we said, there has not been one agency in America, NOAA, NASA, DOD, CIA that to my knowledge has backed off their views.

I would like to put into the record an article that appeared in a British newspaper called the Independent, Think-tanks take oil money and use it to fund climate deniers. It says Exxon Mobil cash supported a concerted campaign to undermine case for manmade warming. An orchestrated campaign is being waged against climate change science to undermine public acceptance of manmade global warming, environmental experts claimed last night. And this goes on. It is a very succinct article.

And last I want to put in the record three studies that were made on job creation if we move forward with climate change legislation. The Clean Energy Economy in America by Pew predicts millions of jobs in the Nation. The Pew Charitable Trusts did a study in California where the clean energy jobs are the only sector that have been growing and providing jobs in my State through this recession, and a University of California study also the same conclusion.

I want to ask you about the brownfields funding because I am very pleased with it. You are requesting an additional $41 million. And a lot of us worked to pass that law. I think Senator Inhofe may have worked with us as well. Can you describe the kind of job

creation benefits and leveraging of resources EPA expects from the brownfields program under your budget?

Ms. JACKSON. Yes. History has shown that brownfields money is heavily leveraged with private sector money. Oftentimes brownfields money is the way to start the engine economically around a particular site or in a particular community. The increased funding is a reflection of our recognition of that simple fact and the fact that not all communities are dealing with one big Superfund site. Oftentimes it is smaller sites that are holding back economic growth.

So, the money will be used to assess sites, to actually do the testing and assessment to determine the nature of the problem, to do clean up on sites, including underground storage tank sites, to do job training. The EPA Brownfields Job Training Program is one of those little gems that uses communities that have been impacted by pollution, trains them to get good paying jobs in cleaning up pollution, an industry that sadly will probably never be without a need for well trained workers.

And I am very proud of the fact that we were able to squeeze a little bit more money into this budget for brownfields.

Senator BOXER. OK, my time is up, so I am going to put a question in the record because I am very pleased with the increase in funding for the Office of Children's Health, and I wanted you to write to me and describe some of the new initiatives you plan to take.

Ms. JACKSON. I would be happy to.

[The information follows:]

OFFICE OF CHILDREN'S HEALTH—NEW INITIATIVES

The Office of Children's Health Protection (OCHP) will oversee implementation of the Energy Independence and Security Act of 2007 (EISA), providing technical assistance to States and communities on implementation of voluntary school siting and environmental health guidelines to incorporate greater consideration of environmental health issues in schools.

Using authority provided by the Energy Independence and Security Act of 2007, EPA will establish a State grants program to support States and communities in the implementation of strategies to create healthy school facilities.

EPA will also provide increased and focused outreach and technical assistance to school districts to assist with implementation of the guidelines and increase adoption of EPA's programmatic school environmental health tools (e.g. IAQ Tools for Schools, School Chemical Cleanout Campaign, Integrated Pest Management). Activities will include:

- Increased coordination with States, tribes, local communities, schools and the general public by supporting a strong communications and outreach effort to share information and provide technical assistance, tools and materials.
- Expanded outreach through conferences, meetings, training events, Webinars, and other outreach mechanisms.
- Targeted efforts in underserved communities, such as urban, tribal and other underserved areas.

OCHP will co-lead an inter-agency effort with the Department of Education and the Department of Health and Human Services to improve Federal Government-wide support of clean, green and healthy schools, implementing legislative mandates and coordinating outreach and technical assistance.

Senator BOXER. If you would do that, please.

Senator Inhofe.

[The referenced documents follow:]

JASON KESTREL BURNETT

July 6, 2008

The Honorable Barbara Boxer
Chairman, Committee on Environment and Public Works
United States Senate
Washington, DC 20510-6175

Dear Senator Boxer:

In order to answer your questions from your letter dated July 1st, 2008 I will provide some background. In my role as Associate Deputy Administrator of the Environmental Protection Agency (EPA), I led and coordinated energy and climate change actions across various EPA offices. The most significant such action was the effort to respond to the *Massachusetts v. EPA* Supreme Court decision. Having found that greenhouse gases are air pollutants under the Clean Air Act, the Supreme Court's decision required that the Administrator of EPA determine whether greenhouse gases "may reasonably be anticipated to endanger public health or welfare" and, if so, to issue greenhouse gas regulations. The basic logic of the statute is straightforward; if the public is endangered, the government must act.

After months of work by EPA professional scientists and lawyers, a number of senior meetings at the White House, and a robust decision-making process, the Administrator asked staff to draft a provisional finding that greenhouse gases may reasonably be anticipated to endanger public welfare.

1. Your first question concerns the events of December 2007 related to that endangerment finding. In early December EPA was preparing the finding for formal Office of Management and Budget (OMB) review. All of us were very deliberate in our actions knowing the profound consequences of such a finding caused. I took extra steps to ensure that there was a common understanding within the government regarding this finding. For example, on December 1st, 2007 I read key sections of the provisional endangerment finding to OMB staff to ensure that it correctly reflected the conclusions that had been reached in prior meetings. On the morning of December 5th I discussed the finding with the Administrator of the Office of Information and Regulatory Affairs of the OMB. I got agreement that the finding was ready for formal OMB review provided that EPA make certain modifications.

   We made the requested modifications, I checked with others in senior EPA management, and I sent an email containing the finding. Shortly after I sent the email, EPA received a phone call from the White House asking for us not to send the finding. When we explained that the document had been sent, I was asked to

send a follow-up note saying that the email had been sent in error. I explained that I could not do this because it was not true.

I was then asked to retract the previous email on the grounds that the Energy Bill then working its way through Congress could make such a finding moot. I declined to do so. I and others at EPA explained that if Congress did amend the Clean Air Act to render the Supreme Court decision moot then and only then would the EPA be relieved of the obligation to move forward with an endangerment finding.

2a. You ask whether I am "aware of any efforts by White House or other officials to encourage or require the redaction of statements by CDC [Centers for Disease Control and Prevention] that global warming endangers human health or the environment." The Council on Environmental Quality (CEQ) and the Office of the Vice President (OVP) were seeking deletions to the CDC testimony. CEQ requested that I work with CDC to remove from the testimony any discussion of the human health consequences of climate change.

2b. You ask whether "such redactions were sought in order to avoid support for a finding of public endangerment that could trigger regulatory action under the Clean Air Act." During the fall of 2007 there was extensive debate about how the Administrator should make the endangerment finding. CEQ contacted me to argue that I could best keep options open for the Administrator if I would convince CDC to delete particular sections of their testimony. As I have said in other forums, I saw it as a key part of my job to keep options open for the Administrator even if I did not personally agree with those options. However I only worked to keep options open that were consistent with relevant scientific information.

2c. You ask "who sought such changes in CDC's testimony" and any role I or White House officials may have played. As stated above, CEQ and OVP were seeking changes and CEQ asked if I would work with CDC to make the desired deletions. I read the testimony, checked with EPA scientists, and came to the conclusion that the draft testimony was fundamentally accurate as written. I therefore declined to make the requested deletions or to suggest to CDC that they do so.

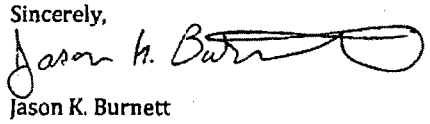
3. You ask for a description of "any efforts by White House officials to alter any other testimony regarding the threats posed by global warming in hearings before this Committee." In preparation for the January 24th, 2008 hearing before this Committee regarding the Administrator's denial of California's request for a vehicle emission waiver, EPA staff had drafted written testimony that quoted the Administrator's December 19th, 2007 letter to Governor Schwarzenegger. That letter had stated "greenhouse gas emissions harm the environment in California and elsewhere regardless of where the emissions occur." While EPA staff, myself included, did not support the denial, we thought including such language in the testimony would help clarify that the denial was consistent with the Administrator's belief that climate change is a problem.

In the course of interagency review of EPA's draft testimony we received a suggestion to avoid the phrase "greenhouse gas emissions harm the environment." EPA made it clear that we intended to keep the original language since it was accurate and informative.

An official in the OVP called to tell me that his office wanted the language changed. I declined to accept the suggestion, providing again the defense that the testimony was accurate as written. I said if the OVP wanted the language changed then someone more senior would need to talk with the Administrator. In the end this part of the Administrator's testimony remained as EPA had written it.

I have recently resigned from my position at EPA having reached the conclusion that no more productive work responding to the Supreme Court could be accomplished under this Administration. Please feel free to contact me at

Sincerely,



Jason K. Burnett

Testimony ~~Before the~~

Committee on Environment and Public Works

Climate Change and Public Health

Statement of
Julie L. Gerberding, M.D., M.P.H.
Director, Centers for Disease Control and Prevention
Administrator, Agency for Toxic Substances and Disease Registry
U.S. Department of Health and Human Services

For Release on Delivery
Expected at 10:00 a.m.
Tuesday, October 23, 2007

Introduction

Good morning Madam Chairwoman, Senator Inhofe, and other distinguished members of the Committee. It is a pleasure to appear before you as Director of the Centers for Disease Control and Prevention (CDC), the Nation's leading public health protection agency located within the Department of Health and Human Services. Thank you for the opportunity to present on climate change and human health and to highlight the role of CDC in preparing for and responding to the health effects of climate change.

Background

The health of all individuals is influenced by the health of people, animals, and the environment around us. Many trends within this larger, interdependent ecologic system influence public health on a global scale, including climate change. The public health response to such trends requires a holistic understanding of disease and the various external factors influencing public health. It is within this larger context where the greatest challenges and opportunities for protecting and promoting public health occur.

~~Scientific evidence supports the view that the earth's climate is changing. A broad array of organizations (federal, state, local, multilateral, faith-based, private and nongovernmental) is working to address climate change. Despite this extensive activity, the public health effects of climate change remain largely unaddressed. CDC considers climate change a serious public health concern.~~

~~Climate Change is a Public Health Concern~~

In the United States, climate change is likely to have a significant impact on health, through links with the following outcomes:

- Direct effects of heat,
- Health effects related to extreme weather events,
- Air pollution-related health effects,
- Allergic diseases,
- Water- and food-borne infectious diseases,
- Vector-borne and zoonotic diseases,
- Food and water scarcity, at least for some populations,
- Mental health problems, and
- Long-term impacts of chronic diseases and other health effects

The United States is a developed country with a variety of climates. Because of its well developed health infrastructure, and the greater involvement of government and nongovernmental agencies in disaster planning and response, the health effects from climate change are expected to be less significant than in the developing world. Nevertheless, many Americans will likely experience difficult challenges. Catastrophic weather events such as heat waves and hurricanes are expected to become more frequent, severe, and costly; the U.S. population is anticipated to continue to age and move to vulnerable locations such as coastal areas, increasing exposures to specific risks; and concurrent challenges such as water scarcity in certain regions could limit our resilience. In addition, climate change is likely to alter the current geographic distribution of some vector-borne and zoonotic diseases; some may become more frequent, widespread, and outbreaks could last longer, while others could be reduced in incidence.

Heat Stress and Direct Thermal Injury

One of the most likely climate change projections is an increase in frequency of hot days, hot nights, and heat waves. The United States is expected to see an increase in the severity, duration, and frequency of extreme heat waves. This, coupled with an aging population, increases the likelihood of higher mortality as the elderly are more vulnerable to dying from exposure to excessive heat. Midwestern and northeastern cities are at greatest risk, as heat-related illness and death appear to be related to exposure to temperatures much hotter than those to which the population is accustomed.

Extreme Weather Events

Climate change is anticipated to alter the frequency, timing, intensity, and duration of extreme weather events, such as hurricanes and floods. The health effects of these extreme weather events range from loss of life and acute trauma, to indirect effects such as loss of home, large scale population displacement, damage to sanitation infrastructure (drinking water and sewage systems), interruption of food production, damage to the health care infrastructure, and psychological problems such as post traumatic stress disorder. Displacement of individuals often results in disruption of health care, of particular concern for those with underlying chronic diseases. Future climate projections also show likely increases in the frequency of heavy rainfall events, posing an increased risk of flooding events and overwhelming of sanitation infrastructure.

Air Pollution Related Health Effects

Climate change can affect air quality by modifying local weather patterns and pollutant concentrations, affecting natural sources of air pollution, and promoting the formation of secondary pollutants. Of particular concern is the impact of increased temperature and UV radiation on ozone formation. Some studies have shown that higher surface temperatures, especially in urban areas, encourage the formation of ground-level ozone. As a primary ingredient of smog, ground-level ozone is a public health concern. Ozone can irritate the respiratory system, reduce lung function, aggravate asthma, and inflame and damage cells that line the lungs. In addition, it may cause permanent lung damage and aggravate chronic lung diseases.

Allergic Diseases

Studies have shown that some plants, such as ragweed and poison ivy, grow faster and produce more allergens under conditions of high carbon dioxide and warm weather. As a result, allergic diseases and symptoms could worsen with climate change.

Water- and Food-borne Infectious Diseases

Altered weather patterns resulting from climate change are likely to affect the distribution and incidence of food- and water-borne diseases. Changes in precipitation, temperature, humidity, and water salinity have been shown to affect the quality of water used for drinking, recreation, and commercial use. For example, outbreaks of *Vibrio* bacteria infections following the consumption of seafood and shellfish have been associated with increases in temperatures. Heavy rainfall has also been implicated as a contributing factor in the overloading and contamination of drinking water treatment systems, leading to illness from organisms such as *Cryptosporidium* and *Giardia*. Storm water runoff

from heavy precipitation events can also increase fecal bacterial counts in coastal waters as well as nutrient load, which, coupled with increased sea-surface temperature, can lead to increases in the frequency and range of harmful algal blooms (red tides) and potent marine biotoxins such as ciguatera fish poisoning.

Vector-borne and Zoonotic Diseases

Vector-borne and zoonotic diseases, such as plague, Lyme disease, West Nile virus, malaria, hantavirus pulmonary syndrome, and dengue fever have been shown to have a distinct seasonal pattern, suggesting that they are weather sensitive. Climate change-driven ecological changes, such as variations in rainfall and temperature, could significantly alter the range, seasonality, and human incidence of many zoonotic and vector-borne diseases. More study is required to fully understand all the implications of ecological variables necessary to predict climate change effects on vector-borne and zoonotic diseases. Moderating factors such as housing quality, land-use patterns, and vector control programs make it unlikely that these climate changes will have a major impact on tropical diseases such as malaria and dengue fever spreading into the United States. However, climate change could aid in the establishment of exotic vector-borne diseases imported into the United States.

