

CLIMATE CHANGE: THE NEED TO ACT NOW

HEARING

BEFORE THE

SUBCOMMITTEE ON CLEAN AIR
AND NUCLEAR SAFETY

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

JUNE 18, 2014

Printed for the use of the Committee on Environment and Public Works



CLIMATE CHANGE: THE NEED TO ACT NOW

CLIMATE CHANGE: THE NEED TO ACT NOW

HEARING

BEFORE THE

SUBCOMMITTEE ON CLEAN AIR
AND NUCLEAR SAFETY

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

JUNE 18, 2014

Printed for the use of the Senate Committee on Environment and Public Works



Available via the World Wide Web: <http://www.gpo.gov/fdsys>

U.S. GOVERNMENT PUBLISHING OFFICE

98-181 PDF

WASHINGTON : 2016

For sale by the Superintendent of Documents, U.S. Government Publishing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2104 Mail: Stop IDCC, Washington, DC 20402-0001

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ONE HUNDRED THIRTEENTH CONGRESS
FIRST SESSION

BARBARA BOXER, California, *Chairman*

| | |
|----------------------------------|---------------------------|
| THOMAS CARPER, Delaware | DAVID VITTER, Louisiana |
| BENJAMIN L. CARDIN, Maryland | JAMES M. INHOFE, Oklahoma |
| BERNARD SANDERS, Vermont | JOHN BARRASSO, Wyoming |
| SHELDON WHITEHOUSE, Rhode Island | JEFF SESSIONS, Alabama |
| TOM UDALL, New Mexico | MIKE CRAPO, Idaho |
| JEFF MERKLEY, Oregon | ROGER WICKER, Mississippi |
| KIRSTEN GILLIBRAND, New York | JOHN BOOZMAN, Arkansas |
| CORY A. BOOKER, New Jersey | DEB FISCHER, Nebraska |
| EDWARD J. MARKEY, Massachusetts | |

BETTINA POIRIER, *Majority Staff Director*

ZAK BAIG, *Republican Staff Director*

SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY

SHELDON WHITEHOUSE, Rhode Island, *Chairman*

| | |
|---|--|
| THOMAS R. CARPER, Delaware | JEFF SESSIONS, Alabama |
| BENJAMIN L. CARDIN, Maryland | JOHN BARRASSO, Wyoming |
| BERNARD SANDERS, Vermont | MIKE CRAPO, Idaho |
| TOM UDALL, New Mexico | ROGER WICKER, Mississippi |
| EDWARD J. MARKEY, Massachusetts | JOHN BOOZMAN, Arkansas |
| BARBARA BOXER, California (<i>ex officio</i>) | DAVID VITTER, Louisiana(<i>ex officio</i>) |

C O N T E N T S

Page

JUNE 18, 2014

OPENING STATEMENTS

| | |
|---|----|
| Whitehouse, Hon. Sheldon, U.S. Senator from the State of Rhode Island | 1 |
| Vitter, Hon. David, U.S. Senator from the State of Louisiana | 12 |
| Boxer, Hon. Barbara, U.S. Senator from the State of California | 13 |
| Barrasso, Hon. John U.S. Senator from the State of Wyoming | 18 |
| Sanders, Hon. Bernard, U.S. Senator from the State of Vermont | 20 |
| Inhofe, Hon. James U.S. Senator from the State of Oklahoma | 21 |
| Cardin, Hon. Benjamin, U.S. Senator from the State of Maryland | 37 |
| Boozman, Hon. John, U.S. Senator from the State of Arkansas | 39 |
| Gillibrand, Hon. Kirsten, U.S. Senator from the State of New York | 40 |
| Sessions Hon. Jeff, U.S. Senator from the state of Alabama | 41 |
| Booker, Hon. Corey, U.S. Senator from the State of New Jersey | 43 |

WITNESSES

| | |
|--|-----|
| Ruckelshaus, William D., Strategic Advisor, Madrona Venture Group and Former Administrator, U.S. Environmental Protection Agency | 47 |
| Prepared statement | 50 |
| Response to an additional question from Senator Whitehouse | 53 |
| Response to an additional question from Senator Sessions | 53 |
| Responses to additional questions from Senator Vitter | 53 |
| Whitman, Christine Todd, President, The Whitman Strategy Group; Former Governor, State of New Jersey; and Former Administrator, U.S. Environ- mental Protection Agency | 88 |
| Prepared statement | 90 |
| Response to an additional question from Senator Whitehouse | 97 |
| Responses to additional questions from: | |
| Senator Booker | 97 |
| Senator Vitter | 98 |
| Senator Sessions | 109 |
| Reilly, William K., Senior Advisor, TPG Capital; Chairman Emeritus, Climateworks Foundation; and Former Administrator, U.S. Environmental Protection Agency | 110 |
| Prepared statement | 112 |
| Response to an additional question from Senator Whitehouse | 116 |
| Responses to additional questions from Senator Vitter | 116 |
| Thomas, Lee M., Former Administrator, U.S. Environmental Protection Agen- cy | 129 |
| Prepared statement | 131 |
| Botkin, Daniel, Professor Emeritus of Biology, University of California, Santa Barbara | 133 |
| Prepared statement | 136 |
| Responses to additional questions from: | |
| Senator Vitter | 168 |
| Senator Sessions | 169 |
| Strange, Hon. Luther, Attorney General, State of Alabama | 173 |
| Prepared statement | 175 |
| Response to an additional question from Senator Vitter | 183 |
| Responses to additional questions from Senator Sessions | 184 |

IV

| | Page |
|--|------|
| Joseph, Mason, R., Hermann Moyse, Jr./Louisiana Bankers Association Endowed Professor of Banking, Louisiana State University and Senior Fellow, The Wharton School | 186 |
| Prepared statement | 188 |
| Responses to additional questions from: | |
| Senator Whitehouse | 207 |
| Senator Vitter | 209 |
| Senator Sessions | 211 |

ADDITIONAL MATERIALS

| | |
|---|-----|
| William J. Haun; The Clean Air Act as an Obstacle to the Environmental Protection Agency's Anticipated Attempt to Regulate Greenhouse Gas Emissions from Existing Power Plants | 252 |
| Paul C. Knappenberger and Patrick J. Michaels; Global Science Report | 268 |
| Thinkprogress; The Progress Report, Here Come the Kochs | 284 |
| Politico Kochs Launch New Super PAC for Midterm Fight | 286 |
| Letter; Patrick Morrissey, Attorney General Re: EPA's Asserted Authority Under Section 11(d) of the Clean Air Act to Regulate CO ₂ Emissions from Existing Coal-Fired Power Plants | 289 |
| National Journal; The New Energy Paradigm, Coal Country's Decline Has a Long History | 298 |
| Letter; Nine Governors to President Barack Obama | 300 |

CLIMATE CHANGE: THE NEED TO ACT NOW

Wednesday, June 18, 2014

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY,
Washington, DC.

The subcommittee met, pursuant to notice, at 10 a.m. in room 406, Dirksen Senate Building, Hon. Sheldon Whitehouse (chairman of the subcommittee) presiding.

Present: Senators Whitehouse, Cardin, Sanders, Markey, Gillibrand, Booker, Sessions, Barrasso, Crapo, Boozman, Inhofe and Vitter.

OPENING STATEMENT OF HON. SHELDON WHITEHOUSE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator WHITEHOUSE. The hearing of the EPW Subcommittee on Clean Air and Nuclear Safety will come to order.

We will have opening statements from the members limited to 5 minutes each followed by introduction and swearing of the witnesses, followed by the testimony of the witnesses. I know that Ranking Member Sessions will be joining us later. I would like to thank him and members of the subcommittee and our witnesses for being here today to discuss the need to act on carbon pollution and climate change.

We are privileged to have before our subcommittee four former Administrators of the Environmental Protection Agency. All of them solved contentious environmental problems during their tenures working for Republican presidents. Now they are banding together to bring attention to the biggest environmental threat of all, climate change.

In a New York Times op-ed written last year, that I would like to enter into the record, without objection, these former Administrators stated, "We have a message that transcends political affiliation. The United States must move now on substantive steps to curb climate change at home and internationally."

[The referenced information follows:]

The New York Times

August 1, 2013

A Republican Case for Climate Action

By WILLIAM D. RUCKELSHAUS, LEE M. THOMAS, WILLIAM K. REILLY and CHRISTINE TODD WHITMAN

EACH of us took turns over the past 43 years running the Environmental Protection Agency. We served Republican presidents, but we have a message that transcends political affiliation: the United States must move now on substantive steps to curb climate change, at home and internationally.

There is no longer any credible scientific debate about the basic facts: our world continues to warm, with the last decade the hottest in modern records, and the deep ocean warming faster than the earth's atmosphere. Sea level is rising. Arctic Sea ice is melting years faster than projected.

The costs of inaction are undeniable. The lines of scientific evidence grow only stronger and more numerous. And the window of time remaining to act is growing smaller: delay could mean that warming becomes "locked in."

A market-based approach, like a carbon tax, would be the best path to reducing greenhouse-gas emissions, but that is unachievable in the current political gridlock in Washington. Dealing with this political reality, President Obama's June climate action plan lays out achievable actions that would deliver real progress. He will use his executive powers to require reductions in the amount of carbon dioxide emitted by the nation's power plants and spur increased investment in clean energy technology, which is inarguably the path we must follow to ensure a strong economy along with a livable climate.

The president also plans to use his regulatory power to limit the powerful warming chemicals known as hydrofluorocarbons and encourage the United States to join with other nations to amend the Montreal Protocol to phase out these chemicals. The landmark international treaty, which took effect in 1989, already has been hugely successful in solving the ozone problem.

Rather than argue against his proposals, our leaders in Congress should endorse them and start the overdue debate about what bigger steps are needed and how to achieve them — domestically and internationally.

As administrators of the E.P.A under Presidents Richard M. Nixon, Ronald Reagan, George Bush and George W. Bush, we held fast to common-sense conservative principles — protecting the health of the American people, working with the best technology available and trusting in the innovation of American business and in the market to find the best solutions for the least cost.

That approach helped us tackle major environmental challenges to our nation and the world: the pollution of our rivers, dramatized when the Cuyahoga River in Cleveland caught fire in 1969; the hole in the ozone layer; and the devastation wrought by acid rain.

The solutions we supported worked, although more must be done. Our rivers no longer burn, and their health continues to improve. The United States led the world when nations came together to phase out ozone-depleting chemicals. Acid rain diminishes each year, thanks to a pioneering, market-based emissions-trading system adopted under the first President Bush in 1990. And despite critics' warnings, our economy has continued to grow.

Climate change puts all our progress and our successes at risk. If we could articulate one framework for successful governance, perhaps it should be this: When confronted by a problem, deal with it. Look at the facts, cut through the extraneous, devise a workable solution and get it done.

We can have both a strong economy and a livable climate. All parties know that we need both. The rest of the discussion is either detail, which we can resolve, or purposeful delay, which we should not tolerate.

Mr. Obama's plan is just a start. More will be required. But we must continue efforts to reduce the climate-altering pollutants that threaten our planet. The only uncertainty about our warming world is how bad the changes will get, and how soon. What is most clear is that there is no time to waste.

The writers are former administrators of the Environmental Protection Agency: William D. Ruckelshaus, from its founding in 1970 to 1973, and again from 1983 to 1985; Lee M. Thomas, from 1985 to 1989; William K. Reilly, from 1989 to 1993; and Christine Todd Whitman, from 2001 to 2003.

Senator WHITEHOUSE. They are four in a large choir of voices singing the same tune on this issue. Major corporations are concerned about climate change and have already started reducing their own emissions. The BICEP climate declaration is signed by more than 750 companies, including nameplate American brands like eBay, Gap, Levi, L'Oreal, Mars, Nike and Starbucks.

The declaration states, in part, "We cannot risk our kids' futures on the false hope that the vast majority of scientists are wrong. Leading is what we have always done and by working together, regardless of politics, we will do it again." I will enter a copy of that declaration into the record, without objection.

[The referenced information follows:]



June 2, 2014

President Barack Obama
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

RE: Business Support for Proposed Carbon Pollution Standard for Existing Power Plants

Dear President Obama,

As businesses concerned about the immediate and long-term implications of climate change, we, the undersigned strongly support the principles behind the draft Carbon Pollution Standard for existing power plants released today. The Environmental Protection Agency's (EPA) proposed Carbon Pollution Standard for existing power plants represents a critical step in moving our country towards a clean energy economy.

Our support is firmly grounded in economic reality. We know that tackling climate change is one of America's greatest economic opportunities of the 21st century and we applaud the EPA for taking steps to help the country seize that opportunity.

Our businesses represent many different sectors of the economy and we recognize the importance of flexibility in choosing a path that is most effective and efficient in meeting the goals we have each set within our respective companies. That is why we are pleased to see that EPA's proposed rule allows individual states to utilize a number of flexible strategies to comply with the proposed standard.

We are especially pleased to see an approach that catalyzes energy efficiency and renewable energy deployment. Clean energy policies are good for our environment, the economy, and companies. Increasingly, businesses rely on renewable energy and energy efficiency solutions to improve corporate performance and cut costs. In 2012, a study by Ceres, Calvert Investments and the World Wildlife Fund revealed that 60 percent of the combined Fortune 100 and Global 100 companies have set a renewable energy goal, a greenhouse gas reduction goal or both. In short, a majority of the world's largest companies are investing in clean energy and reducing emissions. Today's rules will help spur investment and provide the long-term certainty necessary for our businesses to thrive and to meet these goals.

The new standards will reinforce what leading companies already know: climate change poses real financial risks and substantial economic opportunities and we must act now. We applaud your

administration for its commitment to tackling climate change and we encourage your timely pursuit of the finalization and implementation of these standards.

Thank you for your leadership.

Sincerely,

| | |
|-----------------------------------|----------------------|
| The adidas Group | Portland, OR |
| Adventure Safety International | Sandy, UT |
| Akamai Technologies | Cambridge, MA |
| Amicus Green Building Center, LLC | Kensington, MD |
| Annie's, Inc.* | Berkeley, CA |
| Asean Corporation | Portland, OR |
| Aspen Skiing Company* | Aspen, CO |
| Auralites, Inc. | Fletcher, NC |
| Aveda* | Blaine, MN |
| Bates Apartments | Morrisonville, NY |
| Ben & Jerry's* | South Burlington, VT |
| Big Green Island Transportation | Vancouver, BC |
| Biosynthetic Technologies | Irvine, CA |
| Blessed Coffee | Takoma Park, MD |
| BlueGreen Consulting Group Inc. | Toronto, ON |
| Blue Moon Massage | Lubbock, TX |
| Boston Building Resources | Boston, MA |
| Broadside Bookshop, Inc. | Northampton, MA |
| Burton Snowboards* | Burlington, VT |
| Camelback Mountain Resort | Tannersville, PA |
| CDI Meters, Inc. | Woburn, MA |
| CEM Design | Rockville, MD |
| ChangeWorks of the Heartland | Columbus, OH |
| Chrysalis Farm | Viroqua, WI |
| Classic Communications | Foxboro, MA |
| Clean Agency | Los Angeles, CA |
| Clean Power Finance | San Francisco, CA |
| Clean Technology Partners | Bellevue, WA |
| ClearSky Reporting | Boulder, CO |
| Clif Bar & Company* | Emeryville, CA |
| Contempl8 T-Shirts | Minneapolis, MN |
| Continuum Industries | San Francisco, CA |
| Convergence Energy LLC | Lake Geneva, WI |
| Crystal Mountain | Thompsonville, MI |
| Deer Valley Resort | Park City, UT |
| Detour Destinations | Bozeman, MT |
| Dignity Health | San Francisco, CA |
| Distance Learning Consulting | Lafayette, CA |
| Ecco Bella | West Orange, NJ |
| Ecologic Brands | Oakland, CA |
| Eco-Products | Boulder, CO |
| Eileen Fisher* | Irvington, NY |
| EMC Corporation | Hopkinton, MA |
| Ethical Electric | Silver Spring, MD |

| | |
|------------------------------------|----------------------|
| Ethical Markets Media | St. Augustine, FL |
| Exact Solar | Yardley, PA |
| Fort Production Management, Inc. | Chicago, IL |
| Four Twenty Seven LLC | Berkeley, CA |
| Gaia's Basket | Auburn, CA |
| General Biomass Company | Evanston, IL |
| Global Perception Inc. | Columbia Heights, MN |
| GoLite | Boulder, CO |
| Great Face & Body | Albuquerque, NM |
| Great Green Editing | Lutz, FL |
| Green Alliance | Portsmouth, NH |
| Gypsy Divers, Inc. | Raleigh, NC |
| Hayes Law, PL | Orlando, FL |
| HOTLIPS Pizza | Portland, OR |
| Impact Infrastructure, LLC | New York, NY |
| Interdependent Web | Emporia, KS |
| JLL* | Chicago, IL |
| Jumpin Jay's Fish Cafe | Portsmouth, NH |
| K2 Sports | Seattle, WA |
| KB Home* | Los Angeles, CA |
| Klean Kanteen | Chico, CA |
| Kollar Design EcoCreative | San Francisco, CA |
| Lake Climate Group LLC | Minneapolis, MN |
| Levi Strauss & Co.* | San Francisco, CA |
| LightWave Solar | Nashville, TN |
| The Lion Company | Lexington, MA |
| Mal Warwick Donordigital | Berkeley, CA |
| Mars, Incorporated* | McLean, VA |
| Martha's Antiques and Collectibles | Cambridge, MA |
| Method | San Francisco, CA |
| Mightybytes | Chicago, IL |
| Mindease Billing | Portland, OR |
| Mirador Community Store | Portland, OR |
| MOM's Organic Market | Rockville, MD |
| Mountain Rider's Alliance | Hope, AK |
| National Foundry Products, Inc. | Philadelphia, PA |
| New Belgium Brewing* | Fort Collins, CO |
| Nike* | Beaverton, OR |
| The North Face* | San Leandro, CA |
| Novelis Inc. | Atlanta, GA |
| Oaktree/Greenline | Cambridge, MA |
| Oasis Montana Inc. | Stevensville, MT |
| OmniStudio | Washington, DC |
| Outdoor Industry Association* | Boulder, CO |
| Parallax Branding | Encinitas, CA |
| Patagonia, Inc* | Ventura, CA |
| Powdr Corp | Park City, UT |
| Powell Energy and Solar | Moorestown, NJ |
| Practical Energy Solutions | West Chester, PA |
| PRé North America | Washington, DC |
| Prologic Technology Group | Tucson, AZ |

| | |
|-----------------------------------|----------------------|
| Rainbow Solutions, Inc. | Medford, MA |
| The Refill Shoppe | Ventura, CA |
| ReSourcing Natural Solutions | Durham, NC |
| Reusable Solutions Group | Santa Cruz, CA |
| ROSH Energy LLC | Houston, TX |
| Resonate LLC | Berwyn, PA |
| Rune's Furniture | Worthington, MN |
| San Juan Coffee Company | Durango, CO |
| Saunders Hotel Group | Boston, MA |
| Seventh Generation Inc. * | Burlington, VT |
| Singlebrook Technology | Ithaca, NY |
| SolarCity | San Mateo, CA |
| SolarEnergyWorld | Elkridge, MD |
| The Spotted Door | Salt Lake City, UT |
| Squaw Valley | Squaw Valley, CA |
| Starbucks* | Seattle, WA |
| Steve Kay Photo | Placencia, CA |
| Stonyfield Farm* | Londonderry, NH |
| StraightUp Solar | St. Louis, MO |
| Strategic Imperatives Inc. | Atlanta, GA |
| StreetLife, LLC | Tulsa, OK |
| Sugarbush Resort | Warrcn, VT |
| Sungevity | Oakland, CA |
| SunPower | San Jose, CA |
| Sunsense Solar | Carbondale, CO |
| Sustainable Concepts Studio | El Cerrito, CA |
| Sustainable Enterprise Conference | Forestville, CA |
| Swan Creek Energy LLC | Trenton, NJ |
| Symantec Corporation* | Mountain View, CA |
| Tel-Affinity Corporation | Needham, MA |
| The Added Edge | Glen Ellen, CA |
| Thule Inc. | Scymour, CT |
| TwentyTwo Designs | Driggs, ID |
| Underground | San Francisco, CA |
| Unilever | Englewood Cliffs, NJ |
| Venner Consulting | Lakewood, CO |
| Village Bakery and Caf  | Athens, OH |
| The Village at Central Park, LLC | Tulsa, OK |
| The Village Builders, LLC | Tulsa, OK |
| VF Corporation* | Greensboro, NC |
| WeNeedaVacation.com | Wellesley, MA |
| Worthen Industries | Nashua, NH |
| WR Consulting, Inc. | Seattle, WA |
| Zaurie Zimmerman Associates, Inc. | Lexington, MA |

cc:

Gina McCarthy, EPA Administrator
Senate Majority Leader Harry Reid

Senate Minority Leader Mitch McConnell
Speaker of the House John Boehner
House Minority Leader Nancy Pelosi

*Indicates BICEP members

Senator WHITEHOUSE. National defense leaders have sounded the alarm that climate change is a serious national security threat. There are also scientists, outdoorsmen, faith leaders, State and local officials and countless others demanding action.

I understand that many of my colleagues are from States that depend on fossil fuels and have fossil fuel economies. They want to protect jobs in those industries. I get that and it is proper, but I also ask that they look at the other side of the ledger, the side of the ledger that affects States like Rhode Island.

Our side of the ledger includes costs like damage to coastal homes, infrastructure and businesses from rising seas, erosion and storm surge, hospitalizations and missed school and work days for the families of kids suffering from asthma attacks triggered by smog, forests dying from beetle infestations and destroyed by unprecedented wildfire seasons, farms ravaged by worsened drought and flooding. Our side of the ledger counts too. Do not pretend we do not exist.

Recently, the EPA used its Clean Air authority as an established by Congress and affirmed by the Supreme Court to propose carbon pollution standards for the Country's existing power plants. As proposed, the rule will reduce carbon pollution while providing as much as \$93 billion in public benefit per year by 2030.

As you can see from this chart, a recent Washington Post, ABC News poll, found that 70 percent of the public supports Federal standards to limit greenhouse gas pollution. I am not sure if it is clear but the rightmost bar is Republicans who overwhelmingly support power plant regulations.

Just this morning, the Wall Street Journal and an NBC news released polling data saying two-thirds of Americans support President Obama's new climate rule and more than half said the U.S. should address global warming even if it means higher electric bills.

The effects of climate change are apparent across our Country. At the Newport tide gauge, sea level is up almost 10 inches since the 1930's. What do you think will happen when a hurricane as powerful as the devastating hurricane of 1938 rolls into the shores of Rhode Island on seas that are 10 inches higher?

Louisiana is losing a football field of wetlands every hour due in part to sea level rise. According to measurements at NOAA's Dolphin Island Station, sea level rise is up five inches along the Alabama coast between 1966 and 2006. That is five more inches of ocean to batter Mobile Bay during storms.

Then there is Florida, ground zero for climate change. In October 2012, streets and homes in Hendricks Isle, Florida were flooded but not because of a storm. It all happened on a beautiful, sunny day. It was just extreme high tides pushed into the town by sea level rise. Climate change is a challenge we have a solemn duty to solve.

Again, I thank the witnesses for joining us. The committee has much to learn from the collective experience of the former Administrators as we address this American challenge.

[The prepared statement of Senator Whitehouse follows:]

PREPARED STATEMENT OF HON. SHELDON WHITEHOUSE, U.S. SENATOR
FROM THE STATE OF RHODE ISLAND

I'd like to thank Ranking Member Sessions, members of the subcommittee, and our witnesses for being here today to discuss the need to act on climate change.

We are privileged to have before our subcommittee today four former administrators of the Environmental Protection Agency.

All of them solved contentious environmental problems during their tenures working for Republican presidents. Now they're banding together to bring attention to the biggest environmental threat of all—climate change. In a New York Times op-ed written last year that I'd like to enter into the record, these former administrators stated, "[W]e have a message that transcends political affiliation: the United States must move now on substantive steps to curb climate change, at home and internationally."

They are four in a large choir of voices singing the same tune on this issue. Major corporations, are concerned about climate change and have already started reducing their own emissions. The BICEP Climate Declaration is signed by more than 750 companies, including nameplate American corporations like eBay, Gap, Levi's, L'Oreal, Mars, Nike, and Starbucks. It states, in part, "We cannot risk our kids' futures on the false hope that the vast majority of scientists are wrong—Leading is what we've always done. And by working together, regardless of politics, we'll do it again." I will enter a copy of the declaration into the record. The defense community has sounded the alarm that climate change is a serious national security threat. There are also scientists, outdoorsmen, faith leaders, State and local officials, and countless others demanding action.

I understand that many of my colleagues are from states that depend on fossil fuels, and they want to protect jobs in those industries. But I also ask that they look at the side of the ledger that affects states like Rhode Island. Our side of the ledger includes costs like damage to coastal homes, infrastructure, and businesses from rising seas, erosion, and storm surge; hospitalizations and missed school and work days for the families of kids suffering from asthma attacks triggered by smog; forests dying from beetle infestations and destroyed by unprecedented wildfire seasons; farms ravaged by worsened drought and flooding. Our side of the ledger counts, too.

Recently, the EPA used its Clean Air Act authority, as established by Congress and affirmed by the Supreme Court, to propose carbon pollution standards for the country's existing power plants. As proposed, the rule will reduce carbon pollution while providing as much as \$93 billion in public health and climate benefits per year by 2030. As you can see from this chart, a recent Washington Post-ABC News poll, found that 70 percent of the public supports Federal standards to limit greenhouse gas pollution.

Chart

And just this morning, the Wall Street Journal and NBC-News released polling data saying two-thirds of Americans support President Obama's new climate rule and more than half say the U.S. should address global warming even if it means higher electricity bills.

The effects of climate change are apparent across our country. At the Newport tide gauge, sea level is up almost ten inches since the 1930's. What do you think will happen when a hurricane as powerful as the devastating hurricane of 1938 rolls into the shores of Rhode Island on seas that are ten inches higher? [Hurricane 1938 photo]. Louisiana is losing a football field of wetlands every hour due in part to sea level rise. According to measurements at NOAA's Dauphin Island station, sea level has risen approximately five inches along the Alabama coast between 1966 and 2006. In addition to eroding the coastline, that's five more inches of ocean that batter Mobile Bay during storms. And then there is Florida, ground zero for climate change. In October 2012, streets and homes in Hendrick's Isle, FL, were flooded—but not because of a storm. It all happened on a beautiful sunny day. It was just extreme high tides, pushed into the town by sea-level rise.

Climate change is a challenge that can and must be solved. Again I thank the witnesses for joining us. The committee has much to learn from the collective experience of the four former administrators as we address this urgent threat.

Senator WHITEHOUSE. I went over by a minute so Senator Vitter will have an extra minute.

Senator VITTER. Thank you, Mr. Chairman.

Before I start, if I could make a unanimous consent request, we have at least eight empty chairs in the room. There are plenty of folks outside, many of whom have traveled a long distance to be

here. We also have standing room, so I would make the unanimous consent request that at least 10 or 12 more folks be let in for this important discussion.

Senator WHITEHOUSE. I would be happy to allow folks to be let into the extent that there are empty chairs that are not reserved for anyone. We will let the committee staff sort that out.

Senator VITTER. Let me clarify.

Senator WHITEHOUSE. One of the people who is not here is one of your witnesses.

Senator VITTER. We will keep the seat for him.

Senator WHITEHOUSE. I assume that he has staff with him, so I want to be polite to your witness.

Senator VITTER. I think that is permission for about 10 other folks to come in. Thank you.

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

I look forward to hearing from all of our witnesses here today, certainly including Dr. Daniel Botkin, Dr. Joseph Mason and Hon. Luther Strange.

The science and economic consequences and legal underpinnings of the EPA's actions to advance the President's climate action plan are topics the Administration does not want to discuss in detail.

However, their unilateral actions will increase America's electricity bills, decrease family disposable income and result in real job losses for little or no measurable impact on our ever changing climate.

On June 2, EPA proposed an unprecedented rule targeting our Country's electricity system. Using a provision in the Clean Air Act that has only been used five times in 40 years, EPA requires States to set performance standards that apply to the entire electricity system, mandating renewable energy and rationing energy on which families and businesses rely.

EPA argues that this rule is a gift to States that provides States with flexibility. In reality, that is a complete red herring. States are forced into achieving questionable emission reduction targets from a limited menu of economically damaging and legally questionable options.

States are left little choice but to join or create regional cap and trade programs which achieves the Administration's goal of making sure we all pay more for energy.

Electricity prices right now in the Regional Greenhouse Gas Initiative States and California are 45 percent higher than in my home State of Louisiana. Fifty-six percent of Louisiana families already spend at that lower rate an average of 21 percent of their after tax income on energy. They simply cannot afford the higher electricity bills that will inevitably result from this rule.

The rule is billed as climate change mitigation with America leading the way. Unfortunately, anyone who has actually read the 645 page rule finds it has no material effect on global average temperature or sea level rise. The major of the benefits touted by EPA come from double accounting reductions of other emissions already regulated through other measures.

While this Administration expects other governments to consider the global consequences of their greenhouse emissions when regulating, there is absolutely no reason to presume the world's biggest emitters will follow us down this path of economic destruction.

In fact, much of the world is changing course. Our friends in Europe have adopted similar carbon constraining frameworks several years ago, filled with government mandates and cronyism and were rewarded with harsh economic pain.

In an effort to recover, Germany is lifting its ban on fracking and increasing the use of coal. Spain is abandoning the handouts that supported its renewable energy program. Instead of embracing our domestic energy resources and the bright economic light they provide in our otherwise poor economy, this climate action plan moves us beyond coal and beyond natural gas with serious negative consequences.

Today, the American electricity system provides affordable, reliable power, 7 days a week, 365 days a year to families, schools, hospitals and businesses. The existing source rule as proposed will increase costs to all consumers significantly. As always, that especially hits the poor, the elderly and those on fixed incomes for no measurable effect on climate change.

In reality, this rule is essentially a Federal takeover of the American electricity system. Is everyone here really comfortable with the EPA being fully, completely responsible for all of those details of our electricity system?

The only thing missing from this strategy is an empty promise from the President. If you like your affordable energy, you can keep your affordable energy. We like it, we want to keep it. This rule will destroy it.

Thank you, Mr. Chairman.

Senator WHITEHOUSE. Thank you, Senator Vitter.

I will turn now to the wonderful Chairman of the Environment and Public Works Committee, who I am very honored to have here today, a great leader in this effort, Barbara Boxer.

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

Senator BOXER. Thank you, Senator.

Thanks to your work, we are joined by an extraordinary panel. I thank all of you for being here.

We are looking at four former Administrators of the EPA—this is really historic—who were appointed by Republican Presidents. The Honorable William Ruckelshaus served as the first EPA Administrator under President Nixon and then again under President Reagan. The Honorable Lee Thomas served under President Reagan. The Honorable William Reilly served under President George H.W. Bush. The Honorable Christine Todd Whitman served under President George W. Bush.

I am proud of our landmark environmental laws we created with an overwhelming bipartisan consensus. It saddens me more than I can ever express in words that protecting the environment at this Federal level has become an out and out war, a partisan issue. It should not be that way; it wasn't when I started.

In 1970, the Clean Air Act passed the Senate by a vote of 73 to 0, passed by the House by a vote of 375 to 1, was signed by President Nixon. In 1990, revisions to the Clean Air Act passed the Senate by a vote of 89 to 11, by 401 to 21 in the House and was signed into law by President George H.W. Bush.

In the last Congress, the Republicans sent us over 90 anti-clean air riders. They are planning to do it now in the back rooms. They are working on plans to overturn President Obama's action plan to cut back on carbon pollution.

We all should know that we need to take action to reduce harmful carbon pollution—97 percent of the scientists agree it is leading to dangerous climate change that threatens our families. To say we cannot have an opinion, as some of my Republican colleagues have done because they are not scientists—you heard them say it.

Speaker Boehner said it. He said, I am not a scientist. I can't say whether there is climate change. All the more reason to listen to a scientist if you are not a scientist.

We all have health problems in our families and right here in the Senate. When doctors tell us we need a heart bypass or cancer treatment, we listen. We don't just say, I am not a doctor, I am not going to listen.

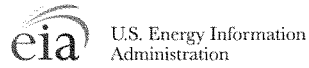
The four former EPA Administrators with us today will testify about the need to control carbon pollution to avoid the most calamitous impacts of climate change such as rising sea levels, dangerous heat waves and economic disruption.

The American people certainly understand this threat. You saw the poll. It is extraordinary. Democrats, Republicans and independents support the President's plan.

As someone with a 95 percent labor record, I want to talk a minute about jobs. I want to welcome the people here who work with their hands because I respect the work that you do, but I want to say two things now.

One, I want to put in the record the number of jobs in the coal industry under George W. Bush, the number of jobs in the coal industry under President Obama and there are more jobs under President Obama. There is a lot of talk around here but a lot of times we don't look at the facts, so I will put this in the record with your permission.

[The referenced information follows:]



Coal
Annual Coal Report

Release Date: December 12, 2013 | Next Release Date: November 2014 |

Previous Reports (pdf)

Data year:

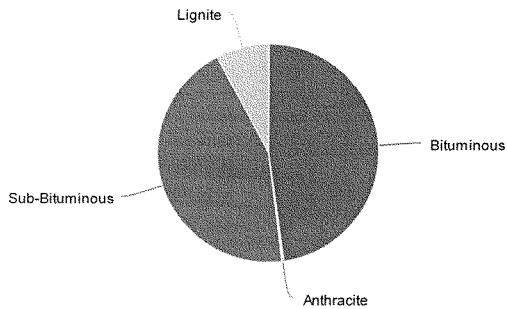
The Annual Coal Report (ACR) provides annual data on U.S. coal production, number of mines, productive capacity, recoverable reserves, employment, productivity, consumption, stocks, and prices. All data for 2012 and prior years are final.

Highlights for 2012:

- U.S. coal production decreased 7.2 percent from 2011, driven by lower electric power sector demand, to roughly 1.02 billion short tons.
- Productive capacity of U.S. coal mines decreased 3.5 percent to 1.28 billion short tons.
- The average number of employees in U.S. coal mines decreased 1.9 percent to 89,838 employees.
- U.S. coal consumption decreased 11.3 percent to 889.2 million short tons.
- The average mine sales price of coal decreased 2.6 percent to \$39.95 per short ton.

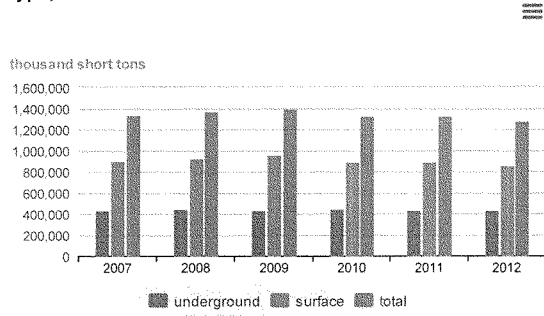
U.S. coal production by rank, 2012

total: 1,016,458 thousand short tons



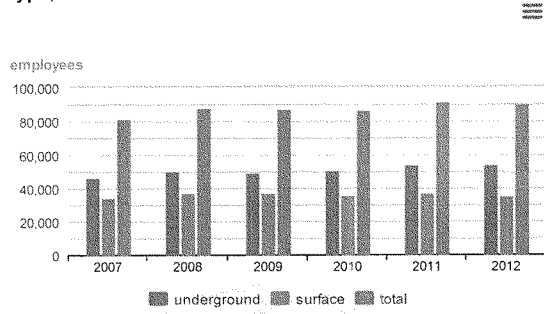
Source: Annual Coal Report Table 6.

Productive capacity of coal mines by mine type, 2007-2012



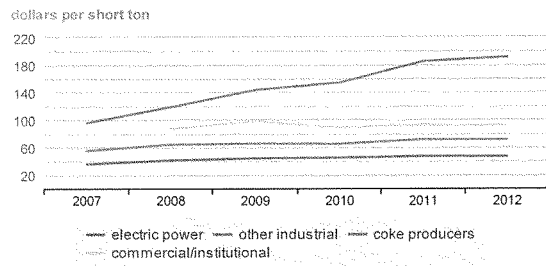
Source: Annual Coal Report Table 11.

Average number of employees by mine type, 2007-2012



Source: Annual Coal Report Table 18.

Average price of coal delivered to end-use sector, 2007-2012



 Source: Annual Coal Report Table 34.

Contact:
Nicholas Paduano
Phone: 202-287-6326
Email: Nicholas.Paduano@eia.doe.gov
Fax: 202-287-1944

Senator BOXER. I also want to say that I lived through all this fear mongering about jobs. Between 1970 and 2011, in 1970, we passed the Clean Air Act amendments. People were shouting, you are a job killer, you are a job killer. What happened? Air pollution dropped 68 percent saving our families' health while the U.S. gross domestic product grew 212 percent. Private sector jobs increased by 88 percent during that same period.

These scare tactics have been tried before and they are just not real. When you look in my State and see the number of jobs that have been created as we moved to clean energy, it is very, very encouraging.

Power plants account for 40 percent of all carbon pollution released into the air. Right now there are no limits to the amount of pollution that can be released, carbon pollution, from those power plants.

This is what the President's plan will do. It will avoid up to 6,600 premature deaths, 150,000 asthma attacks, 3,300 heart attacks, 2,800 hospital admissions and 490,000 missed days at school and work.

I ask you, colleagues, when you go home, you speak to kids all the time. Ask them how many have asthma or know someone with asthma. Half the kids will raise their hands. Why would you attack a plan that will avoid so many heart attacks, asthma attacks, 150,000 asthma attacks?

It is in America's DNA to turn a problem into an opportunity. Let us do it because I will tell you like many other jobs, you cannot outsource putting a solar roof on a home, you cannot outsource putting a wind turbine in place.

I want to thank Senator Whitehouse for his extraordinary leadership.

Senator WHITEHOUSE. I am now pleased to recognize my friend from Wyoming, the distinguished Senator Barrasso.

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

Senator BARRASSO. Thank you very much, Mr. Chairman.

As you know, I am from Wyoming, the most beautiful State in the Nation and I want to keep it that way. I believe we have and can have a healthy environment and a health economy at the same time. We need to do that by striking the right balance between the two.

I believe it is irresponsible to impose costly regulations without having real environmental benefits. The cost of these climate change regulations on families and on communities is very real. The benefits are ill defined. They are unknown or are simply negligible.

President Obama's new climate regulations, which are at the heart of his climate action plan, will harm our fragile American economy, thousands of people will lose their jobs, it will raise electricity prices threaten electricity reliability and undermine America's global competitiveness.

Higher energy costs will hurt low income families and fixed income seniors the most, leaving them with less to spend on food, housing, health care and other basic necessities. The thousands of

unemployed and their families will suffer negative health impacts as a result of chronic unemployment. Electricity prices and hospital visits will necessarily sky rocket.

Is it worth subjecting many in our Country to a dramatically lower quality of life and health for this plan to essentially nationalize our electricity grid? Based on the facts, I would say absolutely not.

We have been told by the U.N. and the EPA that climate change will cause serious impacts across the globe. To address this, the President put forward his Climate Action Plan. This plan is two-fold: first, to have the U.S. nationalize our electricity grid just as he has tried to nationalize our healthcare system.

Nationalizing our electricity grid means taking decisionmaking about electricity policy out of the hands of the States, out of the hands of the communities and putting it in the hands of Washington bureaucrats.

This will occur as EPA rejects in whole or in part State energy plans for reducing carbon emissions and imposing their own Federal plans under the EPA's proposed new regulations for existing coal-fired power plants. This will happen at a cost of thousands of jobs and the public's health and well being.

The second part of the President's plan is to have us believe that he can arrive in Paris in 2015 at the U.N. Climate Change Conference and convince the world to follow his lead. The whole plan hinges on President Obama's foreign policy prowess. His foreign policy record is a series of empty threats, pivots, resets, missed calculations and lead from behind failures in places like Syria, Russia, Iran, Libya and now Iraq.

After all those missteps, the President expects Americans to believe that in 2015, he can draw a red line along the Champs-Élysées and demand that China and India stop burning fossil fuels. Even if the President was able to reach an agreement like the Kyoto treaty of the 1990's, it would still have to be ratified by the Senate. The treaty in the 1990's overwhelmingly failed in the Senate.

If the President cannot deliver in Paris and subsequently in the Senate, we will be left with his domestic climate action plan.

Americans have been told by the EPA and the U.N. that climate change will cause serious impacts to the planet years into the future. The President's domestic climate action plan they champion cannot, on its own, prevent these impacts from happening.

According to our own U.S. Secretary of State, John Kerry, in a column he wrote in the Financial Times on June 3, he stated, "Even as we strive to do better, we recognize that no country can solve this problem alone." Even if the U.S. somehow eliminated all our domestic greenhouse gas emissions, Secretary Kerry says, "It would not be enough. The rest of the world is spewing too much carbon pollution."

That means that the President's climate action plan, on its own, doesn't reduce global temperatures or prevent any of the serious impacts predicted by the U.N. or the EPA. It can't even make a dent, all the while seniors on fixed incomes, families and children suffer high electricity bills, joblessness and poor health.

This is all pain and little gain with what the President is proposing.

Thank you, Mr. Chairman.

Senator WHITEHOUSE. Thank you, Senator Barrasso.

Thanks to the kindness of Senator Cardin, Senator Sanders will be recognized.

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

Senator SANDERS. Thank you very much, Mr. Chairman. Thank you for your tireless efforts on this issue and for organizing this very important hearing today.

I say this as somebody who may have the highest pro-labor voting record in the U.S. Congress, my delight in hearing some of my friends on the other side express their interest about the needs of low income people, working people and senior citizens.

I would remind everyone that many of these same people are folks who have fought to cut social security, Medicare, Medicaid, opposed raising the minimum wage, opposed the kind of jobs program we need to rebuild our crumbling infrastructure and put millions of people back work and opposed lowering college debts for many struggling students in this Country.

The issue we are dealing with today is of enormous importance. It really comes down to whether as a Nation, as the most powerful nation on earth, we are going to listen to the science. When we build weapons systems that cost billions of dollars, we take it for granted that the engineers know what they are talking about. When we invest in cancer research through the National Institutes of Health, we assume and believe that the doctors and scientists know what they are talking about.

Right now, we are in a very strange moment in American history. That is why traditionally there are differences of opinion on labor issues, on health care issues and that is what happens year after year. We are now in a very strange moment and that is we have virtually an entire political party that is rejecting basic science and the science is no longer in doubt.

Some 97 percent of scientists who have written in peer-reviewed journals say the following. Climate change is real, it is significantly caused by human activity, and it is already causing devastating problems in our Country and throughout the world.

Yesterday, the newspapers reported that in Arizona, they are worrying about how Phoenix and other cities are going to get water because of the terrible drought we have seen in the southwest. Australia is burning up. We have had extreme weather disturbances, major storms that have cost us billions and billions of dollars. Sea levels are rising which may flood among other cities, the great city of New Orleans, New York City and Boston.

For some strange reason, while we agree on science in almost every area of our life, in this area we have a party that says, no, climate change is not real; it is maybe a hoax, something concocted by Al Gore or Hollywood.

I am very proud today and want to thank the panelists who are here very much, especially the former EPA Administrators who were appointed by Republicans. I thank you so much for being here

because while we can disagree on a million issues, we should not disagree on what scientists tell us. We should not disagree when scientists tell us that we have a window of opportunity, 10 or 15 years, to turn this thing around, to lead the world.

John Kerry said the rest of the world has to go forward. He is right but somebody has got to lead. This Country leads. By the way, when we lead in transforming our energy system away from fossil fuel, we create millions of jobs through weatherization, through energy efficiency, through wind and solar, geothermal and other technologies that are out there.

I very much want to thank the former Republican Administrators for coming to Washington to say what I think is true nationally, that intelligent Republicans all over this Country—I am not a Republican, my views are very different—but on this issue we can at least respect science, we can respect the planet, we can transform our energy system and most importantly, maybe at the end of the day, we have a moral responsibility for our children and grandchildren so that 30 years from now, they do not look us in the eye and say, all the scientists told you what was going on, why didn't you do something. We have to do something.

I thank you all very much for being here this morning.

Senator WHITEHOUSE. Thank you, Senator Sanders.

Senator Inhofe.

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

Senator INHOFE. Thank you, Mr. Chairman. Thank you for holding the hearing.

While I think it is important for us to conduct oversight over the ESPS rule, we need to be hearing from Gina McCarthy and Janet McCabe and from those who would be affected by the rule which includes the utilities, the consumers, the manufacturers, the miners and others.

We need the record to reflect the whole picture of this rule. We need to hear from the experts on electricity reliability like FERC and NERC.

During his time in office, President Obama has pursued a systematic strategy for using the government to take over major sectors of the economy. He started with Obamacare, nationalizing the healthcare system. He went on to Dodd-Frank, making bank bailouts a permanent fixture in American society.

Now we have the first round of global warming regulations which would nationalize the electricity market and force Americans to live out the President's green dream. We don't have to look any further to see Obama's marvel in Germany to see where the path leads.

I think Senator Vitter covered this pretty well. The fact that they are now trying to get out from under the mess they are in. Germany's cost per kilowatt hour has doubled and is now triple what it is here in the United States, all because of the course the President has tried to put us on.

The Administration may claim that this is unlikely because the United States has an abundance of cheap, domestic sources of natural gas. While that is true, I am not naive enough to believe that

the Administration will stop with coal. In fact, Energy Secretary Ernest Moniz recently said that natural gas power plants will soon need carbon capture sequestration technology and saw it on them to comply with global warming rules. That would put them out of business.

It is not just coal. It is oil, gas, coal and even nuclear that is under attack. Ultimately, President Obama's electricity takeover will force Americans to use less and less electricity at higher and higher prices. The motive is clear.

I am going to ask that this be made a part of the record. Tom Steyer is a California billionaire who has promised to pump \$100 million into the elections to help Senate Democrats get elected if they make global warming a national issue.

This isn't me saying this; this is Tom Steyer. I don't have \$100 million to give away, he does and this means enough to him. I do ask this be made a part of the record.

Senator SANDERS. Reserving the right to object.

Senator INHOFE. That is fine.

Senator SANDERS. I would also like to enter into the record the fact that the Koch Brothers representing the fossil fuel industry will spend hundreds of millions of dollars on this campaign trying to defeat Democrats.

Senator INHOFE. Do you object to having this a part of the record?

Senator SANDERS. So long as mine is able to be entered, I have no objection.

Senator INHOFE. Sure, you can enter it. That is fine.

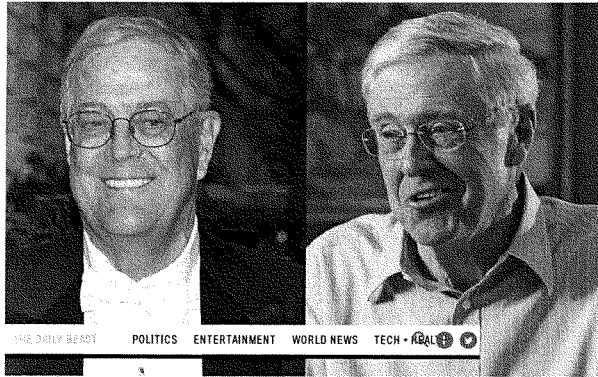
Senator SANDERS. Thank you.

Senator INHOFE. By the way, I have the greatest respect for Senator Sanders. We are totally different on our philosophies, I understand that, but we have respect for each other. We have had honest debates and this is just one of them.

I think it is very important that we keep in mind there is a guy out there.

Senator WHITEHOUSE. The timer will go back on and both documents will be admitted into the record.

[The referenced information follows:]



POLITICS 06.13.14



Koch Brothers Unveil New Strategy at Big Donor Retreat

The Koch brothers' financial network is planning on spending almost \$300 million in the 2014 election, including a new anti-environment effort.



In the face of expanding energy regulations, stepped-up Democratic attacks and the ongoing fight over Obamacare, the billionaire Koch brothers and scores of wealthy allies have set an initial 2014 fundraising target of \$290 million which should boost GOP candidates and support dozens of conservative groups—including a new energy initiative with what looks like a deregulatory, pro-consumer spin, The Daily Beast has learned.

This weekend, at a posh California resort near Laguna Beach, energy is expected to be among the topics as Charles and David Koch and their extensive donor network hold a semiannual fundraising and policy seminar. Political allies including Sen. Marco Rubio of Florida and libertarian political scientist Charles Murray are slated to speak, according to conservatives familiar with the Koch network.

The energy initiative is being created under the umbrella of the largest Koch network nonprofit in apparent response to a number of developments: the commitment by liberal billionaire Tom Steyer to steer \$100 million into ads in several states to make climate change a priority issue in the elections; numerous setbacks at the state level where Koch network backed advocacy groups have been fighting against

6/19/2014

Koch Brothers Make Climate Activists New Target - The Daily Beast

Support The President?

newsmax.com

Newsmax.com is conducting a poll about the President. Vote Now.

renewable energy standards; and the new EPA regulations to curb carbon dioxide emissions from power plants.

The meeting will cap a frenetic fundraising season for the conservative donor network. This year the Koch network not only hosted a similar January conference, but several smaller gatherings in Palm Springs, Newport Beach, St. Louis, and other locales to attract new donors, according to an email from Koch fundraising honcho Kevin Gentry obtained by The Daily Beast. In his email, Gentry called the Palm Springs

event— which drew some 50 wealthy conservatives in March —a “highly successful recruitment reception” and encouraged other veteran donors to get involved by holding local gatherings in their areas.

Koch network operatives also have held periodic conference calls—sometimes with members of Congress on the line—to update loyal check writers on various issues and keep them in the fold, say conservative sources.

Now, hitting the \$290 million goal seems within reach: almost \$170 million of that total was pledged at the last big Koch donor seminar in January this year, say two conservative sources. The hefty haul will help fund a mix of politically active nonprofits like the Koch-backed Americans for Prosperity, and a newer outfit called the Libre Initiative that’s aimed at appealing to Hispanics with a small government, free-market message. AFP alone is expected to spend upwards of \$125 million this year on a variety of political and advocacy projects including air and ground operations, according to Politico.

By comparison, in the 2012 presidential cycle, the Koch donor network raised more than \$400 million to help underwrite 17 politically active nonprofit groups—including AFP and Libre Initiative— according to The Washington Post.

A few Koch network-backed nonprofit groups including AFP have long fought against climate change regulations, a carbon tax, and subsidies for renewable energy. But lately, the Koch universe seem to be facing bigger energy threats stemming from Washington, state governments and big liberal checkbooks.

The new energy initiative is the handiwork of Freedom Partners Chamber of Commerce, the Koch network’s central fundraising hub, which was established in late 2011 as a trade group, according to an email to the group’s members from Gentry. In 2012, the fledgling group—which claims some 200 members who each kick in at least \$100,000 yearly— funneled over \$230 million dollars to numerous other non-profits in the Koch ecosystem according to the group’s 2012 tax returns.

In an April 1 missive, Gentry invited Freedom Partners members to join an upcoming conference call about a “significant new Freedom Partners initiative” which he touted as one that would “drive the national narrative around energy

and the tremendous benefits of reliable affordable energy for all Americans, especially for the less fortunate." The email indicated that discussions about the energy project began last summer at another Koch donor event in New Mexico, which drew outgoing House Majority Leader Eric Cantor and Rep. Paul Ryan among others.

Gentry's email stressed that liberal donors, led by hedge fund billionaire Tom Steyer, have plans to spend as much as \$100 million on climate change issues and ads to make it a top-tier issue in the election. He noted that environmental groups had recently run a \$5 million "clean energy" ad blitz in Iowa, Michigan, and North Carolina, all of which are considered "focus" states for Freedom Partners and among the states where Americans for Prosperity has spent over \$35 million on attack ads against Democratic Senate candidates on Obamacare.

In a chagrined-sounding PS, Gentry opined that the "new multi million dollar campaign by environmentalists is arguably an effort to distract from the failures of Obamacare. But you and I know energy is a critically important issue for the United States."

The details and scope of the new energy initiative, which has not been announced, aren't clear yet, but it's expected to cost in the seven figures and be a topic at the Koch donor conference this weekend— especially in light of the Obama administration's newly unveiled EPA regulations to curb carbon emissions from mostly coal fired power plants. Two sources familiar with Koch donor world told The Daily Beast that a new nonprofit group is being formed to help run the new energy initiative. Neither spokesmen for Freedom Partners or Koch Industries responded to requests for comment about the new initiative or fundraising efforts this year.

The Koch brothers combined net worth exceeds \$80 billion, according to Forbes magazine, and is derived from their control of Koch Industries, the eponymous energy and manufacturing conglomerate

Based on Gentry's email and recent energy drives by other Koch network groups, the initiative is likely to mix a minimalist regulatory and free-market message with a pro-consumer spin.

On its website, Freedom Partners explains its energy policy goals very broadly as "increasing access to affordable energy that helps societies-businesses, families and especially the poor—prosper and thrive." It says that the role of federal government is to "administer smart and safe environmental regulations" but argues that too often there's a lack of transparency and that "unsound science" is used to justify decisions without weighing costs versus benefits.

The new energy initiative may partly stem from setbacks in many states where advocacy groups funded by the Koch network like Americans for Prosperity and allies have been waging mostly uphill battles to roll back renewable energy standards. In these fights the conservative nonprofits have often portrayed renewable mandates as very expensive for consumers, a point that's frequently been rebutted by independent groups.

Even in Kansas, the home of Koch Industries, the Koch-backed advocacy

6/19/2014

Koch Brothers Make Climate Activists New Target - The Daily Beast

network failed to repeal the state's renewable standards, which were enacted in 2009 Under Kansas' Renewable Portfolio Standard, 20 percent of the state's electricity is supposed to come from renewables by the year 2020.

The Kansas fight suggests part of the strategy that Koch-linked groups are expected to pursue to broaden their message and try to appeal to consumers. Alan Cobb, a former lobbyist for the company who also did stints with AFP and Freedom Partners, was hired this spring by the newly created Kansas Senior Consumer Alliance, which sent thousands of postcards to elderly citizens criticizing the renewable standards. The postcards, with pictures of worried-looking seniors opening their mail, said that there had been 15 rate hikes since 2009 when the renewable standards were enacted and urged seniors to contact their representatives to protest them.





A state commission has found less than 2 percent of recent rate increases can be attributed to the renewable standards.

Groups backed by the Koch network in several other states have also been rebuffed in their drives against renewables. But in late May, in a rare victory, Ohio Governor John Kasich signed off on a two-year freeze on the Buckeye State's renewable energy and energy efficiency requirements.

On the 2014 electoral front, other Koch donor supported non-profit groups like the American Energy Alliance (AEA) have poured funds into ads targeting Democrats in close Senate and House races, knocking their opposition to building the Keystone XL pipeline. In May, the AEA spent over \$400,000 on ads in Colorado attacking Sen. Mark Udall for his stance opposing the Keystone pipeline. AEA, which is run by former Koch Industries lobbyist Tom Pyle, has also been fighting to end wind energy subsidies. Last year, Congress ended a two-decade old tax credit for wind energy companies after vigorous lobbying by Koch-backed groups including AEA and AFP. This year, the groups have continued to fight against attempts to revive the credit.

The fight over climate change took a personal twist this spring when Tom Steyer challenged the Koch brothers to a debate about the issue and whether more regulations are needed to curb man-made pollution. The Koch brothers turned down the invitation. In an email to a local Kansas paper, Koch spokesperson Melissa Cohlmi explained "we are not experts on climate change."

The Koch seminar this weekend is scheduled to feature a speech by Sen. Marco Rubio (R-FL), who last month sparked a small firestorm when he said that "I don't believe that "human activity is causing these dramatic changes in our climate the way these scientists are portraying it." Rubio, whose view is contradicted by many scientific studies showing that carbon dioxide emissions have accelerated global warming, added that he thinks proposed laws to deal with climate change "will only wreck our economy." Rubio's position should get a warm reception among the libertarian leaning donors at the conference.

 SHARE  TWEET  POST  EMAIL

Politics

Koch-backed political network, built to shield donors, raised \$400 million in 2012 elections

Conservative billionaires Charles, left, and David Koch have built a massive political network that shields the identities of its donors through a maze of organizations, according to an analysis of new tax returns and other documents. (AP - Bloomberg News)

BY MATEA GOLD January 5

The political network spearheaded by conservative billionaires Charles and David Koch has expanded into a far-reaching operation of unrivaled complexity, built around a maze of groups that cloaks its donors, according to an analysis of new tax returns and other documents.

The filings show that the network of politically active nonprofit groups backed by the Kochs and fellow donors in the 2012 elections financially outpaced other independent groups on the right and, on its own, matched the long-established national coalition of labor unions that serves as one of the biggest sources of support for Democrats.

The resources and the breadth of the organization make it singular in American politics: an operation conducted outside the campaign finance system, employing an array of groups aimed at stopping what its financiers view as government overreach. Members of the coalition target different constituencies but together have mounted attacks on the new health-care law, federal spending and environmental regulations.