Food Scarcity

Climate change is predicted to alter agricultural production, both directly and indirectly. This may lead to scarcity of some foods, increase food prices, and threaten access to food for Americans who experience food insecurity.

Mental Health Problems

Some Americans may suffer anxiety, depression, and similar symptoms in anticipating climate change and/or in coping with its effects. Moreover, the aftermath of severe events may include post-traumatic stress and related problems, as was seen after Hurricane Katrina. These conditions are difficult to quantify but may have significant effects of health and well-being.

Climate Change Vulnerability

The effects of climate change will likely vary regionally and by population. The northern latitudes of the United States are expected to experience the largest increases in average temperatures; these areas also will likely bear the brunt of increases in ground-level ozone and associated airborne pollutants. Populations in mid-western and northeastern cities are expected to experience more heat-related illnesses as heat waves increase in frequency, severity, and duration. Coastal regions will likely experience essentially uniform risk of sea level rise, but different rates of coastal erosion, wetlands destruction, and topography are expected to result in dramatically different regional effects of sea level rise. Distribution of animal hosts and vectors may change; in many cases, ranges could extend northward and increase in elevation. For some pathogens associated with wild animals, such as rodents and hantavirus, ranges will change based on precipitation changes. The west coast of the United States is expected to experience significant strains on water supplies as regional precipitation declines and mountain snowpacks are

depleted. Forest fires are expected to increase in frequency, severity, distribution, and duration.

The health effects of climate change on a given community will depend not only on the particular exposures it faces, but also on the underlying health status, age distribution, health care access, and socioeconomic status of its residents. Local response capacity will also be important. As with other environmental hazards, members of certain ethnic and racial minority groups will likely be disproportionately affected. For example, in low-lying coastal communities facing increasingly frequent and severe extreme precipitation events, there could be increased injuries, outbreaks of diarrheal disease, and harmful algal blooms; saltwater may intrude into freshwater tables and infrastructure is likely to be damaged by severe storms, hampering economic recovery. In certain Southern coastal communities with little economic reserve, declining industry, difficulty accessing health care, and a greater underlying burden of disease, these stressors could be overwhelming. Similarly, in an urban area with increasingly frequent and severe heat waves, certain groups are expected to be more affected: the home-bound, elderly, poor, athletes, and minority and migrant populations, and populations that live in areas with less green space and with fewer centrally air-conditioned buildings are all more vulnerable to heat stress.

Some populations of Americans are more vulnerable to the health effects of climate change than others. Children are at greater risk of worsening asthma, allergies, and certain infectious diseases, and the elderly are at higher risk for health effects due to heat waves, extreme weather events, and exacerbations of chronic disease. In addition, people

~~of lower socioeconomic status are particularly vulnerable to extreme weather events. Members of racial and ethnic minority groups suffer particularly from air pollution as well as inadequate health care access, while athletes and those who work outdoors are more at risk from air pollution, heat, and certain infectious diseases.~~

~~Given the differential burden of climate change's health effects on certain populations, public health preparedness for climate change must include vulnerability assessments that identify the most vulnerable populations with the most significant health disparities and anticipate their risks for particular exposures. At the same time, health communication targeting these vulnerable populations must be devised and tested, and early warning systems focused on vulnerable communities should be developed. With adequate notice and a vigorous response, the ill health effects of many exposures from climate change can be dampened.~~

Public Health Preparedness for Climate Change

Climate change is anticipated to have a broad range of impacts on the health of Americans and the nation's public health infrastructure. As the nation's public health agency, CDC is uniquely poised to lead efforts to anticipate and respond to the health effects of climate change. Preparedness for the health consequences of climate change aligns with traditional public health contributions, and – like preparedness for terrorism and pandemic influenza – reinforces the importance of a strong public health infrastructure. CDC's expertise and programs in the following areas provide the strong platform needed:

- *Environmental Public Health Tracking:* CDC has a long history of tracking occurrence and trends in diseases and health outcomes. CDC is pioneering new ways to understand the impacts of environmental hazards on people's health. For example, CDC's Environmental Public Health Tracking Program has funded several states to build a health surveillance system that integrates environmental exposures and human health outcomes. This system, the Tracking Network, will go live in 2008, providing information on how health is affected by environmental hazards. The Tracking Network will contain critical data on the incidence, trends, and potential outbreaks of diseases, including those affected by climate change.

- *Surveillance of Water-borne, Food-borne, Vector-borne, and Zoonotic Diseases:* CDC also has a long history of surveillance of infectious, zoonotic, and vector-borne diseases. Preparing for climate change will involve working closely with state and local partners to document whether potential changes in climate have an impact on infectious and other diseases and to use this information to help protect Americans from the potential change in of a variety of dangerous water-borne, food-borne, vector-borne, and zoonotic diseases. CDC has developed ArboNet, the national arthropod-borne viral disease tracking system. Currently, this system supports the nationwide West Nile virus surveillance system that links all 50 states and four large metropolitan areas to a central database that records and maps cases in humans and animals and would detect changes in real-time in the distribution and prevalence of cases of arthropod-borne viral diseases. CDC also supports the major foodborne surveillance and investigative networks of FoodNet and

PulseNet which rapidly identify and provide detailed data on cases of foodborne illnesses, on the organisms that cause them, and on the foods that are the sources of infection. Altered weather patterns resulting from climate change ~~are likely to~~may affect the distribution and incidence of food- and water-borne diseases, and these changes can be identified and tracked through PulseNet.

- *Geographic Information System (GIS):* At the CDC, GIS technology has been applied in unique and powerful ways to a variety of public health issues. It has been used in data collection, mapping, and communication to respond to issues as wide-ranging and varied as the World Trade Center collapse, avian flu, SARS, and Rift Valley fever. In addition, GIS technology was used to map issues of importance during the CDC response to Hurricane Katrina. This technology represents an additional tool for the public health response to climate change.

- ~~*Modeling:* Currently sophisticated models to predict climate and heat exist. For example,~~*Modeling:* Model projections of future climate change can be used as inputs into models that assess the impact of climate change on public health. CDC has conducted heat stroke modeling for the city of Philadelphia to predict the most vulnerable populations at risk for hyperthermia. ~~Modeling and forecasting represent an important preparedness strategy, in that it can help predict and respond to the most pressing health vulnerabilities at the state and local level. Armed with modeling data, we can target response plans for heat and other extreme weather events to the most vulnerable communities and populations.~~ In light of these

projections, CDC has initiated efforts to model the impact of heat waves on urban populations to identify those people most vulnerable to hyperthermia.

- *Preparedness Planning:* Just as we prepare for terrorism and pandemic influenza, we should use these principles and prepare for health impacts from climate change. For example, to respond to the multiple threats posed by heat waves, the urban environment, and climate change, CDC scientists have focused prevention efforts on developing tools that local emergency planners and decision-makers can use to prepare for and respond to heat waves. In collaboration with other Federal partners, CDC participated in the development of an Excessive Heat Events Guidebook, which provides a comprehensive set of guiding principle and a menu of options for cities and localities to use in the development of Heat Response Plans. These plans clearly define specific roles and responsibilities of government and non-governmental organizations during heat waves. They identify local populations at increased high risk for heat-related illness and death and determine which strategies will be used to reach them during heat emergencies.

- *Training and Education of Public Health Professionals* – Preparing for the health consequences of climate change requires that professionals have the skills required to conceptualize the impending threats, integrate a wide variety of public health and other data in surveillance activities, work closely with other agencies and sectors, and provide effective health communication for vulnerable populations regarding the evolving threat of climate change. CDC is holding a series of five workshops to further explore key dimensions of

climate change and public health, including drinking water, heat waves, health communication, vector-borne illness, and vulnerable populations.

- *Health Protection Research:* CDC can promote research to further elucidate the specific relationships between climate change and various health outcomes, including predictive models and evaluations of interventions. Research efforts can also identify the magnitude of health effects and populations at greatest risk. For example, CDC has conducted research on the relationship between hantavirus pulmonary syndrome and rainfall, as well as research assessing the impact of climate variability and climate change on temperature-related morbidity and mortality. This information will help enable public health action to be targeted and will help determine the best methods of communicating risk. CDC can serve as a credible source of information on health risks and actions that individuals can take to reduce their risk. In addition, CDC has several state-of-the-art laboratories conducting research on such issues as chemicals and human exposure, radiological testing, and infectious diseases. This research capacity is an asset in working to more fully understand the health consequences of climate change.
- *Communication*: CDC has expertise in communicating to the general public health and risk ~~communication~~information, and has deployed this expertise in areas as diverse as smoking, HIV infection, and cancer screening. Effective communication can alert the public to health risks associated with climate change, ~~avoid inappropriate responses,~~ and encourage constructive protective behaviors.

While CDC can offer technical support and expertise in these and other activities, much of this work needs to be carried out at the state and local level. For example, CDC can support climate change preparedness activities in public health agencies, and climate change and health research in universities, as is currently practiced for a variety of other health challenges.

Conclusion

An effective public health response to climate change can prevent injuries, illnesses, and death and enhance overall public health preparedness. Protecting Americans from ~~the~~adverse health effects of climate change directly correlates to CDC's four overarching Health Protection Goals of Healthy People in Every Stage of Life, Healthy People in Healthy Places, People Prepared for Emerging Health Threats, and Healthy People in a Healthy World.

While we still need more focus and emphasis on public health preparedness for climate change, many of our existing programs and scientific expertise provide a solid foundation to move forward. Many of the activities needed to protect Americans from ~~the~~adverse health effects of climate change are mutually beneficial for overall public health. In addition, health and the environment are closely linked~~, as strongly demonstrated by the issue of climate change~~. Because of this linkage it is also important that potential health effects of environmental solutions be fully considered.

Thank you again for the opportunity to provide this testimony on the potential health effects of global climate change and for your continued support of CDC's essential public health work.

THE INDEPENDENT

February 7, 2010

Think-tanks take oil money and use it to fund climate deniers

By Jonathan Owen and Paul Bignell

ExxonMobil cash supported concerted campaign to undermine case for man-made warming

An orchestrated campaign is being waged against climate change science to undermine public acceptance of man-made global warming, environment experts claimed last night.

The attack against scientists supportive of the idea of man-made climate change has grown in ferocity since the leak of thousands of documents on the subject from the University of East Anglia (UEA) on the eve of the Copenhagen climate summit last December.

Free-market, anti-climate change think-tanks such as the Atlas Economic Research Foundation in the US and the International Policy Network in the UK have received grants totalling hundreds of thousands of pounds from the multinational energy company ExxonMobil. Both organisations have funded international seminars pulling together climate change deniers from across the globe.

Many of these critics have broadcast material from the leaked UEA emails to undermine climate change predictions and to highlight errors in claims that the Himalayan glaciers could disappear by 2035. Professor Phil Jones, who has temporarily stood down as director of UEA's climactic research unit, is reported in today's Sunday Times to have "several times" considered suicide. He also drew parallels between his case and that of Dr David Kelly, found dead in the wake of the row over the alleged "sexing up" of intelligence in the run-up to the invasion of Iraq. Professor Jones said he was taking sleeping pills and beta-blockers and had received two death threats in the past week alone.

Climate sceptic bloggers broadcast stories last week casting doubts on scientific data predicting dramatic loss of the Amazon rainforest. All three stories, picked up by mainstream media, questioned the credibility of the International Panel on Climate Change (IPCC) and the way it does its work. A new attack on climate science, already dubbed "Seagate" by sceptics, relating to claims that more than half the Netherlands is in danger of being submerged under rising sea levels, is likely to be at the centre of the newest skirmish in coming weeks.

The controversies have shaken the IPCC, whose chairman, Dr Rajendra Pachauri, was subjected to a series of personal attacks on his reputation and lifestyle last week. A poll this weekend confirmed that public

confidence in the climate change consensus has been shaken: one in four Britons - 25 per cent - now say they do not believe in global warming; previously this figure stood at 15 per cent.

Professor Bob Watson, the chief scientific adviser to the Department for Environment, Food and Rural Affairs (Defra) and former chairman of the IPCC, said yesterday that the backlash is the result of a campaign: "It does appear that there's a concerted effort by a number of sceptics to undermine the credibility of the evidence behind human-induced climate change." He added: "I am sure there are some sceptics who may well be funded by the private sector to try to cast uncertainty."

A complicated web of relationships revolves around a number of right-wing think-tanks around the world that dispute the threats of climate change. ExxonMobil is a key player behind the scenes, having donated hundreds of thousands of dollars in the past few years to climate change sceptics. The Atlas Foundation, created by the late Sir Anthony Fisher (founder of the Institute of Economic Affairs), received more than $100,000 in 2008 from ExxonMobil, according to the oil company's reports.

Atlas has supported more than 30 other foreign think-tanks that espouse climate change scepticism, and co-sponsored a meeting of the world's leading climate sceptics in New York last March. Called "Global Warming: Was It Ever Really a Crisis?", it was organised by the Heartland Institute - a group that described the event as "the world's largest-ever gathering of global warming sceptics". The organisation is another right-wing think-tank to have benefited from funding given by ExxonMobil in recent years.

A large British contingent was present at the event, with speakers including Dr Benny Peiser, from Lord Lawson's climate sceptic think-tank, the Global Warming Policy Foundation (GWPF); the botanist David Bellamy; Julian Morris and Kendra Okonski from the London-based International Policy Network; the weather forecaster Piers Corbyn; Christopher Monckton, a former policy adviser to Margaret Thatcher; and Professor David Henderson, a member of GWPF's advisory council. Speakers at the event also included two prominent climate bloggers who associate with Paul Dennis, a 54-year-old climate researcher at the University of East Anglia who has been questioned by police investigating the theft of climate data.

In a posting on the blog of the climate sceptic Andrew Montford on Friday, Mr Dennis insisted: "I did not leak any files, data, emails or any other material. I have no idea how the files were released or who was behind it."

But he confirmed that he had been in email contact with Stephen McIntyre, who runs climateaudit.org - a site that was one of the first to receive an anonymous link to the original leaked data from UEA.

Mr Dennis said he emailed Mr McIntyre to alert him to a "departmental email saying that emails and files were hacked" and that "police had copies of my email correspondence with Steve McIntyre and Jeff Id [a pseudonym for the climate sceptic Patrick Condon]. They said it was because I had sent the emails that they were interviewing me."

The UEA researcher also has connections with another prominent sceptic, Anthony Watts, with whom he has posted and who spoke beside Mr McIntyre. Mr Dennis was not available for comment.

Bob Ward, the policy director of the Grantham Research Institute on Climate Change at the London School of Economics, said: "A lot of the climate sceptic arguments are being made by people with demonstrable right-wing ideology which is based on opposition to any environmental regulation of the market, and they are clearly being given money that allows them to disseminate their views more widely than would be the case if they didn't have oil company funding."

But Dr Richard North, a climate change sceptic and blogger, rejected claims of a conspiracy as "laughable" and denied having any links to vested interests. "Anybody who knows me knows I'm e loner. Nobody tells me what to do or dictates my agenda."

ExxonMobil said in a statement: "We have the same concerns as people everywhere - and that is how to provide the world with the energy it needs while reducing greenhouse gas emissions."

2006

Exxon Mobil Corporation[1]
2006 Contributions and Community Investments[2]
($ Millions)

	United States	*Canada*	*Africa & Middle East*	*Asia Pacific*	*Europe, Russia, & Caspian*	*Latin America*	*Totals*
Arts and Culture	3.3	.9	.1	.4	.5	–	5.2
Civic and Community	16.6	1.9	6.2	3.6	11.7	.9	40.9
Environment	1.9	.5	.6	1.6	1.6	.3	6.5
Health	3.9	.7	11.0	.4	2.7	.3	19.0
Education:							
Higher Education	32.0	.8	.5	.6	.9	.3	35.1
Pre-College[3]	10.1	1.2	2.9	.5	3.6	.6	18.9
Total Education	42.1	2.0	3.4	1.1	4.5	.9	54.0
Policy Research	6.1	–	.2	.1	.1	–	6.5
United Appeals	5.4	1.0	–	–	.1	–	6.5
Total	79.3	7.0	21.5	7.2	21.2	2.4	138.6

(1) Includes donations from Exxon Mobil Corporation, its divisions and affiliates, and ExxonMobil Foundation.

(2) Includes contributions to nonprofit and NGO organizations, direct spending on community serving projects, social bonus projects required under agreements with host governments by Exxon Mobil Corporation, its divisions and affiliates, and ExxonMobil's share of community expenditures paid by joint ventures operated by other companies.

(3) Includes in-kind donation in the United States of $225,000.

Public Information and Policy Research

Center for American and International Law, Plano, Texas	
CAIL Rogers Award Dinner 2007'	$ 6,000
Institute for Energy Law	8,000
Institute for Transnational Arbitration	6,500
International and Comparative Law	5,000
Other contributions', each under $5,000	5,500
Subtotal	**$ 31,000**
Center for Strategic and International Studies Inc., Washington, D.C.	
General Operating Support	225,000
Support of the Middle East & Energy Programs'	17,000
US-Saudi Energy Dialogue'	40,000
Subtotal	**$282,000**
Center for the Study of Carbon Dioxide and Global Change*, Tempe, Arizona	10,000
Central and East European Law Initiative Institute*, Washington, D.C.	25,000
Chemical Educational Foundation*, Arlington, Virginia	
Product Stewardship Bulletins	25,000
Committee for a Constructive Tomorrow, Washington, D.C.	70,000
Committee for Economic Development*, Washington, D.C.	10,000
Committee to Encourage Corporate Philanthropy*, New York, New York	
Membership	10,000
Common Good Institute, Inc., New York, New York	25,000
Communications Institute*, Pasadena, California	75,000
Congress of Racial Equality*, New York, New York	25,000
Congressional Black Caucus Foundation, Inc.*, Washington, D.C.	
Annual Legislative Dinner	7,500
Corporate Council on Africa*, Washington, D.C.	
Africa Chiefs of Mission Gathering 2006	5,000
General Operating Support	10,000
Membership	10,000
Subtotal	**$ 25,000**
Council of State Governments*, Lexington, Kentucky	5,000
Council on Foreign Relations, Inc.*, New York, New York	
Africa Initiative	50,000
Annual Corporate Membership	60,000
Eisenhower Exchange Fellowships, Inc., Philadelphia, Pennsylvania	
Northeast Asia Program	40,000
Environmental Law Institute*, Washington, D.C.	
Award Dinner	10,000
Corporate Program Membership	10,000
Federalist Society for Law and Public Policy Studies, Washington, D.C.	15,000
Financial Executives Research Foundation, Inc.*, Florham Park, New Jersey	
Research Program	15,000
Foundation for American Communications*, Pasadena, California	50,000
Foundation for Public Affairs*, Washington, D.C.	5,000
Foundation for Research on Economics and the Environment, Bozeman, Montana	30,000
Foundation for the Center for Energy, Marine Transportation and Public Policy at Columbia University*, New York, New York	100,000
Foundation of the International Association of the Defense Counsel, Chicago, Illinois	10,000
Frontiers of Freedom Institute, Oakton, Virginia	
General Operating Support'	90,000
Science & Policy Center	90,000

2002

Public Information and Policy Research

ExxonMobil supports organizations that research significant domestic and foreign policy issues and promote informed discussion on issues of direct relevance to business and the company's ongoing operations. In 2002, worldwide contributions for Public Information and Policy Research totaled $5.6 million, with $5.1 million focused within the United States.

We support programs that increase the United States' knowledge of the world and shape U.S. foreign policy. We fund the Council on Foreign Relations to assist them in constructive discussions both in private and in public, and to publish Foreign Affairs, a journal on global issues. To increase the understanding by the people of the United States about societies and cultures of the world, we support a variety of organizations and programs focused on both cultural affairs and public policy programs. The Asia Society and the Corporate Council on Africa are currently funded by ExxonMobil.

Organizations that are dedicated to research on free market solutions to public policy problems receive support from ExxonMobil. The American Enterprise Institute for Public Policy Research and the Competitive Enterprise Institute, organizations dedicated to strengthening the foundations of freedom and to the principles of free enterprise, receive support from ExxonMobil.

Through various memberships and affiliations, we support the promotion of business views and solutions on a wide range of global economic and business policy issues. We fund the United States Council for International Business, International Chamber of Commerce and the National Foreign Trade Council to obtain business-critical information about international policy and regulatory issues.

Acton Institute for the Study of Religion and Liberty, Grand Rapids, Michigan	30,000
Advancement of Sound Science Center, Potomac, Maryland	10,000
Advertising Council, Inc., New York, N.Y.	20,000
AEI-Brookings Joint Center for Regulatory Studies, Washington, D.C.	25,000
Africa Society, Washington, D.C.	25,000
American Council for Capital Formation Center for Policy Research*, Washington, D.C.	
Climate Change Activities	199,523
Washington Diplomatic Outreach Activities	100,000
American Council on Germany, Inc., New York, N.Y.	
John J. McCloy Award Dinner*	25,000
General Support	10,000
American Council on Science and Health, New York, N.Y.	10,000
American Enterprise Institute for Public Policy Research, Washington, D.C.	
Annual Dinner*	5,000
General Operating Support	225,000
Project Support	25,000

Committee for Economic Development, New York, N.Y.	*75,000*
Competitive Enterprise Institute, Washington, D.C.	
Congressional Briefing Program	*50,000*
General Operating Support	125,000
General Operating Support*	140,000
Legal Activities*	60,000
Project Support	30,000
Subtotal	**405,000**
Conference Board, Inc., New York, N.Y.	
Exchange Rate Project ($50k: 2001-2002)	*25,000*
Congressional Black Caucus Foundation, Inc.*, Washington, D.C.	
Annual Legislative Conference Dinner	25,000
Consumer Alert, Inc., Washington, D.C.	10,000
Corporate Council on Africa", Washington, D.C.	10,000
Council of State Governments*	
Lexington, Kentucky	*5,000*
Washington, D.C.	*5,000*
Council on Foreign Relations*, New York, N.Y.	
Annual Subscription to the Corporate Program	*50,000*
CPR Institute for Dispute Resolution, Inc.*, New York, N.Y.	6,000
Duke University, Durham, North Carolina	
Center for Environmental Solutions	45,000
East West Institute, New York, N.Y.	10,000
Environmental Law Institute", Washington, D.C.	
Eli Award Dinner	17,500
Federalist Society for Law and Public Policy Studies, Washington, D.C.	*15,000*
Florida International University, Miami	15,000
Foreign Policy Association*, New York, N.Y.	*75,000*
Foundation for American Communications, Pasadena, California	
25th Anniversary Gala	*25,000*
Science Journalism Program*	150,000
Foundation for Public Affairs*, Washington, D.C.	*5,000*
Foundation for Research on Economics and the Environment, Bozeman, Montana	30,000
Foundation for the Center for Energy, Marine Transportation and Public Policy at Columbia University*, New York, N.Y.	
General Support ($500k: 1999-2003)	200,000
Frontiers of Freedom, Fairfax, Virginia	
Center for Sound Science and Pubic Policy	100,000
Global Climate Change Outreach Activities	97,000
Global Climate Change Science Projects	35,000
George C. Marshall Foundation, Washington, D.C.	
Awards Dinner*	10,000
Global Climate Change Program	80,000
George Mason University, Fairfax, Virginia	
Law & Economics Center	20,000

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Syndicate

The **Center for Science and Public Policy (CSPP)** is a non-profit, non-partisan public policy organization. CSPP relies on scientific experts in many nations and the vast body of peer-reviewed literature to help lawmakers, policy makers, and the media distinguish between scientific findings that are agenda-driven and those that are based on accepted scientific methods and practices. In a timely manner, the Center's Science Watch Team alerts policy makers, the media, and the public to unreliable scientific claims and unjustified alarmism which often lead to public harm. We strive for a fair and balanced examination of science.

Climate and Environmental Weekly Archives

Global Warming Library

Mercury Library

Back

Polls

Do you think the stimulus bill is or has helped the U.S. economy?

Yes, it is helping the overall state of the economy because I have seen evidence of the economy turning around since its passing.

No, it is not helping the economy. In fact, the economy is worsening since the stimulus bill passing.

The Obama stimulus bill has had no economic impact, good or bad, since its passing.

It doesn't really matter because President Obama is getting a basketball court installed in the white house, which is much more fun to think about than Wall Street.

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Personnel

President: Robert Ferguson has 26 years of Capitol Hill experience, having worked in both the House and Senate. He served in the House Republican Study Committee, the Senate Republican Policy Committee; as Chief of Staff to Congressman Jack Fields (R-TX) from 1981-1997; Chief of Staff to Congressman John E. Peterson (R-PA) from 1997-2002 and Chief of Staff to Congressman Rick Renzi (R-AZ) in 2002. He has considerable policy experience in climate change science, mercury science, energy and mining, forests and resources, clean air and the environment. His undergraduate and advanced degrees were taken at Brigham Young University and George Washington University, respectively. Ferguson served active duty in the US Army from 1966-1970.

Chief Science Adviser: Willie Soon PhD. - Soon is an astrophysicist and a geoscientist interested in all aspects of the science. He writes and lectures both professionally and publicly on important issues related to the Sun, other stars, the Earth as well as general science topics in astronomy and physics. He is the author of "The Maunder Minimum and the Variable Sun-Earth Connection" http://www.wspc.com/books/physics/5199.html) published March 2004. Dr. Soon's honors include a 1989 IEEE Nuclear and Plasma Sciences Society Graduate Scholastic Awards and a Rockwell Dennis Hunt Scholastic Award from the University of Southern California for "the most representative Ph.D. research thesis" of 1991. In 2003, he was invited to testify in the United States Senate and was later recognized, with an award, for "detailed scholarship on biogeological and climatic change over the past 1000 years" by the Smithsonian Institution. In June 2004, he was presented with the Petr Beckmann award of the by Doctors for Disaster Preparedness for "courage and achievement in defense of scientific truth and freedom."

Chief Policy Adviser: Lord Monckton, UK: -- Christopher, Third Viscount Monckton of Brenchley, was Special Advisor to Margaret Thatcher as UK Prime Minister from 1982 to 1986, and gave policy advice on technical issues such as warship hydrodynamics (his work led to his appointment as the youngest Trustee of the Hates Trophy for the Blue Riband of the Atlantic), psephological modeling (predicting the result of the 1983 General Election to within one seat), embryological research, hydrogeology (leading to the award of major financial assistance to a Commonwealth country for the construction of a very successful

THE PEW CHARITABLE TRUSTS

The Clean Energy Economy
California

California has the largest clean energy economy of the 50 states. Jobs in this sector grew at a faster rate than total jobs in the Golden State between 1998 and 2007. California's clean energy economy has been driven by significant investment, attracting more than $6.5 billion in venture capital in the past three years. It also has been driven by public policies, from financial incentives for clean energy development and energy efficiency to renewable portfolio and energy efficiency standards. California's Green Building Action Plan—a goal for public buildings to be 20 percent more energy efficient by 2015—could save the state $100 million annually.[1]

BY THE NUMBERS, THE CLEAN ENERGY ECONOMY:

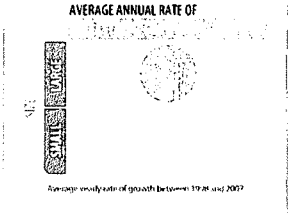
Jobs (2007): **125,390**

Businesses (2007): **10,209**

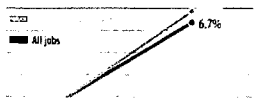
Venture Capital Funds (2006-2008)*: **$6,580,426,908**

Patents (1999-2008): **1,401**

STATUS OF CLEAN ENERGY ECONOMY



10-YEAR GROWTH

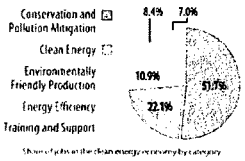


EXAMPLES OF COMPANIES:**

Bridgelux, *Sunnyvale* (Energy Efficiency): designs and manufactures LED lighting

Zpower, *Camarillo* (Clean Energy): designs and manufactures silver zinc batteries for next generation cell phones and computers (formerly known as Zinc Matrix Power)

JOB CATEGORIES***



MORE ABOUT THESE FACTSHEETS

Download the full report by visiting www.pewtrusts.org/cleanenergyeconomy

NOTES: *Values reported in 2008 dollars. **Information current as of May 8, 2009. This report is intended for educational and informational purposes. References to specific products, services, companies and policy makers have been included solely to advance these purposes and do not constitute an endorsement, sponsorship or recommendation by The Pew Charitable Trusts. ***These numbers may not add up to 100 percent due to rounding. ****Financial incentives include residential, commercial and industrial loan financing, rebate programs and tax incentives.