Key players in the Koch-backed network have already begun engaging in the 2014 midterm elections, hiring new staff members to expand

operations and strafing House and Senate Democrats with hard-hitting ads over their support for the Affordable Care Act.

Its funders remain largely unknown; the coalition was carefully constructed with extensive legal barriers to shield its donors.

Inside the Koch-backed political donor network
But they have substantial firepower. Together, the 17 conservative groups that made up the network raised at least \$407 million during the 2012 campaign, according to the analysis of tax returns by The Washington Post and the Center for Responsive Politics, a nonpartisan group that tracks money in politics.

A labyrinth of tax-exempt groups and limited-liability companies helps mask the sources of the money, much of which went to voter mobilization and television ads attacking President Obama and congressional Democrats, according to tax filings and campaign finance reports.

The coalition's revenue surpassed that of the Crossroads organizations, a super PAC and nonprofit group co-founded by GOP strategist Karl Rove that together brought in \$325 million in the last cycle.

The left has its own financial muscle, of course; unions plowed roughly \$400 million into national, state and local elections in 2012. A network of wealthy liberal donors organized by the group Democracy Alliance mustered about \$100 million for progressive groups and super PACs in the last election cycle, according to a source familiar with the totals.

The donor network organized by the Kochs — along with funding an array of longtime pro-Republican groups such as the U.S. Chamber of Commerce, the National Rifle Association and Americans for Tax Reform — distributed money to a coalition of groups that share the brothers' libertarian, free-market perspective. Each group was charged with a specialized task such as youth outreach, Latino engagement or data crunching.

The system involved roughly a dozen limited-liability companies with cryptic, alphabet-soup names such as SLAH LLC and ORRA LLC, and entities that dissolved and reappeared under different monikers.

Lloyd Hitoshi Mayer, a University of Notre Dame Law School professor who studies the tax issues of politically active nonprofits, said he has never seen a network with a similar design in the tax-exempt world.

Twitter ›
 Articles ›

[+ FOLLOW AAR](#)

[Ribbons of Rail](#)

[READ MORE](#)

[Investing in the American Workforce](#)

[READ MORE](#)

[On Track with Florida East Coast Railway. Insight from President & CEO James R. Hertwig](#)

[READ MORE](#)

[The Railroad Jobs You Never Knew You Wanted](#)

[READ MORE](#)

[On Track with Norfolk Southern. Insight from President James A. Squires](#)

[READ MORE](#)

[A Network So Big...](#)

[READ MORE](#)

[Building a Smarter Rail Network](#)

[READ MORE](#)

[Moving America, Industry by Industry](#)

[READ MORE](#)

[On Track with Kansas City Southern. Insight from President & CEO David L. Starling](#)

[READ MORE](#)

[Meeting the Demands of the Digital Age](#)

[READ MORE](#)

"It is a very sophisticated and complicated structure," said Mayer, who examined some of the groups' tax filings. "It's designed to make it opaque as to where the money is coming from and where the money is going. No layperson thought this up. It would only be worth it if you were spending the kind of dollars the Koch brothers are, because this was not cheap."

Tracing the flow of the money is particularly challenging because many of the advocacy groups swapped funds back and forth. The tactic not only provides multiple layers of protection for the original donors but also allows the groups to claim they are spending the money on "social welfare" activities to qualify for 501(c)(4) tax-exempt status.

Such maneuvers could be sharply restricted under new regulations proposed by the Internal Revenue Service in November. The new rules seek to rein in nonprofit groups that have increasingly engaged in elections while avoiding the donor disclosure required of political committees.

The donors

It is unclear how much of the network's funds came directly from the Kochs, who head Koch Industries, one of the largest privately held companies in the country. The brothers, who fund a host of libertarian think tanks and advocacy groups, are heralded on the right and pilloried on the left for their largess.

While "the Koch network" has become a shorthand in political circles, the coalition is financed by a large pool of other conservative donors as well, according to people who participate in the organization.

Through a corporate spokesman, the Kochs declined to comment on what support they give.

"Koch's involvement in political and public policy activities is at the core of fundamental liberties protected by the First Amendment to the United

States Constitution," Koch Industries spokesman Robert Tappan said in an e-mailed statement. "This type of activity is undertaken by individual donors and organizations on all ends of the political spectrum — on the left, the middle, and the right. In many situations, the law does not compel disclosure of donors to various causes and organizations."

Tappan added that "Koch has been targeted repeatedly in the past by the Administration and its allies because of our real (or, in some cases, perceived) beliefs and activities concerning public policy and political issues."

In a rare in-person interview with *Forbes* in late 2012, Charles Koch defended the need for venues that allow donors to give money without public disclosure, saying such groups provide protection from the kind of attacks his family and company have weathered.

"We get death threats, threats to blow up our facilities, kill our people. We get Anonymous and other groups trying to crash our IT systems," he said, referring to the computer-hacking collective. "So long as we're in a society like that, where the president attacks us and we get threats from people in Congress, and this is pushed out and becomes part of the culture — that we are evil, so we need to be destroyed, or killed — then why force people to disclose?"

Since 2003, the Kochs have hosted twice-yearly seminars with like-minded donors at which they collect pledges for groups that share their commitment to deregulation and free markets.

Jack Schuler, a Chicago health-care entrepreneur, attended one of the Kochs' donor meetings in Beaver Creek, Colo., several years ago and has contributed about \$100,000 a year to their efforts since then.

"They came across as guys who are putting a lot of their own money into it,"

Schuler said. "They are pretty soft-spoken, not screamers or screechers. They provide the leadership, the staff — without the framework, I wouldn't do it on my own."

Many donors get involved because they "value the privacy afforded to them by giving to these entities," said Phil Kerpen, president of American Commitment, a nonprofit free-market advocacy group that is part of the network.

"There are hundreds and hundreds of very successful and patriotic Americans that take part in the seminars," Kerpen added. "To suggest that anything that goes through any of these entities is Charles and David Koch is very misleading. There are a significant number of donors involved."

The money

Much of the money that flowed through the network in the last election cycle originated with two nonprofit groups that served as de facto banks, feeding money to groups downstream, according to an analysis by Center for Responsive Politics researcher Robert Maguire, who investigates politically active nonprofits.

The biggest was the Freedom Partners Chamber of Commerce, an Arlington County-based group set up in November 2011 that now functions as the major funding arm of the network, according to people familiar with the operation. The organization, whose board includes current and former Koch Industries officials, brought in nearly \$256 million in its first year, "significantly more revenue than was expected," according to its tax filing.

Nearly \$150 million was in the form of dues paid by more than 200 members of the organization, which is structured as a business league. An additional \$105.8 million came from something called "SA Fund."

James Davis, a spokesman for Freedom Partners, said the organization

funds groups “based on whether or not they advance the common business interests of our members in promoting economic opportunity and free-market principles.”

Davis said the group has been upfront about its spending and made its tax return available online as soon as it was filed in September.

“Our members are free to disclose their affiliation if they wish,” he said. “We leave that decision with them. Unfortunately, recent IRS and other instances of intimidation and harassment of individuals and groups because of their policy beliefs and activities demonstrate why it’s important to keep such information confidential.”

According to people familiar with the network, Freedom Partners took the place of a now-defunct group based in Alexandria called TC4 Trust, which raised more than \$66 million in three years before it was shuttered in June 2012, according to tax filings.

The same tax preparer — a Kansas City, Mo.-based partner in the accounting firm BKD — did the returns for Freedom Partners and TC4 Trust, as well as for nearly half the other groups in the network and for the nonprofit Charles Koch Institute.

In all, the feeder funds and the groups they financed raised an estimated \$407 million in the last election cycle. That figure is a conservative one, since it does not account for the complete revenue of eight groups that have not yet filed their tax returns for the latter half of 2012.

Of the \$407 million, \$302 million can be traced to Freedom Partners or TC4 Trust.

The sources of the rest of the money remain a mystery, but many donors in the network write checks to the individual groups, according to people

familiar with the system. Some of the organizations also have additional funding streams outside the network.

The structure

Freedom Partners and TC4 Trust moved a large share of their funds through an intermediary group, the Phoenix-based Center to Protect Patient Rights, which served as a major cash turnstile for groups on the right during the past two election cycles. It is run by political operative Sean Noble, who served as a Koch consultant in 2012.

Rather than finance CPPR directly, Freedom Partners and TC4 Trust transferred \$129 million to limited-liability companies with changing names that are registered in Delaware, a state that requires corporations to disclose little about their operations: Eleventh Edition (which was renamed Corner Table and then Cactus Wren) and American Commitment (which was SDN, then became Meridian Edition).

Their relationship to CPPR was unknown until May, when the Arizona group acknowledged in amended tax filings that the LLCs were its affiliates.

Such LLCs are known as "disregarded entities," which means that, for IRS purposes, they do not exist. Their revenue is reported on the balance sheets of their parent organizations.

Tax experts said disregarded entities are typically used by nonprofits to, for example, hold a piece of real estate to shield an organization from liability.

But they also can be used to make it harder to trace the movement of funds between groups. In its final tax return, TC4 reported doling out nearly \$28 million to 10 organizations with names such as POFN LLC, PRDIST LLC and TRGN LLC. Those are the affiliates of the groups Public Notice, Americans for Prosperity and Generation Opportunity, in that order.

The Post and the Center for Responsive Politics identified the groups that make up the Koch-backed network through an analysis of tax filings, which revealed their shared DNA. Most have affiliated LLCs and received a substantial share of their revenue from the feeder funds.

The makeup of the coalition was corroborated by people familiar with the structure who said the network is ad hoc and will not necessarily remain constant.

A key player is Americans for Prosperity, the Virginia-based advocacy organization that finances activities across the country and ran an early and relentless television ad assault against Obama during the 2012 campaign. More than \$44 million of the \$140 million the organization raised in that election cycle came from Koch-linked feeder funds.

Other groups in the network included the American Future Fund, a Des Moines-based nonprofit that poured more than \$25 million into ads against Obama and congressional Democrats in 2012; Concerned Women for America, a conservative Christian women's activist group that ran a get-out-the-vote effort aimed at young women; the Libre Initiative Trust, a Texas-based group aimed at Latinos; Generation Opportunity, which seeks to engage millennials; and Themis Trust, which houses the data used by the allied groups.

The network also distributed funds to other independent political players. In the last election, Freedom Partners and CPPR doled out millions of dollars to a wide assortment of groups on the right, including the U.S. Chamber of Commerce (\$3 million), the NRA (\$6.6 million), the National Federation of Independent Business (\$2.5 million) and Heritage Action for America (\$500,000).

Obama's reelection prompted internal reassessments in the network, as it did among many conservative groups that had worked to defeat him in

2012. But there are no signs that the coalition plans to retreat.

Rather, officials are focused on creating a more effective operation aimed at bolstering the conservative movement for the long term. Freedom Partners, which now has nearly 50 employees, is expected to bring many functions in-house and expand beyond grantmaking, according to people familiar with the plans. Groups such as CPPR are expected to play a smaller role going forward.

Others are already engaged in the 2014 fight. Americans for Prosperity is in the midst of a \$20-million-plus ad blitz attacking congressional Democrats for their support of the health-care law, while the Libre Initiative has targeted Latinos with similar messages.

"We raised a lot of money and mobilized an awful lot of people, and we lost, plain and simple," David Koch told *Forbes* shortly after Election Day.

"We're going to study what worked, what didn't work, and improve our efforts in the future. We're not going to roll over and play dead."

Alice Crites contributed to this report.

Senator INHOFE. Very good. Thank you.

We have had the global warming parties on the Senate floor and all of that is going on but the reason guys like Tom Steyer have to go to such lengths to make the political issue is because the American people don't want anything to do with it.

He talks about polls. Poll after poll show more and more Americans learn about the impact of greenhouse gas regulations, the more effect it will have on the economy, the less they care. The Gallup poll that just came out used to list global warming as No. 1 and two. You remember that Christine back when you had that job. Now it is number 14 out of 15 of the major concerns. The people have caught on to this.

The most important issue is the economy. We know that the previous version of cap and trade are estimated to cost between \$300 billion to \$400 billion a year which amounts to about \$3,000 for every family that files a Federal tax return. Then we have to keep in mind even if this was right, even if they were able to do this and pass this, it would not reduce, as one of the members said a moment ago, the amount of greenhouse gas emissions.

Lisa Jackson, the Director of EPA appointed by Barack Obama, made that statement and said, no, it would not reduce because this isn't where the problem is. It is in China, it is in India, Mexico and other places.

The \$3,000 per family would be something that would not achieve the benefits that the other side seems to think are there. This version is going to have a similar impact. The Chamber of Commerce estimated one final construct of the rule would cause \$51 billion in lost GDP each year. The Heritage Foundation estimated it would decrease household income by \$1,200 a year.

These are the facts but they are not talking about the points we hear from the other side. Keep in mind also they are trying to do this through regulation, Obama is, because he couldn't do it through legislation. We have had countless bills introduced to do the very same thing through legislation. Each time they are introduced, they are defeated by a larger margin.

I think if for no other reason, the mere fact that it has been rejected by the House and the Senate is very significant. Why should we through regulation try to do something that the elected members of this body have rejected over and over again?

Thank you, Mr. Chairman.

[The prepared statement of Senator Inhofe follows:]

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

Today we are joined by four former Administrators of the Environmental Protection Agency who were appointed by Republican Presidents: the Honorable William Ruckelshaus served as the first EPA Administrator under President Richard Nixon and then again under President Ronald Reagan; the Honorable Lee Thomas also served under President Reagan; the Honorable William Reilly served under President George H. W. Bush, and the Honorable Christine Todd Whitman served under President George W. Bush.

I am proud that our landmark environmental laws were created with an overwhelming bipartisan consensus, and it saddens me that protecting the environment at the Federal level has become a partisan issue.

In 1970, the Clean Air Act passed the Senate by a vote of 73-0, passed the House by 375-1, and was signed into law by President Nixon.

In 1990, revisions to the Clean Air Act passed the Senate by a vote of 89–11 and by 401–21 in the House, and were signed into law by President George H.W. Bush.

But in the last Congress the Republicans then sent us over 90 anti-Clean Air riders.

We should all know we must take action to reduce harmful carbon pollution, which 97 percent of scientists agree is leading to dangerous climate change that threatens our families. To say we can't have an opinion because we are not scientists makes no sense to me. All the more reason to listen to the scientists.

The four former EPA Administrators with us today will testify about the need to control carbon pollution so we can avoid the most calamitous impacts of climate change—such as rising sea levels, dangerous heat waves, and economic disruption.

The American people understand the threats posed by climate change, and they want action. According to a recent Washington Post-ABC poll, a bipartisan majority of the American people want Federal limits on carbon pollution. Approximately 70 percent say the Federal Government should require limits to carbon pollution from existing power plants, and 70 percent (57 percent of Republicans, 76 percent of Independents, and 79 percent of Democrats) support requiring states to limit the amount of carbon pollution within their borders.

Power plants account for nearly 40 percent of all carbon pollution released into the air. Unlike other pollutants, right now there are no limits to the amount of carbon pollution that can be released into the air for power plants.

The President's carbon pollution reduction plan will avoid up to 6,600 premature deaths, 150,000 asthma attacks, 3,300 heart attacks, 2,800 hospital admissions, and 490,000 missed days at school and work.

It is in America's DNA to turn a problem into an opportunity, and that is what we have done by being a pioneer in the green technology industry. These new carbon pollution standards are no different. Landmark environmental laws have bolstered an environmental technology and services sector that employs an estimated 3.4 million people, according to the Bureau of Labor Statistics. And many of these jobs, like installing solar roofs and wind turbines cannot be outsourced.

I want to thank Senator Whitehouse for putting together this marvelous panel.

Senator WHITEHOUSE. Thank you, Senator Inhofe.

We turn now to Senator Cardin.

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

Senator CARDIN. Thank you, Senator Whitehouse. I thank you for your extraordinary leadership on this issue. You have been incredibly helpful to this Country in the leadership you have taken, particularly in your comments on the floor of the U.S. Senate.

I want to start by thanking our panelists today for what you have done to improve the public health for the people in this Nation. You have put public health first and that is what Congress intended when it passed the Clean Air Act and the Clean Water Act. It was done by bipartisan votes.

The Clean Air Act was enacted in 1970 with bipartisan support by the Members of Congress in both the House and the Senate and signed into law by President Nixon. You have given us the bipartisan or nonpartisan foundation for us to have clean water and clean air. Now we need to move forward in that tradition. Unfortunately, we have not.

I hope we can get back to the same type of spirit that inspired you to use your talent at the EPA as we move forward to advance the public health of the people of this Country.

Seven years ago when I was first elected to the Senate, we had bipartisan members in the Senate working together on climate change legislation. I hope we can get back to that day and get that bipartisan coalition together.

Quite frankly, the solution is one which will answer every member's concerns. Yes, many of us, most of us, are concerned about

the environmental public health threat that climate change poses. I have the honor of representing the State of Maryland. Our greatest natural resource is the Chesapeake Bay.

We are doing a lot. We have asked our farmers to do a lot. We have asked our developers to do a lot. Our municipal governments have done a lot. We have worked together in the public and private sector. A large part of the problem deals with climate change, rising sea levels and the loss of sea grasses. Therefore, climate change affects the quality of life for the people of Maryland.

The scientific information on our environment is pretty clear on public health. As pointed out, 97 percent of the published scientific documents indicate we have a serious threat that we can do something about and we need to take action.

By way of example, if I went to a doctor and 97 percent of the opinion was that I had pneumonia and unless I took certain action, I was risking my health, I would take action, as would every person in this Country.

It is clear that the overwhelming evidence is that we need to take action and move to preserve the public health, not just of America, but globally and the future health of our climate.

The good news is we don't really have to get into debate with the other 3 percent because the solution to the problem of climate change not means a cleaner environment and a safer circumstance for global climate, it also helps our economy.

I would just point to the Maryland experience. We passed some of the toughest environmental laws for our power plants and it created jobs. We can show you the number of jobs that were created. Clean energy creates more jobs than the fossil fuel industry.

There are those saying maybe this is not true, you certainly want to do it for our economic growth in this Country. It also helps us with national security. We have talked about that. We have made progress and are now more energy secure than we were a few years ago because we have invested in cleaner energy sources to help support America's security, economy and our environment.

I can also point to the fact that from our security point of view, many of our military facilities are located on the coast. In Maryland, we are very proud of the Naval Academy, PAX River, Aberdeen Proving Grounds, Indian Head. All those are threatened by sea level increases. It is in our national security interest to do this.

The bottom line is the United States needs to exercise leadership. President Obama is doing that by his climate action agenda and by regulating what power plants are doing. We have seen our President provide the leadership that has made a huge difference. It is now time for Congress to step up and join the President so America can be a leader in dealing with this global problem that affects the security of our Country and affects the future of our globe.

Senator WHITEHOUSE. Thank you, Senator Cardin.

Our distinguished Ranking Member and my friend, Senator Sessions, but he has allowed us to keep the existing order so I will recognize Senator Boozman.

**OPENING STATEMENT OF HON. JOHN BOOZMAN,
U.S. SENATOR FROM THE STATE OF ARKANSAS**

Senator BOOZMAN. Thank you very much, Mr. Chairman.

It is good to see the miners here. It is important that you are here.

One topic we are hearing a lot about today is the 97 percent consensus among scientists on climate change. It is important to ask, where does this 97 percent number come from and what does it mean?

Many scientists question the level of certainty behind the specific climate change scenarios. Others have shown gaps in our knowledge of climate sensitivity. Others have raised questions regarding the reliability of climate models and yet scientists who raise any of these issues can still be counted as the 97 percent.

Too often anybody who raises a question or disagrees with the left wing political position is called out as opposing views held by 97 percent of the published climate scientists as we are hearing today.

This is clearly not true. Again, what does this number mean? The statistic comes from a 2013 review of scientific literature published between 1991 and 2011. This review found that among abstracts expressing a position on anthropogenic global warming, 97.1 percent endorsed the consensus position that humans were causing global warming.

Basically, if anyone agrees with human activity's influence on the climate, that is a pretty broad definition.

Policymakers who disagree with the expensive big government left wing climate policies might still actually agree with the 97 percent consensus. Scientists who question important elements of current climate scientists are included in the number.

For example, last year, this committee received testimony from the climatologist Dr. Roy Spencer. To give you an idea of where he stands, Dr. Spencer published a book entitled, "The Great Global Warming Blunder, How Global Warming Hysteria Leads to Bad Science, Pandering Politicians and Misguided Policies that Hurt the Poor."

Given his outspoken position on climate policy, Dr. Spencer's comments on the 97 percent statistics are noteworthy. He testified "The fact that I believe at least some of recent warming is human caused makes me in the 97 percent of researchers who recently claimed to support the global warming consensus. The 97 percent statement therefore is innocuous since it probably includes all of the global skeptics I know who are actively working in the field."

In short, like the offensive term deniers, the 97 percent statistic is a misleading tactic used to marginalize people who are concerned about hardworking Americans and impose an all pain, no gain energy policy that is bad for our Country and will not change the global climate.

I am not a scientist but I am an optometrist. I spent much of my life working with the scientific community. I was a zoology major. I have said before that there is nothing scientific about discrediting people who present conflicting evidence and ask reasonable questions.

Politicians aren't science referees cutting off debate when it suits one side and no one has a monopoly on the facts. The bottom line is we must ask whether these Obama administration policies are worth the lost jobs, lower take home pay, higher gas and electricity prices, higher food prices and so on.

The President once said that his climate policies would make the cost of electricity necessarily skyrocket and I believe him. Let us remember that the pain will last for decades and falls hardest on low income families. We are driving our industries overseas, hurting American workers and creating foreign factories that emit far more than we would.

I believe in American leadership but we are fooling ourselves if we believe that China, Russia, India, Vietnam and so forth are going to follow the President's lead and shut down their power plants.

With that said, I thank our witnesses for being here and look forward to your testimony.

Thank you, Mr. Chairman.

Senator WHITEHOUSE. Thank you, Senator Boozman.

I will now turn to Senator Gillibrand.

**OPENING STATEMENT OF HON. KIRSTEN GILLIBRAND,
U.S. SENATOR FROM THE STATE OF NEW YORK**

Senator GILLIBRAND. Thank you, Senator Whitehouse, for chairing this hearing today on the need to act on climate change and for your leadership in the Senate to continue to raise the urgency of this issue.

Madam Chairwoman, I am deeply grateful for your leadership and your continued focus on how important this is for our families and our Country.

Climate change is real, it is here and humans have a role to play in it. That much is clear. While it might be easy for some to continue to deny the existence of climate change, we simply do not have that luxury in New York.

In my State, we are seeing the effects of a changing climate every single day. Two and a half years ago, Superstorm Sandy devastated coastal New York as well as New Jersey, Connecticut, Rhode Island and its effects were long felt on the entire Atlantic coast.

That was just 2 years after two other devastating storms, Hurricane Irene and tropical storm Lee, which cut a path of destruction all across the northeast. These major tropical storms in New York over a 2-year period is a huge issue we have to face.

The storm of the century is simply becoming the storm of the year. It is not just the storms themselves that are causing the destruction. Sea levels rise and are threatening greater storm surge effects, meaning that homes thought to be safe for centuries are now at grave risk of flooding.

Those who deny that climate change is real often talk about the potential costs of reducing carbon emissions, but we must weigh those costs against the cost of inaction. Inaction on climate change will cost the Federal Government and our taxpayers billions and billions and billions of dollars.

We have already seen Superstorm Sandy cost more than \$60 billion. In action on climate change also cost homeowners who live in coastal communities. Their flood insurance premiums have gone up with sea levels rising, it is causing greater flooding and FEMA's flood maps were released a year ago show an expansion of New York City's 100 year flood plain by 15 square miles. That is 45 percent. All of New York City is now having to be contemplated.

It also has real cost to my State and the people who live there when these storms strike. Rebuilding a home or a business is very expensive. Suffering the loss of a child or a family member because of a storm, you don't recover from it. These are real costs. These have insurmountable losses and effects.

We have to realize that is the effect of the change in our climate. We have to address the issue head on. If we address the issue head on, we will save lives, we will lower costs, we will protect families' homes and communities and we will protect businesses.

We also know for the economy, when we look to reducing our carbon emissions, we also gain greater innovation and business opportunities in clean energy. In fact, a recent report by the Environment Northeast showed that States that do participate in regional greenhouse gas initiatives have seen carbon pollution reduced by 18 percent and their economies have actually grown by 8.8 percent.

The report also showed that since the launch of RGGI, New York's electricity prices have actually gone down. They have gone down by 6 percent. I am confident that we, this Nation, and some of the greatest entrepreneurs and innovators in the world can solve this problem and do it in the way that can save all Americans costs.

The real and clear issue with regard to climate change is that it is a threat we have to take seriously as a Nation. We cannot wait for other countries who are even bigger polluters to take leadership. We cannot wait for them to go first. We have to lead. It is who we are. We, as Americans, are always in the forefront of real reform and change and great innovation.

Thank you, Senator Whitehouse, again for holding this hearing. It is so important for my State and our Country. It is a great opportunity for us to show new creation of jobs and new innovation. I think we need to take it head on.

Senator WHITEHOUSE. Thank you, Senator Gillibrand.

I now turn to our distinguished Ranking Member and my friend, Senator Sessions.

**OPENING STATEMENT OF HON. JEFF SESSIONS,
U.S. SENATOR FROM THE STATE OF ALABAMA**

Senator SESSIONS. Thank you, Senator Whitehouse.

I know these are important issues to you and you have spent a lot of time and effort in mastering these issues.

I am pleased to have our guests with us, the former EPA Administrators. We have indeed made a lot of progress in our Country since the Environmental Protection Agency was started several years ago. We appreciate your leadership in that regard.

It is great to have Attorney General Luther Strange, my able successor as Attorney General of the State of Alabama. Attorney Generals have environmental responsibilities for their States.

Dr. Mason, it is great to have you and Dr. Botkin, it is wonderful to have you with us. I think it will be a good hearing today.

We have had some agreement on a number of issues that we ought to celebrate. We had agreement at one point, I thought, that we would expand nuclear power, which emits no CO2 and other pollutants into the atmosphere but we are not making much progress there. We have lost four plants in the last few years. A fifth is due to close, I believe, in 2019 and only two are under construction.

How do we get clean energy at a reasonable cost without more nuclear power, it seems to me? We have had some agreement on ethanol though I wonder now whether my votes or my ideas were quite as positive as we thought at the time on ethanol. Good people disagree on the wisdom of ethanol.

We have had some good legislation and maybe some over reaching but some good legislation on efficiency. We can agree on how to make our automobiles, our plants and our buildings more energy efficient but we are concerned about the dramatic economic costs, the costs that would fall on the backs of many of the people sitting in our audience today who produce that huge portion of our energy, coal, and other energy production that will be adversely impacted by the President's regulations.

We have to ask some tough questions about that. I think we will.

It has been mentioned that we have had some storms. I would note that hurricane Sandy was not a hurricane. By the time it hit shore, it was a tropical storm. We are not seeing increases in hurricanes. In fact, it has been 3,100 days since we have had a Category 3 hurricane in America. That is a remarkable time and maybe one of the longest ever.

IPCC's fifth climate assessment report released last year said, "Current data sets indicate no significant observed trends in global tropical cyclone frequency over the past century. Dr. Pilkey testified here that we don't have more tornadoes, we don't have more droughts and we don't have more floods, according to the data he has evaluated.

I just say that it is right and just that members who represent the people of the United States, the workers of the United States, the people who pay electricity bills and pay their gas bills to go to work every day, we represent them too.

We have to ask ourselves are we doing something to this economy that is not good for us and how can we make positive gains together without damaging our economy. I would note, just for the record, that our colleagues need to know that our economy is struggling. We are not doing well.

Since 2009, median household income has fallen by \$2,300. Since 2009, 7.2 million people have left the work force. Growth in the first quarter of this year was negative 1 percent. One out of every six men 25 to 54 is not working today. These are statistics that ought to cause us concern.

We have found that many of the regulations are ineffective. The United States' actions which have been improving with CO2 emissions and we are containing the growth of CO2 more than most countries in the world, will be insignificant in the total world impact.

I hope that this committee hearing will be positive and we can find some common ground and work together but CO2 is not the kind of pollutant, Ms. Whitman and gentlemen, that you fought effectively—NOx, SOx, particulates, and mercury. CO2 is not that same kind of pollutant, it just isn't, and we have to be careful that we don't hammer this economy attempting to achieve something we have very little ability to achieve.

Thank you, Mr.Chairman.

Senator WHITEHOUSE. Thank you, Senator Sessions.

For our final statement, we have Senator Booker of New Jersey.

**OPENING STATEMENT OF HON. COREY BOOKER,
U.S. SENATOR FROM THE STATE OF NEW JERSEY**

Senator BOOKER. I appreciate this opportunity. I want to thank Ranking Member Sessions and Chairman Whitehouse.

I want to particularly thank you for having the right kind of panel assembled here which are Republican Presidential-appointed EPA leaders, including my former Governor, who I am proud and happy to see today. I hope you got my cell phone message last night.

I am extraordinarily pleased because it clearly says that this is not a left-right issue. This is not an issue of politics, this is an issue of facts. To have Republican Presidentially appointed EPA heads come out, as they did in their joint editorial, and clearly say, we have a problem.

It frustrates me to no end that this is nothing new. When people tell the truth of an environmental problem that we have the capacity to do something about, you hear the same story over and over again.

Chairman Whitehouse, I would like to put into the record an article going back and tracing what everyone used to say about what would happen to the economy if we did certain things.

Senator WHITEHOUSE. Without objection.

[The referenced information follows:]

6/18/2014

Will New Climate Regulations Destroy the Economy? (Hint: No.) | Peter H. Gleick

LEARN HOW TO BE HAPPIER AT WORK—TODAY
 the muse **THE Third Metric** Delivered straight to your inbox
 SIGN UP FOR A FREE CLASS

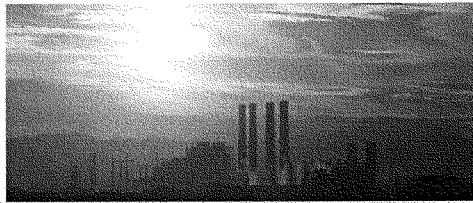
June 18, 2014

HUFF POST GREEN

Will New Climate Regulations Destroy the Economy? (Hint: No.)

Posted: 06/02/2014 11:32 am

417 people like this. Be the first of your friends.



David McNew via Getty Images

No. On the contrary, they might just save it by helping stimulate new technologies and industries and by reducing the risks of climate disruption.

There is a long history of claims that new rules to protect the environment or human health will seriously harm the United States economy. These claims are political fodder, they are provocative, and they are always wrong. In fact, the evidence shows the opposite: environmental regulations consistently produce enormous net benefits to the economy and to human health. In 2008, for example, the United States' environmental technologies and services industry supported 1.7 million jobs. The industry at that time generated approximately \$300 billion in revenues and exported goods and services worth \$44 billion.

Overall, a peer-reviewed 2011 study found that just the programs established by the 1990 Clean Air Act amendments were expected to yield direct benefits to the American people that vastly exceed costs of complying with the regulations. The study's central benefits estimate in 2020 exceeded costs by a factor of more than 30-to-1.

And these partial economic assessments ignore the health benefits of these rules. Health experts have estimated that the 1990 Clean Air Act amendments, for example, for 2010 alone:

- Avoided more than 160,000 premature deaths, 130,000 heart attacks (acute myocardial infarction), millions of cases of respiratory problems such as acute bronchitis and asthma attacks, and 86,000 hospital admissions.
- Prevented 13 million lost workdays, improving worker productivity which contributes to a stronger economy.
- Kept kids healthy and in school, avoiding 3.2 million lost school days due to respiratory illness and other diseases caused or exacerbated by air pollution.

Now, as the Obama Administration has proposed rules to cut carbon dioxide emissions in an effort to reduce the growing threats to the nation of climate change, these claims of harm to the economy are being rolled out again. Even before the Obama Administration's rules were announced, the U.S. Chamber of Commerce issued a report claiming the carbon pollution regulations would harm the economy. That produced a fast response from the US EPA calling the report "irresponsible speculation." (The Chamber also opposed the 1990 upgrade of the Clean Air Act and routinely fights other environmental regulations.)

Some polluting industries might suffer, but it is past time to unleash American ingenuity in the name of reducing the devastating threat of climate change.

Just to provide a bit of perspective, here is a graph of the total U.S. gross domestic production (GDP) in 2009 dollars (corrected for inflation) along with the regular claims of harm to the economy.

6/18/2014

VIII New Climate Regulations Destroy the Economy? (Hint: No.) | Peter H. Gleick

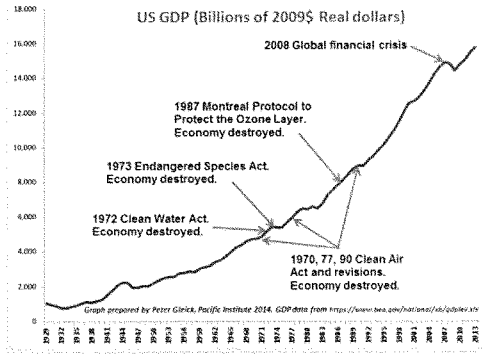


Figure. Claims that environmental laws will destroy the economy have been regularly made and are consistently false. This graph shows U.S. GDP from 1929 to 2013 in real 2009 dollars (corrected for inflation) along with the years major environmental laws were passed. (Prepared by Peter Gleick, Pacific Institute. GDP data from the US Bureau of Economic Analysis.)

And for the record, here are some of those past claims (HT to the Cry Wolf Project and others) - proven wrong over and over.

An October 1990 Wall Street Journal editorial urging President Bush to veto the 1990 Clean Air Act update claimed "The Clean Air Act's unduly stringent and extremely costly provisions could seriously threaten this nation's economic expansion." Auto industry executives, in opposition to the 1990 Clean Air Act update also stated "[Further decreasing auto emissions] is not

feasible or necessary and that congressional dictates to do so would be financially ruinous."

In 1975, the US Chamber of Commerce criticized the passage of environmental laws by Congress, including the Clean Air and Water acts, saying "But they went ahead anyway in the spirit of political expediency to ramrod through measures that would affect millions of people and billions of dollars..."

The CEO of Pennwalt, a major industrial producer of ozone-depleting CFC's, talked of "economic chaos" if CFC use was to be phased out.(1) DuPont, the largest CFC manufacturer, warned that "entire industries could fold" if ozone protection legislation was implemented.(2) Again, in January 1990, the DuPont Chemical Company testified to the House Committee on Energy and Commerce that accelerating the phase-out of ozone-depleting CFCs to July 1, 1996, would cause "severe economic and social disruption."

The Mobil Oil Company testified to the House Committee on Energy and Commerce in October 1990 opposing cleaner gasoline standards, saying "The technology to meet these standards [regarding requirements to use a new kind of cleaner gasoline] simply does not exist today ...[and we predict] major supply disruptions."

The National Association of Manufacturers, in opposing regulations to cut acid rain in 1987, said "The effects [of rules to reduce acid rain] include serious long-term losses in domestic output and employment, heavy cost burdens on manufacturing industries, and a resultant gradual contraction of the entire industrial base. The irony of this bleak scenario is that these economic hardships are borne with no real assurance they would be balanced by a cleaner, healthier environment.

Henry Ford II, in 1966 on regulations addressing seat belt & safety glass mandates, said "We'll have to close down."

We have to address the serious threat of climate change — let's get on with it and unleash America's ingenuity.

Peter Gleick

[Notes:
 1. Cogan, D.G., "Stones in a Glass House", Investor Responsibility Research Center, Washington D.C., 1988. (HT to Jeff Masters at WeatherUnderground. http://www.wunderground.com/resources/climate/ozone_skeptics.asp)
 2. Glas, J.P., "Protecting the ozone layer: a perspective from industry", In Technology and Environment (ed. by Ausubel, J.H. and H.E. Stalovich), Washington D.C., 1989. (HT to Jeff Masters at WeatherUnderground. http://www.wunderground.com/resources/climate/ozone_skeptics.asp)

Follow Peter H. Gleick on Twitter: www.twitter.com/PeterGleick

Senator BOOKER. It just shows the upward slant of our economy. When the 1972 Clean Water Act came out, everyone said the economy would be destroyed, it would cost us jobs—quite the contrary, our economy increased. It helped to push our economy forward.

When the Endangered Species Act came out, everyone said the economy would be destroyed, it was going to have horrible effects. Quite to the contrary, the American economy continued to surge.

In 1987, the Montreal Protocol to protect the ozone layer, everyone said, the economy would be destroyed and jobs would be the cost. In fact, quite the contrary, when we do stand up, Republicans and Democrats, and work together to address real environmental issues pointed out not just by scientists, but also by Republican presidents, we accomplish great things.

The 1990 Clean Air Act amendments done under the Bush administration—I am happy that Hon. William Reilly is here—which addressed our acid rain issues, had tremendous collateral benefits. It avoided more than 160,000 premature deaths. The life of humanity cannot be quantified numerically but, dear God, the health and safety of all residents should be your No. 1 mission.

It prevented 140,000 heart attacks, acute myocardial infarctions, and millions and millions of cases of respiratory problems, acute bronchitis and asthma were helped by this Republican and Democrat coalition under a Republican President with a Republican-appointed EPA head. It prevented 13 million lost work days, improving worker productivity and kept kids healthy in school, avoiding 3.2 lost school days.

This is what we can do when we open and see the facts that Republicans that will talk about today. To me, this is the concern. I do not need to reState what Senator Gillibrand said. The actual truth is, we are seeing climate change right now. I cannot speak to tornadoes, I don't see any of them in New Jersey, but I can speak to the extreme heat problems we are having all across the Country which is real, measurable and unequivocal.

That is causing severe impacts on our Nation and our Nation's economy. I am worried about what is happening in Atlantic City with the oceans rising. It is not an opinion, it is a fact and it is measurable. We are likely to see on the New Jersey shore the ocean rise 1.5 feet by 2050 and 3.5 feet by 2100.

I am especially concerned about the health concerns. EPA's regulation of power plants will bring us immediate health benefits. It is estimated that in the first year of the new rules taking effect that 100,000 asthma attacks and 2,100 heart attacks can be prevented. To me that is real.

It is unfortunate that marginalized folks, often poor people, are the ones who feel the impact of us doing nothing most. African American children are twice as likely to be hospitalized for asthma. I do not need to see the statistics; I see it in school systems across the State of New Jersey. They are four times more likely to die of asthma. Latinos are 30 percent more likely to be hospitalized for asthma.

The beautiful thing about this is by doing the right thing, we not only will not hurt the economy, but we can actually help to improve the economy. If States use these regulations and the opportunity

to make investments, it is estimated we could be seeing upwards of \$279 billion invested in retrofitting buildings.

This creates jobs and spurs the economy. These are the kinds of jobs that cannot be outsourced. The investment can yield more than \$1 trillion of energy savings over 10 years.

I am excited about the opportunity this presents. I feel the urgency when it comes to the health and safety and the long term economic well being of our Nation. We must act and we must act now.

I end with the simple conclusion that the choice between action that is wise and endorsed by Republican-appointed EPA leaders goes to the very evidence that they understand the truth of the matter that is true of humanity as well as the United States that the only thing necessary for evil to be triumphant is for good people to do nothing.

Senator WHITEHOUSE. Thank you, Senator Booker.

We now have the opportunity to hear from our wonderful panel. I will introduce the panel as a group right now and then we will go from witness to witness.

The Honorable William D. Ruckelshaus was the inaugural EPA Administrator under President Nixon and was later brought back as EPA Administrator under President Reagan. He banned the use of the pesticide DDT.

The Honorable Lee M. Thomas served under President Reagan and was instrumental in the negotiation and ratification of the Montreal Protocol to phaseout substances that deplete the ozone layer.

Governor Christine Todd Whitman served two terms as Governor of New Jersey before serving as EPA Administrator under George W. Bush. She oversaw implementation of standards that significantly reduced diesel air pollution.

The Honorable William K. Reilly, EPA Administrator under President George H.W. Bush worked to amend the Clean Air Act, as already mentioned, to control acid rain.

Dr. Daniel Botkin is Professor Emeritus of Biology at the University of California, Santa Barbara.

The Honorable Luther Strange is Alabama's Attorney General. As the former Attorney General of Rhode Island, I particularly welcome a colleague here.

Dr. Joseph R. Mason is the Hermann Moyse Jr./Louisiana Bankers Association Endowed Professor of Banking at Louisiana State University and Senior Fellow, The Wharton School.

I welcome our panel. We will begin with Hon. William Ruckelshaus.

STATEMENT OF WILLIAM D. RUCKELSHAUS, STRATEGIC ADVISOR, MADRONA VENTURE GROUP AND FORMER ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. RUCKELSHAUS. Thank you, Senator Whitehouse, Senator Sessions and other members of the subcommittee for convening this hearing on a matter of enormous importance for our future.

I am pleased to be here and reassure at least of you that I am still alive.

Several months ago after talking with one another, the four former EPA Administrators sitting in front of you found we were convinced by the overwhelming verdict of scientists that the earth was warming and that we humans were the only controllable contributor to this phenomenon.

Given those facts, we all signed an op-ed piece that America get serious about reducing our contribution to changing the world's climate rather than simply sitting back and accepting the avoidable consequences.

If anything, new reports in the last several months have made the need to act even more urgent. It is hard to believe that there is any question of that. The International Panel on Climate Change report validates in the strongest terms the science of climate change and projected impacts.

The National Climate Assessment documents impacts occurring here in this Country right now. A report from the CMA Corporation, made up of retired military officers, highlights the national security and military readiness concerns due to climate change.

We have, as EPA Administrators, served four Presidents over four decades. We have successfully wrestled with a variety of public health and environmental problems, all contentious, including severe automobile, industrial and air pollution, widespread water pollution and the unacceptable effects of pesticides like DDT.

We have made progress. We cut our automobile emissions, for example, by 95 percent and greatly improved air quality while the number of cars has doubled. The hole in the ozone layer and acid rain are under control.

Inherent in all of these problems was uncertain science and powerful economic interests resisting controls. The same is true of climate change. In all cases cited, the solutions to the problems did not result in the predicted economic and social calamity. Scientific uncertainty or the inevitable industry resistance does not mean that nothing should be done unless we are willing to suffer the consequences of inaction.

We believe there is legitimate scientific debate over the pace and effects of climate change but no legitimate debate over the effect of the earth's warming or man's contribution. The models of the world's leading scientists predict rising seas, drought, floods, wildfires and more severe and frequent storms. Those are the projections and predictions of these models.

We are seeing impacts already. Since the ocean absorbs 25-30 percent of the carbon from stationary or mobile sources, we thought the ocean was our friend. It was, keeping significant amounts of carbon from the atmosphere. Our friend is paying a penalty.

The carbon from the burning of fossil fuels is causing the acidity of the ocean to rise and is already threatening shellfish, coral reefs and other ocean species. The culprit is the same carbon that originated from fossil fuels that is contributing to planetary warming.

I was the co-chairman of a committee in my home State of Washington appointed by the Governor to look at the impacts of ocean acidification on Puget Sound which directly threatened the shellfish industry in Puget Sound that contributes \$275 million a year to the State's economy.

To find out what the nature of the problem was and taking steps to both adapt to it and try to reduce the amount of carbon in Puget Sound has begun to have some beneficial effect.

We also know that if America does not get serious about our responsibility to deal with this problem, nothing much will happen in the rest of the world. No action is a choice. It is a choice that means we leave to chance the kind of future we want and opt out of the solution to a problem that we are a big part of.

We like to speak of American exceptionalism. If we want to be truly exceptional, then we should begin the difficult task of leading the world away from the unacceptable effects of our increasing appetites for fossil fuels before it is too late.

This is an extremely complex problem whose solutions are not straightforward. We believe this is no excuse for the complacency or not stepping up to our responsibility.

[The prepared statement of Mr. Ruckelshaus follows:]

Testimony of William D. Ruckelshaus

Before the Clean Air and Nuclear Safety Subcommittee

U.S. Senate Committee on Environment and Public Works

June 18th, 2014

Thank you Senators Whitehouse, Sessions and other members of the Subcommittee for convening this hearing on a matter of enormous consequence for our future.

Several months ago, after talking with one another, the four former EPA administrators sitting in front of you found we were convinced by the overwhelming verdict of scientists that the earth was warming and that we humans were the only controllable contributor to this phenomenon. Given those facts we all signed an op ed piece that recommended that America get serious about reducing our contribution to changing the world's climate rather than simply sitting back and accepting the avoidable consequences.

If anything, new reports in the last three months have made the need to act even more urgent. It is hard to believe that there is any question of that.

- The IPCC report validates in the strongest terms the science of climate change and the projected impacts.
- The National Climate Assessment documents impacts occurring here in this country right now.
- And a report from the CNA Corporation highlights the national security and military readiness concerns due to climate change.

We have, as EPA administrators, served four Presidents over four decades. We have successfully wrestled with a variety of public health and environmental problems, all contentious, including severe automobile and industrial air pollution, widespread water pollution and the unacceptable effects of pesticides like DDT.

We have made progress. We have cut automobile emissions, for example, by 95% and greatly improved air quality while the number of cars has doubled. The hole in the ozone layer and acid rain are under control.

Inherent in all of these problems was uncertain science and powerful economic interests resisting controls. The same is true of climate change. In all of the cases cited the solutions to the problems did not result in the predicted economic and social calamity. Scientific uncertainty or the inevitable industry resistance does not mean that nothing should be done unless we are willing to suffer the consequences of inaction.

We believe there is legitimate scientific debate over the pace and effects of climate change but no legitimate debate over the fact of the earth's warming or over man's contribution. The models of the world's leading scientists predict rising seas, drought, floods, wildfires, and more severe and frequent storms. We are seeing impacts already. Since the ocean absorbs 25-30% of the carbon from stationary or mobile sources we thought the ocean was our friend. It was keeping significant amounts of carbon from the atmosphere. But our friend is paying a penalty. The carbon from the burning of fossil fuels is causing the acidity of the ocean to rise and is already threatening shellfish, coral reefs and other ocean species. The culprit is the same carbon that originated from fossil fuels that is contributing to planetary warming.

We also know that if America does not get serious about our responsibility to deal with this problem nothing much will happen in the rest of the world. Not taking action is a choice. It is a choice that means

we leave to chance the kind of future we want, and opt out of the solution to a problem that we are a big part of.

We like to speak of American exceptionalism. If we want to be truly exceptional then we should begin the difficult task of leading the world away from the unacceptable effects of our increasing appetites for fossil fuels before it is too late.

This is an extremely complex problem whose solutions are not straightforward. We believe this is no excuse for complacency or not stepping up to our responsibility.

Responses from William D. Ruckelshaus
to questions from U.S. Senate Committee on Environment and Public Works
July 23, 2014

Senator Sheldon Whitehouse:

1. Before many environmental regulations are applied, dire consequences and worst fear outcomes are usually perpetuated. How did the worst fears and assumptions of bad outcomes from environmental regulations turn out in reality as the rules were applied in your own experience?

In my experience, when major regulations have been proposed, those opposed to them cite the high costs of compliance, economic and social, should they be implemented. The motivation to emphasize, and, perhaps to exaggerate those costs, is natural.

It is also my experience that when such regulations become final, after hearings and extensive comment, the motivation of those affected focus on driving down the costs of compliance through new technologies and other means.

I cannot recall any situation in my tenures at EPA when predictions of catastrophic costs as a result of a regulation ever materialized.

Senator Jeff Sessions:

1. What do you think should be the role of nuclear power in America's generating mix?

Nuclear Power with its improvement in safety and reduction in costs should play an important role in developing an American energy policy for the future.

Senator David Vitter:

1. Author and environmental activist Bill McGibben has written that "[y]ou can have a healthy fossil-fuel industry or a healthy planet, but you can't have both." Do you agree with this statement?

No. This is not an either or situation. As we have seen from other resource and environmental challenges, there is great potential in new technology that will allow us responsibly to use such resources even as we move to a low-carbon economy.

2. **Mr. McKibben has also written that “one way to fight the power [of fossil fuel companies] is to stop using fossil fuel.” Do you think this is realistic for consumers, in light of the fact that, as the International Energy Agency noted, “Despite all the attention given to renewable energy, fossil fuels still produce about four-fifths of the energy consumed worldwide?” Moreover, by 2050, the IEA projects that, even with its most aggressive carbon reduction scenario, fossil fuels would still provide 45 percent of global energy demand. Do you agree with this projection? More broadly, do you agree that, even as countries take steps to reduce carbon emissions, fossil fuels will continue to comprise a substantial portion of the global energy mix in the coming decades?**

I have not done any independent analysis of these projections by the International Energy Agency. It is a highly regarded, independent institution whose research is relied upon by governments and others around the world. Fossil fuels will undoubtedly be in the mix of energy sources in the years ahead. Prudence suggests to me that we should rapidly reduce our reliance on fossil fuels so as to reduce the risks of climate change.

3. **Mr. McKibben has written that a “huge problem with increased reliance on cheap natural gas: it undercuts the transition to zero-carbon energy sources like solar and wind power, locking us into long-term reliance on fossil fuels.” Do you agree with this statement? Do you believe that “reliance on cheap natural gas” has been harmful or helpful to the U.S. economy, particularly for consumers and manufacturers?**

Clearly access to low-cost natural gas has been helpful to the economy. Certainly the use of natural gas, from the perspective of climate change, is better than the use of coal or oil, absent any kind of carbon controls. The larger issue, however, involves the absence of a national energy policy that sets a long-term agenda to reach a low-carbon economy to meet the challenges of a changing climate. We, as a nation, would be far better off with such an energy policy, instead of the ad hoc approach we now take.

4. **Activist Naomi Klein wrote that “with the fossil-fuel industry, wrecking the planet is their business model. It’s what they do.” Do you agree with this statement?**

No.

5. **On November 3, 2013, climate scientists Kerry Emanuel, Tom Wigley, James Hansen, and Ken Caldeira, in an open letter to environmentalists, disputed the notion that world energy demand could be met with 100 percent renewables. Nuclear, they contend, must be part of the equation: “Renewables like wind and solar and biomass will certainly play roles in a future energy economy, but those energy sources cannot scale up fast enough to deliver cheap and reliable power at the scale the global economy requires. While it may be theoretically possible to**

stabilize the climate without nuclear power, in the real world there is no credible path to climate stabilization that does not include a substantial role for nuclear power.” Do you agree with the authors of this statement?

I agree that in a future low-carbon economy, nuclear power will play an important role. This is especially true given the current absence of storage technology that would address concerns about renewable power generation. I note, again, however, that the absence of any comprehensive national energy policy makes achieving our future energy goals more difficult and more expensive.

6. According to Ted Nordhaus and Michael Schellenberger of the Breakthrough Institute, “Whatever their merits as innovation policy, Germany’s enormous solar investments have had little discernible impact on carbon emissions. Germany’s move away from baseload zero-carbon nuclear has resulted in higher coal consumption since 2009. In 2012, Germany’s carbon emissions rose 2 percent.” Do you agree with this statement? Do you believe the U.S. should deploy more nuclear instead of relying on renewables to provide baseload power?

I think we should, going forward, push renewables very hard and include nuclear power in the mix.

7. According to an analysis by the *Economist* magazine, renewable energy targets in Germany are popular, but their economic consequences are not. As the *Economist* explained, consumers “increasingly dislike” the “side-effects” of subsidizing renewable energy. “First, there is the rising cost of electricity. This is a consequence of a renewable-energy law passed in 2000 which guarantees not only 20 years of fixed high prices for solar and wind producers but also preferred access to the electricity grid. As a result, Bavarian roofs now gleam with solar panels and windmills dominate entire landscapes. Last year, the share of renewables in electricity production hit a record 23.4%.”

The *Economist* explained further, “This subsidy is costly. The difference between the market price for electricity and the higher fixed price for renewables is passed on to the consumers, whose bills have been rising for years. An average household now pays an extra €260 (\$355) a year to subsidise renewables: the total cost of renewable subsidies in 2013 was €16 billion. Costs are also going up for companies, making them less competitive than rivals from America, where energy prices are falling thanks to the fracking boom.”

Do you believe that Germany’s renewable energy policies have delivered zero-carbon energy without harming consumers? Do you believe that states, as they attempt to meet EPA’s emissions targets under the proposed Clean Power Plan for existing power plants, can both deploy more renewable energy while doing so without raising the cost of electricity, or imposing higher costs to consumers?

We should examine all subsidies granted to energy production and use and determine which are moving us toward lower carbon in the most cost effective way possible.

- 8. Do you think the U.S. drilling boom, spurred by the technological advance of hydraulic fracturing, coupled with horizontal drilling, has been positive or negative for the U.S. economy, particularly for consumers?**

In the short term the United States economy has definitely benefited from hydraulic fracturing and horizontal drilling. Developing a sound energy policy also entails looking at potential long-term costs of refusing to factor in the risks of climate alteration. A careful examination of climate risks will show significant potential environmental and national security costs as well as economic ones.

- 9. Do you think EPA's Clean Power Plan will have a meaningful effect on reducing global greenhouse gas concentrations by 2030? Please explain how the Clean Power Plan will prevent rising sea levels, droughts, wildfires, and severe weather.**

EPA's Clean Power Plan will not solve the problem of climate change. NO single step will. America must lead or the combination of effective and efficient steps by the world will not materialize

- 10. Albert Einstein once famously stated that "the right to search for truth implies also a duty; one must not conceal any part of what one has recognized to be true." Do you agree with this statement?**

I do agree with the Einstein quote. My answers to questions i through ix would be the same as Mr. Reilly's as the sources I would rely on would be the same. Therefore I incorporate by reference Bill Reilly's responses.

- 11. As you are at least tangentially aware, fossil resources provide the base molecules and products that we need to manufacture virtually everything we use in a modern society. In fact, coal combustion byproducts are what comprise, strengthen and make possible our roads and infrastructure. Chemicals derived from oil and natural gas production are what are refined and manufactured into virtually every product we use today, from computers to our homes, and are what make possible wind turbines (all components derived, manufactured or refined from fossil fuels) and solar panels (all components derived, manufactured or refined from fossil fuels). Accordingly, many claims about eliminating our use of fossil resources are wholly illusory. However, in order to provide a better understanding of some of your claims regarding our nation's dependence on these resources, other than counting intermittent electricity generation as a product, please provide a comprehensive list of all the things that are a product or can be manufactured out of sunlight and wind (again, please exclude electricity).**

The sun, through the process of photosynthesis (see answer to Q. 20), creates directly, and indirectly the food that sustains life on this planet.

The wind, harnessed by early explorers, led to the discovery of much of the Western Hemisphere including America. In the absence of electricity, wind also provided the power to run machinery throughout the world.

12. As EPA Administrator, you acted to ban DDT. Were you ever advised against taking action on banning DDT due to the science on DDT health effects?

The decision was based on balancing the risks of the continued use of DDT against the benefits in the United States. I decided the risks outweighed the benefits – not all agreed. The reasons for this are spelled out in my decision. (Attachment I to this response.)

13. Were you associated with any environmental organization at the time of your decision?

No, and never while at EPA.

14. In what year did you first start fundraising for the Environmental Defense Fund? And how much money in total would you estimate you've helped raise for EDF?

I have never raised money for EDF.

15. In 2006 the World Health Organization lifted the ban on DDT. The toll of the ill-advised ban following EPA's lead was measured in human lives (millions dead-mostly pregnant women and children under the age of 5), illness (billions sickened) and poverty (more than \$1 trillion dollars in lost GDP in sub-Saharan Africa alone). Do you have any regrets for your decision?

My decision, under the terms of the statute I administrated, affected only the United States, where malaria was not an issue. Of course the Congress did not direct me to strike this balance for any other country and I did not.

16. Did you disagree with the WHO's decision on DDT? If so, please explain why and what science you use to support your disagreement.

The WHO recommended the use of DDT in 2006 to control malarial mosquitos in those countries where malaria is a problem. As I have said many times, had I been so charged, I would have made the same decision.

17. In your own estimates, how many people have died as a result of your banning of DDT?

Where the decision applied (the U.S.) none have died to my knowledge.

18. Has the EPA ever made any other decisions on a chemical that resulted in more deaths than your banning of DDT?

See answer to #17.

19. Are you still affiliated with any environmental organization now? If so, which organizations?

I am Chairman Emeritus of the World Resources Institute.

20. Please explain the process of photosynthesis.

New Oxford Dictionary defines photosynthesis as the following:

The process by which green plants and some other organisms use sunlight to synthesize foods from carbon dioxide and water.

21. How many parts per million (ppm) do humans inhale of CO₂ when they breathe? How many ppm do humans exhale when they breathe?

I have no data on this question.

22. Of all the “pollutants” regulated by the Clean Air Act and EPA, please provide a list of all those humans exhale at a greater rate than they inhale and at what rate in ppm are they exhaled?