SOURCES: Jobs and establishment data from The Pew Charitable Trusts, 2009; based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics. (1) State of California: Office of the Governor press release, "Executive Order S-20-04," December 14, 2004, http://gov.ca.gov/executive-order/3360/ (accessed May 13, 2009).

CLEAN ENERGY POLICIES

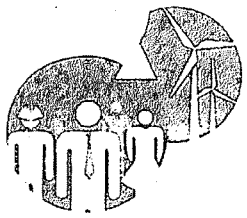
Financial Incentives****

Renewable Portfolio Standards

Energy Efficiency Resource Standards

Regional Cap and Trade Program

the CleanEnergy Economy



Repowering Jobs, Businesses and Investments Across America

THE PEW CHARITABLE TRUSTS

Executive Summary

America's clean energy economy is declining as a critical component of the nation's future.

Research by The Pew Charitable Trusts shows that despite a lack of sustained policy attention and investment, the emerging clean energy economy has grown considerably—extending to all 50 states, engaging a wide variety of workers and generating new industries. Between 1998 and 2007, its jobs grew at a faster rate than overall jobs. Like all other sectors, the clean energy economy has been hit by the recession, but investments in clean technology have fared far better in the past year than venture capital overall. Looking forward, the clean energy economy has tremendous potential for growth, as investments continue to flow from both the government and private sector and federal and state policy makers increasingly push for reforms that will both spur economic renewal and sustain the environment.

By 2007, more than 68,200 businesses across all 50 states and the District of Columbia accounted for about 770,000 jobs that achieve the double bottom line of economic growth and environmental sustainability (Exhibit 1).

In today's tough financial climate, when millions of jobs have been lost, those numbers may sound modest. Three quarters of a million jobs represent half a percent of all jobs in the United States today. But Pew's research shows that between 1998 and 2007, clean energy economy jobs—a mix of white- and blue-collar positions, from scientists and engineers to electricians, machinists and teachers—grew by 9.1 percent, while total jobs grew by only 3.7 percent. And although we expect job growth in the clean energy economy to have declined in 2008, experts predict the drop in this sector will be less severe than the drop in U.S. jobs overall.

Pew's research indicates a strong start for a new economy still very much in its infancy. To put our clean energy economy numbers in perspective, consider the following. Biotechnology, which has developed applications for agriculture, consumer products, the environment and health care and has been the focus of significant public policy and government and private investment, employed fewer than 200,000 workers, or about a tenth of a percent of total U.S. jobs in 2007, according to a 2008 Ernst & Young report. And the well-established traditional energy sector—including utilities, coal mining and oil and gas extraction, industries that have received significant government investment—comprised about 1.27 million workers in 2007, or about 1 percent of total employment.

Growing attention and financial support from both the private and public sectors indicate that the clean energy economy is poised to expand significantly. Signaling interest in new market opportunities, venture capital investment in clean technology crossed the $1 billion threshold in 2005 and continued to grow substantially, totaling about $12.6 billion during the past three years. Although they have dropped significantly in recent months because of the recession, investments in clean

technology are actually faring better than other industries: They were down 48 percent in the first three months of 2009 compared with a year earlier, while total venture capital across all sectors was down 61 percent for the same period. "It's important not to miss the forest for the trees," Nicholas Parker, executive chairman of the Cleantech Group, said in January 2009. "In 2008, there was a quantum leap in talent, resources and institutional appetite for clean technologies. Now, more than ever, clean technologies represent the biggest opportunities for job and wealth creation."

Between 2006 and 2008, 40 states and the District of Columbia attracted venture capital investments in technologies and industries aimed at economic growth and environmental sustainability. And all states will receive a major infusion of federal funds through the recently enacted American Recovery and Reinvestment Act (ARRA), which allocates nearly $85 billion in direct spending and tax incentives for energy- and transportation-related programs.

Every State Has a Piece of the Clean Energy Economy

With traditional manufacturing jobs declining during the past decade, states have been working aggressively to develop new industries and create jobs that will endure—and remain within U.S. borders. They also have been working to address the public's concerns about high energy prices, national security and our dependence on foreign oil, and global warming—all with an understanding that America is on its way to being a carbon-constrained country. "While our economic engine has for years been powered by relatively inexpensive energy, there is evidence that this era is coming to a close," a National Governors Association report noted in 2007. "Meanwhile, we are increasingly aware of the serious impacts of global climate change—and how America's consumption of fossil fuels is contributing to a warming Earth."

Pew's analysis shows that every state has a piece of America's clean energy economy. Texas, for instance, generates more electricity from wind than any other state, had more than 55,000 clean energy economy jobs in 2007, and attracted more than $716 million in venture capital funds for clean technology between 2006 and 2008. Tennessee has succeeded in cultivating jobs in recycling, waste treatment and water management, among other conservation industries; jobs in Tennessee's clean energy economy grew by more than 18 percent between 1998 and 2007, compared with 2.5 percent growth in all jobs in the state. Colorado has raised the amount of power electricity providers must supply from renewable energy sources to stimulate job growth in solar and wind power and other forms of clean energy generation. Ohio ranked among the top five states with the most jobs in clean energy, energy efficiency and environmentally friendly production in 2007. Idaho, Kansas, Mississippi and South Dakota are among more than a dozen states where the number of jobs in the clean energy economy in 2007 was modest, but the average annual growth rate of those jobs was among the highest in the country. All told, in 38 states and the District of Columbia, job growth in the clean energy economy outperformed total jobs growth between 1998 and 2007. In a number of states, job gains in the clean energy economy have helped lessen total job losses.

Defining the Clean Energy Economy

Pew partnered with Collaborative Economics, Inc., a public policy research firm based in California, on the research. While organizations on both sides of the political spectrum have weighed in with forecasts and economic modeling to estimate the size of the clean energy economy, Pew's analysis is the first of its kind to count actual jobs, businesses and investments for each of the 50 states and the District of Columbia. Our numbers are conservative and may be lower than some other reports for three reasons: First, we developed a stringent definition of the clean energy economy; second, we used a new, labor-intensive methodology that counted only companies that we could verify online as being actively engaged in the clean energy economy; and third, we counted businesses and jobs supplying products and services generated by the clean energy economy, not the companies using these products and services to make themselves "greener" (i.e., we counted only companies and jobs on the supply side, not the demand side, of the clean energy economy).

Policy makers, business leaders and the public need credible, reliable data to ground their policy deliberations and choices, and to understand where emerging economic opportunities lie. They also need a clear, concrete and common definition of what constitutes the clean energy economy so they can track jobs and businesses and gauge the effectiveness of public policy choices and investments.

Based on significant research and input from experts in the field, including the advisory panel that helped guide this study, Pew developed the following definition:

A clean energy economy generates jobs, businesses and investments while expanding clean energy production, increasing energy efficiency, reducing greenhouse gas emissions, waste and pollution, and conserving water and other natural resources.

The clean energy economy cuts across five categories: (1) Clean Energy; (2) Energy Efficiency; (3) Environmentally Friendly Production; (4) Conservation and Pollution Mitigation; and (5) Training and Support.

While specific jobs and businesses will change in the coming decades, the five categories of the clean energy economy will not—providing a clear, practical and consistent framework for federal, state and local policy makers and the private sector to track investments, job and business creation, and growth over time.

Jobs of Today, and Jobs of Tomorrow

Pew's framework takes into account that technology, scientific research, market forces and public policy will continue to drive innovation and competition, so the largest segments of today's clean energy economy may not be its driving forces tomorrow.

Our data show that 65 percent of today's clean energy economy jobs are in the category of Conservation and Pollution Mitigation—a sector that reflects the growing recognition among the public, policy makers and business leaders of the need to recycle waste, conserve water and mitigate emissions of greenhouse gases and other pollutants. But three other categories—Clean Energy, Energy Efficiency and Environmentally Friendly Production—are growing at a far faster clip. And about 80 percent of venture capital investments in 2008 were in the sectors of Clean Energy and Energy Efficiency: businesses and jobs working to develop clean, renewable energy

sources such as wind and solar and products and services that reduce our overall energy consumption—all of which will help meet the demands of a carbon-constrained economy.

The flow of venture capital indicates which sectors are most attractive to investors and have the greatest growth potential. The number of jobs and businesses in Clean Energy and Energy Efficiency will grow over time—and as the country increases the amount of power it draws from renewable sources, we will generate less waste, reduce our reliance on foreign oil and produce fewer carbon emissions that cause global warming. That does not mean that jobs in the Conservation and Pollution Mitigation category will disappear. As other countries seek to follow America's lead, they increasingly will need help managing their finite natural resources and addressing the adverse effects of their use of fossil-fuel energy sources—creating a new market for our products, technology and know-how.

Public Policy's Role in Driving the Clean Energy Economy

Public policy is another important indicator of the future of the clean energy economy.

Policies intended to advance the clean energy economy—from comprehensive energy plans, renewable energy standards and energy efficiency measures to the development of alternative fuels, job retraining and waste reduction efforts—have been adopted or are being actively considered by both the federal government and states. It is too early to tell to what degree these efforts will succeed in stimulating U.S. job growth, strengthening America's competitiveness, curbing pollution and conserving resources. But Pew's analysis indicates such policies have great potential because they create significant incentives for both the private and public sectors to develop new technologies, infrastructure and processes for clean energy, efficiency and conservation. Now that we have baseline data in hand, Pew will conduct follow-up research to assess which approaches are particularly effective in generating jobs, businesses and investments in the clean energy economy.

State policies. Governors and legislators across the country are seeking to get to the double bottom line of economic growth and environmental sustainability by adopting policies to advance the clean energy economy.

- *Financial incentives.* Forty-six states offer some form of tax incentive to encourage corporations and residents to use renewable energy or adopt energy efficiency systems and equipment. Thirty-three states provide residential, commercial and industrial loan financing for the purchase of renewable energy or energy efficiency systems or equipment. And 22 states and the District of Columbia offer rebate programs to promote the installation of solar water heating or solar panels for electricity generation.
- *Renewable portfolio standards.* Twenty-nine states and the District of Columbia have adopted renewable portfolio standards, which require electricity providers to supply a minimum amount of power from renewable energy sources.
- *Energy efficiency standards.* Nineteen states have established energy efficiency standards for energy generation, transmission and use.

Regional clean energy initiatives. Twenty-three states are participating in three major regional initiatives seeking to increase renewable energy generation and reduce carbon pollution from power plants that causes global warming.

Vehicle emissions standards. Fourteen states and the District of Columbia have adopted (and three more states are poised to adopt) California's vehicle emissions standards, which allow states the right to require automakers to reduce carbon emissions from new cars and light trucks more aggressively than federal standards mandate. On May 19, 2009, President Barack Obama established national limits on vehicle emissions by adopting fuel efficiency standards that match California's.

Federal policies. The federal government also has played a critical role, adopting policies and making investments that have spurred economic growth and environmental protection from coast to coast. Laws enacted in the 1960s and 1970s helped develop the recycling, waste reduction and waste management industries. The EPA's Energy Star and Water Sense certification and labeling initiatives long have helped consumers choose and use products that conserve energy and water. And for almost two decades, the U.S. Department of Commerce has helped manufacturers improve efficiency, reduce waste and develop clean technologies and products.

In the last three years, federal policy makers have taken major steps to drive the clean energy economy forward. President Obama's recent efforts to enact stronger fuel efficiency standards built on earlier legislation. In 2007, President George W. Bush signed into law the first congressionally mandated increase in fuel efficiency standards for cars and light trucks in more than 30 years. The Energy Independence and Security Act of 2007 is projected to save consumers $25 billion at the gas pump, save 1.1 million barrels of oil a day and reduce greenhouse gas emissions.

Enacted in February 2009, ARRA—the federal stimulus bill—includes an array of provisions to spur clean energy generation and energy efficiency businesses, jobs and investments. Among the almost $85 billion the package allocates to energy- and transportation-related spending, about $21 billion is dedicated to extending tax incentives for wind, solar and other renewable energy manufacturers. ARRA also provides more than $30 billion for direct spending on clean energy programs, including $11 billion to modernize the nation's electricity grid; $2 billion for advanced battery technology; more than $6 billion for state and local efforts to achieve energy efficiency; $5 billion for weatherization of low-income homes; $500 million for job training to help workers participate in the clean energy economy; and $300 million to purchase thousands of new, fuel-efficient vehicles for the federal fleet from American auto companies.

Moving forward. Given America's need to create enduring jobs and industries while conserving natural resources and reducing carbon emissions, federal leaders are deliberating additional measures to spur the clean energy economy.

President Obama has signaled his support for a federal clean energy plan to reduce greenhouse gas emissions by at least 80 percent by 2050, and a national renewable

portfolio standard that would require that 25 percent of the nation's energy supply be derived from renewable sources by 2025. At this writing, the U.S. House of Representatives is considering the American Clean Energy and Security Act, a market-based proposal that would limit overall greenhouse gas emissions and distribute tradable federal allowances for each ton of pollution emitted. The program would apply to electric utilities, oil companies and other entities that produce more than 25,000 tons of carbon dioxide each year. The bill would increase significantly the amount of energy derived from low- or zero-carbon sources, including renewables—meaning that businesses and jobs would be generated to develop clean energy sources to meet the demand.

EXHIBIT 1

THE U.S. CLEAN ENERGY ECONOMY BY THE NUMBERS

By 2007, 68,203 businesses in the United States had generated more than 770,000 jobs in the clean energy economy. And between 2006 and 2008, about $12.6 billion of venture capital investments was directed toward clean technology businesses in 40 states and the District of Columbia. The U.S. clean energy economy is an emerging source of jobs that achieve the double bottom line of economic growth and environmental sustainability. Every state has a piece of America's clean energy economy.

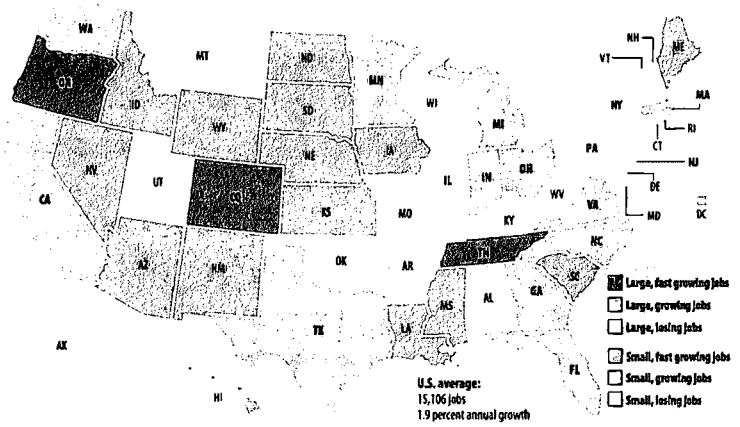
	CLEAN BUSINESSES 2007	CLEAN JOBS 2007	CLEAN JOB GROWTH 1998-2007	OVERALL JOB GROWTH 1998-2007	VENTURE CAPITAL 2006-2008 (thousands)
Alabama	799	7,849	2.2%	1.6%	$0
Alaska	350	2,140	9.4	15.7	0
Arizona	1,123	11,578	21.3	16.2	31,106
Arkansas	448	4,597	7.8	3.5	22,845
California	10,209	125,390	7.7	6.7	6,580,427
Colorado	1,778	17,008	18.2	8.2	622,401
Connecticut	857	10,147	7.0	-2.7	30,050
Delaware	211	2,368	-2.3	-8.9	3,342
District of Columbia	280	5,325	18.8	-7.1	89,877
Florida	3,831	31,122	7.9	22.4	116,980
Georgia	1,827	16,222	10.8	15.7	179,686
Hawaii	356	2,732	43.6	7.3	12,304
Idaho	428	4,517	126.1	13.8	27,890
Illinois	2,176	28,395	-2.5	-2.5	108,519
Indiana	1,268	17,298	17.9	-1.0	26,000
Iowa	729	7,702	26.1	3.6	149,237
Kansas	591	8,017	51.0	-0.3	13,275
Kentucky	778	9,308	10.0	3.6	0
Louisiana	995	10,641	19.5	3.0	0
Maine	725	6,000	22.7	3.3	0
Maryland	1,145	12,908	-2.4	1.3	323,996
Massachusetts	1,912	26,678	4.3	-4.4	1,278,462
Michigan	1,932	22,674	10.7	-3.6	55,099
Minnesota	1,206	19,994	11.9	1.9	49,938
Mississippi	454	3,200	24.8	3.6	30,384
Missouri	1,062	11,714	5.4	2.1	24,480
Montana	408	2,155	0.2%	12.7%	$0
Nebraska	368	5,292	108.6	-4.9	0
Nevada	511	3,641	28.8	26.5	19,804
New Hampshire	465	4,029	2.0	6.8	66,917
New Jersey	2,031	25,397	-9.6	-2.7	282,568
New Mexico	577	4,815	50.1	1.9	147,913
New York	3,323	34,363	-1.9	-2.6	209,590
North Carolina	1,783	16,997	15.3	6.4	82,571
North Dakota	137	2,112	30.9	9.4	0
Ohio	2,513	35,267	7.3	-2.2	74,224
Oklahoma	693	5,465	6.8	2.4	5,192
Oregon	1,613	19,340	50.7	7.5	70,002
Pennsylvania	2,934	38,763	-6.2	-3.1	232,897
Rhode Island	237	2,328	0.7	0.6	22,845
South Carolina	884	11,255	36.2	2.2	0
South Dakota	169	1,636	93.4	4.9	0
Tennessee	1,090	15,507	18.2	2.5	16,329
Texas	4,802	55,646	15.5	6.7	716,894
Utah	579	5,199	-12.4	10.8	26,957
Vermont	311	2,161	15.3	7.4	53,747
Virginia	1,446	16,907	6.0	6.6	70,828
Washington	2,008	17,013	0.5	1.3	635,109
West Virginia	332	3,065	-4.1	0.7	5,741
Wisconsin	1,294	15,089	-5.2	3.4	46,743
Wyoming	225	1,419	56.4	14.0	6,942
U.S. Total	68,203	770,385	9.1	3.7	12,570,110

NOTE: Venture capital values are adjusted for inflation and reported in 2008 dollars. See appendices for the complete data sets.
SOURCE: Pew Charitable Trusts, 2009, based on the National Establishment Time Series Database and data from the Cleantech Group™ LLC; analysis by the Pew Center on the States and Collaborative Economics

EXHIBIT 10

WHERE ARE THE JOBS IN THE CLEAN ENERGY ECONOMY?

Looking simultaneously at the total number of jobs (large or small) and their average annual growth rate (fast growing, growing or losing), states' clean energy economies fall into six groups: large and fast-growing jobs, growing jobs or losing jobs; and small and fast-growing jobs, growing jobs or losing jobs. Large states had more jobs in their clean energy economies in 2007 than the national average of 15,106 jobs. Small states had fewer than the national average of clean energy economy jobs. States with fast-growing clean energy economies experienced average annual growth between 1998 and 2007 that exceeded the national average of 1.9 percent. Growing states had a positive average annual rate of growth less than 1.9 percent and losing states have experienced negative growth.



STATE	TOTAL CLEAN JOBS 2007	AVG. ANNUAL GROWTH 1998-2007	STATE	TOTAL CLEAN JOBS 2007	AVG. ANNUAL GROWTH 1998-2007	STATE	TOTAL CLEAN JOBS 2007	AVG. ANNUAL GROWTH 1998-2007
Alabama	7,849	0.31%	Kentucky	9,308	1.09%	North Dakota	2,112	3.17%
Alaska	2,140	1.14	Louisiana	10,641	2.06	Ohio	35,267	0.85
Arizona	11,578	2.19	Maine	6,000	2.34	Oklahoma	5,465	0.89
Arkansas	4,597	0.99	Maryland	12,908	−0.11	Oregon	19,340	4.77
California	125,390	0.88	Massachusetts	26,678	0.52	Pennsylvania	38,763	−0.48
Colorado	17,008	1.98	Michigan	22,674	1.20	Rhode Island	2,328	0.37
Connecticut	10,147	1.11	Minnesota	19,994	1.38	South Carolina	11,255	3.56
Delaware	2,368	0.23	Mississippi	3,200	2.57	South Dakota	1,636	7.89
District of Columbia	5,325	2.13	Missouri	11,714	0.71	Tennessee	15,507	2.14
Florida	31,122	0.90	Montana	2,155	0.15	Texas	55,646	1.70
Georgia	16,222	1.18	Nebraska	5,292	10.00	Utah	5,199	−1.31
Hawaii	2,732	4.29	Nevada	3,641	3.15	Vermont	2,161	1.69
Idaho	4,517	10.11	New Hampshire	4,029	0.44	Virginia	16,907	0.66
Illinois	28,395	−0.25	New Jersey	25,397	−1.08	Washington	17,013	0.23
Indiana	17,298	1.88	New Mexico	4,815	4.73	West Virginia	3,065	−0.36
Iowa	7,702	2.66	New York	34,363	−0.14	Wisconsin	15,089	−0.55
Kansas	8,017	4.74	North Carolina	16,997	1.62	Wyoming	1,419	5.16

SOURCE: Pew Charitable Trusts, 2009, based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics.

EXHIBIT III

STATE LEADERS IN JOBS ACROSS THE CLEAN ENERGY ECONOMY BY CATEGORY

Although California leads in overall employment in each category, a closer look reveals other notable trends. Arizona makes the top 10 in Clean Energy but in no other category. Massachusetts, New York and Ohio are among the top 10 in all but one category.

While Arizona, Arkansas, Iowa, Maine, Nebraska, Wisconsin and the District of Columbia each have fewer than 15,106 jobs in the clean energy economy—the national average—they rank among the top 10 states in one of the five categories. In all, nearly half the states rank among at least the top 10 states in at least one category of the clean energy economy.

Clean Energy	JOBS 2007	Energy Efficiency	JOBS 2007	Environmentally Friendly Production	JOBS 2007	Conservation and Pollution Mitigation	JOBS 2007	Training and Support	JOBS 2007
California	27,672	California	10,510	California	13,666	California	64,799	California	8,743
Pennsylvania	10,099	Texas	6,353	Minnesota	3,815	Texas	40,617	New York	3,499
Minnesota	4,030	Ohio	5,367	Oregon	3,304	Pennsylvania	24,703	Illinois	3,216
Ohio	3,653	Oregon	4,893	Ohio	2,800	Florida	24,686	Massachusetts	3,155
Texas	3,479	New York	3,311	Iowa	2,237	New York	23,082	District of Columbia	3,130
New York	3,421	Wisconsin	2,801	Texas	2,223	Ohio	22,296	Texas	2,974
Michigan	2,941	Maine	2,560	Nebraska	2,162	New Jersey	20,060	Florida	2,249
Massachusetts	2,890	Massachusetts	2,553	Illinois	1,921	Illinois	19,631	Virginia	1,755
District of Columbia	2,728	Virginia	2,135	Colorado	1,361	Massachusetts	17,374	Pennsylvania	1,742
Colorado	2,639	Florida	2,071	Arkansas	1,303	Michigan	15,852	North Carolina	1,659

SOURCE: Pew Charitable Trusts, 2009, based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics.

economy as of that year, it was a close second with 0.85 of its overall jobs dedicated to the clean energy economy. At the other end of the spectrum, 0.24 percent of Mississippi's total jobs were part of the clean energy economy in 2007, although the state's number of jobs in this area was growing.

Analysis Three: Growth of Jobs in the Clean Energy Economy Compared with Overall Jobs Growth

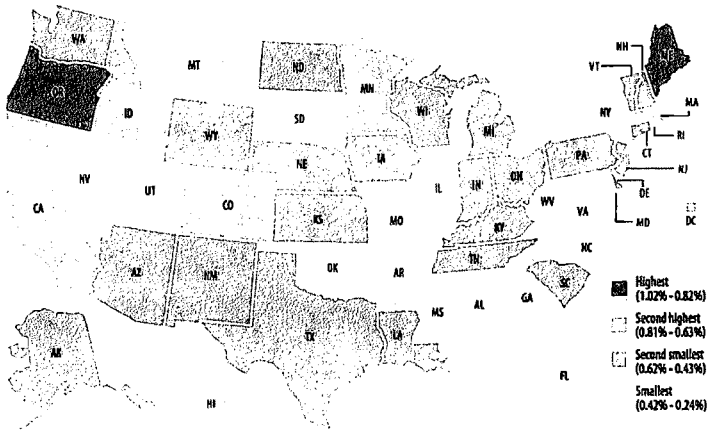
Nationally, jobs in the clean energy economy grew by an average of 1 percent annually during the past 10 years, while total employment grew by an average of 0.4 percent annually. In 38 states and the District of Columbia, job growth in the clean energy economy outperformed total job growth between 1998 and 2007. In a number of states, job gains in the clean energy economy have helped lessen total job losses.

Job growth in the clean energy economy eclipsed growth for all jobs by more than 2 percent in 11 states: Hawaii, Idaho, Iowa, Kansas, Mississippi, New Mexico, North Dakota, Oregon, South Carolina, South Dakota and Wyoming. Oregon's large and fast-growing clean energy economy, for example, has dwarfed the growth of overall jobs in the state, expanding by an average of 4.8 percent compared with an average of less than 1 percent annually. This growth is not limited to one industry or job type: Oregon's jobs in the clean energy economy have experienced marked growth during the past 10 years in all five of Pew's categories. And although North and South Dakota have very small clean energy economies, the growth of these jobs in both states has outpaced their growth of total jobs. In North Dakota, overall jobs grew by 1.0 percent, but jobs in the clean energy economy grew by an average of 3.2 percent. In South Dakota, overall jobs grew by

EXHIBIT 12

CLEAN ENERGY ECONOMIES AS A SHARE OF STATES' OVERALL ECONOMIES

It is important for states to know just how many of their total jobs fall within the clean energy economy. Nationally, jobs in the clean energy economy accounted for 0.49 percent of all jobs in 2007; 22 states exceeded that national average.



	TOTAL JOBS	PERCENT CLEAN		TOTAL JOBS	PERCENT CLEAN		TOTAL JOBS	PERCENT CLEAN
Alabama	2,193,589	0.36%	Kentucky	2,069,602	0.45%	North Dakota	422,054	0.50%
Alaska	388,361	0.55	Louisiana	2,326,888	0.46	Ohio	6,304,302	0.56
Arizona	2,661,437	0.44	Maine	707,195	0.85	Oklahoma	1,784,492	0.31
Arkansas	1,366,809	0.34	Maryland	3,108,256	0.42	Oregon	1,902,294	1.02
California	17,556,872	0.71	Massachusetts	3,870,356	0.69	Pennsylvania	6,542,137	0.59
Colorado	2,668,069	0.64	Michigan	5,279,234	0.43	Rhode Island	549,754	0.42
Connecticut	2,150,723	0.47	Minnesota	3,143,012	0.64	South Carolina	2,059,151	0.55
Delaware	502,773	0.47	Mississippi	1,356,603	0.24	South Dakota	444,659	0.37
District of Columbia	1,021,958	0.52	Missouri	3,178,657	0.37	Tennessee	3,144,614	0.49
Florida	9,903,922	0.31	Montana	512,093	0.42	Texas	11,726,811	0.47
Georgia	4,955,677	0.33	Nebraska	1,038,673	0.51	Utah	1,291,211	0.40
Hawaii	651,894	0.42	Nevada	1,280,532	0.28	Vermont	365,646	0.59
Idaho	718,373	0.63	New Hampshire	735,051	0.55	Virginia	4,238,337	0.40
Illinois	6,792,326	0.42	New Jersey	4,957,892	0.51	Washington	3,098,042	0.55
Indiana	3,348,351	0.52	New Mexico	970,632	0.50	West Virginia	792,474	0.39
Iowa	1,800,264	0.43	New York	9,964,700	0.34	Wisconsin	3,150,000	0.48
Kansas	1,531,164	0.52	North Carolina	4,629,118	0.37	Wyoming	302,245	0.47

SOURCE: Pew Charitable Trusts, 2009, based on the National Establishment Time Series Database; analysis by Pew Center on the States and Collaborative Economics.

of Columbia have had at least one registered clean technology patent in the past 10 years. Exhibit 15 shows the 10 states with the highest number of patent registrations from 1999 to 2008. See Appendix E for the 50-state table.