I have no data on this question

23. It has been claimed about you that “it was, of course, then-Environmental Protection Agency administrator William Ruckelshaus who actually banned DDT after ignoring an EPA administrative law judge’s ruling that there was no evidence indicating that DDT posed any sort of threat to human health or the environment. Ruckelshaus never attended any of the agency’s hearings on DDT. He didn’t read the hearing transcripts and refused to explain his decision.

None of this is surprising given that, in a May 22, 1971, speech before the Wisconsin Audubon Society, Ruckelshaus said that EPA procedures had been streamlined so that DDT could be banned. Ruckelshaus was also a member of – and wrote fundraising letter for – the EDF”.

Please explain which if any of the above statements you disagree with and why.

(See attachment I) In that decision, as stated, I specifically weighed the risks of the continued use of DDT against the benefits. That’s what the statute directed me to do. The opinion speaks for itself on this subject. In writing the decision I made extensive use of the transcripts of the earlier hearing before the administrative law judge. I was, in effect,

under the statute, acting as an Appellate Judge. It would not have been appropriate for me to sit in while the ALJ was conducting his proceedings.

I sat through the entire two day argument appealed to me as Administrator – consistent with the procedure laid out in the statute. My decision was unanimously affirmed upon appeal to the D.C. Court of Appeals on December 13, 1973 as supported by “substantial evidence”. (See attachment II the Court of Appeals decision).

I have never raised money for EDF or said “EPA procedures had been streamlined so that DDT could be banned.”

24. Do you believe environmental activists groups should be held liable for false claims similarly to the way businesses are held accountable for false claims?

Everyone, including members of Congress, should be held accountable for false claims. Whether this creates legal liability depends on the facts surrounding the claim.

25. Please explain if you disagree with any of these statements and why:

“Finally, there is the question of the World Health Organization itself. What’s the WHO been doing for all these years? There are no new facts on DDT – all the relevant science about DDT safety has been available since the 1960s. Moreover, the WHO’s strategy of mosquito bednets and malaria vaccine development has been a dismal failure. While the death toll in malarial regions has mounted, the WHO has been distracted by such dubious issues as whether cell phones and French fries cause cancer. It’s a relief that the WHO has finally come to its senses, but on the other hand, the organization has done too little, too late. The ranks of the WHO’s leadership need to be purged of those who place the agenda of environmental elitists over the basic survival of the world’s needy.”

I am not familiar with the operations of the WHO so I can’t help you on this question.

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

In The Matter Of Stevens Industries, Inc., Et Al.

I.F. & R. Docket Nos. 63, et al. (Consolidated DDT Hearings)

United States Environmental Protection Agency
Environmental Appeals Board

1972 EPA App. LEXIS 2; 1 E.A.D. 9

June 2, 1972

PANEL:

[*1]

Before the Administrator, U.S. Environmental Protection Agency; Opinion by William D. Ruckelshaus

OPINION OF THE ADMINISTRATOR

This hearing represents the culmination of approximately three years of intensive administrative inquiry into the uses of DDT. Part I sets forth the background of these proceedings and Part II contains a discussion of the evidence and law and my factual conclusions. I am persuaded for reasons set forth in Part III of this opinion that the long-range risks of continued use of DDT for use on cotton and most other crops is unacceptable and outweighs any benefits. Cancellation for all uses of DDT for crop production and non-health purposes is hereby reaffirmed and will become effective December 31, 1972, in accordance with Part V of this opinion and the accompanying order, except that certain uses, for green peppers, onions, and sweet potatoes in storage may continue on terms and conditions set forth in Part V of this opinion and the accompanying order.

1

A. BACKGROUND

DDT is the familiar abbreviation for the chemical (1,1,1, trichlorophenyl ethane), which was for many years the most widely used chemical pesticide in this country. DDT's [*2] insecticidal properties were originally discovered, apparently by accident, in 1939, and during World War II it was used extensively for typhus control. Since 1945 DDT has been used for general control of mosquitos, boll weevil infestation in cotton-growing areas, and a variety of other uses. Peak use of DDT occurred at the end of the 1950's and present domestic use of DDT in various formulations has been estimated at 6,000 tons per year. n1 According to Admission 7 of the record, approximately 86% or 10,277,258 pounds of domestically used DDT is applied to cotton crops. The same admission indicates that 603,053 pounds and 937,901 pounds, or approximately 5 and 9% of the total formulated by twenty-seven of the petitioners in these hearings are used respectively on soybean and peanut crops. All other uses of the 11,966,196 pounds amount to 158,833 of the total, or little over 1 percent. n2

n1 Admission 6 shows that domestic shipments of DDT by its sole manufacturer, Montrose Chemical Company, totaled 8,827,900 pounds between January 1 and August 1, 1971. Total domestic sales in 1970 were 11,966,196, as stipulated in Admission No. 7. The Examiner found, apparently based on Admission 7, that domestic use in 1970 "was just under 12 million pounds." Exam. Report at 92.

Counsel for the Agency has called to our attention publication of the Department of Agriculture, *The Pesticide Review of 1971*, which estimates "a domestic disappearance" rate of 25,457 pounds for DDT in 1970. See p. 24. The motion to incorporate this publication is granted, as is the motion by registrants to supplement the record, see infra. I do not believe, however, that the Pesticide Review figure can be accepted, on its face, without further explanation. Since the result I reach today would, if anything, only be reinforced by the higher figure, I see no need to remand. [*3]

n2 Some discrepancy in the figures exists since the figures given in breakdown of use categories total

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

11,977,065 pounds, slightly more than the total sold by the twenty-seven formulators who supplied figures. For the above uses it appears that DDT is sold in four different formulations: emulsifiable sprays; dust; wettable powder; and granular form.

Public concern over the widespread use of pesticides was stirred by Rachel Carson's book, *Silent Spring*, and a natural outgrowth was the investigation of this popular and widely-sprayed chemical. DDT, which for many years had been used with apparent safety, was, the critics alleged, a highly dangerous substance which killed beneficial insects, upset the natural ecological balance, and collected in the food chain, thus posing a hazard to man, and other forms of advanced aquatic and avian life. In 1969 the United States Department of Agriculture commenced a review of the health and environmental hazards attendant to the use of DDT.

Certain uses of DDT were canceled by the Department of Agriculture in 1969 and informal review of remaining uses continued [*4] through 1970. n3 In early 1971 this Agency commenced formal administrative review of DDT registrations by the cancellation of all registrations for DDT products and uses pursuant to Section 4(c) of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) 7 U.S.C. § 135 (1972). n4

n3 PR Notice 69-17. Among the canceled uses were applications to trees for control of Dutch Elm disease, tobacco, home uses, and aquatic uses. 34 Fed. Reg. 18827 (1969).

n4 In *Environmental Defense Fund v. Ruckelshaus*, 439 F.2d 584 (D.C. Cir. 1971), the Court of Appeals held that cancellation proceedings should be commenced whenever a registration of a pesticide raises a "substantial question of safety" which warrants further study. On January 15, 1971, all uses of DDT not canceled in 1969 were canceled. PR Notice 71-1. And on March 18, 1971, notices of cancellation were issued for all registered uses of TDE, a DDT metabolite. PR Notice 71-5.

[*5]

B. STATEMENT OF THE CASE

This hearing is the final stage of formal administrative review. n5 Thirty-one registrants have challenged fifteen of the canceled uses of DDT and its metabolite, TDE. n6 These uses of DDT include applications to cotton fields to control the boll weevil and bollworm, applications to various vegetable crops, and a variety of lesser uses in public programs. The case for cancellation has been presented by counsel for the Pesticides Office of the Environmental Protection Agency and attorneys for the Environmental Defense Fund which is an intervenor. Other parties include Eli Lilly & Co., which held a DDT registration for "topocide," a prescription drug, n7 H. P. Cannon & Son, a user of DDT, n8 and representatives of the chemical manufacturing industry and various wildlife groups. n9

n5 Under FIFRA a registrant is entitled to either a public hearing or a scientific advisory committee or both to review his registration. Pending completion of that review, a registrant is allowed to continue shipment of his product.

n6 Unless specified, discussion of DDT in this opinion applies to TDE. DDT has three major breakdown products, DDA, DDE, and DDD; separate registrations exist for TDE (DDE). [*6]

n7 There has been some controversy over Eli Lilly's status because it failed to appeal cancellation of its registration within 30 days as required by Section 4(c) of FIFRA. For the purposes of this case I believe they should be accorded status as parties.

n8 There has been some question as to whether or not a "user" has standing to appeal a cancellation and thus seek reinstatement of a canceled use even though no registrant has stepped forward to appeal. The same reasoning employed by the court in *Environmental Defense Fund v. Ruckelshaus*, *supra*, and *Environmental Defense Fund v. Hardin*, 428 F.2d 1093 (D.C. Cir. 1970), which accords standing to "public interest" groups gives "users" a right to appeal a cancellation.

n9 The groups are: National Agricultural Chemicals Association; National Audubon Society; The Sierra Club; and West Michigan Environmental Action Council. As already noted, the Secretary of Agriculture, in addition to being a party-registrant by virtue of registrations held by its Plant Regulation Division, has appeared as an intervenor.

[*7]

The testimony and exhibits cover in exhaustive fashion all aspects of DDT's chemical and toxicological properties. The evidence of record, however, is not so extensive concerning the benefits from using DDT, and most of it has been directed to the major use, which is on cotton crops. n10

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

n10 The following uses are involved: for cotton; for military use on clothing; for peppers and pimentos; for fresh market corn; for peanuts; for cabbage, cauliflower, and brussel sprouts; for tomatoes; for lettuce; for potatoes; for sweet potatoes in storage (southern states only); for use in commercial greenhouses and nurseries; for beans (dry, lima, snap); for bat and rodent control; for emergency use for agriculture, health or quarantine purposes; and for onions and garlic; and for lice control. There has been considerable controversy as to what uses were at issue during the hearing. Admission No. 2 sets forth those uses which the Department of Agriculture considers essential. Many of those uses have been canceled and no appeal was taken. The uses at issue in this hearing are only those noted in Admission 11.

[*8]

The Pesticides Office and Environmental Defense Fund (EDF), in presenting their cases against continued registration for DDT, lean most heavily on evidence which, they contend, establishes: (1) that DDT and its metabolites are toxicants which persist in soil and the aquasphere; (2) that once unleashed, DDT is an uncontrollable chemical which can be transported by leaching, erosion, run-off and volatilization; (3) that DDT is not water-soluble and collects in fat tissue; (4) that organisms tend to collect and concentrate DDT; (5) that these qualities result in accumulations of DDT in wildlife and humans; that once stored or consumed, DDT can be toxic to both animals and humans, and in the case of fish and wildlife inhibit regeneration of species; and (7) that the benefits accruing from DDT usage are marginal, given the availability of alternative insecticides and pest management programs, and also the fact that crops produced with DDT are in ample supply. The testimony and exhibits include numerous reports of expert scientists who have described observed effects of DDT in the environment and the laboratory.

Group Petitioners and the United States Department of Agriculture (USDA) [*9] seek to discredit the Agency's case by citing the record of safety DDT has compiled throughout the years, and point to the negative findings of epidemiological and human feeding studies carried out over the years on industrial workers and volunteers exposed to concentrated levels of DDT far in excess of that to which the average individual is exposed. Proponents of continued registration have also introduced expert testimony to the effect that DDT's chronic toxicity to man or animals has not been established by adequate proof. The registrants have attacked the assumption that laboratory data, as to effects of exaggerated doses of DDT, can provide a meaningful basis for extrapolating effects on man or the environment. In the alternative, Group Petitioners contend that whatever harm to the environment might be attributed to DDT, it results from misuse and overdosing that occurred in years past. Lastly, Group Petitioners and USDA have attempted to prove that DDT is effective and that its use is more desirable than the organophosphates which are more acutely toxic and costly than DDT.

On April 25, the Hearing Examiner issued an opinion with proposed findings, conclusions and orders [*10] recommending that all "essential" uses of DDT be retained and that cancellation be lifted. n11 The Examiner's report which has findings, conclusions and an opinion, is attached as an appendix. The Examiner apparently accepted in his report the Agency's proof that DDT is a hazard to aquatic and terrestrial wildlife and substitutes exist. He found, as a "matter of fact," DDT can have adverse effects on beneficial animals; that it is transferred through the food chain; that DDT is fat soluble. He concluded, however, as a "matter of law," that DDT is neither a carcinogen nor teratogen, that the particular uses at issue do not adversely affect wildlife, that DDT use has rapidly declined. Examiner's Rept. p. 93.

n11 There is some confusion as to what the term "essential" means. By Admission number 2 the parties stipulated that certain uses were "essential" in the view of USDA. No stipulation exists that these uses are, in fact, essential in that no alternatives exist or that a shortage of a crop would result without DDT.

[*11]

The Pesticides Office of this Agency and intervenor Environmental Defense Fund (EDF) filed exceptions to the Examiner's report, n12 challenging his application of the burden of proof to this case, his findings of fact, conclusions of law, and numerous evidentiary rulings. Exception was also taken to the Examiner's application of the so-called "risk and benefit" standard of FIFRA.

n12 Exceptions have also been received in Docket 106, *In Re Wallerstein*. Stark Bros. Nurseries held a registration for use of DDT on nursery plants. The Examiner recommended cancellation on the grounds that this was not an "essential" use according to USDA.

On May 2, 1972, the Judicial Officer propounded by order, at my direction, a series of questions for briefing and discussion at oral argument, and oral argument was held on May 16. That argument was transcribed and is part of this record. Group Petitioners, USDA, Eli Lilly and H.P. Cannon & Sons have also responded to the briefs on exceptions.

II

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

A. *APPLICABLE LAW*

The [*12] basic FIG scheme has been outlined in court opinions and Agency decisions (see *EDF v. EPA*, D.C. Cir. Slip. Op. 71-1365, F.2d , May 5, 1972) (Opinion of Judge Leventhal); *Stearns Elec. Paste Co. v. EPA*, 7th Cir. Slip Op. No. 71-1112, F.2d , May 11, 1972; *Continental Chemiste Co. v. EPA*, 7th Cir. Slip Op. No. 71-1828, F.2d , May 11, 1972; *EDF v. Ruckelshaus* (Opinion of Judge Bazelon, *supra*; Statement of Reasons concerning the Registration of Products Containing DDT, 2,4,5-T, and Aldrin/Dieldrin, March 18, 1972; *In re Hari-Kari Lindane Pellets, et al.*, I.F.&R. No. 6 (1971). While there is no need to trace in detail once again the statutory scheme, a brief summary provides a useful prism for filtering the evidence.

1. *FIFRA*

The Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. § 135 (1972), establishes a strict standard for the registration of pesticides. Any "economic poison" which cannot be used without injury to "man or other vertebrate animals, vegetation, and useful invertebrate animals" is "misbranded", n13 and is therefore subject to cancellation.

[*13] n14

n13 Sections 2(z) (2)(c), (d) and (g), respectively provide:

The term 'misbranded' shall apply--

(a) to any economic poison

(c) if the labeling accompanying it does not contain directions for use which are necessary and if complied with adequate for the protection of the public;

(d) if the label does not contain a warning or caution statement which may be necessary and if complied with adequate to prevent injury to living man and other vertebrate animals, vegetation, and useful invertebrate animals;

(g) if in the case of an insecticide, nematocide, fungicide, or herbicide when used as directed or in accordance with commonly recognized practice it shall be injurious to living man or other vertebrate animals, or vegetation, except weeds, to which it is applied, or to the person applying such economic poison;

n14 Section 4 permits the Administrator to cancel a registration "if it appears that 'the article and its labeling * * * do not comply with [the Act]'. Since the Act prohibits distribution of a "misbranded" pesticide, Section 3(a)(5), the registration for a "misbranded" product may be canceled.

[*14]

While the language of the statute, taken literally, requires only a finding of injury to non-target species, the inquiry cannot, however, end with a simplistic application of this plain statutory language. Both judicial and administrative precedent recognize that Congress intended the application of a balancing test, that would measure the risks of using a particular chemical against its benefits. n15 If a product is "misbranded" within the meaning of the Act, *i.e.*, if it bears a label for use that does not meet the criteria of Section 2, it may no longer be shipped in interstate commerce and stocks in hand in the original package may be seized. 7 U.S.C. § 135(g) (1972).

n15 See *EDF v. EPA* (Opinion of Judge Leventhal), *supra*; *EDF v. Ruckelshaus* (Opinion of Judge Bazelon), *supra*, DDT Statement of Reasons, *supra*; see also Statement of Reasons Underlying Suspension and Cancellation of Products Containing Mercury, 37 Fed. Reg. 6419 (1972).

[*15]

2. *RISKS AND BENEFITS*

It follows from the statutory scheme and this Agency's decisions that evidence of each alleged risk must be reviewed and a conclusion reached as to whether or not, and in what degree, such risk is incident to the directed use of a particular product. The task, however, is complicated in the case of a "persistent" pesticide by its possible chronic effects. The degree of persistence, extent of overall usage and mobility all bear on the amplitude or indeed the existence of the risk curve. n16 I believe, however, it is useful to isolate the alleged risks and evaluate each on the

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

assumption that they are unaffected by overall levels of use, and defer to Part IV the discussion of the significance of the relationship between risk and overall use.

n16 Other factors bearing on risk may include the geographical location of application, *see, e.g.*, Statement of Reasons Underlying Registrations for Strychnine, 1080, and Sodium Cyanide, 37 Fed. Reg. 5718 (1972), although this may not be as significant where the chemical is highly volatile as is the case with DDT. *See also* Statement of Reasons Underlying the Cancellation of Mirex, Determination and Order of the Administrator at 7, 32 Fed. Reg. 106 (June 1, 1972).

[*16]

III

A. ANALYSIS OF EVIDENCE

1. RISKS

a. Health Effects and Environmental Properties. There is no dispute on this record that DDT is a non-specific chemical that kills both target and non-target species in the immediate area of application. Few chemicals, however, are so selective that they can be used without causing some injury to "non-target" species. We must therefore proceed to the evidence bearing on other "risks" and the "benefits" from using DDT.

I am convinced by a preponderance of the evidence that, once used DDT is an uncontrollable, durable chemical that persists in the aquatic and terrestrial environments. Given its insolubility in water and its propensity to be stored in tissues, it collects in the food chain and is passed up to higher forms of aquatic and terrestrial life. There is ample evidence to show that under certain conditions DDT or its metabolites can persist in soil for many years, n17 that it will volatilize or move along with eroding soil. n18 While the degree of transportability is unknown, evidence of record shows that it is occasionally found in remote areas or in ocean species, such as whales, far from any known area of application. [*17]

n17 Method of application and type of soil and climate can affect persistence in soil and likewise run-off into aquatic areas.

n18 Registrants have made much of the fact that aquatic contamination and the spread of DDT have resulted from drift during aerial application. While the Examiner's Report dwells at some length on improved methods of application, it recognizes run-off as a significant source of aquatic contamination, even with improved aerial spraying techniques.

Persistence and biomagnification in the food chain are, of themselves, a cause for concern, given the unknown and possibly forever undeterminable long-range effects of DDT in man, and the environment. n19 Laboratory tests have, however, produced tumorigenic effects on mice when DDT was fed to them at high levels. n20 Most of the cancer research experts who testified at this hearing indicated that it was their opinion that the tumorigenic results of tests thus far conducted are an indicator of carcinogenicity and that DDT should be considered a [*18] potential carcinogen. n21

n19 It is particularly difficult to anticipate the long-range effects of exposure to a low dose of a chemical. It may take many years before adverse effects would take place. Diseases like cancer have an extended latency period. Mutagenic effects will be apparent only in future generations. Lastly, it may be impossible to relate observed pathology in man to a particular chemical because of the inability to isolate control groups which are not exposed in the same degree as the rest of the population.

n20 Tumorigenic effects have been noted in a number of laboratory experiments. The most positive results were developed by the Bionetics Study and the Lyons and Milan tests. The Bionetics Study of the National Cancer Institute fed 120 compounds to two strains of mice. DDT was one of 11 compounds to produce an elevated incidence of tumors. The Lyons and Milan Studies of the International Agency for Research of the World Health Organization is a multigenerational study (still in progress) of 6,000 mice of in and outbred strains. Increased hepatomas were noted in male and female mice fed DDT at 250 ppm. Metastasis to the lungs or kidneys has been recorded in five instances. [*19]

n21 Witnesses testifying to the positive correlation between tumorigens and carcinogens were Dr. Umberto Saffiotti, Associate Scientific Director for Carcinogenesis, Etiology Area, National Cancer Institute; Dr. Marvin Schneiderman, Associate Chief, Biometry Branch and Associated Director for Demography, National Cancer Institute; Dr. Samuel Epstein, Senior Research Associate in Pathology, Children's Cancer Research Foundation,

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9
Inc., Boston.

Group Petitioners argue that the testimony is in conflict and fasten on to the testimony of the Surgeon General and that of Drs. Loomis and Butler. The Surgeon General's Statement was, however, cautious and, by no means, carries the burden that the Group Petitioners seek to place on it. In very general terms the Surgeon General stated: "We have no information on which to indict DDT either as a tumorigen or as a carcinogen for man and on the basis now available, I cannot conclude DDT represents an imminent health hazard." (Tr. 1350.) This testimony, however, does not bear on the long-term effects of DDT, nor did the Surgeon General express a view on [*20] what uses, apart from health uses, would justify continued use of DDT. Indeed, the entire thrust of the Surgeon General's testimony was only that use for immediate health needs outweighs the possible long-range effects of DDT on human health. Group Petitioners' other witnesses, Drs. Loomis and Butler, while men of stature in their fields--toxicology and pathology--and knowledgeable about cancer treatment and diagnosis, are not specialists in cancer research as is Dr. Saffiotti. Indeed, Dr. Butler disclaimed such expertise.

Group Petitioners also take refuge under a broad canopy of data--human feeding studies and epidemiological studies--and support it with the increasingly familiar argument that exposure to any substance in sufficient quantities may cause cancer.

None of the feeding studies carried out with DDT have been designed adequately to detect carcinogenicity; and given the latency period of cancer, these studies would have to be carried out for a much longer period. Statistical population samples for epidemiological studies are also virtually impossible given the latency period for cancer and the long-term exposure of the general population. Since there is no sharp distinction [*21] between population groups exposed to low doses and higher doses of DDT, adequate control groups cannot be established. The "everything is cancerous argument" falls because it ignores the fact that not all chemicals fed to animals in equally concentrated doses have produced the same tumorigenic results.

b. Environmental Effects. The case against DDT involves more, however, than a long-range hazard to man's health. The evidence presented by the Agency's Pesticides Office and the intervenors, EDF, compellingly demonstrates the adverse impact of DDT on fish and birdlife. Several witnesses testified to first-hand observed effects of DDT on fish and birdlife, reporting lethal or sub-acute effects on aquatic and avian life exposed in DDT-treated areas. Laboratory evidence is also impressively abundant to show the acute and chronic effects of DDT on avian animal species and suggest that DDT impairs their reproductive capabilities. n22

n22 See the testimony of Drs. Tarzwell, Nicholson, Philip Butler, Duke, Burdick, Dimond, Risebrough, Hickey, and Cade.

While the Examiner erroneously excluded testimony as to economic losses caused by DDT's contamination of the aquatic environment--losses to commercial fishermen caused by inability to market contaminated fish-- this risk is significant, even if it could not be economically quantified. Not all risks can be translated into dollars and cents, nor can all benefits be assessed in cash terms.

[*22]

The Petitioner-registrants' assertion that there is no evidence of declining aquatic or avian populations, even if actually true, is an attempt at confession and avoidance. It does not refute the basic proposition that DDT causes damage to wildlife species. Group Petitioners' argument that DDT is only one toxic substance in a polluted environment, and thus, whatever its laboratory effects, it cannot be shown to be the causative agent of damage in nature, does not redeem DDT, but only underscores the magnitude of effort that will be necessary for cleaning up the environment. Were we forced to isolate in nature, rather than in the laboratory, the effects of various toxic substances, it would be difficult if not impossible to make a judgment as to the chronic effects of any chemical. As our DDT Statement of March, 1971, has noted: "Development of adequate testing protocols and facilities is a priority undertaking. But in the short term, extrapolation from small-scale laboratory analyses must err on the side of safety." See DDT Statement of Reasons, at 11.

Finally, I am persuaded that a preponderance of the evidence shows that DDE causes thinning of eggshells in certain bird species. [*23] The evidence presented included both laboratory data and observational data. Thus, results of feeding experiments were introduced to show that birds in the laboratory, when fed DDT, produced abnormally thin eggshells. In addition, researchers have also correlated thinning of shells by comparing the thickness of eggs found in nature with that of eggs taken from museums. The museum eggs show little thinning, whereas eggs taken from the wild after DDT use had become extensive reveal reduced thickness.

Group Petitioners and USDA argue that the laboratory feeding studies, conducted with exaggerated doses of DDE and under stress conditions, provide no basis for extrapolating to nature. They suggest that the study results are contradictory and place particular emphasis on documents which were not part of the original record and the inconsistencies in Dr. Heath's testimony as brought out during cross-examination. Group Petitioners also contend that

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

the observed phenomenon of eggshell thinning and DDE residue data are tied by a statistical thread too slender to connect the two in any meaningful way.

Viewing the evidence as a total picture, a preponderance supports the conclusion that DDE [*24] does cause eggshell thinning. Whether or not the laboratory data above would sustain this conclusion is beside the point. For here there is laboratory data and observational data, and in addition, a scientific hypothesis, which might explain the phenomenon.

n23

n23 The chief witness introduced to rebut Drs. Risebrough, Hickey and Cade was a graduate student with limited training in statistical analysis. In view of the credentials of EDF's witnesses--Dr. Hickey, Professor of Wildlife Ecology at College of Agriculture, University of Wisconsin; Dr. Rosebrough, Associate Ecologist, University of California at Berkeley; and Dr. Cade, Professor of Zoology at Cornell and Research Director of Cornell Ornithology Laboratory--I cannot credit this attempt at rebuttal.

The Hearing Examiner apparently resolved the conflict in the evidence by concluding that "there was no evidence that DDT was the only factor in a decline of bird populations * * *" and that no evidence "focused its direct thrust on damage to birds by the uses of DDT that are permitted under the registrations in question." Examiner's Report, 70-71. In view of DDT's persistence and mobility, evidence as to the causal effect of these uses was not required.

At argument and by motion Group Petitioners have offered additional evidence, some of which bears on the issue of eggshell thinning. I have granted that motion and considered all that data.

[*25]

B. Benefits

1. Cotton

I am convinced by the evidence that continued use of DDT is not necessary to insure an adequate supply of cotton at a reasonable cost. Only 38% of cotton-producing acreage is treated with DDT, although the approximately 10,277,258 pounds used in cotton production is a substantial volume of DDT and accounts for most of its use. The record contains testimony by witnesses called by registrants and USDA attesting to the efficacy of organophosphate chemicals as substitutes for DDT and, long-range, the viability of pest management methods, such as the diapause program. At present most areas that use DDT combine it with an organophosphate and toxaphene that use DDT combine it with an organophosphate and toxaphene in a 4-2-1 mixture (4 lbs. toxaphene, 2 DDT, 1 methyl parathion). Some areas, however, according to the testimony, which normally use DDT occasionally apply concentrated methyl parathion in a 4-lb. mixture.

There is evidence that organophosphates would not raise costs to the farmer and might, indeed, be cheaper. Any suggestion that the organophosphates are not economically viable cannot be maintained in face of the undisputed evidence that [*26] cotton continues to be tenable crop in Arkansas and Texas where DDT use has declined. n24

There is also testimony in the record to the effect that methyl parathion costs less per application than the DDT-toxaphene formula. Nor are the testimony and exhibits that show cotton insects develop resistance to organophosphate chemicals to the point. The very same exhibits make clear that DDT is also subject to resistance. n25

n24 The parties have referred neither in briefs nor argument to testimony or exhibits describing in detail the economics of cotton production or substitutes. There is general testimony that cotton producers receive a per bushel subsidy and that this subsidy is the difference between profit and break-even. It is not clear whether or not breakeven includes a return to the farm owner in terms of salary or return on his investment. While some evidence suggests that organophosphates are more costly, because of higher price and the need for repeated applications in concentrated quantities, there is little to suggest that the possible increased variable cost from use of organophosphates would be a disincentive to producers. Indeed, with subsidies it is not clear what rate of return a cotton producer receives for invested capital. There was a reference made to an unidentified study showing that the cost of using substitutes would involve \$ 15 million. This figure alone has no meaning. While later testimony suggests that elimination of DDT would increase variable costs per acre by 5%, this, too, is of limited significance since the record does not relate it to the support program and the study looked at only a limited area. [*27]

n25 I cannot accept the suggestion that we should continue to use DDT until it is good to the very last drop.

Whatever the long-term efficacy of the organophosphates the fact remains that they generally work. While the fact of insect resistance is important and underscores the need for retaining a variety of chemicals or methods to manage the same pest problem, this fact does not justify an avoidable use of a harmful chemical.

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

Group Petitioners and USDA, while not disputing the lesser persistence of organophosphates, have stressed their demonstrated acute toxicity. While they are toxic to beneficial soil insects and non-target species, particularly birds alighting on treated fields, these organophosphates break down more readily than DDT. They apparently are not transported in their toxic state to remote areas, unlike DDT which has been found far from treated areas, and consequently do not pose the same magnitude of risk to the aquasphere. Both testimony and exhibits also demonstrate that organophosphates are less acutely toxic to aquatic life, although different compounds have different toxicities. [*28] The effect of organophosphates on non-target terrestrial life can, unlike the effects of DDT, also be minimized by prudent use. Application in known nesting areas for rare or extinct birds can be avoided.

2. Other Crop and Produce Uses

The testimony of record, while sparse, shows that registered alternatives, primarily organophosphates, exist for all other crop and ornamental uses of DDT, except for storage use on sweet potatoes to control weevils, on heavy corn borer infestations of green peppers, and perhaps onions. n26

n26 Toxaphene and diazinon are registered for control of cutworms but it is not clear from the record as to whether or not these chemicals are registered or effective to control cutworm infestations on onions. While none of the parties have pointed to helpful evidence in connection with use for controlling cutworms on onions and weevils on stored sweet potatoes, I have taken judicial notice of the non-existence of registered alternatives.

3. Non-Crop Uses

In addition to the registrations [*29] for use on crops and in nurseries, several registrations for non-crop uses are also in issue. Admission 11 lists "public health pests--bats and rodents," "Agricultural, Health and Quarantine Treatments in Emergencies as Recommended by and Under Direction of State-federal Officials" and "fabric treatment" by the military.

The record is not, unfortunately, well developed as to the scope or method of application for these uses nor as to the overall volume applied for these purposes. While use for bat and mice control is characterized in Admission 11 as a "public health use," application for these purposes is not supervised by public health officials. The briefs suggest that use for control of bats and mice is a proprietary use by the military, even though a private pest control operator testified that use for bats was considered essential by private operators. n27 With respect to "Agricultural and Quarantine" uses it is difficult to determine to what extent applications are for health purposes or for nuisance prevention.

n27 The only evidence as to the amount of DDT used for these purposes was given by Col. Fowler, who said the-total used by the military for bat and mouse control is approximately 800-900 pounds.

[*30]

With respect to all of these uses, both for public health programs and proprietary use, alternatives do exist. The Public Health Service testified that DDT is no longer the chemical of choice for controlling disease vectors. As for mice, warfarin is used effectively, and fumigation and nonchemical means are available for use on bats. Colonel Fowler testified that the military has not used DDT in this country for two years for mothproofing purposes and stated that he was aware of alternatives.

C. Weight To Be Accorded the Examiner's Opinion

In reaching the factual conclusions set forth in the preceding sections, I have been mindful of Group Petitioners' argument, stressed in their briefs and at oral argument, that the Hearing Examiner's findings deserve particular deference in view of his opportunity to resolve contradictions in testimony based on demeanor evidence.

Nowhere does the Examiner state that his conclusions were based on credibility choices. n28 Whatever extra weight, then, that might be due findings based expressly on a credibility judgment is not appropriate in the case before me. See, e.g., *NLRB v. Dinion Coil Co.*, 201 F.2d 484 (2d Cir. 1952) [*31] where the Examiner's report set forth his assessment of the witnesses' credibility. n29

n28 During oral argument counsel admitted that the Examiner's report did not purport to make findings based on credibility of witnesses, nor could he point to findings which might be explained in light of a credibility contest. (Transcript of Argument, p. 9698.) The basic questions of fact in this case, the hazard to man and the environment, were cast and resolved by the Examiner as "conclusions of law."

n29 The precedents, moreover, make clear that the Agency is free to make its own findings and that the Examiner's findings and report only comprise part of the record which a court will then evaluate. *FCC v. Allentown Broadcasting Corp.*, 349 U.S. 358 (1955); *Universal Camara Corp. v. NLRB*, 340 U.S. 474 (1951).

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

Even where an Examiner's findings are based on credibility, the Agency may reach a contrary conclusion. See *FCC v. Allentown Broadcasting Corp.*, *supra*.

[*32]

IV

The application of the risk-benefit test to the facts of record is, by no means, simple. We have noted in our Statement of March 18, 1971, that the variables are numerous. It should also be borne in mind that the variables are not static in point of time. As build-up of a chemical occurs or is detected in the environment, risk increases. Indeed, it may be that the same tendency of a chemical to persist or build up in the food chain is present but not known about substitute chemicals. It may also be that circumspect application of a chemical in limited quantities for those uses most necessary changes the benefit-risk coefficients so as to tilt the scales differently than when we weigh aggregate use for all purposes against aggregate benefits. See generally *EDF v. EPA* (Opinion of Judge Leventhal), *supra*.

A. Burden of Proof

The crux of a cancellation proceeding is the safety of the product when used as directed or in accordance with "commonly recognized practice." *Stearns Phosphorus Paste Co. v. EPA*, *supra*. This, simply stated, means that this Agency has the burden of going forward to establish those risks which it believes to require cancellation. [*33] n30 In addition, an affirmative aspect of the Agency's case should be the availability of preferable substitute means of controlling the pests that are controlled by the canceled chemical where the Agency is relying on this fact to establish that risks outweigh benefits. n31 Evidence showing the availability of a registered chemical or other means of control which this Agency's Pesticides Office is prepared to recommend as a substitute at that point in time, coupled with the Agency's proof on risk, makes out an affirmative case. n32

n30 The legislative history of FIFRA, judicial decisions and Agency pronouncements all state that the "burden of proof" remains on the registrant to demonstrate that his product satisfies the requirements for registration under the Act. See S. Rept. No. 573 at 5 (88th Cong., 1st Sess. 1963); H. Rept. No. 1125 at 4 (88th Cong., 1st Sess. 1963); *EDF v. EPA*, *supra*; *EDF v. Ruckelshaus*, *supra*; Statement of Reasons, March 18, 1971. There has, unfortunately, been a great deal of misunderstanding concerning these statements. Simply stated, the burden of proof referred to by the legislative history is the burden of persuasion which requires a party to establish the existence of primary facts. It should not be confused with the burden of going forward which is generally a rule to establish the order for the presentation of evidence. The burden of going forward may, however, have substantive consequences. Where a party which has the burden of going forward fails to satisfy that burden, the facts will be decided against him, even though the other party may have been responsible for the burden of persuasion.

While in most legal proceedings the party which has the burden of going forward bears the burden of persuasion, this is not necessarily the case. On some issues, like contributory negligence in some jurisdictions, it may be that once one party has introduced evidence to put the issue in the case, the other party bears the burden of persuasion on that point. In a FIFRA cancellation hearing the proponent of cancellation bears the burden of going forward, but does not bear the burden of persuasion. [*34]

n31 While a mere showing of a high degree of risk would make out a prima facie case for cancellation, where the Agency is relying on the existence of an alternative rather than simply a showing of risk, it should, as here, present its own witnesses.

n32 This hearing was conducted under rules which have since been amended. (See 37 Fed. Reg. 9476 (May 11, 1972)). Under the Agency's former rules registrants proceeded first at the hearing. This order of presentation, which is now changed, was not prejudicial in this case. The Agency more than discharged its burden to put on a prima facie case. Registrants had an ample opportunity for rebuttal. At worst this inverted presentation unnecessarily protracted the hearing.

The burden of rebuttal then falls on registrants or users. They may either seek to negate the proof on risks either by rebutting the basic scientific data or by showing that a particular use is so limited as not to engender the risks from widespread use of the chemical. They can also seek to establish aggregate benefits. Where, as here, the existence [*35] of alternatives bears on the benefit of the chemical under review they may choose to show non-viability of alternatives, either for general substitution or in a particular geographical region. n33 They may also seek to show the non-desirability (or risks) of the alternative if they disagree with the staff judgment of this Agency.

n33 Where there is a generally viable substitute, which will insure an adequate crop supply, the non-viability

1972 EPA App. LEXIS 2, *, 1 E.A.D. 9

of the alternative in a particular area will bear on the advisability of a transition period. *See* Part IV, *infra*.

B. Application of Risk-Benefit to Crop Uses of DDT

The Agency and EDF have established that DDT is toxic to nontarget insects and animals, persistent, mobile and transferable and that it builds up in the food chain. No label directions for use can completely prevent these hazards. In short, they have established at the very least the risk of the unknown. That risk is compounded where, as is the case with DDT, man and animals tend to accumulate and store [*36] the chemical. n34 These facts alone constitute risks that are unjustified where apparently safer alternatives exist to achieve the same benefit. Where, however, there is a demonstrated laboratory relationship between the chemical and toxic effects in man or animals, this risk is, generally speaking, rendered even more unacceptable, if alternatives exist. In the case before us the risk to human health from using DDT cannot be discounted. While these risks might be acceptable were we forced to use DDT, they are not so trivial that we can be indifferent to assuming them unnecessarily.

n34 In enacting the present law one of the greatest concerns expressed to Congress was the risk of the unknown. *See* Statement of Congressman Dingell. Hearings Before the Subcommittee on Departmental Oversight and Consumer Relations of the House Committee on Agriculture, at 39 (88th Cong., 1st Sess. 1963).

The evidence of record showing storage in man and magnification in the food chain is a warning to the prudent that man may be exposing [*37] himself to a substance that may ultimately have a serious effect on his health. As Judge Leventhal recently pointed out, cancer is a "sensitive and fright-laden" matter and noted earlier in his opinion that carcinogenic effects are "generally cumulative and irreversible when discovered." *EDF v. EPA*, Slip Op. at 12 and 16. The possibility that DDT is a carcinogen is at present remote and unquantifiable; but if it is not a siren to panic, it is a semaphore which suggests that an identifiable public benefit is required to justify continued use of DDT. Where one chemical tests tumorigenic in a laboratory and one does not, and both accomplish the same task, the latter is to be preferred, absent some extenuating circumstances.

The risks to the environment from continued use of DDT in massive quantities are more clearly established. There is no doubt that DDT run-off can cause contamination of waters and given its propensity to volatilize and disperse during application, there is no assurance that curtailed usage on the order of 12,000,000 pounds per year will not continue to affect widespread areas beyond the location of application. The Agency staff established, as well, the [*38] existence of acceptable substitutes for all crop uses of DDT except on onions and sweet potatoes in storage and green peppers.

Registrants attempted but failed to surmount the evidence of established risks and the existence of substitutes by arguing that the build-up of DDT in the environment and its migration to remote areas has resulted from past uses and misuses. There is, however, no persuasive evidence of record to show that the aggregate volume of use of DDT for all uses in question, given the method of application, will not result in continuing dispersal and build-up in the environment and thus add to or maintain the stress on the environment resulting from past use. The Department of Agriculture has, for its part, emphasized DDT's low acute toxicity in comparison to that of alternative chemicals and thus tried to make the risk and benefit equation balance out favorably for the continued use of DDT. While the acute toxicity of methyl parathion must, in the short run, be taken into account, *see infra*, it does not justify continued use of DDT on a long-term basis. Where a chemical can be safely used if label directions are followed, a producer cannot avoid the risk of his [*39] own negligence by exposing third-parties and the environment to a long-term hazard. Accordingly, all crop uses of DDT are hereby canceled except for application to onions for control of cutworm, weevils on stored sweet potatoes, and sweet peppers. Shipments of DDT labeled for those uses may continue on terms set forth in Part V-A. We defer to Part V-B, *infra*, consideration of the proper timing of cancellation of other uses in light of the short-run dangers of switching to the use of organophosphates without providing training. n35

n35 Registrants adduced considerable testimony on the effects of organophosphates on non-target species. Sevin, it appears, is highly toxic to bees and most witnesses agreed that the organophosphates were toxic to non-target animals, usually birds and insect life, present when a field is sprayed. The present evidence demonstrates, however, that these organophosphate compounds are less "persistent," and thus do not leach or erode into waters or collect in the human food chain. While it may be that in time the familiar phrase "familiarity breeds contempt" will apply, as we learn more about these compounds, they appear not to present a long-range hazard to man or aquatic areas. Where registrants have scored, is by demonstrating the acute toxicity of methyl parathion which is the primary alternative chemical for many of the crop uses in question. That fact does not, however, alter the long-term balance between the risks and benefits, in view of the non-persistence of the organophosphates.

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

[*40]

C. APPLICATION OF RISK-BENEFIT TO NON-CROP USES

There remains the question of the disposition on the registered health and government uses and other non-crop uses of DDT. It should be emphasized that these hearings have never involved the use of DDT by other nations in their health control programs. As we said in our DDT Statement of March, 1971, "this Agency will not presume to regulate the felt necessities of other countries." Statement, at 8. Indeed, the FIFRA does not apply to exports. Section 7, 7 U.S.C. § 135 (1972).

Given the alternatives for mothproofing and control of bats and mice--proprietary governmental uses of DDT--I am persuaded that the benefits are even more de minimis than the risks. On the other hand, public health and quarantine programs fall into a wholly separate category. See *EDF v. Ruckelshaus*, 439 F.2d at 594; DDT Statement of Reasons at 11.

While alternatives also exist for use in public health-quarantine programs and, in most instances, DDT is no longer the yeoman chemical, I believe that it would be unwise to restrict knowledgeable public officials to the choice of one or [*41] two chemicals. Like a physician, the public official must have an ample arsenal for the combat of disease and infestation.

I cannot, however, be indifferent to the fact that the record suggests that "health and quarantine" uses have, in the past, apparently included proprietary uses by government. Nor can I be complacent about non-supervised use for these purposes by private citizens. I am, accordingly, requiring a label which will restrain indiscriminate use of DDT for a wide variety of purposes under the rubric of official use. That label language is set forth in the order accompanying this opinion, and is designed to restrict shipment of DDT only to U.S. Government officials and State Health Departments who will be knowledgeable as to the most effective means for control and mindful of the risks of using DDT. Thus, on an application-by-application basis for necessary health and quarantine purposes, the benefits will be maximized and outweigh the risks. n36 Cf. 42 U.S.C. § 4332 (1971) which requires an environmental impact statement on ongoing official programs.

n36 The use of DDT in Topocide, a prescription drug, is regulated by both the Food and Drug Administration and this Agency. The alternative, Kwell, is a lindane product. I am, however, taking judicial notice of the fact that lindane registrations are presently under review by this Agency's Pesticides Office and several uses of lindane have, in the past, been the subject of cancellation proceedings. See *In Re Hari Kari Lindane*, *supra*. I am not prepared to judge on this record whether or not the risk to the environment and the public at large from DDT shampoo is greater than from lindane shampoo. As for the direct effects on the user of the drug, this matter is for FDA and the prescribing physician.

[*42]

V

I turn now to the disposition of these dockets in light of the foregoing principles. At the outset it should be noted that recent judicial decisions have urged this Agency to use its "flexibility, in both final decisions and suspension orders, to differentiate between uses of the product" (*See EDF v. EPA* (opinion of Judge Leventhal), *supra*, at 20), and reminded us that creative adaptability is the keystone of a workable regulatory process. Cf. *SEC v. National Securities, Inc.*, 393 U.S. 453, 463 (1969). *EDT v. EPA*, while discussing suspension, serves as a beacon in this regard, suggesting that registrations be continued selectively, taking into account "restrictions on kinds and extent of use." *Id.* at 23. Bearing these principles in mind, I turn first to the form and shape our orders should take.

A. Disposition as to Onions, Stored Sweet Potatoes and Sweet Peppers

There is evidence that DDT is the only useful chemical for controlling heavy corn borer infestations which attack green peppers in the Del Marva Peninsula. The record shows that about 13,500 pounds of DDT are used regularly as a ground application for [*43] prophylactic purposes. Sevin, Guthion, and phosphamidon can, however, be used at less than 30% infestation. Del Marva produces less than 5% of the nation's sweet peppers and other crops can be profitably produced. The Agency staff has conceded in its April 15 brief in support of proposed findings, conclusions and order that this use of DDT "comes closest--of all the uses in issue--to being necessary in the sense that no real alternative insect control method exists under certain conditions." (Brief, at 93.)

The evidence concerning use of DDT to control cutworms is less clear-cut. Apparently cutworm infestations in the northwest are sporadic and localized. While it would appear that other chemicals could be used to control cutworm infestations on onions as with peanuts, none are apparently registered. No party has cited evidence of record showing what percent of the onion-producing acreage would be affected by a cancellation of DDT.

The evidence with respect to use of DDT as a "dip" to protect stored sweet potatoes against weevil infestation is even spottier. Neither counsel for the parties nor our research has pointed us to evidence of record showing the precise volume of DDT [*44] use for this purpose, its likely effect on the environment, or the degree of loss that might be

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9
sustained by producers.

While it would be far easier simply to cancel or not cancel the registrations for these uses, I believe that environmental problems should be parsed with a scalpel, not a hacksaw. While EDF and my own staff urge cancellation, on the ground that producers can easily shift to producing different crops, there is no evidence as to how long such transition might require. Moreover, it may be that continued use of a limited volume of DDT in these few areas, taken in conjunction with aggregate volume of use for other purposes, like health, present no risk to the environment. Obviously much of the stress on the "global" environment is reduced by curtailing overall volume of usage and we must then estimate the impact of use, both on the environment as a whole, and the local surroundings. Lastly, it may well be relevant to examine the impact on overall supply of a commodity. Even though peppers, onions and sweet potatoes may not be food "staples," it may be that the other acreage is not suited for producing these crops. In that event, it will be necessary to determine whether [*45] or not supplies will satisfy demand, and whether or not a transition period should be fixed to permit a market adjustment. n37

n37 It is a recognized policy of common law nuisance and also of federal environmental legislation to afford affected producers a transitional period for implementing new requirements.

It follows that additional evidence is required to determine the answers to these questions. In the interim the cancellation orders will remain in effect, subject to registrants or users petitioning to present additional evidence. In that event, a stay order will issue pending the determination on remand. If these users or registrants can demonstrate that a produce shortage will result and their particular use of DDT, taken with other uses, does not create undue stress on the general or local environment, particularly the aquasphere, cancellation should be lifted. If no produce shortage will result because other acreage is suitable for these crops, it shall still be open to demonstrate that a transitional period [*46] is required for switching to new crops. If the interim use of DDT does not constitute an environmental risk, final orders of cancellation for these uses will be deferred until the transition can be accomplished, provided assurances are received at the hearing that formulators and users will not permit bootlegging.

B. *The Switch to Methyl Parathion*

The need for a transition period arises also in connection with those uses that are being canceled based on the existence of methyl parathion.

The record before me leaves no doubt that the chief substitute for most uses of DDT, methyl parathion, is highly toxic chemical and, if misused, is dangerous to applicators. n38 This was the virtually unanimous opinion of all the witnesses. The introduction into use of organophosphates has, in the past, caused deaths among users who are untrained in their application and the testimony and exhibits of record point to the unhappy experience of several years ago where four deaths occurred at the time ethyl parathion began to be used on tobacco crops. Other testimony noted the increase in nonfatal accidents and attributed almost one-half reported pesticide poisonings to the organophosphate group. [*47] A survey conducted after the organophosphates began to replace chlorinated hydrocarbons in Texas suggests a significantly increased incidence of poisonings.

n38 Not all of the possible substitutes for DDT are equally potent. For example, trichlorofon, monocrotophos, malathion and carbaryl, among others, are available to control many cotton pests; carbaryl is an all-purpose chemical for most cotton pests. It is, however, abundantly clear that methyl parathion will be widely used.

That the skilled and trained user may apply organophosphates with complete safety is of comfort only if there is an orderly transition from DDT to methyl parathion so as to train workers now untutored in the ways of proper use. I am accordingly making this order effective as of December 31, 1972, insofar as the cancellations of any particular use is predicated on the availability of methyl parathion as a substitute. In the months that follow the Department of Agriculture and state extension services and representatives of EPA will have time [*48] to begin educating those workers who will have to use methyl parathion in future growing seasons. Such a program can also introduce farmers to the less acutely toxic organophosphates, like carbaryl, which may be satisfactory for many uses.

VI

Far from being inconsistent with the general congressional mandate of FIFRA, a period of adjustment to train users of methyl parathion or permit a needed transition where no substitutes exist is a logical outgrowth of a sensible application of risk-benefit analysis. While the legislative history does not address the specific problem before me--the timing of cancellation orders the hearings that preceded the enactment of FIFRA indicate that congressional concern for safety of the farmer-user of pesticides was no less than Congress' solicitude for the environment. While Congress ultimately struck a balance that generally places the risk of negligence on the applicator, *see Stearns v. EPA, supra*, it did so in light of assurances that farmers are for their own safety as well as that of the environment being trained in proper methods of application. *See* Hearings before the Subcommittee on Departmental Oversight and Consumer

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

Relations [*49] of the House Committee on Agriculture, *supra*, at 54, 68. n39

n39 At least two courts have given express recognition to the similarity between the regulatory schemes in FIFRA and the Food, Drug, and Cosmetic Act. *See Welford v. Ruckelshaus*, 439 F.2d 598 (D.C. Cir. 1971); *Nor-Am v. Hardin*, 435 F.2d 1133 (7th Cir. 1970) (en banc). I believe that the trail Congress intended me to follow is marked by its directive in Section 348 of the Food, Drug, and Cosmetic Act, 21 U.S.C. § 348(f)(3) (1971), which permits the Secretary to set an effective date for his orders. While similar language has not been expressly included in FIFRA, its omission can hardly be considered advertent in view of the legislative history. *See S. Rept. No. 573* (88th Cong., 1st Sess. 1963); *H. Rept. No. 1125* (88th Cong., 2d Sess. 1964). The purpose of the 1964 amendments was to eliminate registration under protest.

The risk-benefit equation [*50] is a dynamic one. Timing is a variable in that equation. What may, in the long run, be necessary to protect the environment could be a short-term threat to human health. This is exactly the case before me now. The benefits of using organophosphates are a long-range benefit and the risks of DDT result from continued long-term use. In the very short run, however, the equation balances out very differently. n40 Likewise, the prospect of dislocation which might ensue were the use of DDT immediately halted where no alternatives exist is a factor we must reckon with. The major environmental regulatory statutes, enacted and pending, provide "lead time" for an adjustment to new requirements. n41

n40 I do not believe that the Seventh Circuit's decision in *Stearns Phosphorous Paste Co. v. EPA, supra*, precludes me from taking into account the short-term dangers that could result from increased use of methyl parathion by untrained users. *Stearns* holds that a product is not "misbranded" simply because it can be highly dangerous if the user is careless. This reasoning does not, however, compel me to ignore the tendency of human beings to be negligent where we are dealing with the implementation of an order that will increase use of a highly dangerous substance. Even negligence can be minimized by training. [*51]

n41 While the Examiner excluded from evidence a study of the DDT problem for this Agency undertaken by a Committee of the National Academy of Sciences, it is appropriate to note that Committee recommended a phase-out period for the same reasons outlined in this opinion. While I reach my conclusions without relying on that report's factual findings and recommendations, and base them on the record as compiled below, I believe the report was erroneously excluded from the record, particularly in view of the offer by counsel for the Agency to produce a committee member for cross-examination.

While impatience is understandable in view of the past history of delay, we must not be lulled into the belief that long-standing problems can be corrected by overnight solutions. Today's decision provides a definitive answer to the status of DDT registrations and all concerned: to this Agency, farmers, manufacturers, the Department of Agriculture, and extension services; all must proceed with alacrity toward the implementation of this order.

FACTUAL FINDINGS

I. SCOPE OF CASE

- A. PR Notices 71-1, 71-3, [*52] 71-5 canceled all registered uses of DDT and TDE.
- B. Appeals have been received by 31 formulators who held registrations for formulating DDT or TDE. These formulators appeared at this proceeding by a single counsel.
- C. Wyco, Inc. and The Wallerstein Co. and Stark Bro's Nurseries have also appeared by separate counsel.
- D. The Plant Regulation Division of the Department of Agriculture was a party to this hearing as a registrant and the Department was an intervenor as to all uses.
- E. Eli Lilly & Co. and H. P. Cannon & Sons were parties to this hearing.
- F. National Agricultural Chemicals Association; Environmental Defense Fund; The Sierra Club; West Michigan Environmental Action Council; and National Audubon Society are intervenor parties.
- G. The following canceled uses were appealed and at issue in this hearing:

Crop Uses

- 1. cotton
- 2. beans (dry, lima, snap)
- 3. sweet potatoes
- 4. peanuts
- 5. cabbage, cauliflower and brussel sprouts
- 6. tomatoes
- 7. fresh market corn

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

8. sweet peppers and pimentos

9. onions

10. garlic

11. commercial greenhouses

Non-Crop Uses

1. control of house mice and bats (military only)

2. fabric treatment (military only)

3. disease vectors [*53]

4. quarantine

5. control of body lice in prescription drugs

II. CHEMICAL PROPERTIES OF DDT

A. Basic Findings

1. DDT can persist in soils for years and even decades.

2. DDT can persist in aquatic ecosystems.

3. Because of persistence, DDT is subject to transport from sites of application.

a. DDT can be transported by drift during aerial application.

b. DDT can vaporize from crops and soils.

c. DDT can be attached to eroding soil particles.

4. DDT is a contaminant of freshwaters, estuaries and the open ocean, and it is difficult or impossible to prevent DDT from reaching aquatic areas and topography non-adjacent and remote from the site of application.

B. Ultimate Finding

The above factors constitute a risk to the environment.

III. ACTIVITY IN FOOD CHAIN AND IMPACT ON ORGANISMS

A. Basic Findings

1. DDT is concentrated in organisms and transferred through food webs.

a. DDT can be concentrated in and transferred through terrestrial invertebrates, mammals, amphibians, reptiles and birds.

b. DDT can be concentrated and transferred in freshwater and marine plankton, insects, molluscs, other invertebrates and fish.

2. The accumulation in the food chain and [*54] crop residues results in human exposure.

3. Human beings store DDT.

B. Ultimate Finding

The above factors constitute an unknown, unquantifiable risk to man and lower organisms.

IV. TOXICOLOGICAL EFFECTS

A. Basic Findings

1. DDT affects phytoplankton species' composition and the natural balance in aquatic ecosystems.

2. DDT is lethal to many beneficial agricultural insects.

3. DDT can have lethal and sublethal effects on useful aquatic freshwater invertebrates, including arthropods and molluscs.

4. DDT is toxic to fish.

5. DDT can affect the reproductive success of fish.

6. DDT can have a variety of sublethal physiological and behavioral effects on fish.

7. Birds can mobilize lethal amounts of DDT residues.

8. DDE can cause thinning of bird eggshells and thus impair reproductive success.

9. DDT is a potential human carcinogen.

a. Experiments demonstrate that DDT causes tumors in laboratory animals.

b. There is some indication of metastasis of tumors attributed to exposure of animals to DDT in the laboratory.

c. Responsible scientists believe tumor induction in mice is a valid warning of possible carcinogenic properties.

d. There are no adequate negative experimental [*55] studies in other mammalian species.

e. There is no adequate human epidemiological data on the carcinogenicity of DDT, nor is it likely that it can be obtained.

f. Not all chemicals show the same tumorigenic properties in laboratory tests on animals.

B. Ultimate Finding

DDT presents a carcinogenic risk.

V. BENEFITS

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

A. Basic Findings

1. DDT is useful for the control of certain cotton insect pests.
2. Cotton pests are becoming resistant to DDT.
3. Methyl parathion and other organophosphate chemicals are effective for the control of cotton pests.
 - a. Methyl parathion and organophosphates are less toxic to aquatic life than DDT.
 - b. Methyl parathion and organophosphates appear to be less "persistent" and do not build up in the food chain.
 - c. Methyl parathion is acutely toxic by dermal, respiratory exposure and oral ingestion.
4. By using methyl parathion or other means of pest control cotton producers can generally produce satisfactory yields at acceptable cost.
5. DDT is considered useful to have in reserve for public health purposes in disease vector control.
6. DDT is considered useful as a mothproofing agent.
 - a. DDT is not presently used by the military for treatment [*56] of fabric.
 - b. Alternatives exist.
7. DDT is useful for public quarantine programs.
8. Quarantine programs are administered by public officials and are a non-proprietary use of DDT.
 - a. This is of little use in controlling the overall gypsy moth problem.
9. DDT is useful for controlling certain insects that attack the crops listed in finding number (I)G.
10. Adequate substitute chemicals, namely, methyl parathion and other organophosphates--for the most part--exist for controlling the diseases that attack the crops listed in finding number (I) G except:
 - a. Sweet potatoes.
 - b. Heavy infestations of corn borer attacking sweet peppers grown on the Del Marva Peninsula.
 - c. Onions attacked by cutworms.
11. DDT is effective for controlling body lice.
 - a. Kwell, a Lindane product, is a substitute.
 - b. Lindane registrations are being reviewed.
12. DDT is used for exterminating bats and mice by the military.
 - a. Fumigation and non-chemical methods can guard against bat infestation.
 - b. Warfarin is effective for exterminating house mice.