EXHIBIT 14
VENTURE CAPITAL INVESTMENTS

Top 10 states attracting venture capital investments in companies in the clean energy economy, 2006-2008. In millions.

California	$6,580
Massachusetts	1,278
Texas	717
Washington	635
Colorado	622
Maryland	324
New Jersey	283
Pennsylvania	233
New York	210
Georgia	180

NOTE: Investment values are adjusted for inflation, reported in 2008 dollars and rounded to the nearest $1,000,000.

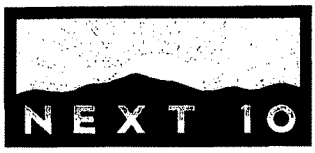
SOURCE: Pew Charitable Trusts, 2009, based on data from The Cleantech Group,™ LLC; analysis by Pew Center on the States and Collaborative Economics.

EXHIBIT 15
CLEAN TECHNOLOGY PATENTS

Top 10 states in clean technology patent registrations 1999-2008

California	1,401
New York	909
Michigan	749
Texas	414
Connecticut	404
Massachusetts	384
Ohio	309
Illinois	297
Georgia	256
New Jersey	248

SOURCE: Pew Charitable Trusts, 2009, based on data from 1790 Analytics, analysis by Pew Center on the States and Collaborative Economics.



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CALIFORNIA GREEN TECH INVESTMENT, PATENTS, JOBS JUMP

New Report Documents Powerful Economic Stimulus of Energy Efficiency

Los Angeles, CA – New statistics to be released today in the 2009 "*California Green Innovation Index*" document the powerful economic stimulus provided by energy efficiency and green technology in California, despite the worldwide financial crisis. The Index finds that total Gross Domestic Product (GDP) produced per unit of energy (energy productivity) is 68 percent higher in California than the rest of the nation, which generates billions for the economy. Since 2005 statewide green jobs have grown at a rate ten times faster than total job growth. Green tech venture capital investment nearly doubled in one year, hitting an all-time high of $3.3 billion in 2008, capturing 57 percent of the national total. Los Angeles, San Francisco and Sacramento together accounted for over 20 percent of the nation's hybrid vehicle registrations in 2007.

"As the country moves quickly to put an economic stimulus package in place, California's experience with energy efficiency and clean technology is instructive," said F. Noel Perry, venture capitalist and founder of the nonpartisan, nonprofit Next 10. "If California had not moved as forcefully to decrease energy consumption over the last three decades, we would be in a much more precarious economic position right now. Imagine where the country could be if it were as efficient as California."

The 2009 California Green Innovation Index, an initiative from Next 10 and authored by Collaborative Economics, will be unveiled at the VerdeXchange Conference in Los Angeles--a leading technology, energy, and regulatory "green marketmakers" event. Designed to track key economic, energy and environmental indicators, the Index provides critical data on the impact of innovation on the state's economic and environmental health as California moves to reduce greenhouse gas (GHG) emissions to 1990 levels as mandated by the California Global Warming Solutions Act (AB 32). A PDF of the Index can be found at: http://www.next10.org/environment/greenInnovation09.html.

The 2009 Index includes never before published data on green businesses and jobs, providing the most comprehensive accounting of this growing area of economic activity. Importantly, this is a bottom-up accounting based on empirical evidence and not statistical modeling. Also unique to this Index is the green patent registrations analysis produced in cooperation with 1790 Analytics (based on data from the U.S. Patent and Trade Office).

Chief among Index findings:

- From 2002-07, California led all states in patent registrations for green technologies, increasing the state's total number by 70 percent over a similar period in the early nineties. (page 31)
- Despite slowing in overall venture capital investment, clean technology investment in California hit an all-time high in 2008 of $3.3 billion, increasing nearly $1.5 billion over 2007 and over seven times total clean tech investment in 2005. (page 28)
- Since 2005, green job growth has grown by 10 percent, while statewide jobs have increased by only 1 percent. By green segment, job growth has been strongest in Advanced Materials (28 percent) followed by Transportation (23 percent), Air & Environment (22 percent), and Green Building (20 percent), with 20 percent of those jobs generated in manufacturing. (pages 70 and 71)
- Over 1.5 million jobs have been created as a result of energy efficiency policies forged by California over the last 35 years, generating $45 billion in payroll. (page 66)

- California's energy productivity is 68 percent higher than that of the rest of the country. Measured as the ratio of energy consumed (inputs) to GDP (economic output), growth in energy productivity equates to more dollars of GDP generated per unit of energy consumed. (page 21)
- Nationally, California is the top-ranking state in alternative fuel vehicle (AFV) registrations (excluding Flex Fuel Vehicles) with the number of newly registered AFVs more than four times higher than any other state. However, according to most recent data, the United States as a whole had a higher average fuel economy of passenger vehicles (20.1 mpg) than California (19.9 mpg) in 2006. (pages 44-46)
- In 2007, three of the top ten hybrid metropolitan markets were in California; Los Angeles (#1), San Francisco (#2), and Sacramento (#9) metropolitan areas accounted for over 20 percent of new hybrid registrations in the U.S. (page 46)
- Power generation from renewable sources increased by 19 percent in California from 2002-2007, while total energy generation grew by only 11 percent. Since 2003, the wind power generated for California increased 95 percent. (pages 52 and 53)
- Since 2001, vehicle miles traveled (VMT) per capita in California dropped 2 percent with half of this progress achieved between 2006 and 2007 alone. During this same time period, VMT per capita in the rest of the nation increased 3 percent. Relative to 2002, while gasoline prices in 2008 climbed 92 percent higher, total California sales dropped back to 2002 levels and gasoline sales per capita dropped 10 percent. (page 39)
- California increased grid-connected photovoltaic (PV) solar capacity by 41 percent from 2006 to 2007. (page 55)
- Public transportation expanded 22 percent from 2005-06, adding over 100.5 million transit service miles.

Trends identified in the 2008 Index that continued in the 2009 Index include:

- Californians, per capita, pay lower utility bills and spend billions less of their state economy as a whole on electricity than the rest of the country due to energy efficiency innovation.
- California's Carbon Economy continues a gradual downward trend in the direction of a carbon-free economy, delinking economic growth from GHG emissions. While GDP per capita has increased by 28 percent in 16 years (1990-2006) gross emission per capita are 10 percent lower than in 1990.
- The average monthly residential electricity bill in California is less than half of the average monthly bill in Texas, representing a total savings for Californians of nearly $25 billion in 2007. As a fraction of the state economy, Texas' overall electricity bill is almost double California's bill.

According to annual Field Poll results included in the Index, despite bleak economic times, seven in ten registered voters believe global warming poses a serious threat to both the economy (69 percent) and overall quality of life (73 percent). In fact, according to California voters, who were polled during the height of September's bank failures, 74 percent believe it is possible to reduce GHG emissions while creating jobs and building economic prosperity.

Though many of the 2009 Index findings confirm continued progress in economic, energy and environmental indicators, major indices underscore the difficult challenges ahead:

- Even while per capita VMT and emissions have scaled back to 1995 levels, total VMT and total transportation GHG emissions have increased 20 percent since that year.
- While slowing in growth since 2001, total GHG emissions in California continued to rise by 4 percent from 2003-2006.
- Total electricity consumption in California continues to rise, though 2006-2007 represents the smallest annual increase since 2002.

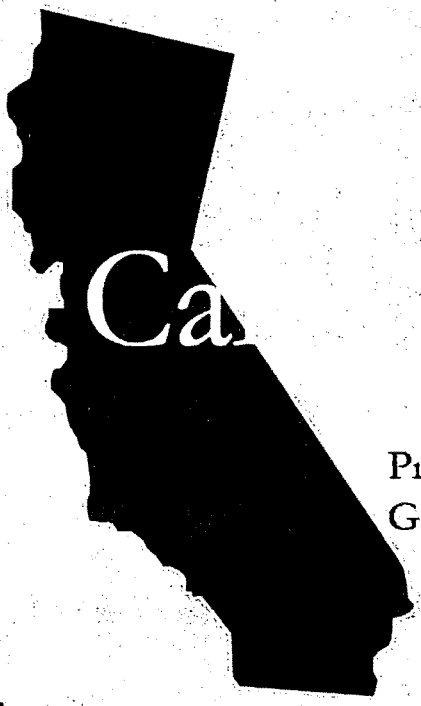
- Commercial electricity consumption continues to rise, increasing overall from 2004-2005 by 3 percent, and per square foot by 1 percent. Large-scale data centers, or server farms, are not included in this number.
- The number of working Californians using alternatives to driving alone has remained fairly static between 26 and 28 percent since 2000.

"California, like the rest of the nation and world, is caught in a financial perfect storm at the same time it has committed to dramatic reductions in global warming emissions," said Doug Henton of Collaborative Economics, a Silicon Valley-based firm that prepared the Index for Next 10. "Interestingly, this Index provides evidence that moving to cleaner and more efficient energy use must be part of the economic solution."

The Index was produced in partnership with Collaborative Economics, a Mountain View, California-based research and consulting organization that works with senior executives from business, foundations, government, education and community sectors to identify economic, environmental and social trends and promote regional innovation. For over a decade, Collaborative Economics has prepared the annual Index of Silicon Valley for Joint Venture: Silicon Valley Network.

Next 10 is an independent, nonpartisan organization that educates, engages and empowers Californians to improve the state's future. Next 10 is focused on innovation and the intersection between the economy, the environment, and quality of life issues for all Californians. Next 10 employs research from leading experts on complex state issues and creates a portfolio of nonpartisan educational materials to foster a deeper understanding of the critical issues affecting our state.

-End-



Profile of the Green Economy

NGA Center for BEST PRACTICES

The National Governors Association Center for Best Practices commissioned Collaborative Economics, Inc. to analyze and prepare reports on the emerging green economy in each state. These reports are based on green businesses across the 15 green industry segments of the core green economy and are designed to help each state make informed decisions about its workforce, economic and energy development opportunities and strategies.

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CALIFORNIA'S GREEN ECONOMY SUMMARY

The emerging green economy is diverse and widespread. To varying degrees, every state is witnessing growth in some green industry segment, and more often than not, this business growth is building off of existing strengths in the state. Familiar products and services are finding new uses or are taking new forms in response to new market demands. As policy makers implement new standards (e.g. building effiency standards, renewable portfolio standard), incentives and regulations, new business opportunities emerge to meet growing demand.

Analyzing a state's green economy in terms of the scope of green business activity can reveal areas of comparative advantage, promising areas for R&D investment and workforce development, and opportunities for building partnerships within and across green industry segments. Additionally, as incentives and new regulations are introduced, this information reveals the extent of a state's business base for meeting the coming demand for things such as highly efficiency appliances, renewable energy generation systems, high-efficiency building products, and low-emission fuels.

This analysis examines core green business activity and focuses on businesses that provide products and services that do the following:[1]

- Provide alternatives to carbon-based energy sources
- Conserve the use of energy and all natural resources
- Reduce pollution (including GHG emissions) and repurpose waste.

In addition, this summary provides an initial view into innovation in the fields of clean and green technology. State trends in venture capital investment and patent registrations can provide some indication for areas of future business activity.

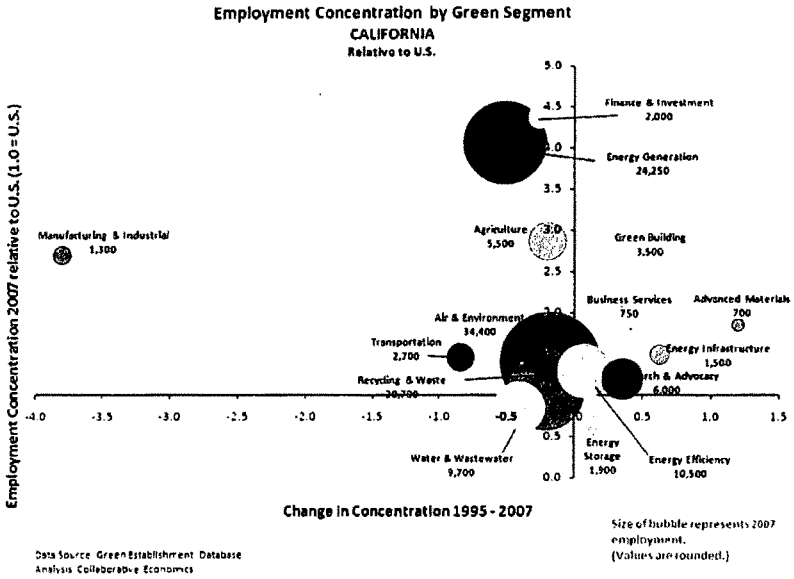
Green Business Activity

California's green economy displays a diverse array of green businesses with different levels of specialization. California has long been a leader in green industry, and is clearly a national leader in Energy Generation and Finance & Investment (see Employment Concentration by Green Segment graph, commonly called a "bubble chart"). Other areas of growing comparative advantage are in Advanced Materials, Business Services, Energy Efficiency, Energy Infrastructure, and Research & Advocacy.

Each "bubble" represents one of the 15 green segments, and its size represents the **employment size.**[2] (The segments are described in a detailed table below.) With more than 34,000 jobs, Air & Environment accounts for approximately 28 percent of employment in California's green segments, while California's 24,000 jobs in Energy Generation account for nearly 20 percent of green employment.

High **employment concentration** in a particular green segment indicates an area of strength and comparative advantage for a state. This means that the percentage of total employment in a particular segment is higher than the national average.[3] For example, California's Finance & Investment segment is nearly four and a half times more concentrated than the U.S. average, and the state is home to nearly half of all U.S. jobs in this segment. Similarly, Energy Generation is more than four times more concentrated than the U.S. average, and represents more than 45 percent of total U.S. jobs in Energy Generation.

Between 1995 and 2007, some segments have witnessed a **change in concentration** either by becoming more specialized over time or diminishing in concentration. This change is displayed by the placement along the horizontal axis (i.e. x-axis). California's concentration in Advanced Materials has more than



doubled since 1995, while employment concentration in Energy Infrastructure has increased by more than fifty percent.