B. Ultimate Findings

1. The use of DDT is not necessary for the production of crops listed in finding (I) 7 except that it may be necessary to [*57] produce those crops listed in Finding V 10(a), (b) and (c).
2. Non-crop uses of DDT for mothproofing and to control bats and mice are proprietary uses for which DDT is not necessary.

VI. MATTERS RELATING TO METHYL PARATHION

A. Basic Findings

1. Many poisonings have been attributed to the use of methyl parathion.
2. Untrained users of methyl parathion are frequently not sufficiently careful in its use despite label directions.
3. Methyl parathion can be used safely.
4. Training programs are useful in averting the negligent use of methyl parathion.
5. Methyl parathion is a substitute for most crop uses of DDT.

B. Ultimate Findings

1. Methyl parathion is dangerous to users and presents a risk to them.
2. An opportunity to train users will minimize the risks and keep down the number of accidents.

VII. GENERAL FINDINGS

- A. No directions for use of DDT, even if followed, can over the long-run completely eliminate DDT's injury to man or other vertebrate animals.
- B. No warning or caution for use of DDT, even if followed, can over the long-run prevent injury to living man and other vertebrate animals and useful invertebrate animals.
- C. The present total volume of use [*58] of DDT in this country for all purposes is an unacceptable risk to man and his environment.
- D. The use of DDT in controlled situations in limited amounts may present less risk than usage in greater amounts, but still contaminates the environment.
- E. The public health program and quarantine uses of DDT by officials, when deemed necessary, can be judged on an application-by-application basis by professionals.
- F. A particular official use, in an isolated instance, may be important.

1972 EPA App. LEXIS 2, *; 1 E.A.D. 9

CONCLUSIONS OF LAW

1. DDT formulations when labeled with directions for use in the production of those crops named in finding (I) G and for use on bats, mice and fabric are "misbranded," within the meaning of Sections 2(z)(2) (c), (d) and (e) of FIFRA, 7 U.S.C. § 135.

2. DDT when labeled with directions "for use by and distribution to only U.S. Public Health Service officials or for distribution by or on approval by the U.S. Public Health Service to other health service officials for control of vector diseases, for use by and distribution to the Public Health Service, USDA, and military for quarantine use; for use in prescription drugs to be dispensed only on [*59] authorization by a certified medical doctor" along with the caution printed in bold type "use for any purpose not specified or not in accordance with directions and use by unauthorized persons is disapproved by the Federal Government: this substance is harmful to the environment," is not "misbranded."

ORDER

In accordance with the foregoing opinion, findings and conclusions of law, use of DDT on cotton, beans (snap, lima, and dry), peanuts, cabbage, cauliflower, brussel sprouts, tomatoes, fresh market corn, garlic, pimentoes, in commercial greenhouses, for mothproofing and control of bats and rodents are hereby canceled as of December 31, 1972.

Use of DDT for control of weevils on stored sweet potatoes, green peppers in the Del Marva Peninsula and cutworms on onions are canceled unless within 30 days users or registrants move to supplement the record in accordance with Part V of my opinion of today. In such event the order shall be stayed, pending the completion of the record, on terms and conditions set by the Hearing Examiner, provided that this stay may be dissolved if interested users or registrants do not present the required evidence in an expeditious fashion. At the conclusion [*60] of such proceedings, the issue of cancellation shall be resolved in accordance with my opinion today.

Cancellation for uses of DDT by public health officials in disease control programs and by USDA and the military for health quarantine and use in prescription drugs is lifted.

In order to implement this decision no DDT shall be shipped in interstate commerce or within the District of Columbia or any American territory after December 31, 1972, unless its label bears in a prominent fashion in bold type and capital letters, in a manner satisfactory to the Pesticides Regulation Division, the following language:

(1) FOR USE BY AND DISTRIBUTION TO ONLY U.S. PUBLIC HEALTH SERVICE OFFICIALS OR FOR DISTRIBUTION BY OR ON APPROVAL BY THE U.S. PUBLIC HEALTH SERVICE TO OTHER HEALTH SERVICE OFFICIALS FOR CONTROL OF VECTOR DISEASES; (2) FOR USE BY AND DISTRIBUTION TO THE USDA OR MILITARY FOR HEALTH QUARANTINE USE; (3) FOR USE IN THE FORMULATION FOR PRESCRIPTION DRUGS FOR CONTROLLING BODY LICE; (4) OR IN DRUG; FOR USE IN CONTROLLING BODY LICE--TO BE DISPENSED ONLY BY PHYSICIANS.

USE BY OR DISTRIBUTION TO UNAUTHORIZED USERS OR USE FOR A PURPOSE NOT SPECIFIED HEREON OR NOT IN ACCORDANCE WITH [*61] DIRECTIONS IS DISAPPROVED BY THE FEDERAL GOVERNMENT: THIS SUBSTANCE IS HARMFUL TO THE ENVIRONMENT.

The Pesticides Regulation Division may require such other language as it considers appropriate.

This label may be adjusted to reflect the terms and conditions for shipment for use on green peppers in Del Marva, cutworms on onions, and weevils on stored sweet potatoes if a stay is in effect.

489 F.2d 1247
6 ERC 1112
(Cite as: 489 F.2d 1247, 160 U.S.App.D.C. 123)

United States Court of Appeals, District of Columbia Circuit.

ENVIRONMENTAL DEFENSE FUND, INC., et al., Petitioners,
v.
ENVIRONMENTAL PROTECTION AGENCY and William D. Ruckelshaus, Administrator,
Respondents, Coahoma Chemical Company, Inc., Intervenor.
ENVIRONMENTAL DEFENSE FUND, INC., Petitioners,
v.
ENVIRONMENTAL PROTECTION AGENCY and William D. Ruckelshaus, Administrator,
Respondents.
COAHOMA CHEMICAL COMPANY et al., Petitioners,
v.
William D. RUCKELSHAUS, Administrator, Environmental Protection Agency,
Respondent, EDF et al., Intervenor.
OLIN CORPORATION, Petitioner,
v.
William D. RUCKELSHAUS, Administrator, Environmental Protection Agency,
Respondent.
CAROLINA CHEMICALS, INC., et al., Petitioners,
v.
William D. RUCKELSHAUS, Administrator, Environmental Protection Agency,
Respondent.
W. R. GRACE & CO. et al., Petitioners,
v.
William D. RUCKELSHAUS, Environmental Protection Agency, Respondent.
OCTAGON PROCESS, INC., Petitioner,
v.
William D. RUCKELSHAUS, Administrator of the Environmental Protection Agency,
Respondent.

Nos. 72-1548, 72-1690, 72-2142, 72-2183, 73-1015, 73-1088, 73-2070.

Argued Nov. 5, 1973.
Decided Dec. 13, 1973.

Petitions for review of order of the Environmental Protection Agency which cancelled almost all registrations for use of DDT except for limited public health and agricultural pest quarantine purposes. The Court of Appeals, Wilkey, Circuit Judge, held that such order was supported by substantial evidence when record as a whole was considered, and that even though action of Environmental Protection Agency would have a substantial effect on human environment, filing of a specific report was not required under National Environmental Policy Act of 1969.

Affirmed.

West Headnotes

[1] Environmental Law ¶686
149Ek686
(Formerly 23k9.11(2), 23k9)

Provisions for judicial review under both 1970 and 1972 Federal Insecticide, Fungicide and Rodenticide Acts require court determine whether findings of fact of the Administrator of Environmental Protection Agency are based upon substantial evidence when considered on record as a whole. Federal Insecticide, Fungicide and Rodenticide Act, § 4(c, d), 7 U.S.C.A. § 135b(c), Federal Environmental Pesticide Control Act of 1970, §§ 2(bb), 3(c)(5)(D), 7 U.S.C.A. §§ 136(bb), 136a(c)(5)(D).

[2] Environmental Law ↩️678**149Ek678**

(Formerly 199k25.15(6.1), 199k25.15(6), 199k25.5 Health and Environment)

"Substantial evidence," for purposes of reviewing findings of fact of Administrator of Environmental Protection Agency, means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. Federal Insecticide, Fungicide and Rodenticide Act, § 4(c, d), 7 U.S.C.A. § 135b(c, d); Federal Environmental Pesticide Control Act of 1970, §§ 2(bb), 3(c)(5)(I). **U.S.C.A. §§ 136(bb), 136a(c)(5)(D)**.

[3] Administrative Law and Procedure ↩️676**15Ak676****[3] Environmental Law** ↩️667**149Ek667**

(Formerly 199k25.15(3.3), 199k25.15(6), 199k25.5 Health and Environment)

[3] Environmental Law ↩️18**149Ek18**

(Formerly 199k25.15(3.3), 199k25.15(6), 199k25.5 Health and Environment)

Hearing examiner's findings and opinion are to be considered as part of evidence of record, both by Administrator of Environmental Protection Agency and by reviewing court.

[4] Environmental Law ↩️18**149Ek18**

(Formerly 199k25.5(9), 199k25.5 Health and Environment)

Even though Administrator of Environmental Protection Agency decided contrary to conclusions of hearing examiner, administrator gave sufficient weight to hearing examiner's report, where the administrator reviewed report of examiner and excepted to report filed by Environmental Protection Agency staff, the administrator decided case on basis of record developed in the hearing; additional briefs, oral argument, and specially prepared summaries, and case was one where demeanor of witnesses was particularly important and where examiner himself had no particular expertise.

[5] Environmental Law ↩️465**149Ek465**

(Formerly 23k9.11(2), 23k9)

Order of Administrator of Environmental Protection Agency which cancelled, effective December 31, 1972, almost all registrations for use of DDT, except for limited public health and agricultural pest quarantine purposes, was supported by substantial evidence when record as a whole was considered. Federal Insecticide, Fungicide and Rodenticide Act, §§ 2-13, 4(c, d), **7 U.S.C.A. §§ 135k, 135b(c, d)**; Federal Environmental Pesticide Control Act of 1970, §§ 2(bb), 3(c)(5)(D), **7 U.S.C.A. §§ 136(bb), 136a(c)(5)**; Reorganization Plan No. 3 of 1970, 5 U.S.C.A. App.

[6] Environmental Law ↩️595(6)**149Ek595(6)**

(Formerly 199k25.10(2.1), 199k25.10(2), 199k25.10 Health and Environment)

Even though action of Environmental Protection Agency in withdrawing DDT registrations would have a substantial effect on human environment, filing of a specific report was not required under the National Environmental Policy Act of 1969, where lengthy hearings were held during which public comment was solicited, and a wide scope of environmental aspects were considered, and the environmental impact of the action, possible adverse environmental effects, possible alternatives, relationship between long and short term uses and goals, and any irreversible commitments of resources all received attention during the hearings and decision-making process. National Environmental Policy Act of 1969, § 102(2)(C), **42 U.S.C.A. § 4332(2)(C)**.

[7] Environmental Law ↩️592**149Ek592**

(Formerly 199k25.5(9), 199k25.5 Health and Environment)

Where an agency is engaged primarily in an examination of environmental questions, and substantive and procedural standards insure full and adequate consideration of environmental issues, formal compliance with National Environmental Policy Act of 1969 is not

necessary, and functional compliance is sufficient.

*1248 **124 John F. Dienelt, Washington, D.C., with whom William A. Butler, East Setauket, N.Y., was on the brief for petitioners in Nos. 72-1548 and 72-1690 and Environmental Defense Fund, Inc., and others, petitioners in No. 72-2142.

Robert L. Ackerly with whom Charles A. O'Conner, III, Washington, D.C., was on the brief for petitioners in Nos. 72-2142, 72-2173-1015 and 73-2070.

Stephen F. Eilperin, Atty., Dept. of Justice with whom Walter H. Fleischer, Atty., Dept. of Justice and Blaine Fielding, *1249 ** Atty., Environmental Protection Agency, were on the brief for respondents. Alan S. Rosenthal, Atty., Dept. of Justice and Michael Farrar, Atty., Environmental Protection Agency also entered appearances for respondents.

Charles M. Crump, Memphis, Tenn., and Walkins C. Johnston, Montgomery, Ala., were on the brief for intervenors.

Before TAMM, ROBINSON and WILKEY, Circuit Judges.

WILKEY, Circuit Judge:

Coahoma Chemical Company, the Environmental Defense Fund, and other parties seek review of the 14 June 1972 Order of Administrator of the Environmental Protection Agency (EPA) which cancelled, effective 31 December 1972, almost all registrations for the use of DDT, except for limited public health and agricultural pest quarantine purposes. [FN1] Coahoma, along with other producers and users, challenges the Order as going too far in banning most uses of DDT; the Environmental Defense Fund (EDF) challenges the Order as not going far enough by allowing a few uses to remain.

[FN1], Environmental Defense Fund (EDF) Appendix at 50.

I. AGENCY ACTION

After a lengthy administrative review of DDT, a potent pesticide, [FN2] the Order of 14 June 1972 was promulgated. The EDF first sought cancellation of DDT registrations under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in October 1970. [FN3] More than a year later, and after two cases challenging the lack of Government action had been brought in and decided by the court, [FN4] on 15 January 1971 [FN5] the Administrator of EPA issued cancellation notices for all registrations of insecticides containing DDT. However, no suspension of use was required at this time.

[FN2], The chemical name for DDT is 1,1,1-trichloro-2,2-bis (pchlorophenyl) ethane. EDF Appendix at 105.

[FN3], 7 U.S.C. §§ 135-135k (1970). Originally FIFRA was enforced and administered by the Secretary of Agriculture. However, a reorganization in 1970 placed responsibility in the Administrator of EPA. See Reorganization Plan No. 3 of 1970, in Appendix to Title 5, U.S.C.

[FN4], Environmental Defense Fund v. Hardin, 138 U.S.App.D.C. 391, 428 F.2d 1093 (1970) (The court granted EPA standing to contest the failure to cancel all DDT registrations and remanded to the Secretary of Agriculture to reconsider its reasons.); Environmental Defense Fund v. Ruckelshaus, 142 U.S.App.D.C. 74, 439 F.2d 584 (1971) (The court directed the Administrator of EPA, now in charge of FIFRA, to initiate cancellation proceedings because of substantial questions of safety of DDT, and to reconsider suspension of use.).

[FN5], EPA PR Notice 71-1. Also TDE, a related chemical, suffered cancelled registrations by PR Notice 71-5.

EPA began evidentiary hearings on DDT in August 1971. A month later an Advisory Committee, appointed at the request of the registrants (i. e., users and producers) of DDT, [FN6] issued a report confirming the hazards caused by DDT and recommended suspension or rapid decrease in use. In one of several preliminary judicial skirmishes between the parties, this court ordered EPA

reconsider its decision not to suspend use of DDT pending the outcome of the cancellation proceedings; [FN7] reconsideration resulted in no change by EPA. We later in effect gave EPA a 15 April 1972 deadline before which to conduct meaningful administrative proceedings. [FN8]

FN6. FIFRA establishes an elaborate procedure for registrants who wish to challenge proposed cancellations. Registrants may request an advisory committee of scientific experts be selected by the National Academy of Sciences to review proposed action. Additionally, registrants may file objections and request a public hearing. 7 U.S.C. § 135b(c). Both options were utilized here.

FN7. Environmental Defense Fund v. Ruckelshaus, Order (No. 71- 1256, 22 Sept. 1971).

FN8. Environmental Defense Fund v. Ruckelshaus, Order (No. 71- 1256, 9 Dec. 1971).

The EPA hearings terminated in March 1972, after seven months of testimony from a broad spectrum of the public, *1250 **126 in April the Hearing Examiner [FN9] filed his Recommended Findings, Conclusions, and Orders. [FN10] The Hearing Examiner concluded that all cancellation notices should be withdrawn, and registrations of DDT should continue, except for non-military mothproofing and DDD fruit spray. [FN11]

FN9. The official title for the Hearing Examiner is now Administrative Law Judge. See 37 Fed.Reg. 16787 (1971); 5 C.F.R. § 930, Subpart B (1973).

FN10. EDF Appendix at 100.

FN11. Examiner's Proposed Orders, in EDF Appendix at 207-218.

The Administrator chose to review the case personally (instead of delegating this as he normally would to the Judicial Officer [FN12]) and after oral argument and written briefs concluded on 14 June 1972 that DDT was sufficiently dangerous to require its use to be banned for most purposes. The Administrator delayed the effective date of his Order for six months, so that users of DDT could be educated in the proper use of alternative pesticides. [FN13]

FN12. See Brief of Respondent, William D. Ruckelshaus, et al., at 21.

FN13. See Brief of Petitioner, Environmental Defense Fund, et al., at 30.

The statutory basis for the EPA action lies in the Federal Insecticide, Fungicide, and Rodenticide Act, FIFRA. This Act requires registration of every economic poison distributed or sold in the United States. [FN14] Registration is to be denied if the substance does not comply with the provisions of the Act, [FN15] and misbranding of the substance is a prohibited action. [FN16] Misbranding is defined in the statute to have occurred, 'if in the case of an insecticide . . . when used as directed or in accordance with commonly recognized practice it shall be injurious to living man or other vertebrate animals, or vegetation, except weeds, to which it is applied or to the person applying such economic poison. [FN17] A later formulation of this requirement was incorporated in the Federal Environmental Pesticide Control Act of 1972, which requires denial of registration unless the substance 'will perform its intended function without unreasonable adverse effects on the environment,' [FN18] and unless 'when used in accordance with widespread and commonly recognized practice it will not generally cause unreasonable adverse effects on the environment.' [FN19] The FIFRA provisions further require that the order of the Administrator cancelling registrations must be based on substantial evidence of record developed at a hearing, if a public hearing is held, and the order must set forth detailed findings of fact. [FN20]

FN14. 7 U.S.C. § 135b(a) (1970).

FN15, 7 U.S.C. § 135b(c).

FN16, 7 U.S.C. § 135a(a)(5).

FN17, 7 U.S.C. § 135(e)(2)(g).

FN18, 7 U.S.C. § 136a(c)(5)(C) (Supp. II, 1972).

FN19, 7 U.S.C. § 136a(c)(5)(D). The statute defines 'unreasonable adverse effects' as 'any unreasonable risk to man or environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide. U.S.C. § 136(bb).

FN20, 7 U.S.C. § 135b(c) (1970).

The Administrator's Order is challenged on two grounds: (1) is it based on substantial evidence in the record; (2) does it comply with the requirements of the National Environmental Policy Act (NEPA)? For the reasons explicated in Parts II and III below, to these questions our answer is affirmative. II. JUDICIAL REVIEW OF THE ADMINISTRATOR'S ORDER

A. The Test

Explicitly established in the substantive legislation are the standards for judicial review. Once the Administrator has made a final order concerning the registration of a pesticide, that order is appealable to the United States Court of Appeals. The FIFRA statute directs the Court of Appeals to sustain the findings of the Administrator with respect to questions of fact if 'supported by substantial evidence when considered on the record as a whole.' FN21 The 1972 amendments further elaborate the scope of judicial review:

FN21, 7 U.S.C. § 135b(d) (1970).

The court shall consider all evidence of record. The order of the Administrator shall be sustained if it is supported by substantial evidence when considered on the record as a whole. FN22

FN22, 7 U.S.C. § 136u(b) (Supp. II, 1972).

The two versions provide standards of review which are somewhat different, in that the court under the 1970 language need only support findings of fact by the Administrator if based on substantial evidence, but the 1972 language requires the court to support orders of the Administrator which are based on substantial evidence. The 1972 amendment was enacted and effective on 21 October 1972, four months after the Administrator issued his Order in question here, but well before our judicial review. While the parties seem to assume that the 1970 version is controlling for purposes of our review, FN23 the 1972 statute has no provision denying application to judicial review of prior orders of the Administrator. We read the 1972 amendment as establishing a standard effect for judicial review commencing after 21 October 1972, and therefore applicable in the case at bar.

FN23, Brief of Petitioner, Coahoma Chemical Co., at 15; Brief of Petitioner, EDF, at 32.

FN24 In any event, the provisions for judicial review under both the 1970 and 1972 language clearly require the court to determine whether the findings of fact of the Administrator are based upon substantial evidence when considered on the record as a whole. Thus we must apply a traditional type of substantial evidence test, albeit one based on an extraordinarily voluminous record. FN25 'Substantial evidence' was long ago defined by Chief Justice Hughes as 'more than a mere scintilla. It means such relevant evidence

a reasonable mind might accept as adequate to support a conclusion.' Consolidated Edison Co v. NLRB. [FN25] And since the statute requires the whole record to be considered as in Universal Camera Corp. v. NLRB:

[FN24]. During seven months of hearings, 125 witnesses appeared to testify and 365 exhibits were placed in evidence. The transcript of the hearings was over 9,000 pages long. Brief of Petitioner, Coahoma Chemical Co., at 5.

[FN25]. 305 U.S. 197, 229, 59 S.Ct. 206, 217, 83 L.Ed. 126 (1938).

The substantiality of evidence must take into account whatever in the record fairly detracts from its weight . . . (This does not mean that even as to matters not requiring expertise a court may displace the Board's choice between two fairly conflicting views, even though the court would justifiably have made a different choice had the matter been before it de novo. [FN26])

[FN26]. 340 U.S. 474, 488, 71 S.Ct. 456, 464, 95 L.Ed. 456 (1951).

The Supreme Court has more recently recognized in *Consolo v. Federal Maritime Commission* that there may be inconsistent conclusions which can be drawn from the same record, each of which may be supported by substantial evidence. Thus, 'substantial evidence'

is something less than the weight of the evidence, and the possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence. [FN27]

[FN27]. 383 U.S. 607, 620, 86 S.Ct. 1018, 1027, 16 L.Ed.2d 131 (1966).

The Supreme Court went on to point out that the substantial evidence test 'frees the reviewing courts of the time-consuming and difficult task of weighing the evidence, it gives proper respect to the expertise of the administrative tribunal and it helps promote a uniform *1252 **128 application of the statute.' [FN28] Other courts have stressed that where questions involve a special expertise of an agency, such as in detailed scientific proceedings, the agency deserves special deference from the courts, although careful review of course always required. [FN29]

[FN28]. *Ibid.*

[FN29]. *See, e.g., Deutsch v. United States Atomic Energy Commission*, 130 U.S.App.D.C. 339, 401 F.2d 404 (1968).

In the case at bar our task is made somewhat simpler than the agency's by adhering conscientiously to the proper scope of judicial review of administrative action, i.e., we as a court are confronted with a problem in administrative law, not in chemistry, biology, medicine, or ecology. It is the administrative agency which has been called upon to hear and evaluate testimony in all scientific fields relevant to its ultimate question of permission or prohibition of the sale and use of DDT. The EPA Administrator had an opportunity to make a careful study of the record of seven months of public hearings and the summaries of evidence prepared for him, [FN30] heard oral argument, and now has arrived at a decision to ban most uses of DDT. It is his decision which we must review; we are not to make the same decision ourselves. We are concerned with how he did it and on how much evidence. Since there is no challenge to the procedure here, our problem narrows down to whether his decision is supported by substantial evidence based on the record as a whole.

[FN30]. The public disclosure of these summaries is sought under the Freedom of Information Act, 5 U.S.C. § 552 (1970), in a companion case, *Montrose Chemical Corp. v. Ruckelshaus*, Nos. 73-1443 and 73-1444.

B. The Evidence

A review of the evidence in this case, as summarized by all the briefs, indicates that the situation is as described in Consolo: there great mass of often inconsistent evidence which was developed at the hearing; this evidence is substantial enough to support conclusions of the Administrator, although it possibly might support contrary conclusions as well. Considering the evidence in record as a whole, we cannot say that the Administrator's decision was not based on substantial evidence, even if the hazardous nature of DDT has not been proved beyond a reasonable doubt. Sufficient evidence has been adduced to show potentially great dangers from DDT, and the Administrator's decision to cancel the DDT registrations is well within his statutory authority.

Specifically, the Administrator states that DDT is hazardous because of several of its inherent properties: its persistence, mobility and lipid solubility. [FN31] He contends that the alternatives to DDT do not have such properties, although he concedes that alternatives may be more acutely toxic in the short run. He presents detailed evidence concerning the human hazards which may arise from DDT (carcinogenicity and mutagenicity of DDT), and also details the environmental hazards (effects on phytoplankton, beneficial agricultural insects, aquatic invertebrates, fish, and birds). [FN32] He concludes that an unacceptable risk to man and environment is posed by continued use of DDT. [FN33] aside from the few carefully controlled uses concerning public health and agricultural quarantine purposes, which he permits. [FN34]

[FN31]. See Brief of Respondent, Ruckelshaus, at 28-43.

[FN32]. See id. at 43-85.

[FN33]. See id. at 86.

[FN34]. See id. at 106.

These findings and the evidence on which they are based are vigorously challenged by Coahoma and other DDT users. While the evidence might be sufficient to have allowed the Administrator to have decided the other way, and permit DDT to continue, the evidence ^{*1253} ^{**129} is not sufficient to vitiate the actual decision of the Administrator as not having been based on substantial evidence in the record as a whole.

[3] Since the Administrator here decided contrary to the conclusions of the Hearing Examiner, the question arises concerning proper deference to be given to the Hearing Examiner's report. As the Supreme Court indicated in *Universal Camera*, the hearing examiner's findings and opinion are to be considered as part of the evidence of record, both by the administrator and by the review court.

We do not require that the examiner's findings be given more weight than in reason and in the light of judicial experience they deserve. The 'substantial evidence' standard is not modified in any way when the Board and its examiner disagree. We intend only to recognize that evidence supporting a conclusion may be less substantial when an impartial, experienced examiner who has observed the witnesses and lived with the case has drawn conclusions different from the Board's than when he has reached the same conclusion. . . . The significance of his report, of course, depends largely on the importance of credibility in the particular case. [FN35]

[FN35]. 340 U.S. 474, 496, 71 S.Ct. 456, 469, 95 L.Ed. 456 (1951).

Later, in *FCC v. Allentown Broadcasting Corp.* [FN36] the Court indicated that where responsibility for decision was placed on the Board, it would be inconsistent to require the Board to adopt an examiner's findings unless rejection would be 'clearly erroneous.' However, the Court did not elaborate on the proper standard to be applied. Subsequently in an opinion by Judge Tamm in *Cinderella Career and Finishing Schools, Inc. v. FTC*, this Circuit held that the agency or administrator deciding a case 'must consider (1) the decision of the examiner) and the evidence in the record upon which it is based, rather than dismissing the proceedings at the hearing of hand.' [FN37]

[FN36]. 349 U.S. 358, 75 S.Ct. 855, 99 L.Ed. 1147 (1955).

[FN37]. 138 U.S.App.D.C. 152, 157, 425 F.2d 583, 588 (1970).

[4] Applying the law to the facts at hand, we conclude that the Administrator has given sufficient weight to the hearing examiner report. The Administrator reviewed the report of the examiner and the exceptions to the report filed by the EPA staff. He decided case on the basis of the record developed at the hearings, additional briefs, oral argument, and specially prepared summaries. [FN38] The case appears to be one where the demeanor of witnesses is not particularly important, and where the examiner himself had particular expertise, for he was a coal mine accident specialist. [FN39] The Administrator could derive a proper appreciation of effect of cross-examination in the case by a reading of the record. Thus we conclude that sufficient weight was given to examiner's report.

FN38. See note 30, supra.

FN39. Brief of Respondent, Ruckelshaus, at 16.

In another aspect of the question of the substantiality of the evidence, Coahoma, et al., urge that the Administrator's findings insufficient in that they are based to a large extent on data which does not directly and specifically relate to the use of DDT to control the boll weevil and the bollworm in the cotton growing areas of the Southeast. [FN40] It is true that much of the evidence in record concerning dangers of DDT *1254 **130 does not specifically relate to this one area or to the use on cotton crops. However, is not necessary to have evidence on such a specific use or area in order to be able to conclude on the basis of substantial evidence the use of DDT in general is hazardous. The Administrator has pointed to evidence in the record showing that use of DDT except minuscule amounts in highly controlled circumstances should be curtailed because of unreasonable risks to health and environment. [FN41] Reliance on general data, consideration of laboratory experiments on animals, etc., provide a sufficient basis support the Administrator's findings, even with regard to each special use of DDT.

FN40. It appears that most of the DDT now in use in the United States is for control of cotton pests, primarily the bollworm. In fact, at least 70% of all DDT is used in the cotton-growing areas, especially the Southeast. Brief of Respondent Ruckelshaus, at 86. The Intervenor, National Cotton Council of America, et al., suggest in their Brief at 4 that cotton accounts for an even greater percentage of use. Their figure of 99% reflects the cancellation of registrations for a variety of uses in 1969-1971.

FN41. See notes 32-34, supra. For the EPA's argument directed towards cotton pests, see Brief of Respondent, Ruckelshaus at 86-99.

On the other hand, EDF challenges the Administrator's decision to allow use of DDT in controlling certain public health problems in agricultural quarantines as not being based on substantial evidence. Specifically EDF contends that there is no need to retain these uses of DDT, and that the usual dangers of DDT are present in these particular uses. [FN42] The Administrator finds that these uses may be necessary to combat potential, severe public health problems, and so DDT registrations for these purposes should be allowed. The necessity arises from the fact that alternative pesticides are also under EPA review, that situations may arise where the alternatives are not effective, [FN43] and that DDT must be available. Because the allowance of continued registration does mean continued use, except where certified to be necessary, the Administrator concludes that the benefits of continued registration outweigh the risks inherent in such a minuscule use. This view has support in the record as a whole, and thus satisfies the substantial evidence test.

FN42. Brief of Petitioner, EDF, at 91-92.

FN43. Brief of Respondent, Ruckelshaus, at 106-107.

[5] The entire Order of the Administrator is supported by substantial evidence when the record as a whole is considered. Under proper application of the substantial evidence test, as formulated by the Supreme Court and by this Circuit, we affirm the Administrator's Order. We stress again that from an administrative law perspective we simply conclude that the Administrator's Order is adequately supported by evidence in the record. We do not decide whether we, ourselves, would ban DDT, nor should we

decide. We have, however, carefully reviewed the decision of the Administrator, and conclude that it should be affirmed.

III. COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

The second challenge to the EPA's action raised by petitioners Coahoma Chemical Co., et al., concerns the failure of EPA to file a specific report under the National Environmental Policy Act of 1969 (NEPA). That statute requires that

to the fullest extent possible . . . all agencies of the Federal Government shall . . . include in every recommendation or report proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on-- (i) the environmental impact of the proposed action . . . [FN44] *1255 **131 This has been interpreted to require an agency to prepare an environmental impact statement whenever the agency's proposed action will have a significant effect on the environment.

FN44, 42 U.S.C. § 4332(2)(C) (1970). The statement is required to include consideration of
 (i) the environmental impact of the proposed action,
 (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
 (iii) alternatives to the proposed action,
 (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
 (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.
 Id.

There is little doubt but that the action of EPA in withdrawing DDT registrations will have a substantial effect on the human environment-- indeed, that was the very purpose of the EPA action. The court is asked to consider two other, somewhat interrelated questions concerning NEPA. First, is the EPA an agency subject to the requirements of the statute when it undertakes environmental actions such as the cancellation of DDT registrations here? Second, has EPA in effect complied with the requirements, despite the lack of a formal NEPA impact statement?

Petitioners Coahoma Chemical Co., et al., urge that EPA is not exempted from the NEPA requirements. They stress the statutory language requiring ALL agencies to comply, and note that there is no specific language in either NEPA or FIFRA which exempts EPA in this or any other set of circumstances. They note two District Court cases which indicate that all agencies, even environmental ones, are covered by the NEPA requirements. [FN45] Furthermore, they contrast the action of Congress in providing a specific exemption for EPA in the Federal Water Pollution Control Act Amendments of 1972, [FN46] with the absence of a provision in the 1972 FIFRA amendments enacted three days later. [FN47]

FN45. The two cases noted by Coahoma are Kalur v. Resor, 335 F.Supp. 1 (D.D.C.1971) (re Corps of Engineers), Anaconda v. Ruckelshaus, 352 F.Supp. 697 (D.Colo.1972) (re EPA). The first of these cases was dismissed as moot in this Circuit. See Portland Cement Ass'n v. Ruckelshaus, 158 U.S.App.D.C. 308, 318 n. 41, 486 F.2d 375, 385 n. 1 (1973). The second case was observed by us in Portland Cement to have a 'myopic' view. Ibid.

FN46. 33 U.S.C. § 137(c) (Supp. II, 1972).

FN47. The FIFRA amendments are contained in the Federal Environmental Pesticide Control Act of 1972, 7 U.S.C. § 136 (Supp. II, 1972). A similar argument was put forth in the Portland Cement case, but was dismissed by the court there providing a 'hazardous basis for inferring the intent of the earlier Congress.' 158 U.S.App.D.C. at 315, 486 F.2d at 375, citing to United States v. Southwestern Cable Co., 392 U.S. 157, 170, 88 S.Ct. 1994, 20 L.Ed.2d 1001 (1968).

On the other hand, EPA contends that NEPA does not apply to the 'environmentally protective regulatory activities of the Administrator conducted under the registration cancellation provision of the FIFRA.' [FN48] Instead, EPA believes that the case is controlled by this Circuit's decision in Portland Cement Ass'n v. Ruckelshaus. [FN49] EPA limits its brief to the contention that NEPA does not apply to this type of action, although it states in footnote that perhaps NEPA is not applicable to any of EPA's environmentally protective regulatory activities. [FN50]

FN48, Supplemental Brief of Respondent Ruckelshaus, at 2.

FN49, 158 U.S.App.D.C. 308, 486 F.2d 375 (1973).

FN50, Supplemental Brief of Respondent, Ruckelshaus, at 2-3, n. 1. The EDF supports the limited stand of E Supplemental Brief of Petitioner, EDF, at 13.

Portland Cement involved EPA's promulgation of stationary source standards for cement plants pursuant to the Clean Air Act. FN51 The EPA action was challenged in part because the agency did not file a NEPA statement in conjunction with promulgation of standards. Judge Leventhal noted that 'there is a serious question whether NEPA is applicable to environmental protective regulatory agencies. There is no express exemption in the language of the Act or Committee Reports.' FN52 We analyzed the pertinent legislative history, concluded that it was inconclusive, and then looked to the purpose and policies underlying NEPA. The goal of NEPA was of course to protect the environment, which it did through 'a broadly applicable measure that provides a first step.' FN53 In Portland Cement we thought that this goal might best be served by exempting certain activities from the formal requirements of filing NEPA reports. While we were not there willing to decide whether there was a broad exemption from all EPA environmental actions, we concluded that the actions taken in that case under the Clean Air Act were exempt from NEPA because the Clean Air Act 'requires the functional equivalent of a NEPA impact statement.' FN54 The Clean Air Act required the Administrator to supply a statement of reasons for his proposed standard, which statement should set forth the environmental considerations, both pro and con, and thus the Act seemed to 'strike a workable balance between some of the advantages and disadvantages of full application of NEPA.' FN55 Furthermore, opportunity for public comment was provided, as was opportunity for court review.

FN51, 42 U.S.C. § 1857c-6 (1970).

FN52, 158 U.S.App.D.C. at 314, 486 F.2d at 381.

FN53, *Id.* at 316, 486 F.2d at 383.

FN54, *Id.* at 317, 486 F.2d at 384.

FN55, *Id.* at 319, 486 F.2d at 386.

161 The rationale we first developed in Portland Cement is applicable here as well, and an exemption from the strict letter of NEPA requirements is thus appropriate. The explicit language in FIFRA requires that pesticides be deregistered if they will be injurious to man and his environment. The substantive standard established by the statute places great emphasis on the quality of man's environment. Additionally, the procedural standards provide full opportunity for thorough consideration of the environmental issues, and for ample judicial review. In this particular case, lengthy hearings were held, during which public comment was solicited and a wide scope of environmental aspects were considered. Thus the functional equivalent of a NEPA investigation was provided for all of the five core NEPA issues were carefully considered: the environmental impact of the action, possible adverse environmental effects, possible alternatives, the relationship between long- and short-term uses and goals, and any irreversible commitments. All resources--all received attention during the hearings and decision-making process. FN56 The law requires no more.

FN56. See note 44, *supra*.

When it is clear that the NEPA objections are being raised by parties who have had ample opportunity to express their views, FN57 when there has been functional compliance, the Portland Cement rationale should certainly apply, and the agency action should be exempted from the strict letter of NEPA requirements. As we wrote recently, 'To require a "statement," in addition to a decision setting forth the same considerations would be a legalism carried to the extreme.' FN58

FN57. As EPA points out, the NEPA objection was only first raised in the briefs to this court; in none of the earlier proceedings was any mention made of NEPA requirements. The raising of the objection so late in the proceedings makes Coahoma position look more like a delaying tactic than a real concern with the environment. However, our recent decision in Arizona Public Service Co. v. FPC, 157 U.S.App.D.C. 272, 280, 483 F.2d 1275, 1283 (1973), noted that 'the tardiness of the parties cannot excuse an agency from complying with its responsibilities under NEPA.'

FN58. International Harvester Co. v. Ruckelshaus, 155 U.S.App.D.C. 411, 446, 478 F.2d 615, 650 n. 130 (1973). The court in International Harvester noted that the requirements of NEPA should be subject to a 'construction of reasonableness.' Although we do not reach the question whether EPA is automatically and completely exempt from NEPA, we see little need in requiring a NEPA statement from an agency whose raison d'être is the protection of the environment and whose decision on suspension is necessarily infused with the environmental considerations so pertinent to Congress in designing the statutory framework. *Ibid.*

Our recent decision in Arizona Public Service Co. v. FPC, FN59 which requires an agency to at least file a statement of reasons as to why an impact statement is not necessary, FN60 is inapposite to the case at bar. In Arizona Public Service v. Federal Power Commission did not look carefully at the environmental questions, but merely concluded in one sentence that there was no environmental impact. FN61 That is a far cry from the instant case, where the whole focus of the agency action has been on environmental aspects of the use of DDT. The reason for the failure to file a formal NEPA impact statement need not be explicitly stated here, for it is apparent on the face of the agency's action.

FN59, 157 U.S.App.D.C. 272, 483 F.2d 1275 (1973).

FN60, 483 F.2d at 1282.

FN61, Id. at 1280-1281.

[7] We conclude that where an agency is engaged primarily in an examination of environmental questions, where substantive procedural standards ensure full and adequate consideration of environmental issues, then formal compliance with NEPA is necessary, but functional compliance is sufficient. We are not formulating a broad exemption from NEPA for all environmental agencies or even for all environmentally protective regulatory actions of such agencies. Instead, we delineate a narrow exemption from the literal requirements for those actions which are undertaken pursuant to sufficient safeguards so that the purpose and policy behind NEPA will necessarily be fulfilled. The EPA action here meets this standard, and hence this challenge to the EPA action is rejected.

IV. CONCLUSION

On review of the decision and Order of the EPA Administrator, we find it to be supported by substantial evidence based on the record as a whole. Furthermore, we find that EPA has provided the functional equivalent of a formal NEPA report. Therefore, the challenges raised concerning the Administrator's decision to cancel DDT registrations are rejected and the Administrator's action is affirmed.

489 F.2d 1247, 6 ERC 1112, 160 U.S.App.D.C. 123

END OF DOCUMENT

Senator WHITEHOUSE. Thank you very much, Mr. Ruckelshaus. Governor Whitman.

STATEMENT OF CHRISTINE TODD WHITMAN, PRESIDENT, THE WHITMAN STRATEGY GROUP; FORMER GOVERNOR, STATE OF NEW JERSEY; AND FORMER ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Ms. WHITMAN. Thank you very much, Mr. Chairman and Ranking Member Sessions for holding this hearing and allowing us this opportunity.

I have to begin by expressing my frustration with the discussion about whether or not the Environmental Protection Agency has the legal authority to regulate carbon emissions that is still taking place in some quarters.

The issue has been settled. EPA does have the authority. The law says so, the Supreme Court has said so twice. That matter, I believe, should now be put to rest. Given that fact, the agency has decided, properly in my view, that it should act now to reduce carbon emissions to improve the quality of our air, protect the health of our people and as part of an international effort to address global climate change.

To the United States, climate change is not just an environmental issue or an economic issue. Climate change also has very real implications for our national security. Those concerns must be an important part of any discussion that takes place.

We all know that the earth's climate is changing. We also know that human activity, although not solely responsible and we should freely acknowledge that, is both contributing to that change and increasing the risks that we will push the environment beyond the point at which we can repair it.

We should know that when one is contributing to a problem, one has an obligation to be a part of the solution of that problem. That is what the EPA is trying to do.

There is, of course, honest disagreement about aspects of the agency's power plant proposal, including whether or not it may be stretching its legal authority a bit too far in some parts of the proposed rule. I am sure, however, that EPA will be made aware of all concerns during the comment period.

My hope, however, is that the primary focus will be on the substance of the proposed rule and not EPA's broad authority to promulgate it. That being said, it is clear that the Clean Air Act, as it now stands, is an imperfect tool to address the unique challenges that climate change presents. Congressional action and leadership would be a preferable approach, but since Congress has declined to act, EPA must. That is the law. Action will not come without cost, but since President Nixon created the EPA in 1970, it has sought to carry out its mandate in a balanced way.

Environmental protection and economic prosperity are not mutually exclusive goals. EPA has not always been able to reach a State of perfect equilibrium. I think we will all agree to that. It has, however, consistently struck a reasonable balance that protects both the health of the environment and the health of the economy.

From 1980 to 2012, the total emissions in the United States of six common air pollutants dropped 67 percent. At the same time,

our population grew by 38 percent. Our energy consumption increased by 27 percent and our GDP more than doubled in constant dollars.

More people consuming more energy emitted much less pollution without sacrificing economic growth. That is clear evidence of the balance that EPA has been able to strike in the past. If the past is prologue, further reductions are both achievable and affordable.

Mr. Chairman, my hope is that Congress will at long last acknowledge that climate change is real, that humans are contributing to it, and that the potential consequences of inaction are far greater than the projected costs of action.

We have specific and scientific consensus on this issue. What we need is political consensus. The two parties were able to rally around a common purpose in the early days of the modern environmental policymaking. It is urgent that they do so again.

Thank you very much.

[The prepared statement of Ms. Whitman follows:]

**Statement of the Honorable Christine Todd Whitman
before the
United States Senate Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Safety
Washington, D.C.**

June 18, 2014

Thank you, Mr. Chairman (Whitehouse) and Ranking Member Sessions for the opportunity to appear before you this morning. It has been some time since I have appeared before a Senate committee. It's good to be with you.

I must begin by expressing my frustration that the discussion about whether the Environmental Protection Agency has the legal authority to regulate carbon emissions is still taking place in some quarters.

The issue has been settled. EPA does have the authority. The law says so and the Supreme Court has said so twice. The matter should be put to rest.

Given that fact, the Agency has decided – properly, in my view – that it should act now to reduce carbon emissions to improve the quality of our air, protect the health of our people, and as part of an international effort to address global climate change.

For the United States, climate change is not just an environmental issue or an economic issue. Climate change also has very real implications for our national security, and those concerns must be an important part of the discussion.

We all know, after all, that the earth's climate is changing. We also know that human activity, although not solely responsible, as we should freely acknowledge, is both contributing to that change and increasing the risk that we will push the environment beyond the point at which we can repair it. And we should know that when one is contributing to a problem one has an obligation to contribute to its solution. That's what the EPA is trying to do.

There is, of course, honest disagreement about aspects of the Agency's power plant proposal, including whether it may be stretching its legal authority a bit too far in some parts of the proposed rule. I'm sure, however, that EPA will be made aware of any and all concerns during the comment period. But I hope the primary focus will be on the substance of the proposed rule, and not EPA's broad authority to promulgate it.

That being said, it's clear that the Clean Air Act, as it now stands, is an imperfect tool to address the unique challenges that climate change presents. Congressional action and leadership would be a preferable approach. But since Congress has declined to act, the EPA must.

Action will not come without cost. But since President Nixon created the EPA in 1970, it has sought to carry out its mandate in a balanced way. Environmental protection and economic prosperity are not mutually exclusive goals.

EPA has not always been able to reach a state of perfect equilibrium. It has, however, consistently struck a reasonable balance that protects both the health of the environment and the health of our economy.

To illustrate, from 1980 to 2012, the total emissions in the United States of six common air pollutants dropped by 67 percent. At the same time, our population grew by 38 percent, our energy consumption increased by 27 percent, and our GDP more than doubled, in constant dollars.

So more people, consuming more energy, emitted much less pollution without sacrificing economic growth. That is clear evidence of the balance the EPA has struck.

If the past is prologue, further reductions are achievable and affordable.

Mr. Chairman, my hope is that Congress will, at long last, acknowledge that climate change is real, that humans are contributing to it, and that the potential consequences of inaction are far greater than the projected costs of action.

We have a scientific consensus around this issue. We also need a political consensus.

The two parties were able to rally around a common purpose in the early days of modern environmental policymaking. It is urgent that they do so again.

Thank you.

POLITICOMAGAZINE



IN THE ARENA

The Climate Is Changing. Republicans Need to Open Their Eyes Before It's Too Late.

By CHRISTINE TODD WHITMAN | May 14, 2014

This week, two teams of scientists announced that the West Antarctic ice sheet has begun collapsing, beginning what they call an “unstoppable” process that could raise sea levels by as much as 15 feet over time. “This is really happening,” Thomas P. Wagner, one of the researchers, told the *New York Times*. “There’s nothing to stop it now.”

The timing was especially unfortunate for Marco Rubio, the Florida Republican senator and 2016 hopeful, who had just cast doubt on

<http://www.politico.com/magazine/story/2014/05/my-party-need...> 6/11/2014

the phenomenon of human-induced climate change, telling ABC News, “I do not believe that human activity is causing these dramatic changes to our climate the way these scientists are portraying it.”

Rubio has expressed more reasonable positions on the topic in the past—and he quickly sought to clarify his remarks—but I do not entirely blame him for his rhetorical shift. In an annual Pew poll, only 14 percent of Republicans cited climate change as a top policy priority. That’s down from 23 percent in 2007, the first year Pew included climate change in its priority list. The party has clearly changed in those seven years, and Rubio knows where his voting base for 2016 is on the issue.

This is not simply a problem in the Republican Party, though. The American public routinely ranks addressing climate change low on its list of priorities for Washington. This year it ranked 19th among 20 issues tested by Pew, just behind “dealing with moral breakdown” and “improving roads, bridges, public transit.”

The climate issue is politically challenging not only because it’s at the bottom of people’s priority lists, but also because of overreach on both sides of the debate. Humans aren’t the sole “cause” of climate change, and environmentalists have done a disservice in making that claim too assertively. Our activities are exacerbating natural phenomena, making us part of the problem, but the Earth and its climate has been changing since it was formed. Because of human activity, things *are* changing faster than nature or humans can

adapt, and the sooner we start taking steps to slow things, the better off we will be.

The modern environmental movement arguably began with Teddy Roosevelt, the Republican president who established the national park system. A Republican president, Richard Nixon, and a Democratic Congress created much of our landmark environmental legislation, including the Clean Air Act and the establishment of the Environmental Protection Agency. But Republicans have gotten away from those values in recent years. The only way to return the GOP to its roots and, in turn, make headway on climate change is by ensuring that Republicans—and all Americans—recognize the very real economic costs of not protecting our environment.

Scientists have long predicted that one of the consequences of climate change will be more frequent and more severe storms. They can't predict where and when they will occur, but the extreme magnitude of them reflects climate change. We saw the destruction wrought by Hurricane Sandy in 2012, and I do not want anyone to have to endure what citizens of the New Jersey and New York coastlines experienced in that storm. Taking just my home state as an example, New Jersey's 127 miles of sandy beaches contribute approximately \$20 billion in economic activity to New Jersey's economy. More frequent and more severe storms means more homes and businesses destroyed, state economies blighted and of course, most importantly, more lives lost. We simply cannot afford to let that happen.

And the climate's not the only thing at stake here. Recent studies linking various health and economic impacts of environmental contamination should be enough to give any policymaker pause: the connection between certain pesticides and Parkinson's, the correlation between elevated lead in gasoline with crime rates and the finding that pregnant women who were exposed to high levels of diesel particulates were twice as likely to have an autistic child. In our necessary mission to grow the economy, we cannot neglect environmental stewardship; the price we pay is much greater than we can afford, both in terms of dollars and human lives.


This is no zero-sum game. In fact, the more our economy grows, the better we ought to be able to protect the planet—and ourselves. Recently economists have hypothesized what is called the “environmental Kuznets curve,” which shows that after a certain point in a country's development, GDP continues to grow even as the level of environmental pollutants decreases. To use just one example, between 1970 and 2006, U.S. GDP grew by 195 percent, yet thanks to regulatory changes annual emissions of carbon monoxide, nitrogen oxide, sulfur dioxide, and lead all decreased significantly.

I remain confident that economic prosperity and environmental protection are not mutually exclusive goals, and as soon as my party recognizes the exorbitant economic costs of *not* acting on climate change, I believe we will start to make progress. It is imperative that Congress make this issue a priority. I only hope it's not already too late.

The Climate Is Changing. Republicans Need to Open Their Eye... Page 5 of 5

Christine Todd Whitman, former governor of New Jersey and administrator of the U.S. Environmental Protection Agency, is president of the Whitman Strategy Group.

Additional credits:

 Lead image by Getty.

Environment and Public Works Committee Hearing

June 18, 2014

Follow-up Questions for Written Submission

Questions for Whitman

Questions from:

Senator Sheldon Whitehouse

1. Before many environmental regulations are applied, dire consequences and worst fear outcomes are usually perpetuated. How did the worst fears and assumptions of bad outcomes from environmental regulations turn out in reality as the rules were applied in your own experience?

As I indicated in my testimony, environmental protection and economic growth can go hand in hand. From 1980 to 2012, the total emissions in the United States of six common air pollutants dropped by 67 percent. At the same time, our population grew by 38 percent, our energy consumption increased by 27 percent, and our GDP more than doubled, in constant dollars. As I mentioned at the hearing, one example during my tenure was the regulation of diesel non-road engines. When we began the regulatory process, industry complained that they couldn't possibly meet the new, cleaner engine standards in the timeframe proposed and that it would be very costly. As the process proceeded, one company eventually came forward and said they could meet the new standards within the timeframe. As the regulations went into effect, all of the companies were able to comply without dire consequences, and significant clean air benefits have been achieved.

EPA has compiled on their website the costs and benefits of the various Clean Air Act regulations at: <http://www.epa.gov/cleanairactbenefits/economy.html>

Questions from:

Senator Cory Booker

1. Governor Whitman, I appreciated your opening comments which recognized that environmental protection and economic prosperity are not mutually exclusive goals. Since 2009, the nine states participating in the regional cap-and-trade program known as RGGI

have cut emissions by 18 percent, while their economies grew by nearly 9 percent during that time period. I believe that New Jersey should re-join RGGI.

- a. In light of the proposed new EPA power plant regulation which would give flexibility to states in how to reduce emissions, do you believe that New Jersey should now consider re-joining RGGI?

I will leave that decision to Gov. Christie.

2. From my research it seems that New Jersey is particularly vulnerable to the effects of climate change. Not only are sea levels off the Jersey Coast expected to rise more than the global average in coming years, but our coast is also slowly sinking over time. All of this adds up to potentially catastrophic future flooding.

- a. Is this consistent with your understanding of the threat climate change poses to New Jersey?

I would agree that, with 127 miles of beach front, New Jersey is certainly at significant risk from sea level rise, but I'm not sure that it is more or less vulnerable than other coastal states.

3. Governor Whitman, nationally we get about 20 percent of our electricity from nuclear energy. But in New Jersey we get nearly 50% of our electricity from nuclear.

- a. As a carbon free source of base load power, do you see more nuclear energy as part of the solution towards significant emissions reductions?

Yes

Questions from:

Senator David Vitter

1. Author and environmental activist Bill McKibben has written that “[y]ou can have a healthy fossil-fuel industry or a healthy planet, but you can’t have both.”

Do you agree with this statement?

No. This is not an either/or situation. As we have seen from other resource and environmental challenges, there is great potential in new technology that will allow us to use responsibly such resources even as we move to a low-carbon economy.

2. Mr. McKibben has also written that “one way to fight the power [of fossil fuel companies] is to stop using fossil fuel.”

Do you think this is realistic for consumers, in light of the fact that, as the International Energy Agency noted, “Despite all the attention given to renewable energy, fossil fuels still produce about four-fifths of the energy consumed worldwide?” Moreover, by 2050, the IEA projects that, even with its most aggressive carbon reduction scenario, fossil fuels would still provide 45 percent of global energy demand. Do you agree with this projection? More broadly, do you agree that, even as countries take steps to reduce carbon emissions, fossil fuels will continue to comprise a substantial portion of the global energy mix in the coming decades?

I agree that fossil fuels make up a substantial part of our energy mix and will continue to do so for some time. My hope is that we can migrate to cleaner sources of power over time, such a nuclear power and renewable energy, and can increase our efforts at conservation and efficiency. Within the fossil fuels, natural gas is cleaner than coal and can be an important fuel, particularly in the nearer term, and hopefully we can transition to cleaner coal as the technology becomes available/affordable.

3. Mr. McKibben has written that a “huge problem with increased reliance on cheap natural gas: it undercuts that transition to zero-carbon energy sources like solar and wind power, locking us into long-term reliance on fossil fuels.”

Do you agree with this statement? Do you believe that “reliance on cheap natural gas” has been harmful or helpful to the U.S. economy, particularly for consumers and manufacturers?

I do not agree; I do not think it is an either/or proposition. We can use more natural gas while also increasing our use of renewables. Overall, natural gas has been helpful to our country since much of it is domestically produced, and it has allowed for the reduction in coal use. We need to be careful not to over-invest in natural gas as an electricity source, however, because of its price volatility. We also need to be careful that the gas is obtained in a safe and environmentally protective manner. This is why I agreed to serve on the Board of the Center for Sustainable Shale Development (CSSD), a collaboration built on constructive engagement among environmental organizations, philanthropic foundations, and energy companies in the Appalachian Basin working to develop rigorous performance standards for sustainable shale development.

The larger issue, however, involves the absence of any national energy policy that sets a long-term agenda to reach a low-carbon economy to meet the challenges of a changing climate. We, as a nation, would be far better off with such an energy policy, instead of the ad hoc approach we now take.

4. Activist Naomi Klein wrote that “with the fossil-fuel industry, wrecking the planet is their business model. It’s what they do.”

Do you agree with this statement?

No

5. On November 3, 2013, climate scientists Kerry Emanuel, Tom Wigley, James Hansen, and Ken Caldeira, in an open letter to environmentalists, disputed the notion that world energy demand could be met with 100 percent renewables. Nuclear, they contend, must be part of the equation: “Renewables like wind and solar and biomass will certainly play roles in a future energy economy, but those energy sources cannot scale up fast enough to deliver cheap and reliable power at the scale the global economy requires. While it may be theoretically possible to stabilize the climate without nuclear power, in the real world there is no credible path to climate stabilization that does not include a substantial role for nuclear power.”

Do you agree with the authors of this statement?

Yes

6. According to Ted Nordhaus and Michael Schellenberger of the Breakthrough Institute, “Whatever their merits as innovation policy, Germany’s enormous solar investments have had little discernible impact on carbon emissions. Germany’s move away from baseload zero-carbon nuclear has resulted in higher coal consumption since 2009. In 2012, Germany’s carbon emissions rose 2 percent.”

Do you agree with this statement? Do you believe the U.S. should deploy more nuclear instead of relying on renewables to provide baseload power?

I agree with the statement from the Breakthrough Institute. I do not believe, however, that nuclear and renewables are an either/or proposition. I support increasing our use of nuclear power while also expanding our use of renewables. Most renewables, like wind and solar, are not baseload power, however, and require backup power.

7. According to an analysis by the *Economist* magazine, renewable energy targets in Germany are popular, but their economic consequences are not. As the *Economist* explained, consumers “increasingly dislike” the “side-effects” of subsidizing renewable energy. “First, there is the rising cost of electricity. This is a consequence of a renewable-energy law passed in 2000 which guarantees not only 20 years of fixed high prices for solar and wind producers but also preferred access to the electricity grid. As a result, Bavarian roofs now gleam with solar panels and windmills dominate entire landscapes. Last year, the share of renewables in electricity production hit a record 23.4%.”

The *Economist* explained further, "This subsidy is costly. The difference between the market price for electricity and the higher fixed price for renewables is passed on to consumers, whose bills have been rising for years. An average household now pays an extra €260 (\$355) a year to subsidise renewables: the total cost of renewable subsidies in 2013 was €16 billion. Costs are also going up for companies, making them less competitive than rivals from America, where energy prices are falling thanks to the fracking boom."

Do you believe that Germany's renewable energy policies have delivered zero-carbon energy without harming consumers? Do you believe that states, as they attempt to meet EPA's emissions targets under the proposed Clean Power Plan for existing power plants, can both deploy more renewable energy while doing so without raising the cost of electricity, or imposing higher costs on consumers?

I agree that renewable energy can be costly. I will defer to the states on how they will comply with the Clean Power Plan, but in general I believe we need an "all of the above" strategy to meet our energy needs while also working to reduce emissions.

8. Do you think the U.S. drilling boom, spurred by the technological advance of hydraulic fracturing, coupled with horizontal drilling, has been positive or negative for the U.S. economy, particularly for consumers?

I believe it has been a net positive since it is a domestically-sourced fuel and it has allowed for us to reduce our coal use. On the other hand, natural gas is subject to price spikes so I believe we need to be careful not to over-invest in natural gas plants as an electricity source. Also, we must be sure that the natural gas is extracted safely, in an environmentally protective way. That is one of the reasons I've agreed to serve on the Board of the Center for Sustainable Shale Development, (CSSD), a collaboration built on constructive engagement among environmental organizations, philanthropic foundations, and energy companies in the Appalachian Basin working to develop rigorous performance standards for sustainable shale development.

9. Do you think EPA's Clean Power Plan will have a meaningful effect on reducing global greenhouse gas concentrations by 2030? Please explain how the Clean Power Plan will prevent rising sea levels, droughts, wildfires, and severe weather.

I will defer to the EPA to defend their plan and to explain its results. I do believe, however, that it is important for our country to take meaningful action on climate change and to show leadership on the issue if we are going to get the rest of the world to take action also.

10. As you are at least tangentially aware, fossil resources provide the base molecules and products that we need to manufacture virtually everything we use in a modern society. In fact, coal combustion byproducts are what comprise, strengthen and make possible our roads and infrastructure. Chemicals derived from oil and natural gas production are what are refined and

manufactured into virtually every product we use today, from computers to our homes, and are what make possible wind turbines (all components derived, manufactured or refined from fossil fuels). Accordingly, many claims about eliminating our use of fossil resources are wholly illusory. However, in order to provide a better understanding of some of your claims regarding our nation's dependence on these resources, other than counting intermittent electricity generations as a product, please provide a comprehensive list of all the things that are a product or can be manufactured out of sunlight and wind (again please exclude electricity).

I am not sure what you mean by my "claims regarding our nation's dependence on these resources." I agree with you that we cannot eliminate the fossil fuel industry. I am not aware of products manufactured out of sunlight or wind other than electricity, although sunlight is obviously integral to industries involved in food production, lumber, etc.

11. The new NAAQS standard for PM2.5 was established in December 2012. Why would EPA purposely ignore the impact of the new standards on continuing reductions?

I would defer to EPA for a response to this question. This standard was established nearly 10 years after my departure from the agency.

12. Based on EPA's air trends data, PM2.5 concentrations have been reduced by 33% from Year 2000 to Year 2012, and the trend is for further reductions under the new regulations. Given this, how and why are "co-benefits" of the GHG NSPS justified?

Again, I would defer to EPA for information pertaining to the GHG NSPS.

13. There are serious problems with the science underpinning the PM2.5 standards. The key participants (Beale, Brenner, Wegman) were employed during your tenure at EPA.

- a) Were you ever briefed by any of these individuals?
 - b) Did you ever review the work of these individuals?
 - c) Were you ever made aware of the problems with the data?
 - d) What regulations were developed or promulgated during your tenure that were justified based on this data?
- a. Yes
 - b. No. None of these individuals reported to me so I did not review their work.
 - c. No
 - d. None that I am aware of.

14. Do you believe it is appropriate for the American public to trust EPA on any regulation that relies upon "secret science"?

I believe EPA should use the best science available when developing regulations.

15. Please explain what constitutes a violation of the Information Quality Act.

I will defer to the legal experts as to what constitutes a violation of this law. OMB guidance on the Act can be found here:

http://www.whitehouse.gov/omb/inforeg_agency_info_quality_links

16. Please explain what constitutes a violation of the Data Access Act.

I will defer to the legal experts as to what constitutes a violation of the Data Access Act. The OMB Circular on this issue can be found here: <http://www.gpo.gov/fdsys/pkg/FR-1999-10-08/html/99-26264.htm>

17. On December 4, 2001, you were advised by Dr. John Graham, OIRA:

Based on our reviews of EPA's recent rulemakings on air pollution and the agency's 2001 Regulatory Plan, it is clear that we need to understand better which sources of PM in our economy are responsible for the PM-related health effects. As the present time, there is no scientific consensus about what toxicity values are appropriate for specific types of particles and, as a result, EPA has adopted a default position in past regulatory analyses that all particles are equally toxic. However, there is emerging evidence that some types of fine particles may pose a greater health risk. The more recent multi-city studies suggest that PM appears to be more harmful in some cities than others, variation that may be attributable to the different kinds of particles found in different cities. Studies vary in their findings about which sources of PM are most strongly related to mortality, identifying a variety of sources from coal combustion and oil burning to the emissions from motor vehicles.

If research can identify those particles most responsible for health risks, it may be possible to design controls that do more for public health and cost the economy less than would occur through policies that assume all particles are equally toxic. Given the tens of billions of dollars of social costs that will be devoted to PM emissions over the next 20 years, this follow-up research should begin without delay in FY 2002.

On March 12, 2002, you responded by indicating that EPA was proceeding with more research. What were the results of that research while you were at EPA?

I am not aware of any outcomes from the research conducted that year. I left EPA in June 2003.

18. In April 2006 OIRA sent a letter to Admin Johnston (sic) indicating that there were still serious concerns about the ability of EPA to properly differentiate between the effects of PM2.5 and

PM10. Are you aware of any progress in addressing the OIRA concerns about the data and modeling used by EPA?

No

19. The ozone concentrations have been reduced 14% from 1990 to 2012 and 9% from 2000 to 2012. The national average is now below the EPA standard. How can EPA justify “co-benefits” of the GHG NSPS rule? And why has EPA not provided a baseline projection of the ozone levels?

I will defer to EPA to answer questions related to their proposed rule.

20. EPA is well aware that indoor air is a major factor in asthma incidents. How do you account for this effect in your views on the NSPS?

I will defer to EPA to answer questions about their proposal. As you know, the rule is a proposal at this point and is likely to change following the comment period.

21. The Model for the Assessment of Greenhouse Gas Induced Climate Change (MAGICC) was adopted by EPA to estimate the impacts of CO₂ reduction policies. Was this model in use during your tenure? If the model showed negligible temperature and sea level rise as a result of a proposal, how should EPA respond? Why didn't EPA present this analysis in the RIA for the GHG NSPS?

I do not know whether that model was used in my tenure. I will defer to EPA to answer questions related to the appropriate use of this model and their GHG NSPS proposal.

22. EPA has used an approach to estimate the impact of loss of discretionary income on premature death among the elderly. Was this analysis ever used during your tenure at EPA? Why weren't these results reported in the GHG RIA?

I do not know if this approach was used during my tenure. Again, I would defer to EPA as to why these results were not reported in their GHG RIA.

23. Please explain the process of photosynthesis.

See 4th grade science activities in Louisiana for a definition:
http://www.vrml.k12.la.us/4th/science/science_by_unit08/4th_sc_unit4/un4act2_sc.htm

24. How many parts per million (ppm) do humans inhale of CO₂ when they breathe? How many ppm do humans exhale when they breathe?

For gases by percentage, see <http://en.wikipedia.org/wiki/Breathing>

25. Of all the “pollutants” regulated by the Clean Air Act and EPA, please provide a list of all those humans exhale at a greater rate than they inhale and at what rate in ppm are they exhaled?

I am not aware of any pollutants that are exhaled at a greater rate than they are inhaled, as is carbon dioxide.

26. Albert Einstein once famously stated that “the right to search for truth implies also a duty; one must not conceal any part of what one has recognized to be true.” Do you agree with this statement?

Yes, in general.

- a. In light of the Einstein quote, please answer the following questions based on empirical evidence as well as provide the source for your answer:

- i. What are all the natural influences on our climate and which ones are we able to control or not control?

While the Third National Climate Assessment (NCA) can be referenced to address the entirety of the questions, some natural influences on our climate include varying solar output from the sun, volcanic eruptions, and the El Nino Southern Oscillation (ENSO). Human factors are those we can control and include the emissions of heat-trapping gases and particles as well as clearing of forests and other land-use changes.

Additionally, the third NCA report explains that natural climate drivers alone do not explain recent observed warming, and that over the last half century the majority of the warming at the global scale can only be explained by the effects of human influences, especially the emissions from burning fossil fuels and from deforestation.

- ii. For how long has the climate been changing and does climate change predate the internal combustion engine?

Natural influences on our climate have been changing our climate long before the invention of the internal combustion engine. However, the scientific consensus from the nation’s climate experts states in the third NCA that human activities have been the main driver of climate change for the last half century.

- iii. Have global average temperatures over the last 15 years been increasing, decreasing, or stayed virtually the same?

According to the National Climatic Data Center (NCDC), global average temperatures have increased 0.167°C over the last 15 years above the 20th century average – from 0.46°C above the 20th century average in 1999 to 0.62°C above the 20th century average in 2013. The NCDC also finds that 12 of the 13 warmest years on record have occurred in the last 15 years.

- iv. Has all climate change throughout earth's geologic history been negative?

The ever-changing climate has positive and negative impacts on people and the environment across regions around the world. The rate at which the climate is changing, primarily from the emissions of greenhouse gases and deforestation resulting from human activities, is expected to result in negative impacts that will outweigh positive impacts on a global scale, as stated in the latest global assessment by the leading climate scientists around the world according to the IPCC.

For example, the IPCC's AR5 report states with high confidence that "[g]lobally, positive impacts will be outweighed by the magnitude and severity of negative impacts..."

The IPCC's AR5 report also states with very high confidence that "[r]ising sea levels and storm surges, heat stress, extreme precipitation, inland and coastal flooding, drought and water scarcity, and air pollution pose widespread negative risks for people, health, livelihoods, assets, local and national economies, and ecosystems..."

- v. Over the last 100 years have hurricanes been increasing or decreasing in number and intensity?

According to the IPCC's AR5 report, limited observation capabilities have made it difficult to discern a trend in tropical cyclone activity over the last century. However, the technological advancements (e.g., the satellite era) have allowed for more comprehensive observations since the 1970s, and they have revealed a robust increase in the intensity and frequency of tropical systems in the North Atlantic. The IPCC also states

that projections for the 21st century indicate a warmer world will result in an increase in tropical cyclone strength and associated rainfall.

- vi. How does the Great Colonial Hurricane of 1635 compare to the recent history of hurricanes in the United States over the last 5 years?

The lack of observational capabilities in the 1635 present challenges in documenting the Great Colonial Hurricane (GCH) of 1635, which according to NOAA, were mainly limited to the accounts of William Bradford and John Winthrop, making a comprehensive assessment of this hurricane extremely difficult.

Technological and scientific advancements have been exponential since 1635, and assessments of tropical cyclones are now rigorous and comprehensive. When only taking into account tropical cyclones over the past 5 years that each cost the United States more than \$1 billion, NCDC estimates they caused nearly \$80 billion in aggregate costs.

- vii. What decade was the worst decade for drought in the United States?

According to Richard Heim, a meteorologist and drought expert with NCDC, "In terms of percent area of country affected by drought (as measured by the Palmer Drought Index), the 1930's Dust Bowl decade is the worst drought on record by spatial area."

According to NCDC, "[t]he 'dust bowl' effect was caused by sustained drought conditions compounded by years of land management practices that left topsoil susceptible to the forces of the wind," meaning human activities played a role in the magnitude of the drought.

- viii. What decade was the worst decade for wildfires in the United States?

According to the third NCA report, "[s]easonal and multi-year droughts affect wildfire severity. For example, persistent drought conditions in the Southwest, combined with wildfire suppression and land management practices, have contributed to wildfires of unprecedented size since 2000. Five western states (Arizona, Colorado, Utah, California, and New Mexico) have experienced their largest fires on record at least once since 2000. Much of the increase in fires larger than 500 acres occurred in the western United States, and the area burned in the

Southwest increased more than 300% relative to the area burned during the 1970s and early 1980s.”

The third NCA report also states, “[d]rought and fire risk are increasing in many regions as temperatures and evaporation rates rise. The greater the future warming, the more these risks will increase, potentially affecting the entire United States.”

- ix. Is the statement “What we do know is the temperature around the globe is increasing faster than was predicted even ten years ago” an accurate statement of global warming claims? Please provide the base source and by what you are measuring for any supporting position.

According to NCDC, global average temperatures over the last 10 years have continued to rise. While the increase temperatures has been at a rate more in-line with the lower end of some model projections, additional warming to global temperatures will only further enhance the risk we face from the impacts of climate change in the United States and globally.

- x. What is the current rate of sea level rise, and how does it compare to the first and second halves of the twentieth century? What has been the average rate of seal level rise since the last ice age?

According to the IPCC AR5 report, it is likely that global mean sea level has accelerated since 1900. For a comprehensive and detailed answer to your question, please reference the report.
<http://www.ipcc.ch/report/ar5/wg1/>

- xi. Please provide a list of the worst ten floods in world history based on human impacts, including the country and date they occurred, and the number of human lives lost.

National and international organizations like the National Climatic Data Center and the World Meteorological Organization can likely provide you with the answer to your question.

As an overall comment to your questions above, I would say that climate change is a naturally occurring phenomenon that is exacerbated by human behavior, causing the climate to change at a rate faster than the environment can adapt. While we cannot determine if a particular weather event is caused by climate change, we can expect an increased frequency of extreme weather events.

Questions from:

Senator Jeff Sessions

1. Administrator Whitman: your testimony acknowledges “honest disagreement” about “whether EPA may be stretching its legal authority a bit too far.” What did you mean by that? Would you agree that there are aspects of EPA’s proposed greenhouse gas regulations impacting power plants that may not comply with the requirements of law?

Some stakeholders are questioning EPA’s ability to regulate “beyond the fence.” I trust that the courts will determine whether EPA has this authority.

2. Even the mere threat of expensive new EPA regulations can hinder job creation and economic growth. President Obama conceded this fact when, in 2011, he directed EPA to not move forward with reconsideration of the ozone standard “particularly as our economy continues to recover” (Pres. Obama, 9/2/2011). Isn’t it true that onerous climate regulations can increase energy costs on American families?

Climate regulations may lead to increased energy costs but the costs of not acting are significant as well.

3. The U.S. Supreme Court recently ruled in the case of Utility Air Regulatory Group v. Environmental Protection Agency. Do you agree with the Court’s decision?

While I have read press reports of the decision, I have not reviewed the court’s ruling in depth. It was a fractured and complicated decision, but I was encouraged that the Court largely upheld the ability of the EPA to regulate greenhouse emissions.

Senator WHITEHOUSE. Thank you very much, Governor Whitman.

We now turn to Mr. William Reilly. Welcome.

STATEMENT OF WILLIAM K. REILLY, SENIOR ADVISOR, TPG CAPITAL; CHAIRMAN EMERITUS, CLIMATEWORKS FOUNDATION; AND FORMER ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. REILLY. Thank, Mr. Chairman, Senator Sessions and members of the subcommittee.

Thank you for convening this session on one of the critical challenges our Country faces. It is a privilege to appear with two of my predecessors and Governor Whitman who served after us.

After I was nominated in 1988, my first briefing on climate was by Frank Press, president of the National Academy of Sciences, followed soon by briefings on EPA's reports on climate effects and policy options commissioned by Administrator Thomas.

Incidentally, 11 National Academy of Science since that time have formally reflected upon and studied climate science and have concluded that humans are affecting the climate and greenhouse gases are changing it.

At that time, climate science was a matter of computer modeling, coupled with theory, notably the greenhouse effect, which explains why the earth's atmosphere is hospitable to life. At that time, the concern was sufficient to prompt then Secretary of State Jim Baker in his first statement on the topic to signal a policy of no regrets. We will consider those measures, he said, that address current priorities that also help reduce gas emissions.

The 1987 Montreal Protocol, which Lee Thomas helped negotiate, is an example of this kind of thinking. That was 25 years ago. Today, the models are far more reliable and they are buttressed by literally thousands of credible scientific studies documenting changes underway.

I listened to Senator Boozman. There are still many outstanding questions, the pace of change, tipping points, local impacts, fugitive methane emissions and more. The earth's climate is a complex system. We do not have a complete picture. We welcome serious, constructive critiques that examine gaps, anomalies and uncertainties. That is how science advances our understanding of such complex issues.

Change is underway. We can expect to see many more disruptions, more intense storms, more wildfires, the spread of pests and diseases, dengue fever will arrive in America, storm surges that overwhelm coastal communities, heat waves and other impacts on our health, on water resources, on food production and on other sectors of our economy.

The longer we delay, the more adverse the impacts will be and the more expensive will be to address them. Reducing greenhouse gas emissions, especially carbon dioxide, can help fend off more draconian impacts later this century.

I increasingly believe we have a second, immediate agenda, namely to prompt States, communities and our Federal agencies to begin to adapt to likely changes and to buildup resiliency. Dealing with flooding and meeting future projections from storm surges will

be costly and add to growing demands on Federal, State and local budgets.

I chaired a task force on adaptation for Governor Schwarzenegger . We concluded that the 1,100 levees in the Sacramento Basin simply will not survive anticipated sea level rise.

Climate change and associated disruptions, as has been pointed out, are a global problem. Absent action by China, Brazil, India and other fast growing economies, what we do alone will not suffice.

Action by the United States, if not sufficient, is nonetheless necessary if we are to have credibility to negotiate with other countries who typically fault the developed world for causing the problem and worry that carbon constraints will thwart their legitimate needs for economic growth.

I must express some disappointment that the debate between developed and developing countries has tended to focus more on how much financial aid advanced nations are willing to provide rather than on the substance of how much and how to reduce greenhouse gas emissions in those nations.

I participated for a number of years in the China Sustainable Energy Forum. At first, throughout the 1990's, any mention of climate change triggered a lecture about how those who caused the problem should pay for fixing it globally.

As China has begun to experience serious impacts, especially in water resources, it now is a matter of self interest that they respond and join constructively in international negotiations, even as they continue to assert the national interest in development.

China announced 1 day after the announcement by EPA of its new carbon rule that they intend to build a cap on carbon dioxide. This is obviously a response to the United States, a significant one, and it is further demonstration of U.S. leadership.

Markets the world over seek clean energy technologies. Well over a billion people do not have electricity. For many, it will be small scale, renewable technologies that will help improve their lives and offer new economic opportunities.

Technology and innovation are a comparative advantage for our Country that will help control what we can and help find ways to replace the most serious contributors to the climate challenge.

This is an enormous opportunity for U.S. entrepreneurs and exporters, even as we deploy more clean energy at home. While the President has taken many important steps, a full and constructive response is needed from Congress.

In closing, I have little doubt that the planet will endure major climate disruptions. There have been many such episodes in the past due to natural causes, but you would have to reject the greenhouse effect out right to conclude that human activities pumping millions of tons of CO₂ and other greenhouse gases into the atmosphere every year are having little or no impact on the earth's climate.

That is simply not a tenable position. For me, the question is how hospitable this earth remains for future generations and for civilization as we know it.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Reilly follows:]

**Statement of the Honorable William K. Reilly
before the
Senate Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Safety
Washington, D.C.
June 18, 2014**

Mr. Chairman, Members of the Subcommittee,

Thank you for convening this session on one of the critical challenges our country faces. It is a privilege to appear with two of my predecessors—three if you count Ruckelshaus twice!—and Governor Whitman, who served after us.

Each of us, during our tenures, had to navigate the complexities of law, science, economics, public policy, the prevailing winds of politics and public sentiments, and more on any number of difficult issues to fulfill the intent of Congress and Americans' aspirations for both a healthy, productive environment and a prosperous economy. We did so in what Bill called a "fishbowl," all of it out in the open.

After I was nominated, my first briefing was on climate by Frank Press, president of the National Academy of Sciences, followed soon by briefings on EPA's reports on climate effects and policy options, commissioned by Administrator Thomas. At that time, climate science was a matter of computer modeling coupled with theory, notably the "greenhouse effect," which I'm sure you appreciate explains why the earth's atmosphere is hospitable to life. At the time, the concern was sufficient to prompt then-Secretary of State Jim Baker in his first statement on the topic to signal a policy of "no regrets"—we will consider those measures that address current priorities that also help reduce greenhouse gas emissions. The 1987 Montreal Protocol, which Lee helped negotiate, is an example of this kind of thinking.

With this as backdrop, President George H.W. Bush ensured that our Administration took climate change seriously. I met regularly with my counterparts from the European Union to discuss content, timing, targets, and other key issues. We hosted a major conference during the

President's term. And we negotiated with other countries the Framework Convention on Climate Change, which the President signed at the Rio Earth Summit in 1992 and submitted to the Senate for ratification, which occurred in October 1992. The Framework Convention remains, for the United States, the most important international treaty in effect on climate change.

That was 25 years ago. Today, the models are far more reliable and they are buttressed by literally thousands of credible scientific studies documenting changes underway. I hasten to add there are still many outstanding questions—the pace of change, tipping points, local impacts, fugitive methane emissions, and more. Earth's climate is a complex system and we do not have a complete picture. We welcome serious, constructive critiques that examine gaps, anomalies, uncertainties. That is how science advances our understanding of such complex issues.

That said, change is underway and we can expect to see many more disruptions, more intense storms, more wildfires, the spread of pests and diseases, storm surges that overwhelm coastal communities, heat waves, and other impacts on our health, on water resources, on food production, and on other sectors of our economy. The longer we delay, the more adverse the impacts will be, and the more expensive to address them.

Reducing greenhouse gas emissions, especially carbon dioxide, can help fend off more draconian impacts later this century. Yet I increasingly believe that we have a second, immediate agenda, namely to prompt states and communities and our federal agencies to begin to adapt to likely changes and to build up resiliency. If you read the *Washington Post's* June 1st front-page story on Norfolk, Virginia, you get an excellent picture of the dilemma that community faces—not to mention what the Navy's base there faces. Dealing with flooding and meeting future projections from storm surges will be costly, and the growing demands on federal, state, and local budgets come at a time when the country seeks to reduce federal debt and tame federal deficits.

In other words, not only is climate change likely to affect natural resources and public health, but it will have profound effects on our economy.

We have to take seriously that climate change and the associated disruptions are a global problem, as Members of Congress, policymakers, scientists, and virtually everyone I know have explicitly acknowledged. Absent action by China, India, and other fast-growing economies, what we do alone will not suffice. Action by the United States, if not sufficient, is nonetheless absolutely necessary if we are to have the credibility to negotiate with other countries, who typically fault the developed world for causing the problem and worry that carbon constraints will thwart their legitimate need for economic growth. We have to take this need for development seriously and frame our approach in the international arena with this in mind.

In this international context, I must express some disappointment that the debate between developed and developing countries has tended to focus more on how much financial aid advanced nations are willing to provide rather than on the substance of how much and how to reduce greenhouse gas emission in those nations. I have participated for years in the China Sustainable Energy Forum; at first, any mention of climate change triggered a lecture about how those who caused the problem should pay for fixing it globally. That has changed: as China has begun to experience serious impacts, especially in water resources, you now hear China's officials and academics taking the matter very seriously. It is now a matter of national self-interest that they respond and join constructively in international negotiations even as they continue to assert their national interest in development.

Markets the world over eagerly seek clean energy technologies. Well over a billion people do not have electricity. For many, it will be small-scale, renewable technologies that will help improve their lives, offer new economic opportunities, preserve essential medicines and reduce food waste as refrigeration becomes possible, and more.

Technology and innovation are a comparative advantage for our country that will help control what we can and help find ways to replace the most serious contributors to the climate challenge. This is an enormous opportunity for U.S. entrepreneurs and exporters even as we deploy more clean energy at home. Former Iowa Governor Chip Culver made wind power a priority and that state went from 5% to 20% of electricity generation from wind power in 5 years; importantly, the state attracted turbine and other manufacturers, which in turn spawned 200 new small businesses in their supply chains. When the Governor asked the companies what they most needed, the response was worker training and education. We can learn from this experience.

We have the know-how, the ingenuity, the entrepreneurial spirit, the ability to demonstrate leadership in tackling this challenge. While the President has taken many important steps, a full and constructive response is needed from Congress, and I encourage you and your colleagues to have the kinds of discussions that will lead to congressional action.

In closing, I have little doubt that the planet will endure major climate disruptions. As scientists have confirmed, there have been many such episodes in the past due to natural causes—changes in solar output, shifts in the earth’s orbit, meteor impacts, volcanic eruptions, and the like. But you would have to reject the “greenhouse effect” outright to conclude that human activities pumping millions of tons of CO₂ and other greenhouse gases into the atmosphere every year are having little or no impact on the earth’s climate. That is simply not a tenable position. For me, the real question is about the future well-being of our communities, our settlements, our economy—in short, how hospitable this earth remains for future generations and for civilization as we know it.

Thank you.

July 23, 2014

**RESPONSES FROM THE HONORABLE WILLIAM K. REILLY
TO QUESTIONS FROM ENVIRONMENT AND PUBLIC WORKS CHAIRMAN BOXER
AND RANKING MEMBER VITTER, PER JULY 9, 2014 LETTER**

Senator Whitehouse

1. **Before many environmental regulations are applied, dire consequences and worst fear outcomes are usually perpetuated. How did the worst fears and assumptions of bad outcomes from environmental regulations turn out in reality as the rules were applied in your own experience?**

Since the landmark environmental statutes were passed during the 1970s, we have repeatedly heard from the regulated communities and others that this or that rule will harm the economy, cost jobs, drive industry overseas, and otherwise imperil the United States.

In 1979, The Conservation Foundation, which I headed, released a detailed study *Environmental Regulation of Industrial Plant Siting* which concluded that compliance costs for these regulations constituted a small fraction of production costs. Labor, raw materials, transportation, and other factors were the primary drivers for business decisions.

Moreover, American ingenuity and entrepreneurship have demonstrated again and again that when we put our mind to it, innovation can help meet environmental objectives. We heard that catalytic converters would undermine the auto industry; they didn't. We heard that taking lead out of gasoline would harm automobile engines; it didn't. During the 1990 clean air amendment negotiations, we were told that reformulating gasoline to reduce contaminants was costly. When the law passed, industry found a way to meet the goal.

The fact is since 1970 we have made enormous strides in reducing conventional air pollutants even while our population has grown, our energy consumption has grown, our economy has doubled or more.

Senator Vitter

1. **Author and environmental activist Bill McKibben has written that “[y]ou can have a healthy fossil-fuel industry or a healthy planet, but you can't have both.”
Do you agree with this statement?**

Continuing each year to pump billions of tons of greenhouse gases into the atmosphere, in my view, can only further destabilize conditions with serious adverse consequences, some of which we can foresee, others that will surprise us. Thus, I see the challenge

ahead as moving to low carbon energy over time in ways that continue to maintain our economy.

2. Mr. McKibben has also written that “one way to fight the power [of fossil fuel companies] is to stop using fossil fuel.”

Do you think this is realistic for consumers, in light of the fact that, as the International Energy Agency noted, “Despite all the attention given to renewable energy, fossil fuels still produce about four-fifths of the energy consumed worldwide?” Moreover, by 2050, the IEA projects that, even with its most aggressive carbon reduction scenario, fossil fuels would still provide 45 percent of global energy demand. Do you agree with this projection? More broadly, do you agree that, even as countries take steps to reduce carbon emissions, fossil fuels will continue to comprise a substantial portion of the global energy mix in the coming decades?

I see reliance on fossil fuels globally continuing for some time to come even with the most optimistic scenario for deploying renewable energy.

3. Mr. McKibben has written that a “huge problem with increased reliance on cheap natural gas: it undercuts the transition to zero-carbon energy sources like solar and wind power, locking us into long-term reliance on fossil fuels.”

Do you agree with this statement? Do you believe that “reliance on cheap natural gas” has been harmful or helpful to the U.S. economy, particularly for consumers and manufacturers?

At the time of the 1990 amendments to the clean air act, no one had any idea that with new drilling techniques natural gas would become more available. Nor did any of the experts on the National Commission on Energy Policy, which included the CEO of a major oil company, a former Deputy Secretary at DOE, utility executives, scientists, and others appreciate what was coming when we released our report in 2004. All argued for conserving natural gas supplies for those purposes for which there were no alternatives.

The advent of natural gas through horizontal drilling and hydraulic fracturing has been a game changer. Though there are long term implications since new power plants typically have a 40 year or longer life span, there seems to me ample evidence that new sources of natural gas have been a plus for the country and the economy – provided it is extracted safely with proper safeguards regarding waste disposal, protection of water resources, reduction of fugitive air emissions, including methane leaks, and with community development impacts in mind, as well as respect for private property rights. With sufficient planning, preparedness, safety procedures, and oversight, I believe hydraulic fracturing can proceed as an industrial operation.

4. **Activist Naomi Klein wrote that “with the fossil-fuel industry, wrecking the planet is their business model. It’s what they do.”**
Do you agree with this statement?

I'm not aware of any U.S. company, fossil fuel or otherwise, that deliberately seeks as a business strategy to “wreck the planet.” That said, there have been many examples during our history when unintended consequences, new information about impacts, technological innovation that leads to less costly, less troublesome modes, or other factors have caused us to re-think how we do business, how we sustain our economy and improve opportunities and the quality of life for all Americans.

5. **On November 3, 2013, climate scientists Kerry Emanuel, Tom Wigley, James Hansen, and Ken Caldeira, in an open letter to environmentalists, disputed the notion that world energy demand could be met with 100 percent renewables. Nuclear, they contend, must be part of the equation: “Renewables like wind and solar and biomass will certainly play roles in a future energy economy, but those energy sources cannot scale up fast enough to deliver cheap and reliable power at the scale the global economy requires. While it may be theoretically possible to stabilize the climate without nuclear power, in the real world there is no credible path to climate stabilization that does not include a substantial role for nuclear power.”**
Do you agree with the authors of this statement?

I consider nuclear power a significant, indeed essential, part of the country's electricity generation. I say this with full appreciation that a new large, multi-reactor plant can cost in the range of \$12 to \$14 billion or more, prompting the former CEO of Exelon, the utility with the largest nuclear fleet, to comment that was the market capitalization of his entire company and he would not be willing to bet his company on such a costly undertaking.

Add to this challenge the matter of waste disposal and the United States' clear security interest in preventing nuclear proliferation.

That is one reason I'm intrigued by the prospect of small scale reactors, less costly and suitable for deployment at installations, campuses, industrial parks and in combination with micro grids.

Their deployment is some years off, I believe, and thus we need to look for means of ensuring that current nuclear plants can continue to contribute to meeting the country's energy demand, with safety in mind, of course. I've been impressed with the Institute for Nuclear Power Operations' ability to improve performance continually.

6. **According to Ted Nordhaus and Michael Schellenberger of the Breakthrough Institute, “Whatever their merits as innovation policy, Germany’s enormous solar investments have had little discernible impact on carbon emissions. Germany’s move away from baseload zero-**

carbon nuclear has resulted in higher coal consumption since 2009. In 2012, Germany's carbon emissions rose 2 percent."

Do you agree with this statement? Do you believe the U.S. should deploy more nuclear instead of relying on renewables to provide baseload power?

Though I am familiar with Germany's intent to advance renewable power, I do not have the precise numbers of what has or has not been achieved.

As to the future of nuclear power, please see my response to question 5. I believe market forces will largely shape what kind of nuclear plants are built.

7. According to an analysis by the *Economist* magazine, renewable energy targets in Germany are popular, but their economic consequences are not. As the *Economist* explained, consumers "increasingly dislike" the "side-effects" of subsidizing renewable energy. "First, there is the rising cost of electricity. This is a consequence of a renewable-energy law passed in 2000 which guarantees not only 20 years of fixed high prices for solar and wind producers but also preferred access to the electricity grid. As a result, Bavarian roofs now gleam with solar panels and windmills dominate entire landscapes. Last year, the share of renewables in electricity production hit a record 23.4%."

The *Economist* explained further, "This subsidy is costly. The difference between the market price for electricity and the higher fixed price for renewables is passed on to consumers, whose bills have been rising for years. An average household now pays an extra €260 (\$355) a year to subsidise renewables: the total cost of renewable subsidies in 2013 was €16 billion. Costs are also going up for companies, making them less competitive than rivals from America, where energy prices are falling thanks to the fracking boom."

Do you believe that Germany's renewable energy policies have delivered zero-carbon energy without harming consumers? Do you believe that states, as they attempt to meet EPA's emissions targets under the proposed Clean Power Plan for existing power plants, can both deploy more renewable energy while doing so without raising the cost of electricity, or imposing higher costs on consumers?

I do not know enough about Germany's current electricity costs, the history of such costs, the level of subsidies or other factors to answer the first part of the question.

Regarding the impact of EPA's proposal, the proposal is just that - a proposal subject to extensive consultations with stakeholders, which I'm confident will lead to adjustments in the final rule. As that rule takes shape, more reliable cost estimates should be forthcoming.

My sense is that electricity costs will rise regardless of this rule as we will have to deal forthrightly with grid reliability, planning, preparedness, and recovery related to natural disasters, cybersecurity, power outages, more costly fuel extraction methods, as well as externalities – impacts on health, crops, buildings, and the like.

8. Do you think the U.S. drilling boom, spurred by the technological advance of hydraulic fracturing, coupled with horizontal drilling, has been positive or negative for the U.S. economy, particularly for consumers?

Please see the response to question 3.

9. Do you think EPA's Clean Power Plan will have a meaningful effect on reducing global greenhouse gas concentrations by 2030? Please explain how the Clean Power Plan will prevent rising sea levels, droughts, wildfires, and severe weather.

I refer to my testimony in which I stated that EPA's action, indeed U.S. action, by itself will not be sufficient to reverse or slow the impacts associated with climate change. Nonetheless, I see it as an essential step – absent Congressional action on a national response – if the United State is to have credibility in negotiating an international framework that ensures China, India, Brazil, and other fast growing economies meet their obligations.

10. As you are at least tangentially aware, fossil resources provide the base molecules and products that we need to manufacture virtually everything we use in a modern society. In fact, coal combustion byproducts are what comprise, strengthen and make possible our roads and infrastructure. Chemicals derived from oil and natural gas production are what are refined and manufactured into virtually every product we use today, from computers to our homes, and are what make possible wind turbines (all components derived, manufactured or refined from fossil fuels) and solar panels (all components derived, manufactured or refined from fossil fuels). Accordingly, many claims about eliminating our use of fossil resources are wholly illusory. However, in order to provide a better understanding of some of your claims regarding our nation's dependence on these resources, other than counting intermittent electricity generation as a product, please provide a comprehensive list of all the things that are a product or can be manufactured out of sunlight and wind (again, please exclude electricity).

Having served on the boards of DuPont and ConocoPhillips, I am well that fossil fuels provide inputs and raw material for purposes other than generating electricity and will likely continue to do so.

I have no comprehensive list at my disposal of products from sunlight or wind though I would note that humans depend on sunlight as do other species, including plants – sea grasses essential for fisheries; trees that provide lumber, fruit, mulch, seeds, wildlife habitat, water filtration; and, of course, food crops. Communities around the Andes and the Himalayas rely on the sun melting glaciers for drinking water – at least as long as the glaciers remain.

10. Please explain the process of photosynthesis.

I refer you to Wikipedia, which has a good explanation:

"Photosynthesis is a process used by plants and other organisms to convert light energy, normally from the sun, into chemical energy that can be later released to fuel the organisms' activities. This chemical energy is stored in carbohydrate molecules, such as sugars, which are synthesized from carbon dioxide and water – hence the name photosynthesis....In most cases, oxygen is also released as a waste product. Most plants, most algae, and cyanobacteria perform photosynthesis, and such organisms are called photoautotrophs. Photosynthesis maintains atmospheric oxygen levels and supplies all of the organic compounds and most of the energy necessary for life on Earth.

Although photosynthesis is performed differently by different species, the process always begins when energy from light is absorbed by proteins called reaction centres that contain green chlorophyll pigments. In plants, these proteins are held inside organelles called chloroplasts, which are most abundant in leaf cells, while in bacteria they are embedded in the plasma membrane. In these light-dependent reactions, some energy is used to strip electrons from suitable substances such as water, producing oxygen gas. Furthermore, two further compounds are generated: reduced nicotinamide adenine dinucleotide phosphate (NADPH) and adenosine triphosphate (ATP), the "energy currency" of cells....

The first photosynthetic organisms probably evolved early in the evolutionary history of life and most likely used reducing agents such as hydrogen or hydrogen sulfide as sources of electrons, rather than water. Cyanobacteria appeared later, and the excess oxygen they produced contributed to the oxygen catastrophe, which rendered the evolution of complex life possible. Today, the average rate of energy capture by photosynthesis globally is approximately 130 terawatts, which is about six times larger than the current power consumption of human civilization. Photosynthetic organisms also convert around 100–115 thousand million metric tonnes of carbon into biomass per year."

11. Are there any other "pollutants" regulated under the Clean Air Act that are necessary to the process of photosynthesis?

Not that I am aware of.

- 12. How many parts per million (ppm) do humans inhale of CO₂ when they breathe? How many ppm do humans exhale when they breathe?**

I do not have this information handy.

- 13. Of all the “pollutants” regulated by the Clean Air Act and EPA, please provide a list of all those humans exhale at a greater rate than they inhale and at what rate in ppm are they exhaled.**

I'm not aware that humans exhale any of the 6 criteria air pollutants covered under the clean air act, though substantial research has confirmed that breathing in sulfur dioxide, carbon monoxide, lead, nitrogen oxide, ozone, or particulates are not good for anyone's health.

- 14. While you were Administrator in 1992, you commissioned an Expert Panel on the Role of Science at EPA to help identify how EPA could meet the goal of using sound science as the foundation for the Agency's policy and program decisions. The Panel reported to you that “EPA science is of uneven quality, and the Agency's policies and regulations are frequently perceived as lacking a strong scientific foundation.” It also found that “the Agency is perceived to have a conflict of interest because it needs science to support its legal activities.” EPA has made little progress in becoming a source of unbiased scientific information over the years. Did you implement the recommendations made by the Panel to ensure the EPA made all regulatory decisions based on sound, peer-reviewed science? Do you believe the EPA has fully embraced all of these suggestions and committed itself to basing its actions on sound science and transparency?**

From the time I was named EPA Administrator, I put a high priority on science in the agency. The Reducing Risk report was intended to help better align the EPA budget with the most serious risks.

The expert panel cited was also an attempt to improve the agency's scientific capabilities. I learned at the start that Administrators do not always have all the information at hand one would like. Budget constraints, gaps in data and scientific understanding, incomplete risk assessments, inadequate testing or sampling methodologies, and other factors can limit this information. Nonetheless, the laws or a risk assessment often requires action. Weighing what you have to go on falls to the Administrator.

Since I left EPA in early 1993, I did not have the opportunity to see through the various recommendations.

As for EPA's science capabilities today, I am not close enough to observe internal operations. I would note, however, that Bill Ruckelshaus was the first to remark that all of EPA's business is transacted in a fishbowl. There is no shortage of outside stakeholders, reviewers, advocates, and the like.

1. Albert Einstein once famously stated that "the right to search for truth implies also a duty; one must not conceal any part of what one has recognized to be true." Do you agree with this statement?

a. In light of the Einstein quote, please answer the following questions based on empirical evidence as well as provide the source for your answer:

i. What are all the natural influences on our climate and which ones are we able to control or not control?

While the Third National Climate Assessment ([NCA](#)) can be referenced to address the entirety of the questions, some natural influences on our climate include varying solar output from the sun, volcanic eruptions, and the El Nino Southern Oscillation (ENSO). Human factors are those we can control and include the emissions of heat-trapping gases and particles as well as clearing of forests and other land-use changes.

Additionally, the third NCA report explains that natural climate drivers alone do not explain recent observed warming, and that over the last half century the majority of the warming at the global scale can only be explained by the effects of human influences, especially the emissions from burning fossil fuels and from deforestation.

ii. For how long has the climate been changing and does climate change predate the internal combustion engine?

Natural influences on our climate have been changing our climate long before the invention of the internal combustion engine. However, the scientific consensus from the nation's climate experts states in the third [NCA](#) that human activities have been the main driver of climate change for the last half century

- iii. **Have global average temperatures over the last 15 years been increasing, decreasing, or stayed virtually the same?**

According to the National Climatic Data Center ([NCDC](#)), global average temperatures have increased 0.167°C over the last 15 years above the 20th century average – from 0.46°C above the 20th century average in 1999 to 0.62°C above the 20th century average in 2013. The [NCDC](#) also finds that 12 of the 13 warmest years on record have occurred in the last 15 years.

- iv. **Has all climate change throughout earth's geologic history been negative?**

The ever-changing climate has positive and negative impacts to people and the environment across regions around the world. The rate at which the climate is changing, primarily from the emissions of greenhouse gases and deforestation resulting from human activities, is expected to result in negative impacts that will outweigh positive impacts on a global scale. As stated in the latest global assessment by the leading climate scientists around the world according to the IPCC.

For example, the IPCC's [AR5](#) report states with high confidence that "[g]lobally, positive impacts will be outweighed by the magnitude and severity of negative impacts..."

The IPCC's [AR5](#) report also states with very high confidence that "[r]ising sea levels and storm surges, heat stress, extreme precipitation, inland and coastal flooding, drought and water scarcity, and air pollution pose widespread negative risks for people, health, livelihoods, assets, local and national economies, and ecosystems..."

- v. **Over the last 100 years have hurricanes been increasing or decreasing in number and intensity?**

According to the IPCC's [AR5](#) report, limited observation capabilities have made it difficult to discern a trend in tropical cyclone activity over the last century. However, the technological advancements (e.g., the satellite era) have allowed for more comprehensive observations since the 1970s and have revealed a robust increase in the intensity and frequency of tropical systems in the North Atlantic. The IPCC also states that projections for the 21st century

indicate a warmer world will result in an increase in tropical cyclone strength and associated rainfall.

vi. How does the Great Colonial Hurricane of 1635 compare to the recent history of hurricanes in the United States over the last 5 years?

The lack of observational capabilities in 1635 present challenges in documenting the Great Colonial Hurricane (GCH) of 1635, which according to NOAA were mainly limited to the accounts of William Bradford and John Winthrop, making a comprehensive assessment extremely difficult for the Great Colonial Hurricane of 1635.

Technological and scientific advancements have been exponential since 1635, and assessments of tropical cyclones are now rigorous and comprehensive. When only taking into account tropical cyclones over the past 5 years that each cost the United States more than \$1 billion, [NCDC](#) estimates they caused nearly \$80 billion in aggregate costs.

vii. What decade was the worst decade for drought in the United States?

According to [Richard Heim](#), a meteorologist and drought expert with NCDC, "In terms of percent area of country affected by drought (as measured by the Palmer Drought Index), the 1930's Dust Bowl decade is the worst drought on record by spatial area."

According to [NCDC](#), "[t]he 'dust bowl' effect was caused by sustained drought conditions compounded by years of land management practices that left topsoil susceptible to the forces of the wind," meaning human activities played a role in the magnitude of the drought.

viii. What decade was the worst decade for wildfires in the United States?

According to the third NCA report, "[s]easonal and multi-year droughts affect wildfire severity. For example, persistent drought conditions in the Southwest, combined with wildfire suppression and land management practices, have contributed to wildfires of unprecedented size since 2000. Five western states (Arizona, Colorado, Utah, California, and New Mexico) have experienced their largest fires on record at least once since 2000. Much of the

increase in fires larger than 500 acres occurred in the western United States, and the area burned in the Southwest increased more than 300% relative to the area burned during the 1970s and early 1980s.”

The third NCA report also states, “[d]rought and fire risk are increasing in many regions as temperatures and evaporation rates rise. The greater the future warming, the more these risks will increase, potentially affecting the entire United States.”

- ix. **Is the statement “What we do know is the temperature around the globe is increasing faster than was predicted even ten years ago” an accurate statement of global warming claims? Please provide the base source and by what you are measuring for any supporting position.**

According to NCDC, global average temperatures over the last 10 years have continued to rise. While the increase temperatures has been at a rate more in-line with the lower end of some model projections, additional warming to global temperatures will only further enhance the risk we face from the impacts of climate change in the United States and globally.

- x. **What is the current rate of sea level rise, and how does it compare to the first and second halves of the twentieth century? What has been the average rate of seal level rise since the last ice age?**

According to the IPCC AR5 report, it is likely that global mean sea level has accelerated since 1900. For a comprehensive and detailed answer to your question, please reference the report. <http://www.ipcc.ch/report/ar5/wg1/>

- xi. **Please provide a list of the worst ten floods in world history based on human impacts, including the country and date they occurred, and the number of human lives lost.**

National and international organizations like the National Climatic Data Center and the World Meteorological Organization can likely provide you with the answer to your question.

- 17. 1. Please explain your exact role in the 2007 buyout of TXU.**

- a. Were you ever involved in the negotiations to cancel coal fired power plants?
- b. What environmental groups did you bring to the table for negotiations?
- c. Did any money exchange hands with any environmental groups as part of this negotiation or were any promises made to contribute to any environmental groups?
- d. According to a May 2, 2014 article in the Washington Post, “A lot of banks and big investors got burned in the bankruptcy last week of Energy Future Holdings, a Texas electric utility that in 2007 had been acquired for \$45 billion in one of the largest leveraged buyouts ever. But the private-equity folks who put the deal together, thanks to fees and tax deductions, will walk away virtually unscathed and possibly slightly ahead.”
 - i. How did your personal financial situation change as a result of this bankruptcy?
 - ii. What was the exact financial impact to you personally as a result of the 2007 negotiations (how much were you paid), what was your stake in the company, and how did that stake change between 2007 and the 2014 bankruptcy?
 - iii. How has your thinking on shale gas changed as a result of this bankruptcy?
- e. The same Washington Post article reported that “One set of players managed to walk away in decent shape: the private-equity firms that engineered the buyout in the first place.”
 - i. How much was your firm paid in this transaction, and was your compensation at all based on negotiations with the environmental community to terminate coal

I have served as a Senior Advisor to TPG Capital and in that capacity led the negotiations in the TXU transaction on environmental commitments with EDF and NRDC. We agreed to a suite of environmental priorities and commitments, including a reduction in planned coal-fired power plants of 8 in Texas and 3 in other deregulated states. Neither environmental group received compensation or a promise of future compensation from TPG.

I have served throughout the period since the negotiations and purchase as a member of the board of Energy Future Holdings for which I was compensated \$250,000 per year, half in shares now of doubtful value and half in cash. I was awarded compensation following the transaction which principally took the form of carried interest in the anticipated profit of the company in the event of a future sale. As a result of the bankruptcy there are no such profits and I will receive no carried interest.

Although the shale gas boom with its resulting low gas price has been

responsible for the bankruptcy of EFH, it has been a boon to the U.S. economy and environment. Done right it can continue to benefit consumers and reduce CO2 emissions.

Since I was an advisor, I had no responsibility for nor access to TPG accounts.

18. What years were you affiliated with the World Wildlife Fund?

a. What was your salary while serving on the WWF Board?

I served as President of WWF-US from 1985 until I was sworn in as EPA Administrator in 1989. I served on the WWF Board of Directors after leaving EPA in 1993, including two terms as board chairman; I remain on the board as Chairman Emeritus.

WWF does not compensate directors; indeed, it works the other way: directors typically contribute to the organization.

Senator Sessions

1. What do you think should be the role of nuclear power in America's generating mix?

I consider nuclear power a significant, indeed essential, part of the country's electricity generation. I say this with full appreciation that a new large, multi-reactor plant can cost in the range of \$12 to \$14 billion or more, prompting the former CEO of Exelon, the utility with the largest nuclear fleet, to comment that was the market capitalization of his entire company and he would not be willing to bet his company on such a costly undertaking.

Add to this challenge the matter of waste disposal and the United States' clear security interest in preventing nuclear proliferation.

That is one reason I'm intrigued by the prospect of small scale reactors, less costly and suitable for deployment on installations, campuses, industrial parks and in combination with micro grids.

Their deployment is some years off, I believe, and thus we need to look at means of ensuring that current nuclear plants can continue to contribute to meeting the country's energy demand, with safety in mind, of course. I've been impressed with the Institute for Nuclear Power Operations' ability to improve performance continually.

Senator WHITEHOUSE. Thank you very much, Mr. Reilly. We now turn to former Administrator Thomas. Welcome.

**STATEMENT OF LEE M. THOMAS, FORMER ADMINISTRATOR,
U.S. ENVIRONMENTAL PROTECTION AGENCY**

Mr. THOMAS. Thank, Mr. Chairman, Senator Sessions and members of the subcommittee for holding the hearing and giving me an opportunity to offer a perspective on climate change based upon my experience at EPA dealing with many complex environmental issues during the Reagan years.

I have approached the issue using a risk assessment and risk management process. This is the approach we used during my time at EPA as we addressed a range of environmental problems.

Whether it was assessing the impact of stratospheric ozone depletion caused by chlorofluorocarbons or the impact of lead and gasoline on children's health, scientific data and analysis was the first step in evaluating the risk posed by the problem.

During my 6 years at EPA, I dealt with many contentious issues, first, as Assistant Administrator for 2 years and later as Administrator for a little over 4 years. I cannot remember any other matters I dealt with during that 6 year period of time that were not controversial—some more than others.

The issue of climate change is one that the EPA and the global scientific community have studied and analyzed for decades, whether it is the Intergovernmental Panel on Climate Change or the latest scientific valuation that was authorized by Congress, the National Climate Assessment.

There appears to be clear evidence regarding climate change and its anthropogenic foundation. We know that carbon dioxide concentrations in the atmosphere have increased by 40 percent since pre-industrial times.

We know that carbon dioxide and other greenhouse gases are warming the atmosphere. We know they have contributed to a more than 1-1/2 degree Fahrenheit rise in global temperatures since the 1880's.

We know global sea level has risen by an average of 8 inches since 1870, primarily from thermal expansion caused by warmer oceans and some melting of glaciers on the Greenland and West Antarctic ice sheets.

We know that ocean acidification is occurring, harming our coral reefs and marine ecosystems and we know that communities in our Country are dealing today with the effects of changing climate.

In the State of Florida where I live, we see increasing salt water intrusion infiltrating our drinking water supply along the coast due to sea level rise. We see coastal communities dealing with the impact of sea level rise on their drainage systems. A major part of the systems in south Florida are being impacted.

The economic impact is undeniable and the local governments struggle to address today's impacts of climate change while trying to anticipate the increased risk in the future is real.

On a broader scale, scientific analysis of the issue points to widespread impacts across our Country. They range from the depleted shellfish harvest in the Pacific Northwest that Bill mentioned due to ocean acidification or to increased drought and wildfires in the

southwest the National Climate Assessment Report suggested were linked to climate change.

Given this assessment of the impacts and risks posed by global warming, EPA has the responsibility given to it by Congress and affirmed by the courts to address the risk management challenge. We know there are many approaches that can be taken and we also know that all of them are controversial.

We know the gases we have emitted will remain in the atmosphere for decades to centuries and recognize that the solution will require a long term commitment if we are to mitigate both the effects already occurring and those forthcoming.

We also know what many of the solutions are, some of which, Senator Sessions, you mentioned such as improving energy efficiency and increasing our reliance on low emission energy production. Widespread adoption of strategies like these can supplement an international agreement to reduced emissions.

In addition, a coordinated national and international approach is needed to assist States and countries in implementing adaptation measures dealing with the impacts of climate change already taking place today.

Clearly more action is needed to address the impacts today while addressing the larger issue of committing ourselves to avoiding dangerous levels of future warming. The recent steps taken by the EPA to reduce greenhouse gas emissions are significant mitigation measures and once again position the U.S. to demonstrate international leadership on an issue of global significance and consequence.

I would suggest if the United States is not taking the leadership position that international agreement will never come to fruition.

Thank you again for the opportunity to present my views to the subcommittee on what I consider a critically important issue.

[The prepared statement of Mr. Thomas follows:]

**Statement of the Honorable Lee M. Thomas
Former Administrator, U.S. Environmental Protection Agency
before the
United States Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Safety
Washington, D.C.
June 18, 2014**

Good morning, and thank you for the opportunity to contribute to the deliberations of this Subcommittee.

I am pleased to be here to offer a perspective on climate change based upon my experience at the Environmental Protection Agency dealing with similar issues. I've approached the issue using a risk assessment and risk management process. This is the approach I used during my time at EPA as we addressed a range of environmental problems.

Whether it was assessing the impact of stratospheric ozone depletion caused by Chlorofluorocarbons, or the impact of lead in gasoline on children's health, scientific data and analysis were the first step in evaluating the risk posed by the problem.

During my six years at the Environmental Protection Agency I dealt with many contentious issues, first as Assistant Administrator and later as Administrator. As Assistant Administrator, challenges involved implementing the new Superfund statute and working with Congress on reauthorizing and putting into effect law on the disposal of hazardous waste and leaking underground storage tanks. Then as Administrator, addressing major environmental issues. I can't remember any of the matters I dealt with during my tenure at the Environmental Protection Agency that were not controversial, some more so than others, ranging from setting safe drinking water standards to clean air requirements.

The issue of climate change is one that the EPA and the global scientific community have studied and analyzed for decades. And since my time as Administrator, the assessment of risk global warming poses to public health and the environment has continually improved and become more certain. Whether it is the Intergovernmental Panel on Climate Change, or the latest scientific valuation authorized by Congress, the National Climate Assessment, there is clear evidence regarding climate change and its anthropogenic foundation.

We know that carbon dioxide concentrations in the atmosphere have increased by 40 percent since pre-industrial times.

We know that carbon dioxide and other greenhouse gases are warming the atmosphere, contributing to a more than 1.5°F rise in global temperatures since 1880.

We know global sea level has risen by an average of eight inches since 1870 primarily from thermal expansion caused by warmer oceans and the melting of glaciers and the Greenland and West Antarctic ice sheets.

We know that ocean acidification is occurring, harming our coral reefs and marine ecosystems. Absorbing about a quarter of our emissions each year, the current rate of acidification is roughly 50 times faster than known historical change.

We know that communities in our country are already dealing with the effects of the changing climate today. In my state of Florida, we see increasing salt water intrusion infiltrating our drinking water supply due to sea level rise. Coastal communities are dealing with the impact sea level rise is having on their drainage systems, resulting in an investment of more than \$300 million to upgrade flood mitigation infrastructure in Miami Beach alone. The economic impact is undeniable, and local governments struggle to address today's impacts of climate change while trying to anticipate the increased risk it poses in the future.

On a broader scale, scientific analysis of the issue points to widespread impacts across our country. They range from depleted shellfish harvests in the Pacific Northwest due to ocean acidification, to increased drought and wildfires in the Southwest and a more than 70 percent rise in the occurrence of heavy downpours in the Northeast since the late 1950s.

Given this assessment of the impacts and risk posed by global warming, the EPA has the responsibility given to it by Congress, and affirmed by the courts, to address the risk management challenge. We know there are many approaches that can be taken, and all are controversial. We know the gases we have emitted will remain in the atmosphere for decades to centuries, and recognize that the solution will require a long-term commitment if we are to mitigate both the effects already occurring and those forthcoming.

But we also know what many of the solutions are, like improving energy efficiency and increasing our reliance on low-emission energy production. Widespread adoption of strategies like these can supplement an international agreement to reduce emissions. In addition, a coordinated national and international approach is needed to assist states and countries implement adaptation measures dealing with the impacts of climate change already taking place today.

Clearly more action is needed to address the impacts today while addressing the larger issue of committing ourselves to avoiding dangerous levels of future warming. The recent steps taken by the EPA to reduce greenhouse gas emissions are significant mitigation measures and once again position the US to demonstrate international leadership on an issue of global significance and consequence.

Thank you again for the opportunity to present my views to the Subcommittee on this critically important issue.

Senator WHITEHOUSE. Thank you very much, Mr. Thomas.

Before I go on to the next witness, let me thank each of you for your service to our Country in a challenging office over many years and for your testimony today.

We now turn now to Dr. Botkin.

STATEMENT OF DANIEL BOTKIN, PROFESSOR EMERITUS OF BIOLOGY, UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Mr. BOTKIN. Thank, Mr. Chairman.

I come here today as a scientist who since 1968 has published research on the possibility of human-induced global warming and its potential human and ecological effects.

In 1970, I developed a computer model of forest use from then to the present to forecast possible climate change effects on forests and their endangered species. In the 1980's, one of my graduate students added world vegetation to a major climate model.