Areas with high and increasing levels of concentration typically signal promising areas for targeting investment in R&D and commercialization, building university centers of excellence, as well as areas for focusing workforce development.

Taken together, these three dimensions represented in the bubble chart help to illustrate the characteristics of California's green economy. A more extensive green economy profile of California could compare growth in the green economy to that of the economy as a whole. Deeper analysis of California's leading segments such as Energy Generation would reveal detailed areas of specialization within the segment by the specific technologies or by the types of activities such as R&D or component manufacturing. Similarly, an analysis of emerging segments of comparative advantage such as Advanced Materials or Energy Infrastructure could identify specific technologies and sub-sectors for future growth. A deeper analysis could also result in a set of company snapshots that not only describe what the company does but also what its related industries are. For example, because the technologies are closely related, much of California's solar industry emerged from its semiconductor industry.

Green Technology Innovation

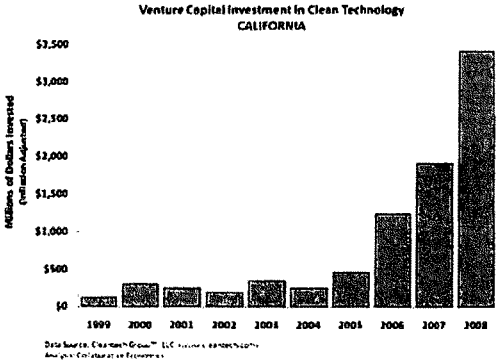
Since the global energy crisis in the 1970s, technology innovation in fields related to renewable energy sources and energy efficiency have taken place in waves. These waves reflect changes in public policy such as in research priorities set for federal funding (e.g. solar in the 1970s) as well as technological advance which spurred innovation in battery technology for small, remote devices like laptops and cell phones in the 1990s.

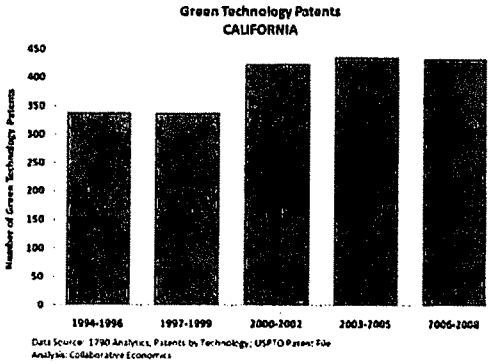
Regional variations exist in terms of where technological breakthroughs are taking place and where the adoption of new technology and practices is being spurred. Patent registrations and venture capital

investment in technologies and processes that support alternatives to the carbon-based economy are two ways to track green technology innovation.

Cleantech investment reached an all time high in California with more than $3.4 billion in 2008. In 2008, investment in cleantech VC was more than 27 times higher than in 1999. From 2007 to 2008, total cleantech VC investment in the state grew by 78 percent.

United States cleantech investment reached an all-time high of $6 billion in 2008. Between 2007 and 2008 alone, total U.S. cleantech VC grew by 51 percent. In terms of the top segments attracting investment dollars, Energy Generation is the largest U.S. cleantech segment, accounting for 59 percent of total U.S. cleantech VC investment, followed by Energy Efficiency (8%), Energy Infrastructure (7%) and Energy Storage (7%). Energy Infrastructure is the fastest growing segment, increasing by $273 million from 2007 to 2008. Other top growing segments include Energy Generation, Manufacturing/Industrial, and Energy Generation.





More than 430 green patents were registered in California between 2006 and 2008. The number of green technology patents increased by nearly 30 percent between the periods 1994-1996 and 2006-2008. For the U.S. as a whole, a total of 2,391 green technology patents were registered by American inventors between 2006 and 2008. Battery technology accounts for the largest share of patents (35%) registered in the U.S., followed by Fuel Cell technology (31%), and Hybrid Systems (11%). Growing by 61 percent over the recent periods, Wind Energy was the fastest growing area of green technology patent registrations (three-year periods 2003-05 to 2006-08).

While not provided in this summary, a "deeper-dive" into a state's green economic profile could include the following:

- Cleantech Venture Capital Investment, by Segment
- Patent Registrations in Green Technology, by Technology Area
- Adoption of Green Technology (e.g. the percentage of energy generation from renewable sources, the percentage of vehicle registrations that are for alternative fuel vehicles)
- Energy Efficiency and Intensity (e.g. energy consumption, electricity consumption, greenhouse gas emissions relative to economic growth)

Fifteen Segments of the Green Economy

As published in Next 10's 2009 *California Green Innovation Index*:

GREEN SEGMENT	DESCRIPTION
1. Energy Generation	• Renewable energy generation (all forms of solar, wind, geothermal, biomass, hydro, marine & tidal, hydrogen, co-generation) • Associated equipment, controls, and other management software and services • Renewable energy consulting services • Research & Testing in renewable energy
2. Energy Efficiency	• Energy conservation consulting and engineering services • Building efficiency products and services • Alternative energy appliances (solar heating, lighting, etc.) • Energy efficiency research • Energy efficiency meters & measuring devices
3. Transportation	• Alternative fuels (biodiesel, hydrogen, non-corn-based ethanol) • Motor vehicles & equipment (electric, hybrid, and natural gas vehicles, diesel technology)
4. Energy Storage	• Advanced batteries (Li-Ion, NiMH) • Battery components & accessories • Fuel cells
5. Air & Environment	• Emissions monitoring & control • Environmental consulting (environmental engineering, sustainable business consulting) • Environmental remediation
6. Recycling & Waste	• Consulting services • Recycling (paper, metal, plastics, rubber, bottles, automotive, electronic waste and scrap) • Recycling machinery manufacturing • Waste treatment
7. Water & Wastewater	• Water conservation (control systems, meters & measuring devices) • Development and manufacturing of pump technology • Research and testing • Consulting services • Water treatment and purification products and services
8. Agriculture	• Sustainable land management and business consulting services • Sustainable supplies and materials • Sustainable aquaculture
9. Research & Advocacy	• Organizations and research institutes focused on advancing science and public education in the areas of: renewable energy and alternative fuels and transportation.
10. Business Services	• Environmental law legal services • Green business portals • Green staffing services • Green marketing and public relations
11. Finance & Investment	• Emission trading and offsets • Venture capital and private equity investment • Project financing (e.g. solar installations, biomass facilities, etc.)
12. Advanced Materials	• Bioplastics • New materials for improving energy efficiency
13. Green Building	• Design & construction • Building materials • Site management • Green real estate & development
14. Manufacturing & Industrial	• Advanced packaging • Process management • Industrial surface cleaning
15. Energy Infrastructure	• Consulting and management services • Cable & equipment

DATA NOTES

Green Business Activity

The nationwide analysis of green business activity was designed and conducted by Collaborative Economics, Inc. on behalf of the Pew Charitable Trusts. The methodology built off of earlier work carried out on behalf of Next 10, a California-based nonprofit, and published in the *California Green Innovation Index* (2008, 2009). The Pew Center on the States reformatted the results of the analysis and developed the report, *The Clean Energy Economy* (June 2009).

The accounting of green business establishments and jobs is based on multiple data sources (including New Energy Finance and the Cleantech Group™, LLC) for the identification and classification of green businesses and also leveraged a sophisticated internet search process. Collaborative Economics designed the parameters of the internet search platform which was engineered by QL2, a Seattle-based developer of business intelligence tools. The National Establishments Time-Series (NETS) database based on Dun & Bradstreet business-unit data was sourced to extract business information such as jobs. The operational definition of green is based primarily the definition of cleantech defined by the Cleantech Network. This sample offers a conservative estimate of the industry.

Green Technology Innovation

The Cleantech Group™, LLC provided venture capital investment data in Cleantech for all disclosed deals. The Cleantech Group™, LLC describes Cleantech as new technology and processes, spanning a range of industries that enhance efficiency, reduce or eliminate negative ecological impact, and improve the productive and responsible use of natural resources. Investment values were adjusted for inflation and are reported in 2008 dollars using the U.S. city average Consumer Price Index (CPI) of all urban consumers, published by the Bureau of Labor Statistics, U.S. Department of Labor.

Patent registrations in green technology are based on tailored search of U.S. Patent & Trade Office data performed by 1790 Analytics, a firm specializing in intellectual property evaluation services. Collaborative Economics defined the search parameters, and 1790 Analytics provided the search results for patents in the following fields of green technology: geothermal, hydro, solar & wind energy generation, energy storage, fuel cells, hybrid systems, batteries, and energy infrastructure.

END NOTES

[1] Nuclear energy generation is not included in their definition of the core green economy. However, CEI can carry out a state-level analysis of the nuclear energy industry.

[2] The jobs numbers reported in this analysis reflect all jobs at these business locations. In the case of multi-establishment companies, only the green establishments are included. While this approach does not examine specifically green occupations that are appearing across the entire economy (such as Chief Sustainability Officer), it does account for the businesses behind the products and services that these new professionals need to use in their jobs (such as advanced metering devices, co-generation equipment, and various high-efficiency materials).

The lack of standardized industry data with information on "green" products, services and occupations has resulted in the development of multiple methodological approaches to defining "green jobs" and the green economy. The definitions of green vary largely depending upon the underlying unit of measurement (i.e. data). Some approaches focus on the activities of occupations. Other approaches focus on businesses offering "green" products and services, while others focus on businesses that operate in a "green" manner regardless of the end products and services they sell. All of these approaches are valid and, from different vantage points, contribute to a better understanding of the emerging green economy.

[3] The employment concentration is represented in the placement of the bubble along the vertical (i.e. y-axis). A concentration of 1 indicates that the percentage of the state's green business employment in a given segment is equal to that for the U.S. as a whole.

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Clean Energy and Climate Policies Lead to Economic Growth in the United States:

New analysis shows that adopting comprehensive clean energy and climate legislation could create up to 1.9 million jobs

Comprehensive clean energy and climate protection legislation, like the American Clean Energy and Security Act (ACES) that was passed by the House of Representatives in June, would strengthen the U.S. economy by establishing pollution limits and incentives that together will drive large-scale investments in clean energy and energy efficiency. These investments will result in stronger job growth, higher real household income, and increased economic output than the U.S. would experience without the bill.

New analysis by the University of California shows conclusively that climate policy will strengthen the U.S. economy as a whole. Full adoption of the ACES package of pollution reduction and energy efficiency measures would create between 918,000 and 1.9 million new jobs, increase annual household income by $487-$1,175 per year, and boost GDP by $39 billion-$111 billion. These economic gains are over and above the growth the U.S. would see in the absence of such a bill.

Table 1: U.S. Macroeconomic Impacts by 2020

	2010 Baseline	2020 Baseline Projection	2020 With ACES	Net Increase Due to ACES	Percent Change Due to ACES
Employment (Thousands)	189,404	213,062	213,980-214,959	918-1,897	0.4-0.9
GDP (2008$ Billions)	12,338	15,852	15,891-15,963	39-111	0.2-0.7

The new comprehensive economic assessment of ACES was conducted by a team of researchers at the University of California using EAGLE, a new state-of-the-art forecasting model, to study the detailed impacts of the legislation on the United States

economy.[1] The model was developed collaboratively between the University of California at Berkeley, the University of Illinois (Urbana-Champaign) and Yale University.

EAGLE analysis of ACES findings:

- **Between 2010 and 2020, national employment would see a net increase of 918,000 (moderate-efficiency case) to 1.9 million (high-efficiency case) jobs under ACES—on top of a baseline increase of 24 million jobs over the same timeframe.**

- **By 2020, ACES would lead to average real personal income that is $487 to $1,175 higher per household per year than without the legislation (2008 dollars).**

- **ACES would result in U.S. real Gross Domestic Product that is $39 billion-$111 billion higher in 2020 than without legislation. That is a 0.2% to 0.7% increase on top of baseline growth of 28% between 2010 and 2020.** (See endnotes for definitions.)

By reducing our dependence on imported energy, the American Clean Energy and Security Act (ACES) will free us to commit more of our resources to domestic job creation while reducing our vulnerability to volatile oil prices, climate damage, and other threats to our national security. Moving from dirty to clean sources of energy will unleash a wave of more efficient technologies and drive innovation that will create new industries.

The cost reductions driven by ACES will boost our economy. The reason is simple: energy efficiency reduces costs for transportation and energy and thereby saves households and businesses money -- money they can spend on domestic goods and services, which will create jobs for Americans. For example, over the last thirty years, California reduced its per capita electricity consumption to 40% below the national average. This saved households $56 billion, and those savings created 1.5 million additional jobs in California.

The EAGLE findings are consistent with previous analyses that have similarly demonstrated that clean energy investments create more jobs, across a wider variety of skill and education levels, than comparable investments in fossil-fuel energy sources. The Political Economy Research Institute (PERI) estimated in June 2009 that the combined effects of the American Reinvestment and Recovery Act ('Stimulus Bill') and ACES would yield a near-term net increase of 1.7 million jobs, based on a $150 billion shift in annual investment from traditional to clean energy. While the PERI analysis focuses on the near-term effect of such legislation, EAGLE was used to analyze the longer-term impact.

Results from both EAGLE and PERI are also consistent with modeling by U.S. government agencies – such as the Environmental Protection Agency, Congressional Budget Office, and the Department of Energy – that shows substantial economic

[1] The Environmental Assessment in General Equilibrium (EAGLE) model was developed at the University of California (Berkeley) in collaboration with researchers at the University of Illinois (Urbana-Champaign) and Yale University. The EAGLE model has been peer reviewed and full technical documentation is available on request.

Senator INHOFE. Thank you, Madam Chairman.

Let me respond to a couple of things that have been said by some of my good Democrat friends.

First of all Senator Merkley talked about reducing our dependence on foreign oil to run this machine called America. We can do it. We can do it overnight. Right now we are the largest—we have the largest recoverable reserves of coal, natural gas and oil of any country out there including China, including Russia. The problem is political. We are the only country in the world whose Congress will not allow us to explore our own resources. That could be done. That is an easy thing.

And I would say to my good friend Senator Whitehouse, you were not in here when we were talking about the science initially. And I would only say we can argue about this as long as you want to argue about it, and people who have said the science is settled, the science is settled, the science is settled, and they say it over and over again hoping that if they say it enough times they will believe it.

Yet the guy who is in charge of all of the science with IPCC is Dr. Phil Jones. Dr. Phil Jones says, I do not believe the vast majority of climate scientists think the debate is over. That is a very simple thing. That is the guy who is charge of the IPCC.