In this new century, I was the lead author on a paper analyzing methods to forecast global warming impacts on biodiversity and published a paper comparing Arctic sea ice extent in the 19th century with that of the end of the 20th century.

I have spent my career trying to help conserve our environment and its great diversity of species, attempting to maintain an objective, intellectually honest approach in the best tradition of scientific endeavors.

I have been dismayed and disappointed in recent years that this subject has been converted into a political and ideological debate. I have colleagues on both sides of the debate and believe we should work together as scientists instead of arguing divisively about preconceived, emotionally based positions.

I was an expert reviewer of both the IPCC and the White House National Climate Assessment. I want to State up front that we have been living through a warming trend driven by a variety of influences.

However, it is my view that this is not unusual and contrary to the characterizations by the two reports, these environmental changes are not apocalyptic or irreversible. I hope my testimony here will help lead to a calmer, more rational approach to dealing with climate change and with other major environmental problems.

The two reports do not promote the kind of rational discussion we should be having. I would like to tell you why.

My biggest concern is that the IPCC 2014 and White House Climate Change Assessment Reports present a number of speculative, sometimes incomplete conclusions embedded in language that gives them more scientific heft than they deserve. The reports are scientific sounding rather than based on clearly settled facts.

Established facts about the global environment exists less often in science than laymen usually thing. The two reports assume and argue that the climate warming forecast by the global climate model is happening and will continue to happen and grow worse. As you can see from Christine's graph over here, currently these predictions are way off the reality.

The extreme overemphasis on human induced global warming has taken our attention away from many environmental issues that used to be front and center but have been pretty much ignored in

the 21st Century. By my count, there are ten issues, a number of which have been mentioned here today, including global warming.

A singular focus on climate change as the driver of the other nine obscures the best solutions to this full suite of environmental challenges we face. In terms of the need to act now, it is on these issues that we should focus with the concern over possible global warming prioritized properly within that group.

There is an implicit assumption in both reports that nature is in steady State, that all change is negative and undesirable for all life, including people. This is the opposite of the reality. The environment has always changed. Living things have had to adapt to these changes and many require change.

The report gives the impression that living things are fragile and rigid, unable to deal with change. The opposite is the case. Life is persistent, adaptable and adjustable. In particular, the IPCC report for policymakers repeats the assertion of previous IPCC reports that large fractions of species face increased extinction risks. Overwhelming evidence contradicts this assertion.

The models making these forecasts use incorrect assumptions leading to over estimates of extinction rates. Surprisingly few species became extinct during the past 2.5 million years, a period encompassing several ice ages and warm periods.

Some of the reports' conclusions are the opposite of those given in articles cited in defense of those conclusions. The White House Climate Change Assessment includes a table of 30 different ecological effects resulting from climate change.

I reviewed the studies cited to support this table and found not a single one of the 30 is supported by direct observations.

The IPCC Terrestrial Ecosystem Report states that 7 of 19 sub-populations of polar bears are declining in number, citing in support of this an article by Vongraven and Richardson but these authors state the contrary, that the decline is an illusion.

On May 22, Vongraven stated that the polar bear population size never has been an estimate of total abundance in a scientific sense, but simply a qualified guess given to satisfy public demand.

Some conclusions contradict and are ignorant of the best statistically valid observations. For example, the IPCC Report says that terrestrial and freshwater ecosystems have sequestered about a quarter of the carbon dioxide emitted to the atmosphere by human activities in the past three decades.

I have done the first statistically valid estimates of carbon storage and uptake for any large area of the earth and can tell you that estimates of carbon uptake like vegetation used by IPCC are not statistically valid and over estimate carbon storage and uptake by as much as 300 percent.

Finally, the IPCC Report uses the term "climate change" with two meanings, natural and human induced. I have heard that today over and over again. They are not distinguished in the text and therefore are confusing.

Of course the climate is changing. It has always changed and it always will change. If the statement is assumed to be about natural change, then it is a truism, something people have always known and experienced. If the meaning is taken to be human caused, then the available data do not support the statements.

Thank you, Mr. Chairman.
[The prepared statement of Mr. Botkin follows:]

Testimony of DANIEL B. BOTKIN**Before the United States Senate Subcommittee on Clean Air and Nuclear Safety****“Climate Change: The Need to Act Now.”****June 18, 2014 at 10:00 A.M.**

Since 1968, I have published research on theoretical global warming, its potential ecological effects, and the implications for people and biodiversity. Some examples: In 1970, I developed the first computer model of forests used in many versions around the world from then to the present to forecast possible climate change effects on forests. In the 1980s, one of my graduate students added world vegetation to a major climate model. In 2010, I published a paper comparing century Arctic sea ice extent in the nineteenth with that at the end of twentieth century. I have a paper in press giving the first statistically valid estimates of forest carbon sequestering for large areas of the Earth.

I have spent my career trying to help conserve our environment and its great diversity of species. Some examples: When the Marine Mammal Protection Act was passed in 1973, the Commission asked me to analyze the law and explain its key concepts both ecologically and legally; I served on a California State Committee to advise what to do about the then 22 condors remaining in the wild; Under a special bill passed by the Oregon State Legislature, I directed a five year study of the relative effects of forest practices on salmon; Under a special bill passed by the California State Legislature, I directed a study concerning Mono Lake, whose supply of fresh water had been completely diverted to Los Angeles: at the request of the city of Los Angeles, I wrote a report concerning the use of trees, shrubs and other vegetation in a city in a semi-arid environment; I have advised the Scientific Committee of the International Whaling Commission; served as the U. S. representative of the International Union for the Conservation of Nature. I have published 14 books about nature and people including one of the leading environmental science textbooks.

I have always attempted to maintain an objective, intellectually honest, scientific approach in the

best tradition of scientific endeavor and have been dismayed and disappointed in recent years that this subject has been converted into a political and ideological debate. I have colleagues on both sides of the debate and believe we should work together as scientists instead of arguing divisively about preconceived, emotionally-based “positions.” I hope my testifying here will help lead to a calmer, more rational approach to dealing with not only climate change but also other major environmental problems. The IPCC 2014 report and the White House Climate Change Assessment do not have this kind of rational discussion we should be having. I would like to tell you why.

The IPCC 2014 report is actually a series of reports, each long, complex in organization, and extensive in scope. The White House Report is 881 pages. Since it’s not possible to discuss these documents thoroughly in detail today, I will highlight some of my thoughts for you here as they relate to the reports, hoping to bring a saner, more sober approach to this highly charged issue.

To characterize where we are with these reports and this issue, I would like to quote James R. Schlesinger, the first U.S. Energy Secretary, who said: *“We have only two modes — complacency and panic.”*—commenting on the country’s approach to energy (1977).

Now to my major points.

1. **I want to state up front that we have been living through a warming trend driven by a variety of influences.** However, it is my view that this is not unusual, and contrary to the characterizations by the IPCC and the National Climate Assessment, these environmental changes are neither apocalyptic nor irreversible.
2. **My biggest concern is that both the reports present a number of speculative, and sometimes incomplete, conclusions embedded in language that gives them more scientific heft than they deserve.** The reports are “scientific-sounding” rather than based on clearly settled facts or admitting their lack. Established facts about the global environment exist less often in science

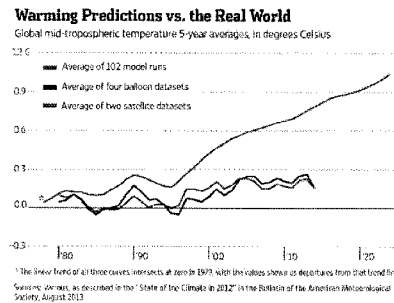
than laymen usually think.

3. **HAS IT BEEN WARMING? Yes, we have been living through a warming trend, no doubt about that.** The rate of change we are experiencing is also not unprecedented, and the “mystery” of the warming “plateau” simply indicates the inherent complexity of our global biosphere. Change is normal; life on Earth is inherently risky. It always has been. The two reports, however, makes it seem that environmental change is apocalyptic and irreversible. It is not.
4. **IS CLIMATE CHANGE VERY UNUSUAL? No, it has always undergone changes.**
5. **ARE GREENHOUSE GASES INCREASING? Yes, CO2 rapidly.**
6. **IS THERE GOOD SCIENTIFIC RESEARCH ON CLIMATE CHANGE? Yes, a great deal of it.**
7. **ARE THERE GOOD SCIENTISTS INVOLVED IN THE IPCC 2014 REPORT?** Yes, the lead author of the Terrestrial (land) Ecosystem Report is Richard Betts, a coauthor of one my scientific papers about forecasting effects of global warming on biodiversity.
8. **ARE THERE SCIENTIFICALLY ACCURATE STATEMENTS AT PLACES IN THE REPORT? Yes, there are.**
9. **What I sought to learn was the overall take-away that the reports leave with a reader.** I regret to say that I was left with the impression that the reports overestimate the danger from human-induced climate change and do not contribute to our ability to solve major environmental problems. I am afraid that an “agenda” permeates the reports, an implication that humans and our activity are necessarily bad and ought to be curtailed.
10. **ARE THERE MAJOR PROBLEMS WITH THE REPORTS? Yes, in assumptions, use of data, and conclusions.**
11. **My biggest concern about the reports is that they present a number of speculative, and**

sometimes incomplete, conclusions embedded in language that gives them more scientific heft than they deserve. The reports, in other words, are "scientific-sounding," rather than clearly settled and based on indisputable facts. Established facts about the global environment exist less often in science than laymen usually think.

12. The two reports assume and/or argue that the climate warming forecast by the global climate models is happening and will continue to happen and grow worse. Currently these predictions are way off the reality (Figure 1). Models, like all scientific theory, have to be tested against real-world observations. Experts in model validation say that the climate models frequently cited in the IPCC report are little if any validated. This means that as theory they are fundamentally scientifically unproven.

13. **Figure 1: Climate model forecasts compared to real world temperature observations** (From John Christy, University of Alabama and Alabama State Climatologist. Reproduced with permission from him.)



14. The reports suffer from the use term "climate change" with two meanings: natural and human-induced. These are both given as definitions in the IPCC report and are not distinguished in the text and therefore confuse a reader. (The White House Climate Change

Assessment uses the term throughout including its title, but never defines it.) There are places in the reports where only the second meaning—human induced—makes sense, so that meaning has to be assumed. There are other places where either meaning could be applied.

- a. In those places where either meaning can be interpreted, if the statement is assumed to be a natural change, then it is a truism, a basic characteristic of Earth's environment and something people have always known and experienced. If the meaning is taken to be human-caused, then in spite of the assertions in the report, the available data do not support the statements.

15. Some of the reports' conclusions are the opposite of those given in articles cited in defense of those conclusions. For example, the IPCC 2014 Terrestrial Ecosystem Report states that "there is medium confidence that rapid change in the Arctic is affecting its animals. For example, seven of 19 subpopulations of the polar bear are declining in number" citing in support of this an article by Vongraven and Richardson, 2011. That report states the contrary, that the "'decline' is an illusion.

In addition, I have sought the available counts of the 19 subpopulations. Of these, only three have been counted twice; the rest have been counted once. Thus no rate of changes in the populations can be determined. The first count was done in 1986 for one subpopulation.¹

On May 22, Vongraven, a member of the international team that created these estimates, stated that the polar bear population size, "never has been an estimate of total abundance in a scientific sense, but simply a qualified guess given to satisfy public demand...the range given for total global population should be viewed with great caution as it cannot be used to assess population trend over the long term." The U. S. Marine Mammal Commission, charged with the conservation of this species, acknowledges "*Accurate estimates of the current and historic sizes of polar bear stocks are*

difficult to obtain for several reasons—the species' inaccessible habitat, the movement of bears across international boundaries, and the costs of conducting surveys.”²

According to Dr. Susan Crockford, “out of the 13 populations for which some kind of data exist, five populations are now classified by the PBSG [IUCN/SSC Polar Bear Specialist Group] as ‘stable’ (two more than 2009), one is still increasing, and three have been upgraded from ‘declining’ to ‘data deficient’ . . . That leaves four that are still considered ‘declining’ - two of those judgments are based primarily on concerns of overhunting, and one is based on a statistically insignificant decline that may not be valid and is being reassessed (and really should have been upgraded to ‘data deficient’). That leaves only one population – Western Hudson Bay – where PBSG biologists tenaciously blame global warming for all changes to polar bear biology, and even then, the data supporting that conclusion is still not available.”³

16. Some conclusions contradict and are ignorant of the best statistically valid

observations. For example, the Terrestrial Ecosystems Report states that “terrestrial and freshwater ecosystems have sequestered about a quarter of the carbon dioxide emitted to the atmosphere by human activities in the past three decades (high confidence).” I have done the first statistically valid estimate of carbon storage and uptake for any large area of Earth’s land, the boreal forests and eastern deciduous forest of North America, and subtropical forests in Queensland, Australia. The estimates of carbon uptake by vegetation used by IPCC and in major articles cited by the reports are based on what can best be called “grab samples,” a relatively small number of studies done at a variety of times using a variety of methods, mainly in old- growth areas. The results reported by IPCC overestimate

carbon storage and uptake by as much as 300 percent.⁴

- 17. The IPCC Report for Policymakers on Impacts, Adaptation, and Vulnerability repeats the assertion of previous IPCC reports that “large fraction of species” face “increase extinction risks” (p15). Overwhelming evidence contradicts this assertion.**

And it has been clearly shown that models used to make these forecasts, such as climate envelope models and species-area curve models, make incorrect assumptions that lead to erroneous conclusions, over-estimating extinction risks. Surprisingly few species became extinct during the past 2.5 million years, a period encompassing several ice ages and warm periods.⁵ Among other sources, this is based on information in the book *Climate Change and Biodiversity* edited by Thomas Lovejoy, one of the leaders in the conservation of biodiversity.⁶ The major species known to have gone extinct during this period are 40 species of large mammals in North America and Northern Europe. (There is a “background” extinction rate for eukaryotic species of roughly one species per year.)

- 18. THE REPORTS GIVE THE IMPRESSION THAT LIVING THINGS ARE FRAGILE AND RIGID, unable to deal with change. The opposite is the case. Life is persistent, adaptable, and adjustable.**
- 19. STEADY-STATE ASSUMPTION: There is an overall assumption in the IPCC 2014 report and the White House Climate Change Assessment that all change is negative and undesirable – that it is ecologically and evolutionarily unnatural, bad for populations, species, ecosystems, for all life on planet Earth, including people. This is the opposite of the reality.** The environment has always changed and is always changing,

and living things have had to adapt to these changes. Interestingly, many, if not most, species that I have worked on or otherwise know about require environmental change.⁷

20. The IPCC Summary for Policy Makers on Impacts, Adaptation, and Vulnerability

makes repeated use of the term “irreversible” changes. A species going extinct is irreversible, but little else about the environment is irreversible. The past confirms this. Glaciers have come and gone repeatedly. The Northwest Passage of North America has gone and come again. The average temperature has greatly exceeded the present and forecasted and has declined only to rise again.

- a. Implicit in this repeated use of irreversible is the belief that Earth’s environment is constant — stable, unchanging — except when subjected to human actions. This is obviously false from many lines of evidence, including the simple experience of all people who have lived before the scientific-industrial age and those who live now and so such work as farm, manage rivers, wildlife and forests.

The extreme over-emphasis on human-induced global warming has taken our attention away from many environmental issues that used to be front and center but have been pretty much ignored in the 21st century. By my count there are ten issues, including global warming. I know it is easier for people to focus on just one issue at a time and ten seems overwhelming, but they can all be part of, and can be cast in terms of, biodiversity and sustainability. A singular focus on climate change as the driver of the other nine obscures the best solutions to the full suite of environmental challenges we face. In terms of “the need to act now” it is on these issues that we should focus, with the concern with a possible global warming prioritized properly with that group.

Environmental Issues that need our attention now

1. Energy
2. Fresh water
3. Habitat destruction
4. Invasive-species control
5. Direct threats to Endangered species
6. Pollution by directly toxic substances
7. Fisheries
8. Forests
9. Phosphorus and other essential minerals

The Terrestrial report in a sense acknowledges this, for example by stating: "*Climate stresses occur alongside other anthropogenic influences on ecosystems, including land-use changes, nonnative species, and pollution, and in many cases will exacerbate these pressures (very high confidence).*"

21. **Do the problems with these reports mean that we can or should abandon any concerns about global warming or abandon any research about it? Certainly not, but we need to put this issue within an appropriate priority with other major here-and-now environmental issues that are having immediate effects.**

22. I reviewed and provided comments on both the IPCC 2014 report and the draft White House's National Climate Change Assessment and, unfortunately, it appears that these issues have not been addressed in the final assessment. For example in regard to the White House Report, I stated:

- a. "The executive summary is a political statement, not a scientific statement. It is filled with misstatements contradicted by well-established and well-known scientific papers."
- b. "Climate has always affected people and all life on Earth, so it isn't new to say it is 'already affecting the American people.' This is just a political statement."

- c. "It is inappropriate to use short-term changes in weather as an indication one way or another about persistent climate change."

WHAT HAS GONE WRONG AND HOW TO FIX IT

1. **Rather than focus on key, specific and tractable aspects of climate-change science, the long-term approach throughout the 20th century was to try to create *de nova* a complete model of the climate.**
2. **This approach has been taken despite a lack of focus on monitoring key variables over time in statistically and scientifically valid ways, e. g. carbon sequestering by forests; polar bear population counts.** As a result, there is an odd disconnect between theory and observation. The attempt to create complete models of every aspect of climate has meant that many factors had to be guessed at, rather than using the best scientific methods. Too many guesses, too little checking against real, observed effects.
3. **Both reports are the result of a very large number of people doing long reviews of the scientific literature. This easily leads to people being so overburdened that they misinterpret specific papers, fail to understand where the major observational gaps are, and have trouble making an accurate list of citations and all sources of information.** The fundamental IPCC and White House Climate Change Assessment approach has been to gather a huge number of scientists from a large number of disciplines, on the assumption that a kind of crowd approach to what can be agreed on is the same as true scientific advance. While this might seem a reasonable and effective approach, there is some danger in relying on this "crowd-sourced" model of information sharing. Groups of people, particularly when credentialed "experts" are involved, are very prone to a condition called an "information cascade" in which error is compounded by group

think, assumptions become unchallenged “fact” and observations play second fiddle to unchallenged models. The excellent scientists involved with the IPCC reports are no less prone to this than the excellent scientists who relied on Aristotelian models of a geocentric universe. Entrenched beliefs are hard to extricate, even amongst supposedly rational thinkers. This is probably in part responsible for the problems listed with the White House Climate Assessment report’s table of Biological Effects, discussed later.

4. **What a scientist discovers is different from what a scientist says. The first is science, the second is opinion.** Have small groups of scientists work on this problem, no more than can easily argue with one another, that is less than 20 and preferably even smaller, representing the primary disciplines. Divide the problem into areas, rather than try to answer all questions in one analysis. I have used this approach in my own work and found it to be successful.^{8, 9}
5. **The desire to do good has ironically overridden the desire to do the best science.**
6. **Under the weight of this kind of crowd rule and approach, some specific alternative approaches to the science of climate change, have not been allowed to rise to the surface.**
7. **Among the approaches that would improve climate science:**
 1. Return to the former reliance on science done by individuals and small groups with a common specific interest and focus.
 2. Change the approach from trying to make a complete, definitive model of every aspect of climate to a different level. See kinds of models that explore specific possibilities and phenomena.
 3. Get out of the blame game. None of the above suggestions can work as long as

global warming remains a moral, political, ideologically dominated topic, with scientists pushed into, or at least viewed as, being either for or against a single point of view.

9. **We need to focus again on major environmental Issues that need our attention now** (see the list above).

10. **ARE THERE EXAMPLES OF THE KIND OF RESEARCH I BELIEVE WE NEED MORE OF? YES.**

- a. NASA Carbon Monitoring System (CMS)
- b. Hubbard Brook Ecosystem Study
- c. Whooping Crane monitoring, e.g. of an endangered species
- d. In-place monitoring on carbon flux, being done by the USGS in the Great Cypress Swamp, Florida.
- e. Many others.

NOTES For the general discussion of both the IPCC 2014 and the White House Climate Change Assessment. (A second section dealing directly with the White House Assessment has its own note section.)

1. IUCN Summary of polar bear population status per 2013 <http://pbsg.npolar.no/en/status/status-table.html>
2. <http://www.mmc.gov/species/pdf/ar2000polarbear.pdf> P. 91.
3. Crockford, S., 2014. Polar Bear Science website <http://polarbearscience.com/2014/03/20/polar-bear-status-changes-in-2013-deconstructed-with-a-map-to-the-good-news/>
4. Botkin, D. B. and L. Simpson, 1990, Biomass of the North American Boreal Forest: A step toward accurate Global Measures: *Biogeochemistry* 9:161-174; Botkin, D. B., Simpson, L. G., and H. J. Schenk, 1992, Estimating Biomass, *Science Letters*. Vol. 257, No. 5067. (Jul. 10, 1992), pp. 146-147; Botkin, D. B., Simpson, L. G., and R. A. Nisbet, 1993, Biomass and Carbon Storage of the North American Deciduous Forest, *Biogeochemistry* 20: 1-17; Botkin, D.

B., Ngugi, M.R., D. Doley (submitted) "Statistically Valid Estimates and Accurate Forecasts of Forest Biomass and Carbon Sequestration: A Forty-Five Year Quest." Keynote speech at IUFRO Forest Biomass Conference, October 7, 2013, to be published in *Drewno (Wood) Journal*.

5. Botkin, D. B., Henrik Saxe, Miguel B. Araújo, Richard Betts, Richard H.W. Bradshaw, Tomas Cedhagen, Peter Chesson, Margaret B. Davis, Terry P. Dawson, Julie Etterson, Daniel P. Faith, Simon Ferrier, Antoine Guisan, Anja Skjoldborg Hansen, David W. Hilbert, Craig Loehle, Chris Margules, Mark New, Matthew J. Sobel, and David R.B. Stockwell. (2007). "Forecasting Effects of Global Warming on Biodiversity." *BioScience* 57(3): 227-236.

6. Lovejoy, T. E., Lee Hannah, editors. (2005). *Climate Change and Biodiversity*. New Haven, Yale University Press.

7. Botkin, D. B., 2012, *The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered* (Oxford University Press, New York, hardback and ebook, September 14, 2012).

8. Botkin, D.B., W.S.Broecker, L. G. Everett, J. Shapiro, and J. A. Wiens, 1988, *The Future of Mono Lake*, California Water Resources Center, University of California, Riverside, Report #68.

9. Botkin, D. B., Henrik Saxe, Miguel B. Araújo, Richard Betts, Richard H.W. Bradshaw, Tomas Cedhagen, Peter Chesson, Terry P. Dawson, Julie Etterson, Daniel P. Faith, Simon Ferrier, Antoine Guisan, Anja Skjoldborg Hansen, David W. Hilbert, Craig Loehle, Chris Margules, Mark New, Matthew J. Sobel, and David R.B. Stockwell. 2007 "Forecasting Effects of Global Warming on Biodiversity." *BioScience* 57(3): 227-236.

SPECIFIC REVIEW OF *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program

Jerry M. Melillo, Terese (T.C.) Richmond, and Gary W. Yohe, Eds.
841 pp. doi:10.7930/J0Z31WJ2.

[Note regarding my connections with Jerry M. Melillo, one of the three primary editors of this report: When I was on the faculty of the Yale School of Forestry and Environmental Studies, Jerry Melillo was a graduate student working on his doctorate and we interacted frequently. Beginning in 1975, Jerry Melillo and I worked at the Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA, and we published four scientific papers together, listed at the end of this document.¹

COMMENTS ON THE ASSESSMENT

GENERAL COMMENTS:

The opening statement of the Assessment (p.1), reproduced here, is characteristic of the entire Assessment in that it violates one of the basic principles of good climatology --- never use short-term weather changes as proof of climate change. Climatologists I have worked with over the decades have said this repeatedly. In 1962, when I was a graduate student at the University of Wisconsin working under a science writing fellowship, I spoke with Reed Bryson, said to be the father of the International Geophysical Year and the person who persuaded Richard Keeling to begin measuring atmospheric carbon dioxide concentration on Mauna Loa, Hawaii. At that time Earth had been undergoing a global cooling since about 1940. At first Professor Bryson said "if present trends continue, we are entering a new ice age." But when I drafted a press release that quoted him so, he thought about it carefully and told me that we could not make that statement, because this was just a short-term weather event.

In the 1980s, I worked closely with climatologist Stephen Schneider and we often gave talks at the same events. Steve, one of the leaders of the modern concern about a possible human-induced global warming, also said that you should never use short-term weather events to infer climate change. I agreed with these experts, and therefore was taken aback by the overall tone of the new White House Climate Change Assessment, which begins: "Climate change, once considered an issue for a distant future, has moved firmly into the present. Corn producers in Iowa, oyster growers in Washington State, and maple syrup producers in Vermont are all observing climate-related changes that are outside of recent experience. So, too, are coastal planners in Florida, water managers in the arid Southwest, city dwellers from Phoenix to New York, and Native Peoples on tribal lands from Louisiana to Alaska. This National Climate Assessment concludes that the evidence of human-induced climate change continues to strengthen and that impacts are increasing across the country.

Based on what my climatologist colleagues had always told me, the Assessment should have begun instead by stating: "*Corn producers in Iowa, oyster growers in Washington State, and maple syrup producers in Vermont are all observing weather-related changes" outside of their*

personal recent experience. So, too, are coastal planners in Florida, water managers in the arid Southwest, city dwellers from Phoenix to New York, and Native peoples on tribal lands from Louisiana to Alaska."

The Assessment concludes that opening paragraph by stating: *This National Climate Assessment concludes that the evidence of human-induced climate change continues to strengthen and that impacts are increasing across the country.*

Americans are noticing changes all around them. Summers are longer and hotter, and extended periods of unusual heat last longer than any living American has ever experienced. Winters are generally shorter and warmer. Rain comes in heavier downpours. People are seeing changes in the length and severity of seasonal allergies, the plant varieties that thrive in their gardens, and the kinds of birds they see in any particular month in their neighborhoods (p.1).

These opening paragraphs and several that follow directly communicate to the reader, both lay and professional, that human-induced global warming in an immediate disaster. For example:

Other changes are even more dramatic. Residents of some coastal cities see their streets flood more regularly during storms and high tides. Inland cities near large rivers also experience more flooding, especially in the Midwest and Northeast. Insurance rates are rising in some vulnerable locations, and insurance is no longer available in others. Hotter and drier weather and earlier snowmelt mean that wildfires in the West start earlier in the spring, last later into the fall, and burn more acreage. In Arctic Alaska, the summer sea ice that once protected the coasts has receded, and autumn storms now cause more erosion, threatening many communities with relocation.

Scientists who study climate change confirm that these observations are consistent with significant changes in Earth's climatic trends. Long-term, independent records from weather stations, satellites, ocean buoys, tide gauges, and many other data sources all confirm that our nation, like the rest of the world, is warming. Precipitation patterns are changing, sea level is rising, the oceans are becoming more acidic, and the frequency and intensity of some extreme weather events are increasing (p. 1).

To be scientifically accurate, these paragraphs should instead have been written (my changes noted by underlining): *Other weather changes are even more dramatic. Residents of some coastal cities see their streets flood more regularly during storms and high tides. Inland cities near large rivers also experience more flooding, especially in the Midwest and Northeast. Insurance rates are rising in some vulnerable locations, and insurance is no longer available in others. Hotter and drier weather and earlier snowmelt mean that wildfires in the West start earlier in the spring, last later into the fall, and burn more acreage. In Arctic Alaska, the summer sea ice that once protected the coasts has receded, and autumn storms now cause more erosion, threatening many communities with relocation. Scientists who study weather and climate change point out that short-term, including several decades and longer, changes in weather do not confirm that these observations are consistent with significant changes in Earth's climatic trends.*

These opening statements are directly followed by: *Many lines of independent evidence*

demonstrate that the rapid warming of the past half-century is due primarily to human activities. The observed warming and other climatic changes are triggering wide-ranging impacts in every region of our country and throughout our economy. Some of these changes can be beneficial over the short run, such as a longer growing season in some regions and a longer shipping season on the Great Lakes. But many more are detrimental, largely because our society and its infrastructure were designed for the climate that we have had, not the rapidly changing climate we now have and can expect in the future. In addition, climate change does not occur in isolation. Rather, it is superimposed on other stresses, which combine to create new challenges (p. 1). **The assertions in this paragraph are based on the forecasts from climate models and from temperature records. However, Figure 1 shows that the climate models greatly exaggerate the rate and amount of temperature change and are not making forecasts that come even close to fitting the data. Furthermore, Figure 1 also shows that the average Earth temperature in the past 30 years has changed very little if at all, contradicting the assertions on the first page of the Assessment.**

The Assessment further attributes the supposed climatic warming to human activities that are releasing greenhouse gases, especially carbon dioxide, into the atmosphere. Therefore the claimed disaster is our fault. But recent evidence shows that temperature change is not tracking the increase in carbon dioxide. The gas has increased from 370 ppm to just over 400ppm, 8 percent, between year 2000 and year 2014 (Figure 2), while the temperature has changed either only slightly or not at all, depending on how one does the analysis (Figure 3). Instead, temperature change tracks closely changes in the energy output from the sun (Soon, W. and D. R. Legates, *Solar irradiance modulation of Equator-to-Pole (Arctic) temperature gradients: Empirical evidence for climate variation on multi-decadal timescales*. Journal of Atmospheric and Solar-Terrestrial Physics, 2013. **93**: p. 45-56.)

Figure 2. Mauna Loa Observatory CO₂ measurements

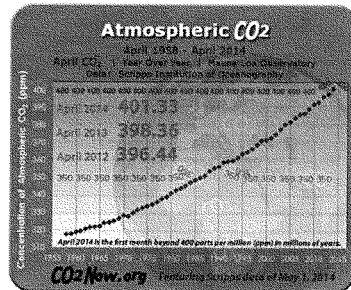
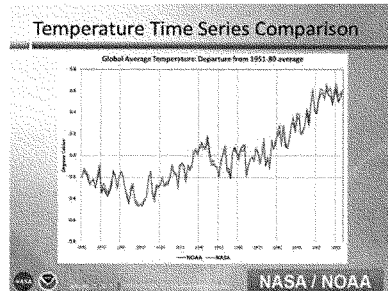


Figure 3. Earth Surface Temperature Departure from 1950-1980 Average



The current evidence from scientific observations shows that Earth's temperature has not changed very much, if at all, since the start of the new century, while carbon dioxide has increased considerably.

Given these facts, the basic opening assertions of the new U.S. Climate Change Assessment are about a hypothetical world, not a real world, and must be taken as a “what if” rather than “what is”. Therefore the dire consequences forecast in the Assessment cannot be taken as reliable, nullifying many, if not most, of the ecological and biological implications the Assessment makes heavy use of.

The time available to write and the space available to publish as written testimony prevent a comprehensive, detailed review of the entire White House Climate Change Assessment. As a result, I have used as an example of the kinds of problems throughout the Assessment the table appearing on pages 204-5, *Biological Responses To climate Change*. As an ecologist, I have taken that table and reorganized it. This reorganization follows.

Although the document is titled “Climate Change Assessment,” the term “climate change” is not defined and is in fact used with two meanings, natural and human-induced. There are places in the Assessment where only the second meaning makes sense, so that meaning has to be assumed. There are other places where either meaning could be applied. In those places where either meaning can be interpreted, if the statement is assumed to be a natural change, then it is a truism, a basic characteristic of Earth's environment and something people have always known and experienced. If the meaning is taken to be human-caused, then in spite of the assertions in the Assessment, the available data do not support the statements.

For example, the Assessment's section titled *CLIMATE CHANGE AND THE AMERICAN PEOPLE* begins with the statement: *Climate change, once considered an issue for a distant future, has moved firmly into the present. Corn producers in Iowa, oyster growers in*

Washington State, and maple syrup producers in Vermont are all observing climate-related changes that are outside of recent experience.

If this is to be interpreted as natural, then people have frequently in history experienced “climate-related changes that are outside of [their] recent experiences,” as the Medieval Warming and Little Ice Age demonstrate,^{2, 3, 4} and therefore it is not unusual nor unexpected in ordinary life. If this is to be interpreted to be human-induced, then the evidence just discussed demonstrates that this kind of change cannot be attributed to human actions and therefore the statement is false.

ANALYSIS OF THE CLIMATE CHANGE IMPACTS ASSESSMENT TABLE OF ECOLOGICAL EFFECTS, titled Biological responses to climate change

(Assessment’s pages 204-205)

The Assessment presents a list of 30 biological responses to climate change. Since this is my particular area of expertise, I have analyzed this list and sorted the items into the following categories: **Where the Assessment is wrong** based on my understanding (10 items); **Improvements** (12 items); **Declines** (which can be taken as worsening) (No items); **Predicted from Climate Models**, Therefore Not Fact, especially given the failure of climate models to forecast with any reliability Earth’s increase in temperature since the 1990s (see figure 1) (3 items); and **Unlikely or Unsupported Statement** (5 items). **Within the context of the Assessment, this table comes across as meaning to demonstrate more very negative effects of a human-induced global warming, but since upon analysis none of the 30 appears to be a legitimately supported decline that might occur under a hypothetical global warming or have been directly observed, this table in fact is an argument against the overall message of the Assessment.**

(The number that appears at the beginning of each entry is the number in the Assessment’s list. The numbers following each of the Assessment’s entry are the citation number as listed in the Assessment. The Assessment’s statements are in italics; my comments appear in plain font.)

ASSESSMENT IS WRONG

1. *21. Seedling survival of nearly 20 resident and migrant tree species decreased during years of lower rainfall in the Southern Appalachians and the Piedmont areas, indicating that reductions in native species and limited replacement by invading species were likely under climate change.*¹³⁴ Since the climate models are admittedly weak about changes in rainfall, this statement has no relevance to purported human-induced global warming.
2. *27. Water temperature data and observations of migration behaviors over a 34-year time period showed that adult pink salmon migrated earlier into Alaskan creeks, and fry advanced the timing of migration out to sea. Shifts in migration timing may increase the potential for a mismatch in optimal environmental conditions for early life stages, and continued warming trends will likely increase pre-spawning mortality and egg mortality rates.*⁸⁷ Salmon have evolved and are adapted to environmental change.
3. *3. Conifers in many western forests have experienced mortality rates of up to 87% from warming-induced changes in the prevalence of pests and pathogens and stress from drought.*¹¹⁸ Important causes of the mortality of trees in western forests are: fire suppression, which promotes insect and disease outbreaks, and from introduced

- (invasive) insects and diseases.
4. 8. *Warmer and drier conditions during the early growing season in high-elevation habitats in Colorado are disrupting the timing of various flowering patterns, with potential impacts on many important plant-pollinator relationships.*⁷⁷ “Disrupting” is a politically loaded term. The scientific term would be “changed” and this is a good sign, showing the adaptability of species to changing environments.
 5. 12. *Variation in the timing and magnitude of precipitation due to climate change was found to decrease the nutritional quality of grasses, and consequently reduce weight gain of bison in the Konza Prairie in Kansas and the Tallgrass Prairie Preserve in Oklahoma.*¹²⁴ Results provide insight into how climate change will affect grazer population dynamics in the future. This is stated in a way that is not open to scientific evaluation. No doubt lower rainfall has negative effects, but the statement is “variation.” In fact, the publication cited (Craine et al., 2008)⁵ states that “Greater late-summer precipitation increased bison weight gain . . . “greater midsummer precipitation decreased weight gain.” This is a scientifically interesting result for those focused on wildlife in grasslands, but it is neither a negative nor positive in terms of global warming, because the forecasting models are weakest in forecasting rainfall even annually, let alone seasonally. Therefore these results cannot be taken as negative (nor positive) effects of a global rise in average temperature.
 6. 10. *Cutthroat trout populations in the western U.S. are projected to decline by up to 58%, and total trout habitat in the same region is projected to decline by 47%, due to increasing temperatures, seasonal shifts in precipitation, and negative interactions with nonnative species.*⁸ Stresses on Cutthroat extend considerably beyond climate change and have to do with fishing intensity, water diversions and other habitat changes, such as competition from introduced, invasive species such as lake trout and rainbow trout.⁶
 7. 28. *Warmer springs in Alaska have caused earlier onset of plant emergence, and decreased spatial variation in growth and availability of forage to breeding caribou. This ultimately reduced calving success in caribou populations.*¹³⁸ The implication is that warming will necessarily have a negative effect on caribou, but the paper cited (Post et al., 2008) actually is much more cautious, stating “it is highly relevant to herbivore ecology to consider the manner in which warming will alter spatial patterns of plant phenology at more immediate spatial scales than that of the regional landscape. The paper concludes, cautiously: “Large herbivores prefer newly emergent forage, presumably owing to the high digestibility and nutrient content of young plant tissues . . . future warming could conceivably impair the ability of herbivores such as caribou to forage selectively, with adverse consequences for their productivity. We suggest, therefore, that it is highly relevant to herbivore ecology to consider the manner in which warming will alter spatial patterns of plant phenology at more immediate spatial scales than that of the regional landscape.”⁷

There is again an inherent assumption that a steady-state between living things and climate is natural and necessary for a species’ persistent. Wildlife population can and do adjust to changes, but this can take some time. See the examples of current adjustments, which I have added below this table. Give the populations a little time to adjust.

8. *26 Changes in female polar bear reproductive success (decreased litter mass and numbers of yearlings) along the north Alaska coast have been linked to changes in body size and/or body condition following years with lower availability of optimal sea ice habitat.*¹³⁷ There is evidence that polar bears are adjusting by feeding more on terrestrial prey. Contrary to the publicity about polar bears, there is little information demonstrating any statistically, scientifically valid decline in polar bear populations. I have sought the available counts of the 19 subpopulations. Of these, only three have been counted twice; the rest have been counted once. Thus no rate of change in the population is possible. The first count was done 1986 for one subpopulation.⁸
9. *7. Quaking aspen-dominated systems are experiencing declines in the western U.S. after stress due to climate induced drought conditions during the last decade.*¹²² Anderegg, W. R. L., J. M. Kane, and L. D. L. Anderegg, 2012: *Consequences of widespread tree mortality triggered by drought and temperature stress. Nature Climate Change, 3, 30-36, doi:10.1038/nclimate1635.* Given the failure of the climate models to predict temperature change and the observed lack of a significant recent rise in temperature, it is incorrect to refer to this as a “climate induced” drought. Moreover, a thousand year tree-ring study shows that deep droughts are characteristic of California. Meteorologist Martin P. Hoerling wrote on March 8, 2014 that “At present, the scientific evidence does not support an argument that the drought there is appreciably linked to human-induced climate change.” Hoerling is a research meteorologist, specializing in climate dynamics, at the Earth System Research Laboratory of the National Oceanic and Atmospheric Administration, and the White House’s National Climate Assessment cites many of Hoerling’s papers, including figure 20.4 “Longer Frost-free Season Increases Stress on Crops,” so his work is respected by the authors.
10. *9. Population fragmentation of wolverines in the northern Cascades and Rocky Mountains is expected to increase as spring snow cover retreats over the coming century.*¹²³ The paper cited, Dawson et al. (2011)⁹, does not mention wolverines. And contrary to making a highly negative statement, the paper states *Populations of many species have persisted in situ at individual sites since the last glacial maximum (toleration) and many have undergone habitat shifts, moving short distances (1 to 10 km) to sites with different aspects, slopes, elevations, and other attributes as the environment changed. Migrations of 100 to 1000 km are well documented for many species.*

IMPROVEMENTS

1. *2. Northern flickers arrived at breeding sites earlier in the Northwest in response to temperature changes along migration routes, and egg laying advanced by 1.15 days for every degree increase in temperature, demonstrating that this species has the capacity to adjust their phenology in response to climate change.*¹¹⁷
2. *11. Comparisons of historical and recent first flowering dates for 178 plant species from North Dakota showed significant shifts occurred in over 40% of species examined, with the greatest changes observed during the two warmest years of the study.*⁷⁵
3. *14. Migratory birds monitored in Minnesota over a 40-year period showed significantly earlier arrival dates, particularly in short-distance migrants, indicating that some species are capable of responding to increasing winter temperatures better than*

- others.126.
4. 15. Up to 50% turnover in amphibian species is projected in the eastern U.S. by 2100, including the northern leopard frog, which is projected to experience poleward and elevational range shifts in response to climatic changes in the latter quarter of the century.127
 5. 16. Studies of black ratsnake (*Elaphe obsoleta*) populations at different latitudes in Canada, Illinois, and Texas suggest that snake populations, particularly in the northern part of their range, could benefit from rising temperatures if there are no negative impacts on their habitat and prey.128
 6. 17. Warming-induced hybridization was detected between southern and northern flying squirrels in the Great Lakes region of Ontario, Canada, and in Pennsylvania after a series of warm winters created more overlap in their habitat range, potentially acting to increase population persistence under climate change.129
 7. 18. Some warm-water fishes have moved northwards, and some tropical and subtropical fishes in the northern Gulf of Mexico have increased in temperate ocean habitat.130 Similar shifts and invasions have been documented in Long Island Sound and Narragansett Bay in the Atlantic.131
 8. 23. Over the last 130 years (1880-2010), native bees have advanced their spring arrival in the northeastern U.S. by an average of 10 days, primarily due to increased warming. Plants have also showed a trend of earlier blooming, thus helping preserve the synchrony in timing between plants and pollinators.135
 9. 24. In the Northwest Atlantic, 24 out of 36 commercially exploited fish stocks showed significant range (latitudinal and depth) shifts between 1968 and 2007 in response to increased sea surface and bottom temperatures.55
 10. 25. Increases in maximum, and decreases in the annual variability of, sea surface temperatures in the North Atlantic Ocean have promoted growth of small phytoplankton and led to a reorganization in the species composition of primary (phytoplankton) and secondary (zooplankton) producers.136
 11. 29. Many Hawaiian mountain vegetation types were found to vary in their sensitivity to changes in moisture availability; consequently, climate change will likely influence elevation-related vegetation patterns in this region.139
 12. 5. In response to climate-related habitat change, many small mammal species have altered their elevation ranges, with lower-elevation species expanding their ranges and higher-elevation species contracting their ranges.120

DECLINES

None.

PREDICTED FROM CLIMATE MODELS, THEREFORE NOT FACT

1. 30. Sea level is predicted to rise by 1.6 to 3.3 feet in Hawaiian waters by 2100, consistent with global projections of 1 to 4 feet of sea level rise (see Ch. 2: Our Changing Climate, Key Message 10). This is projected to increase wave heights, the duration of turbidity, and the amount of re-suspended sediment in the water; consequently, this will create potentially stressful conditions for coral reef communities.140
2. 6. Northern spotted owl populations in Arizona and New Mexico are projected to decline

during the next century and are at high risk for extinction due to hotter, drier conditions, while the southern California population is not projected to be sensitive to future climatic changes.121

3. 19. Global marine mammal diversity is projected to decline at lower latitudes and increase at higher latitudes due to changes in temperatures and sea ice, with complete loss of optimal habitat for as many as 11 species by midcentury; seal populations living in tropical and temperate waters are particularly at risk to future declines.132

UNLIKELY CORRELATION OR UNSUPPORTED STATEMENT

1. 13. (a and b) Climatic fluctuations were found to influence mate selection and increase the probability of infidelity in birds that are normally socially monogamous, increasing the gene exchange and the likelihood of offspring survival. 125
2. 20. Higher nighttime temperatures and cumulative seasonal rainfalls were correlated with changes in the arrival times of amphibians to wetland breeding sites in South Carolina over a 30-year time period (1978-2008).133 Of course. The time period precedes any possible effect of human-induced global warming, and the effect is a truism. Rainfall will affect amphibians. Since the climate models are admittedly weak about changes in rainfall, this statement has no relevance to purported human-induced global warming.
3. 22. *Widespread declines in body size of resident and migrant birds at a bird-banding station in western Pennsylvania were documented over a 40-year period; body sizes of breeding adults were negatively correlated with mean regional temperatures from the preceding year.*85 The citation for this statement is NatureServe, cited 2012: Ecosystem-based Management Tools Network. [Available online at www.ebmtools.org]. This is a general website. I used its search option and did not find bird-banding nor Pennsylvania, nor any reference to a study of bird-banding in Pennsylvania.
4. 4. *Butterflies that have adapted to specific oak species have not been able to colonize new tree species when climate change-induced tree migration changes local forest types, potentially hindering adaptation.*119 . The citation 119 in the Assessment is Aumen, N., L. Berry, R. Best, A. Edwards, K. Havens, J. Obeysekera, D. Rudnick, and M. Scerbo, 2013: Predicting Ecological Changes in the Florida Everglades Under a Future Climate Scenario, 33 pp., U.S. Geological Survey, Florida Sea Grant, Florida Atlantic University. [Available online at http://www.ces.fau.edu/climate_change/ecology-february-2013/PECFEFCS_Report.pdf]. I searched this report and found no mention of butterflies. This is probably an inadvertent editing error and the authors of the Assessment meant to refer to some other paper, but since this is the actual listing, the statement is unsupported.
5. 1. *Mussel and barnacle beds have declined or disappeared along parts of the Northwest coast due to higher temperatures and drier conditions that have compressed habitable intertidal space.*116. The citation listed is Burke, L., L. Reytar, M. Spalding, and A. Perry, 2011: Reefs at Risk Revisited. World Resources Institute, 130 pp. [Available online at http://pdf.wri.org/reefs_at_risk_revisited.pdf]. I searched this citation and did not find any mention of the words mussel or barnacle and the only mention of “northwest” was “northwestern Hawaii.” Again this is likely a typographic error, but no other statement in the Assessment brought me to a relevant paper either, so the statement

is unsupported by the report.

SOME OTHER EXAMPLES OF SPECIFIC STATEMENTS THAT ARE INCORRECT, OR OVERSTATED, OR LIMITED TO A FEW SPECIFIC CASES, OR OTHERWISE OF DOUBTFUL GENERALITY

Given the length of the just-released White House Climate Change Assessment and the time available to review it, I am able to consider only a few examples of other specific problems with the Assessment. I have focused on those that have to do with biological factors. These, however, are representative of problems throughout the Assessment. (Once again, the material in italics is quotes from the Assessment; the material in standard font is my text.)

Cores from corals, ocean sediments, ice records, and other indirect temperature measurements indicate the recent rapid increase of ocean temperature is the greatest that has occurred in at least the past millennium and can only be reproduced by climate models with the inclusion of human-caused sources of heat-trapping gas emissions (p. 559). As we saw earlier, the climate models are not coming even close to forecasting air temperature change, and therefore could not be expected to forecast accurately changes in ocean temperature, so it is not correct to say that something "can only be reproduced by climate models with the inclusion of human-caused sources of heat-trapping gas emissions."

Warmer air and ocean temperatures are also causing the continued, dramatic decline in Arctic sea ice during the summer (panel D) (p. 560). We published a paper comparing Arctic sea ice extent in the nineteenth century, using historical records from ships hunting the bowhead whale, with those in recent times.¹⁰ In this paper we wrote, "Records from May indicate that end-of-winter sea-ice extent in the Bering Sea during the mid-19th century closely resembled that in the 1972–82 data. However, the historical data reveal that sea ice was more extensive during summer, with the greatest difference occurring in July. This pattern indicates a later and more rapid seasonal retreat." While the statement in the White House Climate Change Assessment is not contradicted by our paper, the limited statement (about the summer) in the Assessment once again paints a dire picture to the average reader, whereas our work suggests that in fact the sea ice extent recovered over winter, and changes in arctic sea ice are more complicated than the Assessment implies. The problem here is a matter of tone and communication.

Key Message 4: Seasonal Patterns: Timing of critical biological events—such as spring bud burst, emergence from overwintering, and the start of migrations—has shifted, leading to important impacts on species and habitats (p.201). The implication here is that this is entirely negative for life on Earth and will forever be so. But on the contrary, the environment has always changed and is always changing, and living things have had to adapt to these changes. Interestingly, many, if not most, species that I have worked on or otherwise know about require environmental change, including salmon and sequoia trees.^{11 12}

Two of the longest studies of animals and plants in Great Britain show that at least some species are adjusting to recent weather changes in “timing of critical biological events, such as spring bud burst, emergence from overwintering.” For example, a 47-year study of the bird *Parus major* (one of the longest monitoring of any bird species) shows that these birds are responding behaviorally to recent weather changes. A species of caterpillar that is one of the main foods of this bird during egg-laying has been emerging earlier as spring temperatures have risen. In response, females of this bird species are laying their eggs an average of two weeks earlier.¹³

The second study, one of the longest experiments about how vegetation responds to temperature and rainfall, shows that long-lived small grasses and sedges are highly resistant to climate change. The authors of the study report that changes in temperature and rainfall during the past 13 years “have had little effect on vegetation structure and physiognomy.”¹⁴

Of course with any environmental change, not all species will do well. This has always been the case, and is consistent with Darwinian evolution and with ecological knowledge. Black guillemots (*Cepphus grylle*), birds that nest on Cooper Island, Alaska, illustrate that some species are having difficulties adjusting to climate change. (However, black guillemots in their entire range are not a threatened or endangered species. It is only their abundance on Cooper Island that has declined.)

The problem has been that temperature increases in the 1990s caused the sea ice to recede farther from the island each spring. The parent birds feed on Arctic cod found under the sea ice and must then return to the nest to feed their chicks, who are not yet mature enough to survive on their own. For the parents to do this, the distance from feeding grounds to nest must be less than about 30 km, but in recent years the ice in the spring has been receding as much as 500–800 km (300–500 mi) from the island. As a result, the black guillemots on the island have lost an important source of food. The birds have sometimes targeted sculpin, which is not as abundant as cod.¹⁵

But the real problem these Cooper Island birds face today is egg predation by polar bears. With less sea ice during this time period, bears have gone ashore and eaten young birds. In 2009, of the 180 guillemots that hatched, only one on the island fledged (flew away). The solution to this has been to build bear-proof nesting boxes for the birds. In 2010, bear-proof nesting boxes resulted in about 100 birds that fledged.

Two points emerge here. One is that living things do in fact often adjust to changes in the timing of climate events; if not, there would be little or no life on Earth. The second is that the real problem black guillemots face is here-and-now predation, which can be and has been dealt with and does not require a single focus on whether or not the climate change was human-induced.

Chapter 7, *Forests*, opens with this:

Key Messages

1. Climate change is increasing the vulnerability of many forests to ecosystem changes and tree mortality through fire, insect infestations, drought, and disease outbreaks.

As I noted before, the Assessment suffers from the use of the term “climate change” with two meanings: natural and human-induced. The implication in this key message is that the forest problems are the result of human-induced climate change, but as I have made clear, both the

failure of the models and the failure of temperature change to closely track CO₂ make this key statement false. Furthermore, it is well known that (1) forest wildfires are largely due to long-term suppression of fires in the twentieth century, which allowed the buildup of excessive fuel; and (2) that insect infestations and disease outbreaks are heavily the result of introduced species and the failure to remove dead and decaying timber from forests. In addition, this key statement is another example where recent weather patterns are said to represent and prove human-induced global warming, which I pointed out at the beginning is incorrect.

Key Message 2. *U.S. forests and associated wood products currently absorb and store the equivalent of about 16% of all carbon dioxide (CO₂) emitted by fossil fuel burning in the U.S. each year. Climate change, combined with current societal trends in land use and forest management, is projected to reduce this rate of forest CO₂ uptake.*

As explained in my review of the IPCC 2014 report, the estimates of carbon uptake by vegetation used by IPCC and in major articles cited by the reports are based on what can best be called “grab samples,” a relatively small number of studies done at a variety of times using a variety of methods, mainly in old-growth areas. The results reported by IPCC overestimate carbon storage and uptake by as much as 300%.¹⁶ Therefore this is an unreliable statement.

As I stated at above, these are representative examples of problems that exist throughout the Climate Change Assessment.

NOTES For the White House Climate Change Assessment

1. Publications by myself and J. M. Melillo: Aber, J.S., D.B. Botkin and J.M. Melillo, 1978, Predicting the effects of different harvesting regimes on forest floor dynamics in northern hardwoods, *Canad. J. Forest Research* 8: 306 - 315.; Aber, J.D., D.B. Botkin and J.M. Melillo, 1979, Predicting the effects of different harvesting regimes on productivity and yield in northern hardwoods, *Canadian J. Forest Research* 9: 10 - 14.; Aber, J.S., G.R. Hendrey, D.B. Botkin, A.J. Francis, and J.M. Melillo, 1980, Simulation of acid precipitation effects on soil nitrogen and productivity in forest ecosystems, Brookhaven National Laboratory Publications BNL 28658, Associated Universities, Inc, N.Y. Botkin, D.B., J.M. Melillo and L.S. Wu, 1981, “How ecosystem processes are linked to large mammal population dynamics,” pp. 373 - 387. In: C.W. Fowler and T. Smith, eds. *Population Dynamics of Large Mammals*, John Wiley and Sons, NY.; Aber, J.D., G.R. Hendrey, A.J. Francis, D.B. Botkin and J.M. Melillo, 1982, Potential effects of acid precipitation on soil nitrogen and productivity of forest ecosystems, pp. 411 - 433, In: F.M. D’itri, ed., *Acid Precipitation: Effects on Ecological Systems*. Ann Arbor Science, MI.

2. Le Roy Ladurie, E., *Times of Feast, Times of Famine: A History of Climate Since the Year 1000*, 1971, Garden City, N.Y: Doubleday & Co. 426pp.

3. Botkin, D. B., 2012, *The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered* (Oxford University Press, New York, hardback and ebook, September 14, 2012)

4. Botkin, D. B., and E. A. Keller, 2014. *Environmental Sciences: Earth as a Living Planet* (John

Wiley, New York).

5. Craine, J. M., E. G. Towne, A. Joern, and R. G. Hamilton, 2008: Consequences of climate variability for the performance of bison in tallgrass prairie. *Global Change Biology*, 15, 772-779, doi:10.1111/j.1365-2486.2008.01769.x.
6. Vos, D., "Going Native." *Wildlife Reviews*, 2006. Spring: p. 25-28.
7. Post, E., C. Pedersen, C. C. Wilmsers, and M. C. Forchhammer, 2008: Warming, plant phenology and the spatial dimension of trophic mismatch for large herbivores. *Proceedings of the Royal Society B: Biological Sciences*, 275, 2005-2013, doi:10.1098/rspb.2008.0463. [Available online at <http://rspb.royalsocietypublishing.org/content/275/1646/2005.full.pdf+html>]
8. IUCN Summary of polar bear population status per 2013
<http://pbsg.npolar.no/en/status/status-table.html>
9. Dawson, T.P., S. T. Jackson, J. I. House, I. C. Prentice, and G. M. Mace, *Beyond predictions: Biodiversity conservation in a changing climate*. . *Science*, 2011. **332**: p. 53-58.

10. Mahoney, Andrew R., John R. Bockstoce, Daniel B. Botkin, Hajo Eicken, and Robert A. Nisbet. 2011, "Sea Ice Distribution in the Bering and Chukchi Seas: Information from Historical Whaleships' Logbooks and Journals," *Arctic*. 64, (4): 465 – 477. (DECEMBER 2011).
11. Botkin, D. B., and E. A. Keller. 2014. (9th edition) *Environmental Sciences: Earth as a Living Planet* (John Wiley, New York).
12. Botkin, D. B., 2012, *The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered* (Oxford University Press, New York, hardback and ebook, September 14, 2012).
13. Charmantier, A., Robin H. McCleery, Lionel R. Cole, Chris Perrins, Loeske E. B. Kruuk, Ben C. Sheldon, *Adaptive Phenotypic Plasticity in Response to Climate Change in a Wild Bird Population*. *Science* 2008. **320**(5877): p. 800-803.
14. Grime, J.P., Jason D. Fridley, Andrew P. Askew, Ken Thompson, John G. Hodgson, and Chris R. Bennett, *Long-term resistance to simulated climate change in an infertile grassland*. *PNAS*, 2008. **105**(29): p. 10028-10032.
15. Divoky, G. 2011. Black Guillemots in a melting Arctic: Responding to shifts in prey, competitors, and predators. Transcription, pages 125–130 in R. T. Watson, T. J. Cade, M. Fuller, G. Hunt, and E. Potapov (Eds.). *Gyrfalcons and Ptarmigan in a Changing World, Volume I. The Peregrine Fund*, Boise, Idaho, USA. <http://dx.doi.org/10.4080/gpcw.2011.0112>
16. Botkin, D. B., and L. Simpson, 1990, Biomass of the North American Boreal Forest: A step toward accurate Global Measures: *Biogeochemistry* 9:161-174; Botkin, D. B., Simpson, L. G., and H. J. Schenk, 1992, Estimating Biomass, *Science Letters*. Vol. 257, No. 5067. (Jul. 10, 1992), pp. 146-147; Botkin, D. B., Simpson, L. G., and R. A. Nisbet, 1993, Biomass and Carbon Storage of the North American Deciduous Forest, *Biogeochemistry* 20: 1-17; Botkin, D. B., Ngugi, M.R., D. Doley (submitted). "Statistically Valid Estimates and Accurate Forecasts of Forest Biomass and Carbon Sequestration: A Forty-Five Year Quest." Keynote speech at IUFRO Forest Biomass Conference, October 7, 2013, to be published in *Drewno (Wood) Journal*.

Responses by Daniel Botkin to Additional Questions

Environment and Public Works Committee Hearing June 18, 2014
Follow-up Questions for Written SubmissionTo: Senators Barbara Boxer, Chairman, and David Vitter, Ranking Member,
Environment and Public Works Committee.

Thank you for the opportunity to testify at this Senate hearing. Since the topic of the hearing, "Climate Change: The Need to Act Now," concerned a scientific topic and the application of science to policy, and since I was the only professional scientist testifying at the hearing, and since there was, as a result, a question as to who is a scientific expert, I would like to add the following information to the record, with the hope that this will be useful to the Committee in its future consideration of this important question.

I come to you as a scientist, not a politician, not as a member of a specific political party (I vote as an independent). My doctorate is in biology (Rutgers University 1968) and since 1968 I have done research on the theory of global warming and its possible ecological effects. I would like to put into the record a list of my scientific publications that have dealt with many aspects of this topic, as follows:

DANIEL B. BOTKIN GLOBAL WARMING RELATED BOOKS AND ARTICLES**Books**

1. West, D.C., H.H. Shugart and D.B. Botkin (eds.), 1981, *Forest Succession: Concepts and Applications*, Springer-Verlag, NY, 517 pp.
2. Botkin, D.B., and E.A. Keller, 1987, *Environmental Studies: Earth as a Living Planet*, Charles E. Merrill, Pub. Co., Columbus, Ohio, 500 pp. (2nd edition; 1st edition published 1982).
3. Botkin, D.B., M. Caswell, J. E. Estes, and A. Orio, (Eds.) 1989, *Changing the Global Environment: Perspectives on Human Involvement*, Academic Press, N.Y.
4. Botkin, D.B., 1990, *Discordant Harmonies: A New Ecology for the 21st Century*, Oxford University Press.
5. Botkin, D.B., 1993, *Forest Dynamics: An Ecological Model*, Oxford University Press.
6. Botkin, D.B., 1993, *JABOWA-II: A Computer Model of Forest Growth*, Oxford University Press, N.Y. (Software and manual)
7. Skinner, B., S. Porter, and D.B. Botkin, 1999, *The Blue Planet*, John Wiley & Sons, N.Y.

8. Botkin, D. B., and E. A. Keller, 1995 (1st edition), 1997 (2nd edition), 1999 (3rd edition), 2003 (4th edition), 2004 (5th edition), 2007 (6th edition), 2009 (7th edition), 2011 (8th edition), 2014 (9th edition) *Environmental Sciences: The Earth as a Living Planet*, John Wiley, New York.
9. Keller, E. A., and D. B. Botkin, 2007, *Essential Environmental Science*, John Wiley, New York.
10. Botkin, D. B., 2010 *Powering the Future: A Scientist's Guide to Energy Independence*, FT Press, Upper Saddle River, NJ.
11. Botkin, D. B., 2012, *The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered*, Oxford University Press, in press.

Published Articles:

12. Botkin, D.B., J.F. Janak, and J.R. Wallis, 1973, "Estimating the effects of carbon fertilization on forest composition by ecosystem simulation," pp. 328 - 344, In: G.M. Woodwell and E.V. Pecan, eds., *Carbon and the Biosphere*, Brookhaven National Laboratory Symposium No. 24, Technical Information Center, U.S.A.E.C., Oak Ridge, TN.
13. Botkin, D.B., 1976, "The role of species interactions in the response of a forest ecosystem to environmental perturbation," pp. 147 - 171. In: B.C. Patten, (ed.), System Analysis and Simulation in Ecology, vol. IV. Academic Press, NY.
14. Botkin, D.B., 1977, Forests, lakes and the anthropogenic production of carbon dioxide, BioScience 27: 325 - 331.
15. Woodwell, G.M., R.H. Whittaker, W.A. Reiners, G.E. Likens, C.A.S. Hall, C.C. Delwiche, and D.B. Botkin, 1978, The biota and the world carbon budget, *Science* 199: 141 - 146.
16. Ralston, Charles W.; G. M. Woodwell; R. H. Whittaker; W. A. Reiners; G. E. Likens; C. C. Delwiche; D. B. Botkin 1979 Where has all the carbon gone? *Science*, New Series, Vol. 204, No. 4399. (Jun. 22, 1979), pp. 1345-1346.
17. Botkin, D.B., 1982, Can there be a theory of global ecology? *J. of Theor. Biol.* 96: 95 - 98.
18. Botkin, D.B., 1984, The Biosphere: The New Aerospace Engineering Challenge. *Aerospace America*, July 1984, p. 73-75.
19. Botkin, D.B., J.E. Estes, R.M. MacDonald, M.V. Wilson, 1984, Studying the Earth's Vegetation from Space, *BioScience* 34(8):508-514.

20. Botkin, D.B. and S.W. Running, 1984, Role of Vegetation in the Biosphere, Purdue University Machine Processing of Remotely Sensed Data (Symposium), pp. 326-332.
21. Davis, M. B. and D. B. Botkin, 1985, Sensitivity of the Cool--Temperate Forests and Their Fossil Pollen to Rapid Climatic Change, *Quaternary Research* 23:327-340.
22. Botkin, D. B., 1985, The Need for A Science of The Biosphere, *Interdisciplinary Science Reviews*,10(3):267-278.
23. Yool, S.R., J.L. Star, J.E.Estes, D.B.Botkin, 1985, Analysis of Image Processing Algorithms for Classifying the Forests of Northern Minnesota, Proceedings, Tenth Wm. T. Pecora Memorial Remote Sensing Symposium, Fort Collins, Colorado.
24. Yool, S. R. , J. L. star, J. E. Estes, D. B. Botkin, D. W. Eckhardt, and F. W. Davis, 1986, "Performance analysis of image processing algorithms for classification of natural vegetation in the mountains of Southern California," *Int. J. Remote Sensing*, 7 (5): 683-702
25. Botkin, D.B., 1985, The Science of the Biosphere, *Origin of Life* 15:319-325.
26. A.A.Orio and D. B. Botkin (eds.),1986, Man's Role in Changing The Global Environment, Proceedings International Conference, Venice, Italy, 21-26 October, 1985; *The Science of the Total Environment* 55: 1-399 and vol 56:1-415.
27. Botkin, D. B.(ed.), M. B. Davis, J. Estes, A. Knoll, R. V. O'Neill, L. Orgel, L B. Slobodkin, J. C. G. Walker, J. Walsh, and D. C. White. 1986. *Remote Sensing of the Biosphere*, National Academy of Sciences, Washington, D.C.
28. Botkin, D.B., 1989, "Science and The Global Environment," pp. 3 - 14 (Chapter 1) in
29. Botkin, D.B., M. Caswell, J.E.Estes, A.Orio (eds) *Man's Role in Changing The Global Environment:Perspectives on Human Involvement*, Academic Press, Boston.
30. Stolz, J.F. Botkin, D.B. and M.N.Dastoor, 1989, "The Integral Biosphere", pp. 31-49 (Chapter 3) in M. B. Ramblers and L. Margulis (eds.), *Global Ecology:Towards a Science of the Biosphere* , Academic Press Pub., Boston.
31. Botkin, D. B., R. A. Nisbet, and T. E. Reynales, 1989, "Effects of Climate Change on Forests of the Great Lake States, pp.2-1 to 2-31 in *The Potential Effects of*

Global Climate Change on the United States, J. B. Smith and D. A. Tirpak (eds.)
U. S. Environmental Protection Agency, Washington, D. C., EPA -203-05-89-0.

32. Rosenfeld, A. H., and D. B. Botkin, 1990, Trees Can Sequester Carbon, Or Die, Decay, and Amplify Global Warming: Possible Positive Feedback Between Rising Temperature, Stressed Forests, and CO₂, *Physics and Society* 19:4pp.
33. Botkin, D. B. and L. Simpson, 1990, Biomass of the North American Boreal Forest: A step toward accurate Global Measures: *Biogeochemistry* 9:161-174.
34. Botkin, D. B. and L. G. Simpson, 1990, Distribution of Biomass in the North American Boreal Forest, pp. 1036-1045 in G. Lund (ed.) Proceedings of the International Conference on *Global Natural Resource Monitoring and Assessments: Preparing for the 21st Century*, American Society for Photogrammetry and Remote Sensing.
35. Botkin, D. B. and R. A. Nisbet, 1990, Response of Forests to Global Warming and CO₂ Fertilization, [Report to EPA](#).
36. Botkin, D. B., D. A. Woodby, and R. A. Nisbet, 1991, Kirtland's Warbler Habitats: A Possible Early Indicator of Climatic Warming, *Biological Conservation* 56 (1): 63-78.
37. Botkin, D. B. 1991, Global Warming and Forests of the Great Lakes States: An example of the use of Quantitative Projections in Policy Analysis
38. An Essay Submitted for the George and Cynthia Mitchell International Prize Competition, 1991, which won first prize and was published by the Mitchell Foundation, Houston, TX.
39. Hall, F.G., D. B. Botkin, D. E. Strelbel, K. D. Woods, and S. J. Goetz, 1991, Large Scale Patterns in Forest Succession As Determined by Remote Sensing, *Ecology* 72: 628 - 640.
40. Botkin, D. B., 1991, A New Balance of Nature, *The Wilson Quarterly*, XV: 61-65; 68-72.
41. Botkin, D. B., 1991, Global Warming: What it is, What is Controversial About it, and What We Might Do In Response To It, *UCLA J. of Environmental Law and Policy*, 9: 119-142.
42. Woods, K.D., A. H. Fieveson, and D. B. Botkin, 1991, Statistical error analysis for biomass density and leaf area index estimation, *Canad. J. Forest Research*, 21: 974-989.
43. Botkin, D. B., R. A. Nisbet, S. Bicknell, C. Woodhouse, B. Bentley, and W.

- Ferren, 1991, Global Climate Change and California's Natural Ecosystems, pp. 123 - 149 in J. B. Knox (ed.), *Global Climate Change and California: Potential Impacts and Responses*, University of California Press, Berkeley.
44. Botkin, D. B., and R. A. Nisbet, 1992, Forest response to climatic change: effects of parameter estimation and choice of weather patterns on the reliability of projections, *Climatic Change* 20: 87-111.
 45. Botkin, D. B., R. A. Nisbet and L. G. Simpson, 1992, Forests and Global Climate Change, Chapter 19, pp. 274- 290 in S. K. Majumdar, L. S. Kalkstein, B. M. Yarnal, E. W. Miller, and L. M. Rosenfeld (eds.) *Global Climate Change: Implications, Challenges and Mitigation Measures*, Pennsylvania Academy of Sciences, Philadelphia.
 46. Botkin, D. B., Simpson, L. G., and H. J. Schenk, 1992, Estimating Biomass, *Science Letters*.
 47. Botkin, D. B. and R. A. Nisbet, 1992, Projecting the effects of climate change on biological diversity in forests, pp. 277 - 293 in R. Peters and T. Lovejoy, (Eds.) *Consequences of the Greenhouse Effect for Biological Diversity*, Yale University Press, New Haven.
 48. Botkin, D. B., 1992, "A Natural Myth," *Nature Conservancy* : 42: 92.
 49. Botkin, D. B., Simpson, L. G., and R. A. Nisbet, 1993, Biomass and Carbon Storage of the North American Deciduous Forest, *Biogeochemistry* 20: 1-17.
 50. Simpson, L.G., D. B. Botkin, R. A. Nisbet, 1993, The Potential Aboveground Carbon Storage of North American Forests, *Water, Air, and Soil Pollution* 70:197-205.
 51. Nisbet, R.A. and D. B. Botkin, 1993, Integrating a Forest Growth Model With a Geographic Information System, pp.265-269 in Goodchild, M.S. , B.O. Parks, L.T. Steyaert (eds.) *Environmental Modeling with GIS*, Oxford University Press, N.Y.
 52. Hunsaker, C.T.,R. A. Nisbet, D. C. L. Lam, J. A. Browder, W. L. Baker, M. G. Turner, D. B. Botkin, 1993, pp.248-264 in Goodchild, M.S. B.O. Parks, L.T. Steyaert (eds.) *Environmental Modeling with GIS*, Oxford University Press, N.Y.
 53. Guggenheim, D. and D. B. Botkin, 1996, CO₂ Offset Opportunities in Siberian Forests, Report to the Electric Power Research Institute, Center for the Study of the Environment, Santa Barbara, CA, EPRI report # TR-106059.
 54. Sedjo, R. A, and D. B. Botkin, 1997, "Using Forest Plantations to Spare the

Natural Forest", *Environment* 39(10): 14 - 20.

55. Botkin, D.B. 1998. People and Nature: How to Find a Balance. In *Forest Policy: Ready for Renaissance*, ed. John M. Calhoun. pp. 9-24. Institute of Forest Resources Contribution No. 78. Seattle, Washington.
56. Botkin, D. B., 2000, "Preface," *Forces of Change: A New View of Nature*, National Geographic Society, Washington, D. C. , pp. 15-19
57. Botkin, D. B., Henrik Saxe, Miguel B. Araújo, Richard Betts, Richard H.W. Bradshaw, Tomas Cedhagen, Peter Chesson, Terry P. Dawson, Julie Etterson, Daniel P. Faith, Simon Ferrier, Antoine Guisan, Anja Skjoldborg Hansen, David W. Hilbert, Craig Loehle, Chris Margules, Mark New, Matthew J. Sobel, and David R.B. Stockwell. 2007 "Forecasting Effects of Global Warming on Biodiversity." *BioScience* 57(3): 227-236.
58. Botkin, D. B. (2010) Book Review of *Heatstroke: Nature in an Age of Global Warming*. Anthony D. Barnosky. Island Press, 2009. 288 pp., *BioScience* 60 (7) 552-553.
59. Ngugi, Michael R. and Daniel B. Botkin, 2011, "Validation of a multispecies forest dynamics model using 50-year growth from Eucalyptus forests in eastern Australia," *Ecological Modelling*. 222: 3261– 3270.
60. Mahoney, Andrew R., John R. Bockstoce, Daniel B. Botkin, Hajo Eicken, and Robert A. Nisbet. "Sea Ice Distribution in the Bering and Chukchi Seas: Information from Historical Whaleships' Logbooks and Journals." *Arctic*. 64, (4): 465 – 477. (DECEMBER 2011).
61. Botkin, D. B., 2013. "What Forestry Needs in the Anthropogene," *The Forestry Source*. September 2013 • Vol. 18, No. 9. p. 11.
http://www.nxtbook.com/nxtbooks/saf/forestrysource_201309/index.php#11
62. Botkin, D. B., 2014 (in press) "Adapting Forest Science, Practice, and Policy to Shifting Ground: From Steady-State Assumptions to Dynamic Change." Sample, V. Alaric and R. Patrick Bixler (eds.). *Forest Conservation and Management in the Anthropocene*. General Technical Report. Fort Collins, CO: US Department of Agriculture, Forest Service. Rocky Mountain Research Station.

Questions for Botkin Questions from: Senator David Vitter

1. **Will the Existing Source Performance Standard rule as currently constructed have a measurable effect on global average temperatures, sea level rise, the extent of sea ice, or the severity or frequency of hurricanes, tornados,**

droughts, or floods?

If the United States acts alone, the scientific estimates I have read indicate that this will have very little effect on the average temperature and therefore on these other factors if the rest of the nations of the world continue to emit as much carbon dioxide as they are at present and as forecast they will release in the future. More important, as I show in my testimony, the forecasts from the global climate models do not correspond at all to recent and current temperature trends, but instead vastly overestimate the changes. If this lack of correlation continues, then temperatures will not increase at anywhere near the rate forecast by the climate models from greenhouse gases, and therefore will this reduction by the U.S. would have little effect on the climate.

2. Dr. Botkin, you served as an expert reviewer for both the recent IPCC report as well as the White House Climate Assessment. Did you find either process responsive to reviewer comments?

No, to my knowledge neither process was responsive to any of my comments as a reviewer.

Questions from: Senator Jeff Sessions

1. Your testimony did an excellent job of highlighting the risks of reliance upon the IPCC 2014 Assessment and the National Climate Change Assessment for major policy decisions.

The four EPA Administrators who testified at the hearing wrote an op-ed last year that says "There is no longer any credible scientific debate about the basic facts" and "delay could mean that warming becomes 'locked in.'" Do you believe that there is still scientific debate about the extent to which human greenhouse gas emissions affect the climate? And how do you respond to the claim that "delay could mean that warming becomes 'locked in?'"

Regarding whether there is a scientific debate: Yes, there is still a legitimate scientific debate about the extent to which greenhouse gas emissions are affecting Earth's climate. It is wellknown that carbon dioxide, methane, and some other gases absorb specific wavelengths of infrared light, which is informally known as heat radiation, and therefore function as "greenhouse gases," the term usually used informally. On a planet like Mars or Venus, without life, without water in its three phases — gas, liquid, and solid — and without plate tectonics, and with an atmosphere composed largely of carbon dioxide, this gas has a major effect on that planet's climate. But on Earth the situation is much more complicated, because water vapor is the primary greenhouse gas, because water is continually passing from vapor to condensed (liquid) water in the atmosphere in ways that are extremely complex, passing from liquid to ice and back again in the oceans and on the land also in extremely complex patterns, and because life on Earth affects climate in many ways. The four principal ways that

living things affect climate are (1) through evaporation and uptake (condensation) of water, (2) exchange of other trace gases including greenhouse gases, (3) changing the reflectance of large surface areas of Earth, and (4) changing the roughness index (the way that winds at and near the surface are slowed by the surface).

As I have written in various scientific papers since the 1970s, the result is a global life-supporting and life-containing system that we only partially understand (see my attached list of climate-change-related publications). It is arrogant of us to claim that we understand this incredibly complex system to the extent that we can make firm forecasts, especially given the current failure of climate models to forecast recent temperature changes. To paraphrase the famous thinker Buckminster Fuller, we are born onto a planet that did not come with an instruction manual

In short, we don't fully understand how our planet's life supporting system works, and our difficult but fascinating scientific investigation is still in its very early stages. How unfortunate, then, that how Earth's climate works has been turned into a political debate that assumes we know all we need to know about it to make decisions that will have many large scale effects.

At the hearing, the statement was made repeatedly by the four EPA administrators that 97% of scientists agreed that human-caused global warming was happening. I would like to clarify the basis for that assertion and what the facts actually are as discussed in the paper "Climate Consensus and 'Misinformation': A Rejoinder to Agnotology, Scientific Consensus, and the Teaching and Learning of Climate Change."¹ This paper reanalyzes the basis for the statement that 97% of scientists agree that our addition of greenhouse gases to the atmosphere is causing a major global warming and concludes "Inspection of a claim by Cook et al. (Environ Res Lett 8:024024, 2013) of 97.1 % consensus, heavily relied upon by Bedford and Cook, shows just 0.3% endorsement of the standard definition of consensus: that most warming since 1950 is anthropogenic." It is not 97% of scientists that agree about global warming, but less than 1%, according to this paper.

None of the four EPA administrators are scientists. They were simply repeating the standard assertions that are made, which, as I discussed, are an inaccurate assessment of what scientists in general believe to be the case. But most important, science is not a majority-rule process. It is an analysis based on what the facts show. There are many cases in the history of science those in political and ideological control strongly opposed findings by scientists, with very negative results. Two obvious examples are Galileo and the Pope; and in the USSR, centralized political control over genetics and agriculture by Trofim Lysenko, the director of the Soviet Union's Lenin All-Union Academy of Agricultural Sciences. Lysenkoism. "Lysenkoism" was a theory that acquired characteristics could be inherited. For example, if you cut off the tails of rats, their offspring would lack tails. Even though it departed completely from the then

¹ David R. Legates, Willie Soon, William M. Briggs, Christopher Monckton of Brenchley 2013, Climate Consensus and 'Misinformation': A Rejoinder to Agnotology, Scientific Consensus, and the Teaching and Learning of Climate Change, *Science & Education*. (10.1007/s11191-013-9647-9) August 2013,

and now well-accepted Darwinian evolutionary theory, Lysenkoism was the required rule in the Soviet Union and Darwinian evolution was suppressed, greatly damaging biological research in the Soviet Union.

In a democracy with freedom of speech, scientific findings must speak themselves, not drawn out by the repeated mouthings of half-truths by nonscientists.

For those not familiar with the bases of the scientific method, I recommend chapter 2 in my textbook with Professor Edward A. Keller, *Environmental Science: Earth as a Living Planet*.

Regarding whether "delay could mean that warming becomes 'locked in'" there are two problems with this assertion. First, carbon dioxide has varied greatly over the geological ages and has never gotten permanently "locked into" a specific concentration in the atmosphere. The same can be said for Earth's average temperature.

Second, such a statement arises from a specific kind of theory about the climate as a system, a theory that assumes climate without human action achieves and remains at a steady state, at a constant concentration. To the contrary, well-accepted findings from such research as the Antarctic Ice Cores show that the climate has always changed, has never been in a steady-state. It is therefore a non-steady-state system, and a theory it to be steady-state is bound to be wrong in general and in many specific ways. This is also a point I have made repeatedly in my scientific papers.

Steady-state systems, like the Empire State Building, remain in a constant condition unless tipped too far. This is what lies behind claims that the climate may be at or near a "tipping point." Earth's climate is inherently non-steady-state and it is an incorrect description of such a system to claim that something like the concentration of a greenhouse gas or Earth's temperature could be "locked-in."

Put more simply, how Earth's biosphere (the global life-containing and life-supporting system) is just beginning to be understood, and there are, of course, many different theoretical approaches to explain how this system works. At present we do not know enough to make claims about whether any of Earth's systems could be definitely characterized as having "tipping points," and especially whether any aspect of the climate is about to be "locked in."

2. During the hearing, you sought to comment on assertions that linked sea level rise to CO₂ emissions. Could you elaborate for the record upon sea level rise in general and correlation with CO₂ emissions? Please provide any charts, data sets, or peer-reviewed papers you feel relevant.

Let me make clear first of all that my primary research has been on terrestrial ecosystems and my speciality is not oceanography. Measurements of sea level rise are themselves difficult and subject to scientific questions about consistency over time and location, and experts in this field are actively discussing whether there has been an increase in the rate of sea level rise during the twentieth century. Forecasting how sea level will rise in the future is even more difficult and uncertain and is a major subject of current research. For example, a major scientific paper concerning sea level rise stated that "Uncertainties in sea-level projections for the 21st century have focused ice sheet

modelling efforts to include the processes that are thought to be contributing to the recently observed rapid changes at ice sheet margins. This effort is still in its infancy, however, leaving us unable to make reliable predictions of ice sheet responses to a warming climate if such glacier accelerations were to increase in size and frequency.”²

Reconstructions of past sea-level rise show considerable variation of the past 17,000 years, depending on the rate at which glaciers melted, and this poses a problem beyond my expertise for forecasting changes today into the future.³

I am not expert enough about this subject to comment further, except to point out the following: Several things about sea level are well known and well accepted relating to this question of sea level rise and CO₂ emissions. Most important, sea level has been rising since the end of the last ice age, approximately 12,500 years ago. This is so well known that even a book for lay people about environmental problems in Venice, Italy, *The Science of Saving Venice*,⁴ states that “during the last great ice age, the landscape [of Venice] was very different. The sea was 100 metres lower than it is today . . . the seas rose as the ice age ended.” The standard estimate is that as a result of the natural melting of the continental glaciers and natural warming trend since the end of that last ice age, the sea level has risen approximately one to two feet a century. Many discussions of sea level rise and CO₂ concentration ignore this natural process and present the situation as if all sea level rise was the result of human activities that are increasing the concentration of this gas in the atmosphere. On the contrary, effects of our additions of greenhouse gases to the atmosphere is *in addition to* the background natural rate of sea level rise.

² PALSEA (PALeo SEA level working group). 2010. The sea-level conundrum: case studies from palaeo-archives. *J. Quaternary Sci.*, Vol. 25 pp. 19–25. ISSN 0267-8179. Received 4 November 2008; Revised 14 January 2009; Accepted 15 January 2009.

³ Fairbanks, R., *A 17,000 year glacio-eustatic sea level record: influence of glacial melting rates on the Younger Dryas event and deep ocean circulation.* . *Nature* 1989. **342**(637-642).

⁴Fletcher, C., and Jane De Mosto, *The Science of Saving Venice*. 2004, Torino, London, Venice, New York: Umberto Allemandi & C.

Senator WHITEHOUSE. Next, we will hear from Attorney General Strange. Welcome, Attorney General.

**STATEMENT OF HON. LUTHER STRANGE, ATTORNEY
GENERAL, STATE OF ALABAMA**

Mr. STRANGE. Thank, Mr. Chairman, Senator Sessions and members of the committee for having me here today. I am pleased to be here to share my thoughts.

As the Attorney General of Alabama, it is my sworn duty to uphold the rule of law for the almost 5 million people that we have in my State. That duty includes enforcing the environmental laws that help protect our natural resources and the health of our citizens.

One of the most important matters I am involved with now as attorney general is serving as the coordinating counsel for the Gulf States in the historic BP oil spill litigation. Alabama's coastline was covered in oil and our economy was shut down for months as a result of the spill.

I understand firsthand manmade environmental disasters and the importance of sensible and effective environmental regulations. With that said, my comments today reflect a continuing concern with this Administration's approach to environmental regulation.

The defense of this proposal will be that the States have "flexibility." Providing the States with a narrow range of costly policy choices, which most of the States did not choose for themselves, does not provide any actual flexibility and still produces the same outcome—higher electricity prices and decreased generation.

Repeating over and over again the word "flexibility" is not an adequate defense or an adequate answer to the low income consumers in my State or any other State, for that matter, who will ask why they must pay more to reduce CO2 emissions when those reductions cannot and will not impact the global climate.

Congress did not intend for the Clean Air Act, Section 111(d) to have such a far reaching consequence for the American people. Indeed, to prevent impacts such as those that will flow from EPA's proposed emission guidelines, Congress took care to limit EPA's authority under Section 111(d).

Given the enormous burdens that would be imposed by EPA's proposed guidelines, however, it may be obvious that EPA has simply disregarded the limits of the law. These limits, moreover, are not questionable or controversial. They are expressed in clear elements of the Clean Air Act.

First, the Clean Air Act forbids regulating sources under Section 111(d) if they are regulated under Section 112 of the Act. Existing electric utility generating units are regulated under Section 112.

Second, the Clean Air Act also forbids Section 111(d) regulations based on emission reductions that cannot be achieved at individual facilities but instead rely on reductions that require actions by an entire system. EPA's proposed emission guidelines fully embrace a system-wide approach to regulation.

Third, EPA has improperly attempted to limit Section 111(d)'s express statutory delegation of authority to the States and in doing so, EPA's proposal not only rejects State discretion under the Clean

Air Act, but jettisons decades of unquestioned precedent establishing State jurisdiction over electricity markets.

In conclusion, the State of Alabama vigorously opposes EPA's proposed mandate to effectively restructure the electric sector as it would have disastrous consequences for electric reliability and the economy. Those consequences, moreover, would all stem from a patently unlawful application of the Clean Air Act.

EPA's proposal seeks to expand the scope of Section 111(d) in an unprecedented manner. It would do so at the expense of State authority that is expressly identified and preserved in the Clean Air Act and in the unquestionable jurisdiction of States over intraState electricity markets.

Finally, it would do all these things for no discernible benefit, given the increased emissions of China and other developing economies. There is no rationale that can support such regulation and this committee should ensure that it is halted.

[The prepared statement of Mr. Strange follows:]

“CLIMATE CHANGE: THE NEED TO ACT NOW”
SENATE COMMITTEE ON ENVIRONMENT & PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY
JUNE 18, 2014

Testimony of Alabama Attorney General Luther Strange

Good morning, Chairwoman Boxer, Ranking Member Vitter, Subcommittee Chairman Whitehouse, Ranking Member Sessions, and Members of the Committee. Thank you inviting me to testify here today. My name is Luther Strange, and I am the Attorney General of Alabama. As Attorney General, my sworn duty is to uphold the rule of law for the 4.8 million hardworking men and women in my state. That duty includes enforcing the environmental laws which help protect our natural resources and the health of our citizens. My comments today reflect a continuing concern with this Administration’s approach to environmental regulation. EPA’s proposed guidelines for existing power plant performance standards under Clean Air Act section 111(d) are simply the most recent example of the Federal Government usurping authorities properly delegated to the States.

Like electric suppliers all over the country, municipalities, cooperatives and investor-owned utilities in Alabama are trying to come to grips with what this proposal will mean to families and businesses in my state. Ultimately, someone has to pay for changing the way we produce and use energy. If anyone suggests that these costs are minimal or worth it because of the example that the United States will set, I would point out that setting an example in this instance cannot by definition be free or cheap. On its face, the Administration’s proposal would force electric suppliers to: 1) spend more for efficiency projects that are not economic, 2) deploy renewable energy projects that do not meet normal cost-benefit standards, 3) limit the amount of electricity used by customers through demand management efforts that do not meet standard cost tests, 4) operate gas plants out of economic order in a way that was never envisioned before the proposal, and 5) deny consumers access to lower cost coal plants—that were paid for through current low rates—in ways that no one ever envisioned before the proposal.

The proposal goes to great lengths to disguise or minimize the negative economic, social, and reliability impacts that it will have. Even the Administration’s own estimates, however, are shocking—65,000 megawatts of generation will be closed prematurely; 6,000 megawatts will close in my region; annual compliance costs will be between \$7.5 billion and \$9 billion and rising; southern region electric prices will increase by 3.4 percent by 2020 and nationwide by 6.5 percent. Recent history, moreover, has shown that EPA is likely to have underestimated these already severe impacts. During the MATS rulemaking, for instance, EPA told the nation that only 5,000 megawatts of coal-fired electric generation would be retired. Ten times that amount has been announced—some 50,000 megawatts. To put this in perspective, between the MATS actual impact and EPA’s low ball assessment of this proposal, America will shutter generation resources that exceed the electricity output of the entire nation of Spain. Early forced closure of existing generation has to have cost impacts—low-cost generation is closed, more costly generation remains, and customers must pay more for electricity. The result is inescapable and intended. Even the President acknowledged that electricity prices must “skyrocket” in order to implement his climate policies. I believe the President. I disagree with his policies.

The defense of this proposal will be that the States have “flexibility,” but providing the States with a narrow range of costly policy choices, which most of the States did not choose for themselves, does not provide any actual flexibility and still produces the same outcome—higher electricity prices and decreased generation. Repeating over and over the word “flexibility” is not an adequate defense or adequate answer to the low-income consumers in my state, or any other state, who will ask why they must pay more to reduce CO₂ emissions when those reductions cannot and will not impact the global climate.

In reaching this conclusion, I have given the President’s proposal the benefit of its own analysis. The U.S. Chamber of Commerce, however, may be closer to the mark when it predicted that the compliance costs for these regulations will be nearly \$480 billion by 2030, or \$28 billion a year by 2030. That is three times the EPA estimates. Electricity is a force multiplier, rising electric costs damage Gross Domestic Product. The Chamber says the loss will be \$50 billion a year, peaking at over \$100 billion in 2025. This would mean a typical family in my State would lose approximately \$3,400 in disposable income, which would affect poor families disproportionately. I am unwilling to transfer to a federal environmental agency the indirect, but undeniable, power to reshape my State’s energy portfolio and choices at the expense of the hardworking families of Alabama.

Congress did not intend for Clean Air Act section 111(d) to have such far-reaching consequences for the American people. Indeed, to prevent impacts such as those that will flow from EPA’s proposed emission guidelines, Congress took care to limit EPA’s authority under section 111(d). Given the enormous burdens that would be imposed by EPA’s proposed guidelines, however, it may be obvious that EPA has simply disregarded the limits of the law. These limits, moreover, are not questionable or controversial; they are express and clear elements of the Clean Air Act. As I will explain, the Clean Air Act forbids regulating sources under section 111(d) if they are regulated under section 112 of the Act. Existing electric utility generating units are regulated under section 112. The Clean Air Act also forbids section 111(d) regulations that are based on emission reductions that cannot be achieved at individual facilities but that instead rely on reductions that require actions by an entire system, including facilities acting in tandem, state governments, and even electricity consumers. EPA’s proposed emission guidelines fully embrace a system-wide approach to regulation. EPA has also improperly attempted to limit section 111(d)’s express statutory delegation of authority to the States, and, in doing so, EPA’s proposal not only rejects state discretion under the Clean Air Act but jettisons decades of unquestioned precedent establishing state jurisdiction over electricity markets. For each of these reasons, EPA’s proposed emission guidelines must be stopped before they do lasting damage to the Clean Air Act, the States, and the Nation.

The Clean Air Act Prohibits Regulation of Electric Generating Units Under Section 111(d)

As a threshold matter, the Clean Air Act is abundantly clear that EPA has no authority to issue this proposal. As explained in a June 6, 2014 letter from West Virginia Attorney General

Patrick Morrissey to EPA Administrator Gina McCarthy,¹ section 111(d) expressly states that EPA is prohibited from regulating any air pollutant emitted from an existing source category that is regulated under section 112 of the Clean Air Act.² EPA has imposed extensive regulations on existing coal- and natural gas-fired power plants pursuant to section 112, thereby precluding regulation of these sources under section 111(d). EPA itself has conceded that “a literal reading” of section 111(d) prohibits its proposed 111(d) guidelines for existing electric generating units, but claims an ill-defined right to fundamentally reinterpret the statute.³ As a state Attorney General, I believe the law is what the law says, and I am troubled by EPA’s belief that it can “fill in the blanks” in a statute when there are no blanks to fill.

The Clean Air Act Does Not Allow 111(d) Standards That Apply “Beyond the Fence-line”

Even if EPA had the authority to issue this proposal, EPA’s proposed emission guidelines flout fundamental statutory requirements in section 111(d). At the most basic level, the Clean Air Act demands that any standards of performance issued by States pursuant to section 111(d)—and any emission guidelines that EPA issues to inform the development of state standards—represent emission limits reflecting “best system of emission reduction” (“BSER”) that has been adequately demonstrated for the existing source.⁴

Specifically, section 111(d) plainly states that the EPA Administrator is to establish a procedure, including emission guidelines, under which each State prepares and submits “a plan which establishes standards of performance *for any existing source* for any air pollutant.”⁵ Further, the Act defines “stationary source” as “any building, structure, facility, or installation which emits or may emit any air pollutant.”⁶ The clear import of these provisions is that 111(d) standards must be based on the emission reductions that individual sources can achieve by controlling their own emissions.

The U.S. Court of Appeals for the District of Columbia Circuit has confirmed that 111(d) standards must be emission control obligations that can be applied to “a single building, structure, facility, or installation—the unit prescribed in the statute” and that EPA cannot rewrite the Clean Air Act to apply a 111(d) standard to “a combination of such units.”⁷

Accordingly, a 111(d) standard of performance can only be based on emissions reductions that are demonstrated and achievable at individual emitting facilities—here, CO₂ reductions that can be achieved at existing coal- and natural gas-fired electric generating units. In other words, a standard of performance must be based on emission reductions “inside the

¹ Letter from Hon. Patrick Morrissey, Attorney General of the State of West Virginia to Hon. Gina McCarthy, Administrator, U.S. Environmental Protection Agency, Re: EPA’s Asserted Authority Under Section 111(d) Of The Clean Air Act To Regulate CO₂ Emissions From Existing Coal-Fired Power Plants (June 6, 2014).

² Clean Air Act § 111(d)(1)(A)(i).

³ Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units at 26.

⁴ Clean Air Act § 111(a)(1).

⁵ Clean Air Act § 111(d)(1) (emphasis added).

⁶ Clean Air Act § 111(a)(3).

⁷ *ASARCO v. EPA*, 578 F.2d 319, 327-328 (D.C. Cir. 1978).

fence-line” of a facility. EPA’s proposed 111(d) guidelines are based on reductions achievable “beyond the fence-line” and are, therefore, inconsistent with the Clean Air Act.

EPA has proposed to conclude that four “building blocks” of measures are the “best system of emission reduction” for controlling CO₂ at existing electric generating units. Those four categories, which EPA calls “building blocks,” are:

- (1) Efficiency requirements at coal and natural gas fired electric generating units;
- (2) Substituting generation from the most carbon intensive electric generating units with generation from less carbon intensive units;
- (3) Substituting generating from coal and natural gas-fired electric generating units with generation from zero-carbon renewable generation; and
- (4) Using demand-side efficiency measures to reduce the total amount of generation that its needed by consumers.

Building blocks 2, 3, and 4 all depend on CO₂ emission reductions that can only be achieved when multiple facilities are operated as a coordinated system. CO₂ emission reductions would be achieved under these building blocks, for instance, through emission averaging, allowance trading, demand-side reductions, and re-dispatching generation from one facility to another. This approach would effectively regulate the entire category of existing electric generating units as a single source and base the “standards of performance” on the emission reductions that arguably might be achievable by the category as a whole, rather than basing standards on reductions demonstrated and achievable at individual sources. This “beyond the fence-line” approach to setting 111(d) standards is inconsistent with the Clean Air Act and is in direct violation of D.C. Circuit’s holding in *ASARCO v. EPA*.

Further, even building block 1—imposing efficiency improvement requirements at coal- and natural gas-fired electric generating units—violates Clean Air Act requirements. The Clean Air Act requires that “standards of performance” be “achievable” on a continuous basis by the facilities regulated under section 111(d). Standards of performance for existing electric generators based on one-size-fits-all efficiency improvements cannot be “achievable.” The results possible at individual sources differ wildly: some units may be able to achieve meaningful efficiency gains; others that are already highly efficient will not be able to further enhance their efficiency. Even at individual sources, measures to improve efficiency often degrade over time, so that the source may not be able to demonstrate the same emission levels continuously. Moreover, the emission impacts of efficiency improvements are exceedingly difficult to measure, and if a source is used to its full capacity, there will by definition be no absolute reduction in emissions. Thus, it is not feasible or consistent with the Clean Air Act to prescribe or enforce a “standard of performance” based on efficiency improvements for existing electric generating units.

Additionally, undertaking efficiency improvements at a power plant could potentially incite other regulatory requirements. In the past, EPA and environmental groups have filed lawsuits alleging that power plant efficiency improvements triggered additional obligations under the Act's onerous "New Source Review" program. The potential for additional liability will have a chilling effect, reducing the availability of compliance options.⁸

EPA's building block approach to establishing 111(d) guidelines is not only unlawful, it is inscrutable and onerous. EPA has an obligation to promulgate its guidelines through an open and transparent process. Unfortunately, EPA has failed to meet that obligation, as this complicated building block analysis results in complex calculations based on unfounded technical assumptions that are not adequately explained anywhere in the record. Although my staff and I are still in the process of unpacking this byzantine analysis, even a cursory review of the measures required to meet my state's emissions target is shocking. According to EPA's model, by 2030 Alabama would need to eliminate over 20% of its affordable and reliable coal-fired generation; increase generation from more intermittent renewable energy sources over five-fold; and expand nuclear generation by over 2.3 million megawatt-hours. These draconian requirements, built on such a flimsy legal foundation, are a grave abuse of regulatory authority.

The Proposed 111(d) Guidelines Unlawfully Disregard State Authority

The proposed 111(d) guidelines' substantive shortcomings are compounded by significant procedural failures that undermine the role of the States under the Clean Air Act. However, as noted in an analysis sent to EPA from a bipartisan group of 17 Attorneys General, including myself, the proposal would, in fact, upend the Act's deliberate division of regulatory authority between the States and the Federal Government.⁹

At its heart, the Act relies on the principle of "cooperative federalism" and establishes clearly defined roles for both EPA and the States that recognize that "air pollution control at its source is the primary responsibility of States and local governments."¹⁰ Cooperative federalism embodies the values enshrined in the Tenth Amendment to the U.S. Constitution, which declares that those powers "not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." It also reflects the inherent wisdom of entrusting authority to the level of government that is closest to regulated sources, is most familiar with local operating conditions, and is most sensitive to local costs and impacts to consumers and businesses. Yet EPA's proposed emission guidelines depart radically from this fundamental principle and, if finalized, would expand EPA's authority far beyond the bounds of the Clean Air Act.

Section 111(d) unambiguously grants States the sole authority to decide what standards will apply to existing sources and only provides a limited role for EPA – a role the Agency has

⁸ See Pennsylvania Department of Environmental Protection, *Recommended Framework for the Section 111(d) Emissions Guidelines Addressing Carbon Dioxide Standards for Existing Fossil Fuel-Fired Power Plants*, Apr. 10, 2014.

⁹ *Perspective of 18 States on Greenhouse Gas Emission Performance Standards for Existing Sources under § 111(d) of the Clean Air Act*, Sep. 11, 2013.

¹⁰ Clean Air Act § 101(a)(3).

plainly overstepped here. The Act merely authorizes EPA to “establish a *procedure*” for States to submit plans establishing standards of performance for existing sources.¹¹ Clearly, EPA’s role in regulating existing sources is purely procedural: the Agency has no authority to establish the substantive requirements to be imposed. It is States that establish the applicable emission standards. EPA’s implementing regulations allow the Agency to promulgate an “emission guideline” setting forth “criteria for judging the adequacy” of state plans, but these guidelines do not impose any substantive obligations on States or existing sources.¹²

Section 111(d) requires that the procedure for submitting these state plans must be similar to section 110’s procedure for submitting state implementation plans, or “SIPs,” implementing the National Ambient Air Quality Standards. It is important that Congress used this analogy, because it highlights the substantial discretion States can exercise in designing their plans for existing sources and EPA’s limited ability to second-guess that discretion. Nearly 40 years ago, the U.S. Supreme Court held in *Union Electric Co. v. EPA* that the Agency *must* approve a SIP if the State has accounted for all of the relevant statutory requirements, even if EPA disagrees with the State’s choice of emission limits.¹³ More recently, the Fifth Circuit repeated that “the Act confines the EPA to the ministerial function of reviewing SIPs for consistency with the Act’s requirements.”¹⁴

In that vein, section 111(d) limits EPA to the “ministerial function” of approving state plans for existing sources as long as the State has considered the appropriate statutory requirements—in this case, the factors listed in section 111(a)(1) to set its “standards of performance.” That provision states that standards of performance must be “achievable” for individual sources through the application of the “best system of emission reduction” that has been adequately demonstrated, and must account for costs, energy requirements, and other environmental impacts.¹⁵ Under 111(d), it is the States—not EPA—that are authorized to establish emission standards; therefore it is the States—and not EPA—that weigh these statutory factors to determine what standard is appropriate for existing sources. As with the SIPs, EPA cannot use its emission guidelines to dictate the substance of the standards in state plans; it can only require that States adopt performance standards that are based on the application of the statutory factors.

EPA’s proposed emission guidelines for greenhouse gases bear no resemblance to the CAA’s legal framework or to any of EPA’s previous 111(d) rulemakings. Instead of recognizing State authority and expertise, EPA has relegated States to implementing a federal mandate handed down from Washington, regardless of its costs, effectiveness, or achievability in light of local circumstances. Despite the Agency’s numerous public claims to have incorporated “flexibility” into its unprecedented approach, EPA’s proposal actually *denies* States the flexibility that section 111(d) mandates and that the States have historically exercised.

¹¹ Clean Air Act § 111(d)(1) (emphasis added).

¹² 40 C.F.R. § 60.22(b)(5); 40 Fed. Reg. 53,341 (Nov. 17, 1975).

¹³ 427 U.S. 246 (1976).

¹⁴ *Luminant Generation Co., LLC v. EPA*, 675 F.3d 917, 921 (5th Cir. 2012).

¹⁵ Clean Air Act § 111(a)(1).

For example, the Clean Air Act explicitly allows States to consider “the remaining useful life” and “other factors” within the State’s discretion in order to tailor standards to individual sources.¹⁶ Likewise, States are free to determine that a specific source or group of sources should be subject to a less stringent standard or longer compliance schedule because of costs, physical limitations on installing control equipment, or any other factor making a less stringent standard more reasonable.¹⁷

But under the proposed emission guidelines, EPA is attempting to strip that discretion from the States. The Agency makes clear that under its approach, any State plan that does not match the target emission rate chosen by EPA will be rejected. And because the target rates rely on the exercise of all the State’s tools, no discretion remains. Putting aside the lack of any language in the Clean Air Act authorizing EPA to establish mandatory emission guidelines, by proposing a single state-wide emission rate for existing sources, the Agency is eliminating States’ inherent ability to adjust their plans to account for costs, achievability, aging sources, or any of the other myriad factors a state may rely on to perform its statutory role of establishing emission standards. Each State’s proposed target subsumes all existing sources under one emission rate, preventing any meaningful sub-categorization or individualization of standards: a State cannot reduce the burden on one source (as section 111(d) allows it to do) without increasing the burden on others. Given that EPA’s proposed targets appear to be unachievably high at the outset, depriving States of their ability to account for local impacts will only exacerbate the destructive consequences of EPA’s guidelines for consumers and for the economy. EPA should abandon its attempt to usurp the role of the States.

The Proposed 111(d) Guidelines Would Displace Traditional State Control of Electricity Markets

The proposed 111(d) guidelines also undermine State roles in policy areas well outside the Clean Air Act. For nearly a century, States have enjoyed substantial flexibility to oversee the generation and distribution of electricity within their borders. This autonomy flows from the Federal Power Act’s recognition that State and federal authorities occupy distinct and separate spheres with regard to the regulation of electricity. Specifically, the Federal Power Act broadly limits federal regulations “only to those matters which are not subject to regulation by the States.” Thus, the Federal Government may exercise jurisdiction over the transmission of electricity in interstate commerce, as well as wholesale sales of electricity in interstate commerce.¹⁸ As recently as last month, the U.S. Court of Appeals for the District of Columbia Circuit reaffirmed that, absent a “clear and specific grant of jurisdiction,” the Federal Government cannot regulate areas of the electricity market left by the Federal Power Act to the States.¹⁹

¹⁶ Clean Air Act § 111(d)(1)(B).

¹⁷ 40 C.F.R. § 60.24(f).

¹⁸ 16 U.S.C. § 824(a) and (b). Consistent with the scope of this express statutory authorization, it has been recognized that the Federal Power Act permits regulation of unbundled sales of transmission in a state, even when such sales are at retail. See *New York v. FERC*, 535 U.S. 1 (2002).

¹⁹ *Electric Power Supply Association v. FERC*, No. 11-1486 at 9 (D.C. Cir. May 23, 2014).

EPA claims its outside the fence-line approach offers States flexible options to implement the proposed 111(d) guidelines. What EPA calls “flexibilities”—changing dispatch rules, mandating efficiency, utilizing other generation sources—are, in fact, the very intrastate generation, transmission, and distribution matters explicitly reserved by the Federal Power Act for the States. By requiring States to meet standards based on these outside the fence-line actions, the 111(d) guidelines effectively upend the Federal Power Act’s careful balance between State and federal authority, subverting traditional State control of retail electricity matters with a federal mandate to overhaul virtually every aspect of the intrastate electricity system. Thus, the proposed 111(d) guidelines effectively replace the Federal Power Act’s co-regulatory model with federal regulations, in EPA’s own words, “from plant to plug”²⁰—granting the Federal Government powers denied it for nearly the entire history of the electricity grid. Since 1915, the Alabama Public Service Commission has guided intrastate electricity development so as to protect rate-payers and ensure reliability. Under EPA’s proposed 111(d) guidelines, however, the Commission could continue these efforts only in so much as they comport with EPA’s greenhouse gas agenda.

Congress surely did not intend to undermine the entire Federal Power Act structure by authorizing such expansive powers under the Clean Air Act—particularly under section 111(d), where, as explained above, State and federal powers are so carefully tailored. Rather, this provision can only be coherently read, both internally and externally, as contemplating measures solely inside the fence-line of a designated facility. Indeed, while the proposed 111(d) guidelines quote analysis questioning whether the division between inside and outside the fence-line measures “arguably becomes irrelevant—at least from a legal perspective[.]”²¹ the Federal Power Act’s express limitations make clear that this distinction is not without cause. By limiting 111(d) to only those measures inside the fence-line of a designated facility, Congress constrained EPA to the role of environmental protection and prevented the Agency from impinging on outside policy matters like traditional electricity regulation. Ultimately, limits on federal power in both the Federal Power Act and Clean Air Act section 111(d) are not legally irrelevant, but instead reflect Congressional assent to the Tenth Amendment’s exhortation that “the powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”

Conclusion

The State of Alabama vigorously opposes EPA’s proposed mandate to effectively restructure the electric sector, as it would have disastrous consequences for electric reliability and the economy. Those consequences, moreover, would all stem from a patently unlawful application of the Clean Air Act. EPA’s proposal seeks to expand the scope of section 111(d) in an unprecedented manner. It would do so at the expense of State authority that is expressly identified and preserved in the Clean Air Act and in the unquestionable jurisdiction of States over intrastate electricity markets. And it would do all of these things for no discernible benefit, given the increasing emissions of China and other developing economies. There is no rationale that can support such a regulation, and this Committee should ensure that it is halted.

²⁰ EPA Administrator Gina McCarthy, *Remarks Announcing Clean Power Plan, As Prepared*, June 2, 2014.

²¹ Proposed 111(d) Guidelines at 312-313, FN 237.

“Climate Change: The Need to Act Now”
Senate Committee on Environment & Public Works
Subcommittee on Clean Air and Nuclear Safety
June 18, 2014

Answers to Follow-up Questions for Alabama Attorney General Luther Strange

Question from Senator David Vitter

1. Attorney General Strange, last year, the Senate EPW Republicans released a report entitled, “Neglecting a Cornerstone Principle of the Clean Air Act: President Obama’s EPA Leaves States Behind.” The report chronicles EPA’s increasing departure from the cooperative federalism approach established in the Clean Air Act. When it comes to EPA’s implementation of the President’s Climate Action Plan, is it your opinion that EPA is abiding by the cooperative federalism design of the Clean Air Act? Is EPA seeking to cooperate with the States?

Answer: No, EPA is absolutely failing to abide by the Clean Air Act’s cooperative federalism design. Instead of seeking to cooperate or collaborate with the States as Congress intended, EPA is attempting to unilaterally carry out a mandate from the Executive Branch.

In enacting the Clean Air Act, Congress relied on the principle of cooperative federalism, establishing clearly defined roles for both EPA and the States and recognizing that air pollution control is the primary responsibility of States and local governments. As I explained in my written testimony, EPA’s proposed implementation of the President’s Climate Action Plan represents a radical departure from that fundamental principle, and if finalized, would expand EPA’s authority far beyond the bounds of the Clean Air Act. EPA has clearly overstepped its limited role in Clean Air Act implementation. EPA is authorized only to “establish a procedure” for States to submit plans establishing standards of performance for existing sources; the Agency has no authority to establish the substantive requirements to be imposed. It is States that establish the applicable emission standards. But under EPA’s proposal, EPA attempts to divest that discretion from the States.

EPA’s failure to abide by the Clean Air Act and recognize State authority and expertise in implementing the President’s Climate Action Plan is the latest instance of EPA’s repeated attempts to usurp States’ powers under the Act in the last several years. Often springing from secretive “sue and settle” arrangements with environmental organizations that exclude the States, EPA has again and again stripped States of their statutory powers by revoking longstanding, well-accepted provisions of state implementation plans (“SIP”) and imposing excessively stringent, costly, and even unachievable standards.

Questions from Senator Jeff Sessions

1. Your testimony points out that EPA's Mercury and Air Toxics Standards will close ten times more power plants than the Agency had projected – numbers supported by analysis from DOE's Energy Information Administration. Even the L.A. Times said EPA's projections for that rule "turned out wrong almost immediately." In light of this inaccurate history, can States credibly rely on EPA's impact analysis for the proposed existing power plant guidelines?

Answer: No, given EPA's track record, States cannot reasonably rely on the agency's impact analysis for its proposal. EPA's wildly inaccurate estimates of the MATS Rule's effects are indicative of the great lengths the agency will go to in an attempt to conceal the devastating impact its climate proposal will have on the economy, industry, and electric reliability. Note that, as outlined in my written testimony, even EPA's own (likely underestimated) predictions are alarming, but the (likely accurate) estimates of the U.S. Chamber of Commerce are downright terrifying and demand withdrawal of EPA's proposal. By the Chamber's calculations, compliance costs by 2030 will be three times greater than EPA has estimated.

2. Are you concerned that the proposed existing power plant guidelines could undermine the ability of state utility commissions to protect rate-payers and ensure reliability? If so, why?

Answer: Yes. Under the Federal Power Act, the States have considerable autonomy in overseeing the generation and distribution of electricity within their borders. The Federal Government may regulate only those aspects of the electricity market not designated for regulation by the States under the Federal Power Act. But EPA's proposal involves requiring States to meet standards based on changes in the very intrastate generation, transmission, and distribution matters that the Federal Power Act reserves for the States. EPA's effective seizure of States' control over their own electricity systems would leave utility commissions like the Alabama Public Service Commission without the ability to guide intrastate electricity development unless their choices conform to EPA's preferences with respect to the climate plan. This would impair States' ability to protect rate-payers and ensure reliability, which could have disastrous economic consequences for the States.

3. At the hearing, you were asked by Senator Boxer whether "Alabama lost all recent major Clean Air Act cases" including legal challenges to the Cross-State Air Pollution Rule, the Mercury and Air Toxics Rule (Utility MACT), and the endangerment finding and light duty vehicle GHG tailpipe standards. I understand that Sen. Boxer's question may have over-simplified the legal posture and outcomes of those cases. Please supplement your response so that the record is more complete on this topic.

Answer: Yes, I would like to clarify my response to Senator Boxer's question with respect to the legal challenge to the Cross-State Air Pollution Rule (the "Transport Rule"). Although the U.S. Supreme Court's decision indeed reversed and remanded the decision of the D.C. Circuit to vacate the Transport Rule, there are multiple unresolved

issues that the D.C. Circuit may consider on remand. While disagreeing that EPA's approach to defining what constitutes a "significant contribution to nonattainment" was facially invalid, the Supreme Court agreed with the D.C. Circuit that the Clean Air Act precludes EPA from requiring reductions in upwind state emissions that are "more than the amount necessary" to eliminate significant contributions to nonattainment. Furthermore, the Supreme Court's decision recognized that States may bring particularized challenges to the Transport Rule. Now that the case is once again before the D.C. Circuit, Alabama and other States have requested the opportunity to address those unresolved issues in supplemental briefing. Thus the case remains pending, and the outcome is yet unknown.

I would also like to clarify my response to Senator Boxer's question with respect to the legal challenge to the MATS Rule. Alabama and other parties have submitted a petition for a writ of certiorari to the U.S. Supreme Court, seeking review of the D.C. Circuit's decision upholding the rule. Thus, that case remains pending, as well.

Senator WHITEHOUSE. Now, finally, we have Dr. Mason. Please proceed, sir.

**STATEMENT OF JOSEPH R. MASON, HERMANN MOYSE, JR./
LOUISIANA BANKERS ASSOCIATION ENDOWED PROFESSOR
OF BANKING, LOUISIANA STATE UNIVERSITY AND SENIOR
FELLOW, THE WHARTON SCHOOL**

Mr. MASON. Good morning and thank you for inviting me to testify here today on this crucially important topic.

My research specialty throughout my career has been market failures and crises. I began studying cap and trade markets in 2005 as the EU system became a reality and quickly began to fail.

I did so because of the preternatural push among lawmakers to embark upon cap and trade solutions despite widespread consensus among economists that cap and trade does not suit carbon emissions.

With respect to Chairman Boxer's earlier medical analogy, I do not disagree with the diagnosis here but with the proposed treatment. You are all presupposing that the treatment is known. It is not.

In recent history, no system, not the EU, the RGGI or the California Initiative has priced carbon at levels prohibitive to emissions. Prices currently hover at just \$5 on the RGGI, \$11 in California and between those two levels in the EU. It is widely viewed that prices in excess of \$30 are necessary to cut emissions.

The recent EPA proposal seems to be merely an attempt to specify quantity goals instead of price goals. There are two problems with this approach.

First, to control quantity, one has to actually be in control of the thing one targets. The U.S. Federal Reserve wanted this years ago when it had to move away from targeting the money supply because so many near money substitutes existed that it really had no effectiveness just monitoring cash and checking account balances.

In carbon markets, the common policy of carbon permit fungibility has always rendered this quantity targeting unworkable. In a series of famous cases, the EU high court ruled that EU member states have sovereignty over the amount of permits they issue.

In one famous case in 2010 when invalid permits infiltrated BlueNext, the exchange had to close for 3 days while the permits could be isolated and swapbacks could be arranged for them to be removed from the market.

Second, as an economist, it does not matter which side of the price quantity coin you look at, the effects are the same. Quantity will go down only if price goes up. When real prices go up, output declines and unemployment increases.