Now, since it was said trivial mistakes, I think it was Senators made that comment, we may think it is trivial here but if you look overseas at what is happening, the Financial Times has called for an independent investigation of the IPCC report, the Atlantic Magazine, The Stink of Intellectual Corruption is Overpowering, the Daily Telegraph, this scandal is the greatest scientific scandal of our generations.

Our magazines over here, the Chicago Tribune editorial, Global Doubting, the U.N.'s credibility on climate change is in tatters and what is going to affect the debate. The Atlantic says that the stink of intellectual corruption is overpowering. The Guardian, and they were on the other side of this issue, said I was too trusting of some of those who provided the evidence I championed. I would have been a better journalist if I had investigated their claims more closely.

The same thing is true of the Washington Post, Newsweek, there is not time to go over that, but I will have those submitted into the record.

Now, one of the things that has been said over and over again is the question that it is not really just the IPCC. Well, I read Administrator Jackson's report saying for the proposal the agency relied in large part on the assessment reports developed by the Intergovernmental Panel on Climate Change. I believe that. I know that is true.

However, if you look at the various statements that are made, no, this is NOAA saying this, the Defense Department is saying this, the Lawrence Livermore National Lab and all that, this is the thing that is kind of interesting. In the TSD report, that is the technical support document of the endangerment finding, this refers to 67 different documentations from science, of which 47 are the IPCC. Now, some of the others that are reported, the other 20, those people also are IPCC, but they are not identified as that.

For example, Dr. Benjamin Santer, who is the current Research Scientist, Program for Climate Model Diagnosis, this is Lawrence Livermore, but he is also an author of the IPCC. Gavin Schmidt, that is NASA, when it is talking about no, NASA came through with this, well, NASA did, but this guy is also a reviewer for the IPCC assessments. Dr. Susan Solomon, that is NOAA, she also is one of the authors of this report.

So, when it gets down to it the bottom line is that the science came from the IPCC. That was the collection point. All of the scientists were there.

And my concern still goes back to this. I fought for years on the floor of the U.S. Senate to keep us from going down the road of financial destruction in having a cap-and-trade type of approach. And I am talking about the McCain-Lieberman bill in 2003, the McCain-Lieberman bill of 2005, the Warner-Lieberman bills, the Boxer-Sanders bill, all of these. The one thing they had in common is it was cap-and-trade, which is essentially what we would be doing, even though it is being denied, it would be doing it through regulations.

Now, what is the cost of that? I am not, you know, I do not claim to be the economist. But I know that MIT, the Wharton School, CRA and all of the rest of them said somewhere in the range of $300 billion to $400 billion a year. That would be the largest tax increase on the American people. And by the admission of the Administrator Jackson this would not reduce CO_2 if we pass any of these bills. And the same is true, I would have to say, with doing the same thing through regulations.

So, here we have an endangerment report that is based on the science from the IPCC which has been totally discredited. And I think somebody has to say this because, when the hard times come, when the increases, when the overregulation, hits the American people for no useful purposes, because it is not going to reduce CO_2, then someone is going to have to stand up and say, we knew all the time that the science was cooked.

That is my question.

[Laughter.]

Ms. JACKSON. I have a two-word answer. I disagree. But just let me respond to three things, Senator. And I am happy to do additional things for the record if that is necessary.

I do not agree that the IPCC has been totally discredited in any way. In fact, I think it is important to understand that the IPCC is a body that follows impartial and open and objective assessments. Yes, they have had concerns about e-mail. I do not defend the conduct of those who sent those e-mails. There is peer review, which is part of the IPCC process, there are numerous, numerous groups of teams and independent researchers all a part of coming up with IPCC findings such that even the IPCC has said, while we need to investigate and ensure that our scientists are held to a standard of scientific conduct that we can be proud of, we stand behind our findings. And so I cannot agree with you there. And I am sure that you are not surprised.

I do not agree with you on the job killing. I actually believe, as the President does, that we have to have a foundation for growth in this country and that Americans want clean energy and see the

value of investing in a future for generations to come. And if we want to make that investment we have to change from being totally dependent on fossil-based power without controls for carbon, without a price for carbon, and we have to do that.

And I have to tell you that it strikes me, when I hear about these doom and gloom forecasts for economic ruin, that, you know, the Clean Air Act amendments predicted a quiet death for business across the country. That is what we were told. A cap-and-trade program, or a program to reduce pollution through market incentives, and what really happened is that the U.S. economy grew by 64 percent, even as acid rain pollution was cut by 50 percent.

There are ways to make smart environmental investments and policy. I commit to you, sir, that I would do nothing less as I sit in this chair. It is too important to our country, economically but also environmentally. But to sit here and say that these policies and a move toward clean energy will not be good for jobs in this country, I simply cannot——

Senator INHOFE. You know, I would appreciate that if I were the one who was saying this. This was MIT, this was the Wharton School. They talk about the economic destruction of our country. And then, of course, the comment you made, I do appreciate, except that is the reason that I quoted all the—the Atlantic, the Guardian, all of these newspapers, all of these publications who are now saying that the science was not right.

So it is not me saying it. I am quoting others. Because I do not have the credibility. I understand that. But certainly, when the whole Nation turns around and people say this should be a wakeup call, we are basing this major step, this endangerment, on science that we know now is flawed. And that is the reason that I quote other sources, so that I do not have to quote myself.

Ms. JACKSON. Well, I think we have to quote sources like the National Academies of Science. I think we have to talk about the——

Senator INHOFE. Well, how about the IPCC? Is that not a pretty good source?

Ms. JACKSON. Well, we just talked about the IPCC and said that I absolutely agree, that you can look into e-mails and any allegations that come up, but that, you know, science can be a bit messy. The dust will settle. But I have not at this point seen anything that changes my belief that the endangerment finding is not only on sound ground but will stand up to scrutiny and challenge.

Senator INHOFE. And the IPCC said the science is not settled.

Thank you, Madam Chairman.

Senator BOXER. Senator. I am going to take the 4 minutes extra that I gave you at the end.

Senator Whitehouse.

Senator WHITEHOUSE. Oh, I am sorry. Well, I think that Senator Inhofe is absolutely right about one thing and that is that history will be our judge. I just disagree with him on the judgment of history over this time. I think if we do not take action the judgment of history will be extremely harsh.

I think that the combination of willful blindness and corporate special interests creates a unique risk. And I think it is very important that we stand true to the basic principles of scientific method

and recognize that doubt is a product that is sowed on purpose in this debate.

I cannot think of an area in my personal life where I would refuse to act until 100 percent certainty was achieved. If I heard an alarm in the night, sure there is a chance that the alarm has malfunctioned. But I still wake up the kids. If there is a gas leak in the house, well sure there is a chance that it will never go off or it will solve itself. But you take reasonable, thoughtful measures.

And with the scale of the problem that we are potentially facing I would encourage you, Madam Administrator, to hold firm to the science and to what you are doing. I think most people who have looked at this get very clearly where we need to be, and as challenging as these moments in this rather special chamber might be for you, hold on for the judgment of history.

Thank you for your efforts.

Senator BOXER. Well, we are, thankfully for you, Administrator Jackson, bringing our hearing to a close.

This has been an important debate because, frankly, I think we have reached a new point in this debate. And the debate is shifting. My Republican friends have shifted from attacking the international scientific panels to attacking the most respected organizations right here in America. From NOAA, the Oceanic Administration, to NASA, the Space Administration, to the CIA, to the DOD, to the CDC, DOT, meaning the Department of Transportation, the CDC, the Center for Disease Control, we are talking about attacks on the Department of Agriculture that is very involved in helping us with this, the Interior Department. We are now seeing colleagues attack American's most respected institutions.

This reminds me of some other times that we had where people turned on our most admired institutions. I mean, they are attacking groups like the American Association for the Advancement of Science, the American Geophysical Union, the American Meteorological Society, the American Society of Plant Biologists, the Association of Ecosystem Research Centers, the American Chemical Society, the American Institute of Biological Scientists, the American Society of Agronomy, the American Statistical Association, the Botanical Society of America, the Crop Science Society of America, the Ecological Society of America, the Organization of Biological Field Stations, the Natural Science Collections Alliance, the Society for Industrial Applied Mathematics, the Society of Systemic Biologists, the University Corporation for Atmospheric Research and the Soil Science of America, who wrote to us and said to us, observations throughout the world make it clear that climate change is occurring and rigorous scientific research demonstrates that the greenhouse gases emitted by human activities are the primary driver.

Now, look. There has been a shift today. This is big news. We are now seeing the other side attack our own people, in America, who are not political, who care about this country, who love this country, who have dedicated themselves to making sure that we get the facts. Now our job, as Senator Inhofe says, is to get the facts and make the policy. We are not scientists.

Now, I have other information that the organization cited by Senator Barrasso is funded through Exxon Mobil. So, we will put that in the record.

So, I guess you have to ask the question, whose side are we on? And I come down on the side of America's leading scientists, of the credible people here in this country who want us to succeed, who want us to do the right thing. And of course the good news that we have is if we do the right thing, we are going to create millions and millions of job.

I so appreciate, Administrator Jackson, your being here today and in your very calm way telling us the truth about what you know, what you have learned, how you have built on the Bush administration scientists and leaders. And this debate, to me, as I said, has been a turning point. And the vast majority of this committee, we are just going to continue to do our work based on the facts.

The last point I would make is that we all know that we are entitled to our opinions but not to the facts. And I just ask Jason—is he here? To hold up, there is one chart I just want to look at, the one that talks about what has already happened, not speculation, to the climate in the last decade. We do not have that one up here? Well, then we will just go with these.

[Charts shown.]

Senator BOXER. The extreme weather. This is not conjecture. Amount of rain in the heaviest storms has increased nearly 20 percent in the past century. By contrast, in much of the Southeast and large parts of the West, the frequency of droughts has increased over the past 50 years. In the West, both the frequency of large wildfires and length of the fire season have increased substantially in recent decades. And in the last 30 years annual sea surface temperatures have increased 2 degrees, coinciding with an increase in the destructive energy of Atlantic tropical storms and hurricanes.

And we have the facts on the melting ice sheets. We know about the temperatures. We know all these things. They have already happened. The last decade was the hottest ever recorded. So, these are the facts. No one can dispute this. Senator Inhofe cannot dispute these facts. This has already happened.

So where we are now is, as legislators we need to make policy based on the science. And we intend to do this. We have great respect, the majority of this committee, for NASA and NOAA and the CIA, and the DOD, and all the departments at the EPA. Nobody is perfect here. We know that nobody is perfect. But we see the trends.

And again the good news is when we act and we do the right thing we are going to lead this world in these technologies, and we are going to create these jobs.

So, the challenge stands before us. I appreciate, Administrator Jackson, your testimony. Thank you very much.

We stand adjourned.

[Whereupon, at 12:10 p.m., the full committee was adjourned.]

[An additional statement submitted for the record follows:]

STATEMENT OF HON. FRANK R. LAUTENBERG,
U.S. SENATOR FROM THE STATE OF NEW JERSEY

Madam Chairman, thank you for holding this hearing on the Environmental Protection Agency's budget request.

One of the most important things this request does is to give the EPA the resources it needs to fight global warming pollution. Some of our colleagues on this committee would have us believe that the science about global warming is in dispute, and we lack the proof to act. They are trying to use a few stolen e-mails and minor errors out of thousands of scientific papers to suggest that global warming is no longer a serious threat to our well-being. But that is contrary to overwhelming scientific consensus and common sense.

The world's leading scientific organizations continue to agree that global warming is a scientific reality. In fact, even the Bush administration agreed that climate change is a threat to our environment, health and national security.

When there's a fire, firefighters do not sit on their hands and wait for it to get worse. They run to put it out.

We have a fire burning—and that fire is climate change. We can sit here and argue about whether it's a three-alarm or four-alarm fire, or we can act to put it out and protect our planet. That spirit of action is at the heart of President Obama's budget request for the Environmental Protection Agency.

While I would like to see more funding for the EPA, this budget makes the investments necessary to address the critical problems facing the health of our environment and our children.

This budget, for example, requests $56 million—including $43 million in new funding—for the EPA and States to address climate change by controlling greenhouse gas emissions.

Beyond climate change, this budget makes serious investments in areas we can all agree on: cleaning up pollution in the air to protect our children, reducing our dependence on oil to improve our national security, and creating clean energy jobs so that America can lead the 21st century economy.

The budget request also includes a 9.5 percent increase for the development of 21st century testing of chemicals. The EPA understands, as I do, that far too many unsafe chemicals are winding up in the products we use every day.

That's why I will soon introduce a bill that will overhaul our Nation's chemical laws. My safer chemicals bill will have a simple goal: force chemical makers to prove that their products are safe before they end up in a store, in our homes, or in our bodies. I look forward to working with the EPA on this common sense legislation.

Finally, Madam Chairman, I look forward to working with the Administration and EPA on one of my concerns with this budget: inadequate funding for the Superfund Program.

This program is one of the Federal Government's most important tools for keeping our communities clean and safe. New Jersey has more Superfund sites than any other State in the Nation, but the Superfund program was gutted during the Bush years. It's critical we fully fund this program. We cannot leave toxins sitting in communities where our children live.

We also need to hold polluters accountable for the destruction they cause. I am pleased that this budget request calls for the reinstatement of the Superfund polluter pays tax, and I will work with the Administration to make that a reality.

I look forward to continuing to work with our friend from New Jersey, EPA Administrator Lisa Jackson, to protect our planet and our children's health.

[Additional material submitted for the record follows:]

Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

December 2, 2009

Chairman Barbara Boxer
410 Dirksen Senate Office Bldg.
Washington, DC 20510-6175

Dear Chairman Boxer:

The body of evidence that human activity is the prominent agent in global warming is overwhelming. The content of a few personal emails has no impact whatsoever on our overall understanding that human activity is driving dangerous levels of global warming. The scientific process depends on open access to methodology, data, and a rigorous peer-review process. The robust exchange of ideas in the peer-reviewed literature regarding climate science is evidence of the high degree of integrity in this process.

Sincerely,

James J. McCarthy

Harvard University
Alexander Agassiz Professor of
Biological Oceanography

American Association for the Advancement of Science
Chair of Board of Directors

Union of Concerned Scientists
Chair of Board of Directors

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