Corporations already forego billions of dollars of investment due to anticipated carbon prices and States in which those corporations operate will feel the effects of this new policy. It is important to remember, however, those are not just oil and gas companies but companies like Walt Disney and Wal-Mart.

In preparing for this hearing, I regressed the State EPA goals normalized for each State's percent of power from coal in 2013 on a number of very important variables. Perhaps most importantly,

the regression shows that States with lagging economies coming out of the great recession have tougher goals to meet than others.

Certainly there are simple adjustments that can be made to mitigate the effects of carbon policy upon economic growth if we just think about those for a moment.

No government has yet accepted the lower economic growth necessary to meaningfully curb carbon emissions. Officials know prices should go up but cannot bear the political heat of restricting permits to achieve that goal.

In fact, in March 2014, the UK Chancellor of the Exchequer, George Osborne, announced the government would freeze attacks on carbon emissions as part of a broad plan to cut consumer energy bills. While his party backs carbon reform, consumer energy costs have become a campaign plank for the opposition which vowed to freeze energy prices if they win in mid-2015.

A similar issue is growing in Germany which is subsidized renewables growth with a mandatory household surcharge on electricity and voters are not happy.

By far, the worst effects of carbon markets have been the regulatory arbitrage fraud and theft that have occurred on such systems. If we are not ready to deal with the existing corporate fraud and bribery, tax fraud, investor fraud, counterfeiting, money laundering, hacking and phishing on carbon markets that have troubled established markets in recent years, we should not be discussing their implementation in the largest economy in the world.

Denying the failure of existing carbon policy risks raising energy prices without reducing carbon output. U.N. climate talks on carbon broke down this week over this simple economic fact.

Extending my analogy with central banking, Members of Congress should remember that the National Monetary Commission studied central bank functions around the world for 7 years before concluding upon the design of the U.S. Federal Reserve system.

Let us take our time now and research existing carbon abatement mechanisms before emulating demonstratively failed schemes around the world, enriching financial industry interest groups at the cost of our economy while continuing to allow carbon to grow as a national and global problem.

Thank you.

[The prepared statement of Mr. Mason follows:]

Testimony of Joseph R. Mason

Hermann Moyse, Jr./Louisiana Bankers Association Professor of Finance,
Louisiana State University and Senior Fellow, The Wharton School

Before the United States Senate
Environment and Public Works Committee
Subcommittee on Clean Air and Nuclear Safety

June 18, 2014

"Climate Change: The Need to Act Now."

Table of Contents

- I. The Price of Carbon on Cap and Trade Markets Has Not Achieved Levels to Restrain Output 1
- II. Announcing a Quantity Target is No Different..... 3
- III. Any effective program WILL restrain economic growth..... 3
 - A. The effects of carbon goals will be uneven..... 3
 - B. The unevenness of the EPA’s goals will affect state-level jobs and growth..... 5
 - C. Economic effects will hit consumers, as well 6
- IV. ...but if it doesn’t also restrain carbon, it is all pain and no gain..... 6
 - A. Governments don’t have the appetite for restraining economic growth (that’s why we have independent central banks) 6
 - B. Arguments abound over who decides the supply of permits, and this new Federal layer will intensify those in the US 8
 - C. There is no appetite for using proceeds of carbon permit sales to invest in new technology 9
- V. Worse yet, if carbon markets just benefit Wall Street then they just create new interest groups to capture the government and the financial markets..... 10
 - A. Investor Fraud 10
 - B. Corporate Fraud 13
 - C. Permit Fraud..... 14
 - 1. Counterfeiting 14
 - 2. Theft..... 15
- VI. Conclusion and Policy Recommendations..... 16

The US government is once again pursuing cap and trade mechanisms. As an economist, I have to say I have no idea why.

Since I am not a climate scientist I cannot opine from more than a lay perspective on whether there is a consensus in the discipline on man-made global warming. Since I am an economist, however, I can say that there exists a wholesale consensus among economists that carbon is not well-suited for cap and trade.

Moreover, existing markets in the US and EU have failed to price carbon at levels that lead to reduced carbon emissions because to do so would be costly to economic growth. The question of “who can issue the permits” continues to drag down the effectiveness of the EU system, and poses considerable problems for the proposed state-level system in the US. There is no plan for investing the proceeds from permit sales in developing clean technology. And existing carbon markets have been prone to fraud, theft, and counterfeiting worldwide. All of this is widely reported and known throughout the world. Jumping in with our eyes closed to such crucial developments exposes US citizens and the US, and world, economies to unnecessary risk.

Below, I review recent evidence on the shortcomings of cap and trade, concluding that we should emulate the historical approach we took to establishing a central bank after the Panic of 1907: take our time and study what works and what does not so that we design an effective system that does not pose unnecessary costs upon our nation.

I. The Price of Carbon on Cap and Trade Markets Has Not Achieved Levels to Restrain Output

Cap and trade does not work for carbon. The reasons for that failure are multi-faceted, but the simple fact is that even existing markets have not priced carbon at levels that restrain output for many years now.

The ETS has suffered from a drastic oversupply of carbon permits for quite some time. In October 2009, Peter Zapfel, assistant to the deputy director general of the environment department at the European Commission, said the oversupply of government allowances is threatening to overwhelm the system. At the time, many newer EU members from Central and Eastern Europe contributed a huge oversupply of credits. These countries have excess credits that numbered roughly five times the number in European market, depressing prices and undermining carbon reduction goals the market was formed to support.¹

Since then, little has changed. In fact, by January 2013, record low auction bids from utilities, factories and banks led Germany to cancel an auction of European Union emission permits for the first time, ever. Connie Hedegaard, the EU’s climate chief, said the cancellation should be a “wake-up call” for those who do not support the plan to strengthen the emissions trading

¹ Financial Times (USA); Date: Dec 7, 2009; Section: Investing in commodities; Page: SR7-6.

system.² At the close of trading on Friday, June 13, 2014, EU carbon was trading at 5.71 euro, far short of the 20-euro level needed to prompt industry and utilities to invest in greener energy.³

The US is following a similar path by emulating the EU system instead of learning from its problems. Currently there are two markets in US: one in California (California Air Resources Board) and the nine-state Regional Greenhouse Gas Initiative (RGGI) in Northeast. Neither prices carbon at levels that restrict carbon emissions.

Most recently, it was reported that California companies bought all 16.95 million allowances to release carbon emissions at the state's May 16, 2014 cap-and-trade auction. The price for the carbon allowances was \$11.50 each, slightly higher than the previous two auctions in February and November, each of which sold allowances for \$11.48 each. An additional 4 million permits that can't be used until 2017, of the 9.2 million that were available, sold at \$11.36.

Analysts at Thompson Reuters Point Carbon expect prices to hover just above the program's auction floor price of \$11.34 a metric ton through 2014. Earlier this year, analysts predicted California carbon prices would remain low through 2020 due to excess permits.⁴

"The price for power plants to emit one ton of carbon dioxide in nine northeastern U.S. states cleared at a record high \$5.02 per short ton at the Regional Greenhouse Gas Initiative's (RGGI) 23rd permit auction," the market's administrator said on Friday, June 6, 2014.⁵

The sad fact for politicians is that markets are doing exactly what we economists expect them to do. There is virtually no disagreement among economists that the true cost to society of burning a ton of carbon is greater than its private cost. However, "agreeing that the [social cost of carbon] is greater than zero isn't really agreeing on very much."⁶ The market, in fact, is pricing the most likely environmental scenarios, for which temperature increases are moderate and effects are small, putting carbon in roughly the \$10 to \$40 range.

But that is precisely what markets do. Markets price the "expected" value. If we want to prices to reflect more dramatic outcomes we will have to use a carbon tax. In short, just like in the recent financial crisis, markets are doing what they are supposed to do. Back then, politicians did not like the fact that markets were telling us that a meltdown was coming. Here, politicians do not like the fact that markets pricing the most likely (but not most destructive) scenarios, and they

² EU Carbon Permits Plunge to Record after Germany Cancels Sale," Bloomberg News, Jan 18, 2013. <http://www.bloomberg.com/news/2013-01-18/eu-carbon-plunges-after-german-sale-canceled-on-low-bid-prices.html>.

³ Garside, Ben. Reuters. European Parliament votes to cut carbon permit supply. December 10, 2013. <http://uk.reuters.com/article/2013/12/10/eu-parliament-carbon-idUKL6N0JP2AT20131210>.

⁴ "California Carbon Auction Sells All Allowances," Environmental Leader, May 23, 2014 at <http://www.environmentalleader.com/2014/05/23/california-carbon-auction-sells-all-allowances/>

⁵ Northeast pollution permit prices rocket, boosted by EPA, Reuters, June 6, 2014.

⁶ Pinkdyck, Robert. "Pricing Carbon When We Don't Know the Right Price." Regulation. Summer 2013 at <http://web.mit.edu/rpinkdyck/www/Papers/PricingCarbonRegulation2013.pdf>.

will not do anything else. Either way, markets are telling us the unvarnished truth, whether we like it or not.

II. Announcing a Quantity Target is No Different

One of the hallmarks of the EPA's recent proposal is to establish carbon intensity goals, in effect setting quantity targets rather than price targets that have been the focus of prior carbon abatement mechanisms.

To a monetary economist, however, a quantity target is just the flip side of a price target. Through the history of modern central banking, the US Federal Reserve has experimented with both. For certain periods of time, the Federal Reserve used quantity targets (i.e., M1) and for others, price targets (i.e., the Fed Funds rate). There is no clear evidence that one is superior to the other. In fact, in some periods of history quantities worked fine, while in other prices were superior. Thus, it will be an economic question whether price or quantity is a better target.

It is unclear whether the quantities set are correct, meaningful, or achievable. If they are incorrect, they will be so because they either have no effect on carbon output or they are economically unachievable. If they are unachievable, they will be challenged by the relevant states and, most likely, altered.

The possibility of alteration by Congressional or administrative fiat, however, is precisely the political risk that has contributed price volatility to the EU system. Critics complain that carbon price volatility and the market's exposure to political risk mean the system does not encourage companies to invest in emission reduction, because the goals may be ultimately changed (or firms can lobby for change).⁷

III. Any effective program WILL restrain economic growth

But to begin with, we will first have to set some truly restrictive targets. It is doubtful, however, that meaningfully restrictive targets will arise from Congressional or administrative fiat because elected officials do not like to restrain growth, such decisions will force them to pick winners and losers, and states, industries, and even groups of consumers will have to be chosen.

A. The effects of carbon goals will be uneven

Widespread press coverage already noted the disparity of the goals across states. The Financial Times' Ed Crooks immediately noted that the states with the most demanding targets included

⁷ Financial Times (USA); Date: Dec 7, 2009; Section: Investing in commodities; Page: SR7-6.

Arizona, South Carolina, Oregon, and New Hampshire, while states with least demanding targets included Maine, Rhode Island, Hawaii, and Iowa.⁸

Moreover, Crooks noted that there was perhaps a tenuous connection between goals and actual carbon dioxide states will emit.⁹ Bloomberg Energy Finance reported that California, Nebraska, Rhode Island can actually increase volume of emissions in absolute terms. Louisiana, Arkansas, Idaho will face the largest cuts.¹⁰

*In its ground-breaking “Clean Power Plan” released 2 June, the US Environmental Protection Agency (EPA) proposed to work with 49 states to slash the CO2 intensity of fossil-fuel power generation by 2030. The headlines were simple enough: US plans to cut its emissions 30% from 2005 levels. But what the regulation actually does is lay out a series of (convoluted) state-level targets designed to reduce the carbon intensity of states’ power.*¹¹

Heightening the probability of political risk and disruptive volatility, “President Barack Obama’s plan to cut power plants’ carbon dioxide emissions places a widely differing burden on different states, opening the proposals to objections from those that feel they are being treated unfairly.” Jacob Hollinger, a former EPA lawyer who is now a partner at McDermott, Will & Emery, was quoted as saying he was “‘surprised’ by the differences in the demands made of different states. ‘The implications aren’t totally developed yet, and that is something people should be scrutinising very carefully,’” he said.¹²

My own analysis suggests that the differences in goals among states are also related to politics. In preparing for this hearing, I regressed the goals multiplied by each states’ percent of power from coal in 2013¹³ (to adjust the goals for existing carbon intensity) on each states’ GSP and employment change from 2007 to the most recent quarter, as well as variables related to the Democrat’s “political productivity” of each state in the 2012 elections.¹⁴

⁸ Crooks, Ed. “States feel unequal burden of carbon reduction targets.” Financial Times, June 3, 2014. <http://www.ft.com/intl/cms/s/2/0ea7fe8e-eb32-11e3-bab6-00144feabdc0.html#axzz34L33dgID>

⁹ Ibid.

¹⁰ “EPA’s Clean Power Plan: 50 Chefs Stir the Pot,” Bloomberg New Energy Finance Jun 3, 2014 at <http://about.bnef.com/white-papers/epas-clean-power-plan-50-chefs-stirs-pot/>

¹¹ Ibid. [Emphasis added.]

¹² Crooks, Ed. “States feel unequal burden of carbon reduction targets.” Financial Times, June 3, 2014. <http://www.ft.com/intl/cms/s/2/0ea7fe8e-eb32-11e3-bab6-00144feabdc0.html#axzz34L33dgID>

¹³ The range of the dependent variable is -0.96 to +0.35, since some states are allowed to increase, overall.

¹⁴ The theory of political productivity starts with the notion that a state that cannot be won regardless of what favoritism is directed their way is not worth pursuing, as is one that the party knows they will win regardless of what favoritism is directed their way. Thus, swing states are the ones that parties favor, because grants or programs benefitting those states can have the most “productivity” in elections. The method has been applied to examining the distribution of Federal grants and expenditures from the Great Depression to today.

The regression shows that the EPA's goals are inversely related to GSP growth between 2007 and the most recent quarter (in other words, states with higher change in GSP from 2007 to the most recent quarter *less* restrictive goals, punishing states with lagging economies coming out of the recession) and the effect is statistically significant. The EPA's (normalized) goals are positively related to unemployment (states with less of a recovery in unemployment since 2007 have less restrictive goals to meet), though the effect statistically *insignificant* at conventional levels. Political productivity for the Democratic Party, however, is positive and statistically significant suggesting the EPA's goals would have benefitted the Democrats in the past presidential election. Assuming 2016 is similar, the distribution of EPA goals among states will benefit them then, too.

B. The unevenness of the EPA's goals will affect state-level jobs and growth

It has been clear from applications, worldwide, that companies that do business in regions in which carbon is priced will build carbon costs into their investment and planning decisions. For instance, Shell Vice President Angus Gillespie has stated publicly that climate policies can cost potential investment projects "hundreds of millions of dollars" and that "there are opportunities we have not progressed because of the \$40 a ton" carbon cost estimate that they use internally in their capital budgeting process.¹⁵

But it is not just energy companies that price carbon costs into their planned investments. At least twenty-eight US companies are known to report the carbon prices that they use for internal capital budgeting, including: Delphi Automotive, Walt Disney, ConAgra Foods, Walmart, Apache Corporation, BP, Chevron, ConocoPhillips, Devon Energy, ExxonMobil, Hess, Shell, Wells Fargo, Cummins, Delta Air Lines, General Electric, Google, Jabil Circuit, Microsoft, E.I du Pont de Nemours, Ameren, American Electrical Power, CMS Energy, Duke Energy, Entergy, Integrys Energy, PG&E and Xcel Energy.¹⁶

First, note the diversity of those companies, including energy firms like Exxon, consumer firms such as Walmart, and even entertainment firms like Disney. Clearly, carbon costs affect a broad swath of our economy.

But even more interesting is the diversity of carbon prices used by each of those firms. Prices range from \$10-\$20 at Disney to \$60 at Exxon, and a wide variety of prices in between. As previously stated, carbon price volatility has been an enduring feature of the EU market and political risk in the EU and the US continues to contribute to widely disparate views of the price of carbon in the future, as a result.

¹⁵ Climate Rules May Prompt Higher Shell Internal Carbon Price. June 2, 2014. <http://www.environmentalleader.com/2014/06/02/climate-rules-may-prompt-higher-shell-internal-carbon-price/>.

¹⁶ "Big Oil, Major Firms Plan for Carbon Price," Environmental Leader, December 5, 2013. <http://www.environmentalleader.com/2013/12/05/big-oil-major-firms-plan-for-carbon-price/>.

C. Economic effects will hit consumers, as well

The broad industry exposure to carbon prices illustrated above will undoubtedly affect consumers, not just in their utility bills but in all manner of expenditures. So far, the impact on utility bills is expected to be modest, but this expectation seems to be based on natural gas prices remaining low.

Further investment in renewables and other energy sources will undoubtedly push up consumer costs.

According to the International Energy Agency, global investment in the energy sector will need to reach \$38tn between 2011 and 2035, based on existing trends. Almost \$17tn of this will be for electrical power, covering generation, transmission and distribution. Citi analysts said in a report in September that, while renewables are forecast to make up 50 per cent of additional power output capacity by 2035, they will cost \$5.9tn, against \$3.9tn for conventional sources.¹⁷

One of the most radical transformations in electrical power is happening in Germany, “where the government has committed to phasing out nuclear power stations and switching to renewable energies within a decade.” But new installation of subsidized wind and solar is pushing up electricity prices for consumers. Guaranteed prices for electricity from renewable sources have encouraged investors to build new capacity. The higher prices, however, have come at the expense of consumers in the form of increased energy bills, in order to pay green energy generators an estimated €20.4bn in feed-in tariffs in 2013.¹⁸

As a result, in October 2013, the country’s grid operators raised the mandatory surcharge on units of electricity to a record 5.3 cents per kWh for 2014, up from 3.6 cents. “For a typical household using 3500 kWh per year, this surcharge would rise from €125 to €185. The move is all the more contentious as many businesses are exempted, to protect their international competitiveness.”¹⁹

IV. ...but if it doesn’t also restrain carbon, it is all pain and no gain...

A. Governments don’t have the appetite for restraining economic growth (that’s why we have independent central banks)

As a result of such obvious costs, no system has yet to restrain carbon permit issues to levels that meaningfully restrict carbon output. Even though Germany has come around to imposing costs of developing renewable energy sources on individual consumers, carbon prices are still too low

¹⁷ “Green agenda prompts pricing concerns,” Financial Times Special Report on Energy, November 5, 2012 at 2.

¹⁸ Ibid.

¹⁹ Ibid.

to restrict output. Thus, Germany's is a pure subsidy-driven plan, not a carbon market-driven plan.

Germany, in fact, cancelled an auction in January 2013 due to record low bids from utilities, factories and banks forced Germany to cancel a sale for the first time. Connie Hedegaard, the EU's climate chief said afterward, "the need to fix the market is getting urgent." Johannes Teysen, chief executive officer of EON SE, Germany's biggest power utility, said in an interview with *Manager Magazin* that the EU greenhouse gas trading system is now, "a joke the whole world laughs about." Matthew Gray, an analyst in London at Jefferies Group Inc., opined that some buyers will probably wait for prices to drop further and the commission has limited influence to contain the market's decline. The problem is, when the bloc set the program's cap before 2008, it didn't install a system for dealing with a supply glut.²⁰

In December 2013, EU Parliament finally voted to backload (delay) sales of 900 million carbon permits. Matthias Groote, the German Socialist lawmaker who steered the legislation through parliament, argued that, "backloading is not enough. The market is still oversupplied by 2 billion permits, but this buys us time to have a discussion on how to reform it." Still, the proposal caused "fierce divisions within member states, national governments and the European Parliament over fears it will push up energy prices and dent economic growth."²¹

As a result of the decision, the benchmark December 2013 EU Allowance futures ended the trading day at 4.90 euros. Assuming the first allowances will be withheld from the market in the second half of 2014, Marcus Ferdinand, an analyst at Thomson Reuters Point Carbon, "forecast the Dec-14 carbon price will increase by 35 percent compared to this years' (mean) price, to an average of 6 euros." Analysts predicted prices could eventually double due to backloading, but that it would still be years before they rise above the 20-euro level needed to prompt industry and utilities to invest in greener energy. Some EU lawmakers believe the bloc's carbon market will be irrelevant without further reform.²²

On the March 19, 2014, U.K. Chancellor of the Exchequer George Osborne announce the government would freeze a tax on carbon emissions starting in April 2016 as part of a broad plan to cut consumer energy bills. Consumer energy costs have become a campaign plank, with Prime Minister David Cameron's administration coming under pressure to rein in rising energy costs as a result of Ed Miliband, the leader of the opposition Labour Party, vowing in November to freeze energy prices if he wins the next election in mid-2015. That move prompted the government in

²⁰ EU Carbon Permits Plunge to Record after Germany Cancels Sale," Bloomberg News, Jan 18, 2013. <http://www.bloomberg.com/news/2013-01-18/eu-carbon-plunges-after-german-sale-canceled-on-low-bid-prices.html>.

²¹ Garside, Ben. Reuters. European Parliament votes to cut carbon permit supply. December 10, 2013. <http://uk.reuters.com/article/2013/12/10/eu-parliament-carbon-idUKL6N0JP2AT20131210>.

²² Ibid.

to announce measures cutting green levies by 50 pounds per household a year in December 2013.²³

As of Monday, June 16, 2014, “the use of carbon markets to curb rising greenhouse gas emissions was dealt a blow on Sunday after two weeks of United Nations talks on designing and reforming the mechanisms ended in deadlock.”²⁴

At the close of trading on June 13, 2014, the price was 5.71 euros.

B. Arguments abound over who decides the supply of permits, and this new Federal layer will intensify those in the US

Part of the problem in Europe has been jurisdiction over the issuance of carbon permits.

In 2007, the EU executive rejected Poland's national allocation plan (NAP), which set its total emission allocations and outlined how it intended to distribute them to individual factories covered by the scheme. The EU's main objection was that countries like Poland intended to allocate too many allowances.²⁵

In September 2009, the Commission's decision was overturned by the European Court of First Instance (the General Court). “The court found that member states alone can take the final decision on the total number of allowances to allocate, and ruled that the EU executive had misused its powers.” That decision also ruled on disagreements with Slovakia, the first country to take the issue to the court, and Estonia. All three countries argued that the EU's limits were too low and would hurt their economies.²⁶

In 2013, a Superior Court judge in California rejected a private legal challenge to California's carbon auctions. In that action, the California Chamber of Commerce and Pacific Legal Foundation, on behalf of a dozen clients including Morning Star Packing Company and Dalton Trucking, had filed lawsuits in Sacramento Superior Court to block the carbon allowances.²⁷ While I am not qualified to opine on the legal details, it seems to me that this ruling sets the framework for a similar problem to that of the EU member states where, regardless of the EPA's goals, states' rights to set permit levels may not be able to be challenged.

²³ Morales, Alex and Rachel Morison. Osbourne Freezes U.K. Carbon Tax on Power to Cut Bills. March 19, 2014. <http://www.bloomberg.com/news/2014-03-19/osborne-freezes-u-k-carbon-tax-on-power-to-cut-bills.html>.

²⁴ “U.N. climate talks fracture over future of carbon markets,” Reuters, June 16, 2014.

²⁵ EurActiv. EU, Poland move to settle carbon quota row. April 20, 2010. <http://www.euractiv.com/climate-environment/eu-poland-move-settle-carbon-quo-news-461636>.

²⁶ Ibid.

²⁷ “California Carbon Auction Sells All Allowances,” Environmental Leader, May 23, 2014 at <http://www.environmentalleader.com/2014/05/23/california-carbon-auction-sells-all-allowances/>.

C. There is no appetite for using proceeds of carbon permit sales to invest in new technology

Since carbon prices remain depressed, California's quarterly permit auctions will only raise \$21 billion for the period through 2020, well below the anticipated \$60 billion in revenue.²⁸

Sales have raised \$396 million for the state so far, and that money was initially intended to be devoted to efforts to lower greenhouse gas emissions by subsidizing renewables and new technologies. Instead, however, Governor Jerry Brown decided to, "lend \$500 million from the funds to the California state legislature to plug gaps in the state's budget." The state is supposed to repay the state-run greenhouse gas emissions reduction account at a later date.²⁹

Perhaps California can come around. The California Legislature announced Monday, June 16, 2014 that it had approved a \$108 billion spending plan for the 2014-15 fiscal year that included, "\$250 million for the High-Speed Rail project, along with 25 percent of future cap-and-trade funds.... Lawmakers also agreed to spend \$200 million using cap-and-trade revenue on low-carbon transportation projects and \$130 million on affordable housing projects near mass transit."³⁰ Of course, that budget is subject to approval by Governor Jerry Brown. But even if he approves, the on-again, off-again nature of green commitments in California will make it difficult for firms to commit to providing jobs and growth in that sector in the long-run.

Even devoting carbon permit revenues to mass transit, new technologies and renewables, however, has been derided as unjustifiable. "Those most vulnerable to climate change are often least responsible for its causes, and have the fewest resources to deal with its consequences."³¹

*The revenues could support vulnerable countries' efforts to develop long term plans to deal with climate change, as well as finance pilot projects aimed at minimizing loss and damage.... They could fund the monitoring and forecasting of slow-onset and extreme-weather events, enabling authorities and the public to prepare more effectively for an impending disaster. And the money could cover loss-and-damage risk premiums on individual, local, national, regional, or international insurance policies.*³²

²⁸ "California Carbon Auction Sells All Allowances," Environmental Leader, May 23, 2014 at <http://www.environmentalleader.com/2014/05/23/california-carbon-auction-sells-all-allowances/>.

²⁹ Carroll, Rory. California court upholds state's right to sell carbon permits. November 14, 2013. <http://news.yahoo.com/california-court-upholds-states-sell-carbon-permits-234628252.html>.

³⁰ Gutierrez, Melody, "State lawmakers OK \$108 billion budget; plan moves to Gov. Brown," June 15, 2014, at <http://www.sfgate.com/news/article/California-Legislature-OKs-108-billion-budget-on-5554561.php>.

³¹ Saño, Naderev and Richards, Julie-Anne, "Carbon Majors and Climate Justice," Project Syndicate, June 9, 2014 at <https://www.project-syndicate.org/commentary/naderev---sa-o-and-julie-anne-richards-propose-a-levy-on-fossil-fuel-producers-to-help-those-most-vulnerable-to-climate-change>.

³² Ibid.

Affected individuals, “deserve the world’s support – not just moral support, but genuine help in the form of effective, properly funded mechanisms designed to prevent, or at least alleviate, the climate-related hardships inflicted upon them by past and present industrialization.”³³

V. Worse yet, if carbon markets just benefit Wall Street then they just create new interest groups to capture the government and the financial markets

The Interpol Environmental Crime Programme now lists ten classifications of carbon crimes that have already occurred throughout the world and continue to remain a threat.³⁴ Those include:

- Manipulating measurements to fraudulently claim additional carbon credits (Additionality);
- Sale of carbon credits that either do not exist or belong to someone else;
- False or misleading claims with respect to the environmental or financial benefits of carbon market investments;
- Exploitation of weak regulations to commit financial crimes;
- Tax Fraud;
- Securities Fraud;
- Transfer mispricing;
- Money laundering;
- Internet crimes and computer hacking to steal carbon credits; and
- Phishing/Theft of personal information or identity theft.

Some environmentalists even get it. Friends of the Earth has recognized such crimes and, as a result, advocates a carbon tax rather than cap and trade.³⁵

Still, politicians remain preternaturally attracted to cap and trade, even as carbon markets continue to grow and problems continue to mount.

A. Investor Fraud

As carbon markets grow, the carbon fund market has grown, as well. Carbon funds – like mutual funds with stocks or bonds – accept (private or public) investor money to purchase carbon permits. According to the latest survey by Carbon Finance, a carbon market data service published by Environmental Finance, over 2008-09, funds under management grew by 20 per cent to \$16.1bn (£9.8bn, €10.7bn). The number of carbon funds and government purchase programs increased from 80 to 88.³⁶

³³ Ibid.

³⁴ Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

³⁵ Chan, Michelle, “Ten Ways to Game the Carbon Market,” Friends of the Earth USA, http://www.foe.org/sites/default/files/10waystoGametheCarbonMarkets_Web.pdf.

³⁶ “Carbon funds grow despite problems,” Financial Times, Dec 7, 2009; Page: SR7-6.

Mark Nicholls, editor of Environmental Finance, who published the survey noted that, “thirty-eight of the 88 funds listed are governmental carbon purchasing vehicles, or are run by multilaterals either for governments or emitting companies, or a combination.... The majority of the remainder are open to institutional investors.” “Of the 12 funds that were launched since the 2008-09 edition, only two were governmental or multilateral; the rest were private sector vehicles.”³⁷

The returns can be lucrative. “The European Carbon Fund, run by French bank Natixis and one of the earliest run to generate a cash return, says that based on its net asset value at the end of 2008, the fund has generated an annual return of 27.8 per cent since its inception in April 2005.”³⁸

The problem is that such returns quickly attract fraudulent schemes.

Interpol reported that in 2009 and 2010, an Australian investment firm ran an aggressive telemarketing strategy advertising false connections to legitimate organizations and environmental standards. Potential investors were offered a high return investment opportunity in carbon credits. The firm is estimated to have defrauded Australian victims of \$3.2 million.³⁹

The FTAlphaville warned of a firm called “Enviro Associates” that was selling voluntary carbon credits for investment purposes, all the while warning that:

Voluntary Carbon Credits were not designed to be purchased for investment purposes; for that reason Carbon Credits (VERs) are not for all specifications of Investors due to its high risk and undeveloped market landscape and uncertainty...

*Individuals should be aware if they are purchasing for speculative means that there is little or no liquidity at present in the market which in turn would affect your ability to sell/exit from a holding at this time. This may change in the future.*⁴⁰

Enviro Associates claims to be a “clearing member” of Gemmax Solutions, a payments and clearing service. Britain’s Financial Conduct Authority warns, however, that:

Several unauthorized firms promoting and selling carbon credits are telling investors that carbon Neutral Investments Limited (CNI) or Gemmax Solutions, firms authorized by

³⁷ Ibid.

³⁸ Ibid.

³⁹ SCAMwatch, WesternField Holdings Inc. Carbon Credit Investment Scams, <http://www.scamwatch.gov.au/content/index.phtml/itemId/781866>. See also David Fogarty, Firm Accused of Carbon Scam May Face Legal Claims, REUTERS, Mar. 26, 2010, http://uk.reuters.com/article/2010/03/26/us-carbon-investment-fraud-idUKTRE62P19020100326_, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁴⁰ Murphy, Paul. A carbon comedy. October 15, 2013. <http://ftalphaville.ft.com/2013/10/15/1666352/a-carbon-comedy/>.

*us, will handle money in their investment. We believe this is done to suggest investors will be protected as though they are dealing with an authorized firm. But this is incorrect.*⁴¹

Without investor protection and regulatory oversight, carbon schemes continue to proliferate.

Britain's Financial Services Authority summarizes warnings to investors about carbon frauds and emphasizes that they do not regulate carbon credits in the same manner as shares of stock.⁴² Still, investors flock to these green "investment" opportunities.

In November 2013, Britain's FSA reported that it had shut down nineteen companies in the past fifteen months for bilking roughly 1,500 investors out of 24 million pounds (\$38.7 million) through selling carbon credits to individual investors.⁴³

The UK Insolvency Service said the firms mainly targeted the elderly with high pressure sales techniques and promises of hefty returns of more than 40 percent. "Salesmen played on peoples' keenness to 'do their bit' to save the environment while making an investment at the same time," the Service said in a statement.⁴⁴

The FCA in September released the findings of a survey of 125 carbon investors, showing not one had made any money from investing in the credits.⁴⁵

The watchdog said some 183 carbon firms have been put under investigation since 2011 and has listed many of them on its website.⁴⁶

In the US, carbon schemes have prompted several States Attorneys General, including those of California, Vermont, Arkansas, Delaware, Maine, Mississippi, Oklahoma, Illinois, Connecticut and New Hampshire, to back efforts by the Federal Trade Commission to investigate consumer fraud in the carbon offsets market.⁴⁷

⁴¹ Ibid. See also, BBC World News. Oct 12, 2012. 'Misleading' carbon credit claims by Enviro Associates' <http://www.bbc.com/news/uk-england-hampshire-20265034>.

⁴² Financial Services Authority. Carbon credit trading. May 5, 2012. http://www.fsa.gov.uk/consumerinformation/scamsandswindles/investment_scams/carbon_credit.

⁴³ Szabo, Michael. UK watchdog says investors lost 24 million pounds in carbon credit scam. November 6, 2013. Reuters. <http://www.reuters.com/article/2013/11/06/us-britain-carbon-fraud-idUSBRE9A50L020131106>.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ See for example, "States seek fraud protection for carbon offset market," 25 Jan 2008 at <http://www.ens-newswire.com/ens/jan2008/2008-01-25-091.asp>.

B. Corporate Fraud

Clean Development Mechanism (CDM) projects generate carbon credits based on the extent to which the project resulted in fewer emissions than would otherwise have occurred. Dan Welch, of *The Guardian*, wrote, “Offsets are an imaginary commodity created by deducting what you hope happens from what you guess would have happened.”⁴⁸

Companies, therefore, have an incentive to either inflate the estimate of emissions that would have occurred without the project or claim that the project will reduce emission by more than it actually does.

In order to constrain firms from mischaracterizing their projects, the CDM mechanism requires third-party validation and verification before a project receives carbon credits. Third-party verification is carried out by Designated Operation Entities (DOEs) certified by the CDM Executive Board.

Even independent third party auditors, however, may be susceptible to bribes or collusion to manipulate the results.

According to Transparency International, bribery is most common at the project approval stage. “Although kickbacks to officials have not been reported, a Russian agency reportedly asked for direct monetary payments. In South-east Asian countries, it is fairly common for developers to invite the authorities to workshops (with attractive per diems) before submitting projects for approval. In China, it is not uncommon for project developers to invite experts reviewing their projects to dinner.”⁴⁹

But even independent verification agencies are not immune to manipulation. In 2008 and 2009 respectively the UN temporarily suspended two independent organizations – Norwegian company Det Norske Veritas and Swiss firm SGS – after “spot checks found flaws in their methodologies.”⁵⁰ Investigations showed that both companies had approved projects without sufficient review.⁵¹

⁴⁸ Dan Welch, *The Guardian* June 16, 2007.

⁴⁹ Corruption and the Private Sector, Transparency International, 2009, at 44, available at http://www.transparency.org/whatwedo/pub/global_corruption_report_2009.

⁵⁰ At the time these two companies were dominating the validation/verification market. For further information see Michael Szabo, DNV Suspension Another Jab at Battered CO2 Scheme, *Reuters*, Dec. 2, 2008, <http://www.reuters.com/article/2008/12/02/us-carbon-dnv-idUSTRE4B04K120081202>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁵¹ Danny Fortson, Carbon-Trading Market Hit as UN Suspends Clean-Energy Auditor, *THE TIMES*, Sept. 13, 2009, http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article6832259.ece; James Murray, DNV Wins UN Authorisation CDM Project Approval, *Business Green*, Feb. 16, 2009, <http://www.businessgreen.com/bg/news/1804681/dnv-wins-un-authorisation-cdm-project-approval>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

“The UN inspection found one company had a flawed review process, inadequate preparation and training of their auditing staff, and an overall failure to assign auditors with the proper technical skills. The other was suspended after an inspection raised concerns about staff qualifications and the quality of its internal reviews.”⁵²

In a follow-up review in 2009, the five largest DOEs’ validation processes were scored on an A-to-F scale. None received a score higher than a D.⁵³

C. Permit Fraud

1. Counterfeiting

There are many example of fake or invalid carbon permits being sold to unwitting buyers.

In one infamous and convoluted example, in March 2010, the Hungarian government took possession of two million carbon credits which had been surrendered to them by Hungarian businesses.

The rules of the EU-ETS allowed the Hungarian government to legally sell these carbon credits to others because Hungary anticipated being below its Kyoto Protocol target. However, the EU rules prevented these credits from being re-used within the EU.⁵⁴ Thus, Hungary sold the carbon credits to Hungarian Energy Power, “with restrictions that they were ineligible for use in Europe and notified the European Commission of the sale.”⁵⁵ “Hungarian Energy Power then sold the credits to a British trading company, which resold them to a firm in Hong Kong. The Hong Kong firm, however, then put those same recycled carbon credits on BlueNext, a Paris carbon exchange⁵⁶, where a number of European brokers and banks purchased them not knowing the carbon credits had already been used in Europe.”⁵⁷

⁵² Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁵³ Mark Schapiro, Conning the Climate: Inside the Carbon Trading Shell Game, Harper’s Magazine, Feb. 2010, at 36, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁵⁴ See <http://www.euractiv.com/climate-environment/hungarys-sale-co2-credits-worrie-news-368250>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁵⁵ Catherine Airlie, BlueNext Arranges 'Swap Back' of Recycled CO2 Credits After Trading Halt, BLOOMBERG, April 14, 2010, <http://www.bloomberg.com/news/2010-04-14/bluenext-arranges-swap-backs-of-recycled-co2-credits-after-trading-halt.html>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁵⁶ Wrong Sort of Recycling, The Economist, Mar. 25, 2010, <http://www.economist.com/node/15774368>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁵⁷ Danny Fortson and Jonathan Leake, Hunt for 'Rogue Trader' Over Recycled Carbon Credits, THE TIMES, Mar. 21, 2010 <http://www.timesonline.co.uk/tol/news/environment/article7069741.ece>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

When BlueNext discovered the credits were ineligible for use in the EU, the exchange “immediately suspended trading sending the spot price for CERs spiraling downward.”⁵⁸ After shutting down for three days to isolate the problem credits, BlueNext facilitated “swap backs,”⁵⁹ in which the sellers bought back the credits. Prices rose to their previous levels when trading reopened.⁶⁰

While the European Commission has now closed the loophole that allowed the credits to re-enter the EU-ETS,⁶¹ the episode highlights the importance of “strong regulations for monitoring the transfer of carbon credits through several foreign exchanges, particularly cross-checking between those exchanges.”⁶²

2. Theft

Carbon permits are also the target of hackers. A hacking attack in November of 2010 resulted in the theft of 1.6 million carbon credits (valued at €23.5 million) from the Romanian registry account of Holcim Ltd., the world’s second largest cement-maker.⁶³ Holcim immediately posted the identification numbers of the stolen credits on its website and law enforcement efforts between Romania and Liechtenstein were able to track and return 600,000 of the stolen credits.⁶⁴ Still, while the unique identification number of the carbon credits allowed them to be tracked, not all the credits could be returned to Holcim. As it turned out, some “jurisdictions required the holder to return the stolen credits to the legal owner at the holder’s loss, while other jurisdictions allowed the buyer to keep them, with the original owner carrying the loss.”⁶⁵

⁵⁸ The Wrong Sort of Recycling, *The Economist*, Mar. 25, 2010, <http://www.economist.com/node/1577436>.

⁵⁹ Catherine Airlie, BlueNext Arranges 'Swap Back' of Recycled CO2 Credits After Trading Halt, BLOOMBERG, April 14, 2010, <http://www.bloomberg.com/news/2010-04-14/bluenext-arranges-swap-backs-of-recycled-co2-credits-after-trading-halt.html>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁶⁰ The Wrong Sort of Recycling, *The Economist*, Mar. 25, 2010, <http://www.economist.com/node/15774368>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁶¹ EU Closes Carbon Emissions Trading Loophole, *Utility Week*, April 21, 2010, http://www.utilityweek.co.uk/news/news_story.asp?id=148910&title=EU+closes+carbon+emissions+trading+loophole, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁶² Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁶³ Catherine Airlie, EU Carbon Dioxide Emissions Permits Stolen from Romanian Unit of Holcim, *Bloomberg*, Dec. 1 2010, <http://www.bloomberg.com/news/2010-12-01/romania-s-holcim-says-eu-carbon-permits-stolen-from-its-account.html>, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁶⁴ Emissionshandelsregister, Recent News: Million EUAs Stolen from Romanian Registry, Dec. 2, 2010, http://en.emissionshandelsregister.at/service/recent_info/items/news127.html, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁶⁵ Catherine Airlie, EU Carbon Dioxide Emissions Permits Stolen from Romanian Unit of Holcim, BLOOMBERG, Dec. 1 2010, <http://www.bloomberg.com/news/2010-12-01/romania-s-holcim-says-eu->

In another high-profile incident, the European Union's emissions trading system was shut down for a week after cyber-thieves stole emissions allowances worth €7m (\$9.4m) from an account in the Czech Republic, while criminals also hacked into trading accounts in Austria, Poland, Greece and Estonia. "The Commission proposed tighter security measures in 2010 after discovering that hackers had broken into the registries where allowances are stored," but member states have repeatedly claimed they cannot afford the improvements.⁶⁶ It is easy to imagine a similar situation arising in US markets where states would have to bear such unexpected costs.

VI. Conclusion and Policy Recommendations

Economists agree, cap and trade does not work for carbon. So why do politicians continue to pursue such mechanisms? It seems to me that while some paint "climate deniers" as a problem in Congress, an equally troubling problem is "cap and trade failure deniers." Perhaps politicians think that adopting a "market" based solution will get them off the hook for tough decisions on carbon tax rates. But, unfortunately for the rest of us, doing so only exposes the US economy to new sources of fraud, theft, and risk of loss while raising energy prices WITHOUT reducing carbon output.

In fact, the conclusions of the House of Commons, Energy and Climate Change Committee, "The EU Emissions Trading System," Tenth Report of Session 2010–12, Volume I, 17 January 2012 (at 129), summarize my testimony as well, if not better, than I can write on my own:

Some proponents of the ETS suggest that the main flaws are rules that have been designed inadequately or have been badly applied, and could be reformed. We suggest that the failings are of a structural nature. The ETS is a market in a commodity that has been created by legislative fiat. The European Commission is both the supplier and the regulator of carbon as a commodity, a situation which has made the ETS particularly susceptible to rent-seeking behaviour. This should come as no surprise, since the history of emissions trading is littered with evidence that it helps companies and governments to pre-empt and delay making the structural changes necessary to address climate change.⁶⁷

carbon-permits-stolen-from-its-account.html; Macken, Ken, Strengthening Credibility in the EU ETS Following Security and Fraud Related Incidents 2-3 (June 2011), at p.5, conference paper available at http://inece.org/conference/9/papers/Macken_Ireland_Final.pdf, in Interpol Environmental Crime Programme. Guide to Carbon Trading Crime, June 2013.

⁶⁶ Chaffin, Joshua. Cyber-theft halts EU emissions trading. January 19, 2011. Financial Times. <http://www.ft.com/intl/cms/s/0/27ee8cb0-2401-11e0-bef0-00144feab49a.html?ftcamp=rss#axzz34XaYYLnS>.

⁶⁷ For more on CDM, see Tamra Gilbertson and Oscar Reyes (2009) Carbon Trading: how it works and why it fails, Uppsala: Dag Hammarskjöld Foundation, Ch 1 and 2.

This crucial task of reducing carbon emissions needs to be handled with care, lest we merely repeat the mistakes already experienced by established markets. We can't afford such setbacks.

Extending the analogy with central banking, members of Congress should remember that the National Monetary Commission studies central bank functions around the world for seven years before concluding upon the design of the US Federal Reserve System, having experienced two failed central banks before it. Let's take our time now and research existing carbon abatement mechanisms before embarking upon another two (or more) failed schemes that will enrich interest groups while continuing to allow carbon to grow as a national, and global, problem.

###

Follow-Up Questions for Written Submission, Mason

Senator Sheldon Whitehouse

1. In your testimony, you indicated that there is “virtually no disagreement among economists that the true cost to society of burning a ton of carbon is greater than its private cost.”

a. What is the true cost to society of burning a ton of carbon that is currently not accounted for in the private cost (i.e. social cost of carbon) and why?

We don’t know the true social cost. That is why I followed the observation you noted in my written testimony with the statement that “agreeing that the [social cost of CO₂] is greater than zero isn’t really agreeing on very much.”¹

Indeed, the total social cost of future CO₂ output is the important question (even ignoring that much of past developed-world growth and much of developing-world growth stems from underpriced CO₂ externalities). The answer to that question begins embedded in estimates of the cost of future global warming associated with man-made CO₂ output (including foregone economic growth from curtailing CO₂ output). If the effects of CO₂ upon global warming are nearer in time and/or greater in magnitude, the social cost of CO₂ is higher. But even scientific estimates vary considerably in timing and magnitude, leading to estimates anywhere between \$5 per ton and \$200 per ton. A US government study put the cost at \$20 per ton.² In truth, nobody knows the “right” price.

Some economists argue that the social cost of CO₂ should be reflective of a worst-case catastrophic outcome. While there is some logic to that approach, the outcome of such analysis is unhelpful, since *in extremis* the resulting policy prescription is an infinite price on CO₂, so high as to shut down all use altogether. Such reasoning is analogous to requiring banks to hold 100% capital to forestall another financial crisis, resulting in zero bank lending contributing to economic growth. Moreover, the other side of the extreme value distribution is that there is *no* effect on climate, which – while just a remote an outcome – suggests mitigating the prohibitively high price policy back to roughly the average.

Such reasoning is why economists like myself advocate that if setting up a mechanism to address CO₂ at all, setting up a *workable* CO₂ mechanism that can adapt over time to the needs of society. Such a mechanism is not that of the EU, California, or the RGGI, but a national (if not global) mechanism that can balance the cost of abatement with the benefit of lower CO₂ emissions in order to respond to outcomes and scientific evidence, as those evolve. This system need not target a “right” price, but should target a price that – at least minimally – deters CO₂ output at the margin. Current systems are not workable *and* are not pricing CO₂ at a level that even minimally deters output. The current deterrent to CO₂ output – political uncertainty – leads to widely disparate estimates of carbon costs that generally inhibits long-term investment in today’s economy.

¹ Pinkdyck, Robert. “Pricing Carbon When We Don’t Know the Right Price.” Regulation. Summer 2013 at <http://web.mit.edu/rpinkdyck/www/Papers/PricingCarbonRegulation2013.pdf>

² “Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis,” published by the Interagency Working Group on Social Cost of Carbon. February 2010.

Follow-Up Questions for Written Submission, Mason

2. *Several economists who served Republican Presidents, including Henry Paulson (Secretary of Treasury under President George W. Bush), Arthur Laffer (economic policy advisor under President Reagan), and George Shultz (Secretary of State under President Reagan and Secretary of Labor, Director of the Office of Management and Budget, Secretary of Treasury under President Nixon), have expressed support for placing a price on carbon. In your testimony, you stated “if we want markets to reflect more dramatic outcomes we will have to use a carbon tax.”*

a. What is the best way to structure a carbon fee program? Specifically, please explain the sources that should be covered by the fee program; point at which the fee should be assessed (e.g. at the mine mouth, refinery gate); initial price per metric ton and rationale for selecting that price; rate and frequency at which the price should increase; the greenhouse gases (GHGs) to be covered and if the fee is assessed for GHGs besides carbon dioxide, how GHGs with higher global warming potentials (GWPs) should be treated (e.g. refrigerants with high GWPs); entity or entities that should administer and enforce the program; revenue use; and measures to protect energy-intensive trade exposed industries and ensure that low-income Americans are not disproportionately affected.

Related to the response above, since we do not know the “right” price of carbon there is no “best” way to structure a tax on CO₂ or other greenhouse gases.

In fact, it could be that even a small tax – nowhere near the “best” tax – may have drastic effects on energy use, obviating the need for the “best” solution. There are myriad examples in economics of small user fees – well below the economic costs of the activities – changing significantly consumer and business behavior and reducing disproportionately the magnitude of undesirable activities. It could be, therefore, that a small tax on carbon – applied to the right segments of the economy – could have dramatic effects.

That said, we economists know that the effects of any charges are equivalent to a tax in that they reduce the targeted economic activity. If those revenues are used to fund offsetting activities, they can – in theory – be neutral to economic growth. In practice, revenues derived from CO₂ programs have instead been used to pay off prior budget deficits, rendering the taxes a drag on economic growth.

The last portion of the question – focusing on “protect[ing] energy-intensive trade exposed industries and ensure[ing] that low-income Americans are not disproportionately affected” – deserves special attention. Blanket energy subsidies worldwide have been associated with high energy use. In fact, it has been established that such subsidies benefit the rich much more than the poor, because the rich use more subsidized energy in response to subsidies, while the demand from the poor remains relatively inelastic since they are always economizing. Research from the IMF suggests that the richest 20% get more than 40% of the benefits from energy subsidies, roughly six times the share of the bottom 20%.³ Recently, some countries have targeted their energy subsidies to remove the benefit for the rich and preserve the help for the poor, but that has taken extreme political courage on the part of those nation’s politicians.⁴ Nonetheless, the effect on energy usage has already been dramatic.

³ “Energy Subsidy Reform Lessons and Implications,” International Monetary Fund, 2013.

⁴ “Energy Subsidy Reform Lessons and Implications,” International Monetary Fund, 2013.

Follow-Up Questions for Written Submission, Mason

Senator David Vitter

1. You are likely aware that Germany is now building new coal fired power plants to meet their baseload energy needs. As well, Germany is looking at lifting their ban on hydraulic fracturing so their companies can be more competitive and receive the feedstock that makes building virtually anything possible. Why is Germany doing this?

Germany is looking back at conventional energy sources because (1) they need sources to replace the nuclear they are phasing out and (2) their subsidized wind and solar are expensive conventional alternatives. In 2013, Germany experienced a sharp increase in electricity prices as a result of €20.4bn in “feed-in” subsidies for green energy, paid for out of consumer electricity bills. In 2013, the mandatory surcharge electricity rose from 3.6 cents per kWh to a record 5.3 cents per kWh. For a typical household using 3500 kWh per year, this surcharge rose from €125 to roughly €185.

The increase raised consumer ire because many businesses are exempted from the surcharge, in order to protect their “international competitiveness.”⁵

Such subsidies certainly increased investment in green alternatives, but at the inevitable expense of higher energy costs.

But the subsidies have also skewed investment in ways that do not adequately serve Germany’s energy needs. “There is now so much renewable power available at certain times of day that it meets a significant part of demand,” but renewables like wind and solar are unreliable. As a result, utilities need to keep conventional sources of electricity generation, such as gas and coal, operational as back-ups.⁶

According to Jason Channell, alternative energy and cleantech analyst at Citi, those backups need to be paid for, too, and utilities “expect a capacity payment mechanism from regulators to compensate them for the low utilisation rates.”⁷

These demand shifts have formed over the past several years, so much so that they have skewed long-term investment decisions. According to the Financial Times, “Demand for coal from power generators has soared over the past two years as that for cleaner natural gas has shrunk, the reason being price. In Europe, natural gas is generally sold on contracts linked to the oil price, which is still relatively strong. Meanwhile, coal usage has been encouraged by low prices for burning carbon under the EU’s carbon-trading scheme as the eurozone crisis has led to a fall in demand [for CO₂ permits]. Ample supplies of coal on the back of exports from North America – where the shale gas boom has pushed natural gas prices to 10-year lows this year – have also lowered prices, making coal much more competitive.”⁸

In short, Germany got caught in a tangled web of subsidies and perverse incentives that are now actually raising its CO₂ output, instead of shrinking it. Again, the EU’s cap and trade system and sovereign subsidies are not working to reduce CO₂ output and, in my opinion, do not provide a

⁵ Pfeifer, Sylvia. “Green agenda prompts pricing concerns,” Financial Times, November 5, 2012.

⁶ Pfeifer, Sylvia. “Green agenda prompts pricing concerns,” Financial Times, November 5, 2012.

⁷ Pfeifer, Sylvia. “Green agenda prompts pricing concerns,” Financial Times, November 5, 2012.

⁸ Pfeifer, Sylvia. “Low prices fire demand for coal across Europe,” Financial Times, November 5, 2012.

Follow-Up Questions for Written Submission, Mason

framework we should emulate in the U.S.

2. It is my understanding that youth unemployment in the UK stands at almost 21%, reached 26% in France last year, and Spain's is even worse at over 56%. All these countries promised that their carbon regulations and energy mandates would be a boon to their economies and opportunities for young adults. Unfortunately, the exact opposite is the case. How will the President's plan to cap energy use impede economic activity and future opportunities for our young adults?

There seems to be a vast disconnect between energy jobs and policy. Wind turbines, solar panels, and battery storage⁹ are generally not items that are produced in the U.S., but primarily come from companies in the Asia/Pacific region. Some companies – particularly those from China – bring in their own installation and maintenance crews from overseas, again detracting from employment in such sectors in the U.S. Thus, employment opportunities have not been found in wind and solar.

There may be jobs in biofuels as loggers cut down forests to fuel European power plants. I would argue that such gains are fleeting and not green, anyway, so that they do not count to meeting environmental goals but only stand as perverse remnants of failed CO₂ policies.

But the biggest source of jobs associated with lowering CO₂ output is unfashionable and disincentivized in the U.S. If we are to move U.S. power generation to more renewables and lower-CO₂ sources, our energy infrastructure will have to change. But projects like the Keystone Pipeline remain mired in the same bureaucratic morass as energy policy, overall, while jobs suffer and U.S. firms cannot take advantage of cheap natural gas as a step toward cleaner energy generation.

As a result, we are moving backward, toward less developed countries as firms “focus on embedded generation, produced on site where you can control your own energy costs,” according to Ben Warren, energy and environmental infrastructure leader at Ernst & Young.¹⁰ As a result, we “will still need some form of centralized infrastructure to help provide back-up generation,” says Mr. Warren.¹¹

But even the jobs involved in building infrastructure are no longer incentivized by an education policy that tries to send every child to college, whether they are suited for higher education or not (as well as a university “industry” that continues to market that message, as well). Our educational system has deemphasized technical training so much that the demand is partially met by fly-by-night for-profit “colleges” that do not focus on students’ interests and needs. Some of the successes from technical employment are described in a recent Wall Street Journal article, “This Way Up: Mobility in America: Economic mobility is alive and well for Americans who pursue technical or practical training.”

One example used in the article is the welding profession. According to the Wall Street Journal, “The average age in the field is 54, and the American Welding Society predicts openings for more

⁹ While battery storage is “green” from the perspective of CO₂, it is not green from the perspective of heavy metals pollution and ground water. Real green policies would balance clean air and clean water needs by addressing all sorts of environmental threats.

¹⁰ Pfeifer, Sylvia. “Green agenda prompts pricing concerns,” Financial Times, November 5, 2012.

¹¹ Pfeifer, Sylvia. “Green agenda prompts pricing concerns,” Financial Times, November 5, 2012.

Follow-Up Questions for Written Submission, Mason

than 400,000 workers by 2024—welders and others who need welding skills, such as pipe fitters, plumbers and boilermakers. The Bureau of Labor Statistics pegs the average wage at \$36,300 a year, but anecdotal evidence suggests that is the low end of what's possible. JV Industrial says that it pays more like \$75,000, with some employees earning more than \$100,000. In the burgeoning shale industry, in Texas and Appalachia, welders can earn as much as \$7,000 a week.¹² My (late) father owned a welding school. I learned to weld in my teens. I can say from first-hand experience that the Wall Street Journal's description is entirely correct. But such important lessons seem lost on Washington.

So while there may be jobs for U.S. employees in the new clean energy sector, those have yet to be realized, and U.S. education policies AND the proposed new energy policies push them further out of reach of many Americans.

Senator Jeff Sessions

1. Does raising the cost of energy affect poor people more or less than it affects wealthy people? Please explain.

Yes. The reason is that energy expenditures are not elastic for poor people – they already spend as little as they can afford on energy – whereas others have a more elastic demand – they can switch to public transportation or cut out unnecessary transportation or home energy expenditures in response to higher costs.

As a result, it is widely accepted worldwide that “mitigating measures to protect the poor” are required in response to rising energy costs, especially when removing energy subsidies to promote more efficient energy use and higher economic productivity.¹³

In the past several years, Egypt, Jordan, Mauritania, Morocco, Sudan, Tunisia, and Yemen have started reforming energy subsidies “by increasing energy prices while mitigating the impact on the poor. In most cases, reforms have been part of a broad-based fiscal strategy to reduce fiscal deficits and free resources to be put toward social spending and infrastructure—which could help boost growth and reduce poverty and inequality.”¹⁴ All such programs have required a scaling up “well-targeted social safety nets to compensate those who will be hardest hit by higher prices.”¹⁵ The U.S. should expect to undertake similar policies if we choose to increase energy costs.

2. Is a government mandate requiring businesses to spend money to clean up the environment, in an economic sense, little different than the government raising taxes and then using that money to carry out environmental improvements?

Assuming the expenditures are the same – in both magnitude and substance – the only difference arises from government overhead in administering the taxes and selecting projects and awarding funds.

¹² Jacoby, Tamar, “This Way Up: Mobility in America: Economic mobility is alive and well for Americans who pursue technical or practical training,” Wall Street Journal, July 22, 2014.

¹³ “Energy Subsidy Reform Lessons and Implications,” International Monetary Fund, 2013.

¹⁴ “Energy Subsidy Reform Lessons and Implications,” International Monetary Fund, 2013.

¹⁵ “Energy Subsidy Reform Lessons and Implications,” International Monetary Fund, 2013.

Follow-Up Questions for Written Submission, Mason

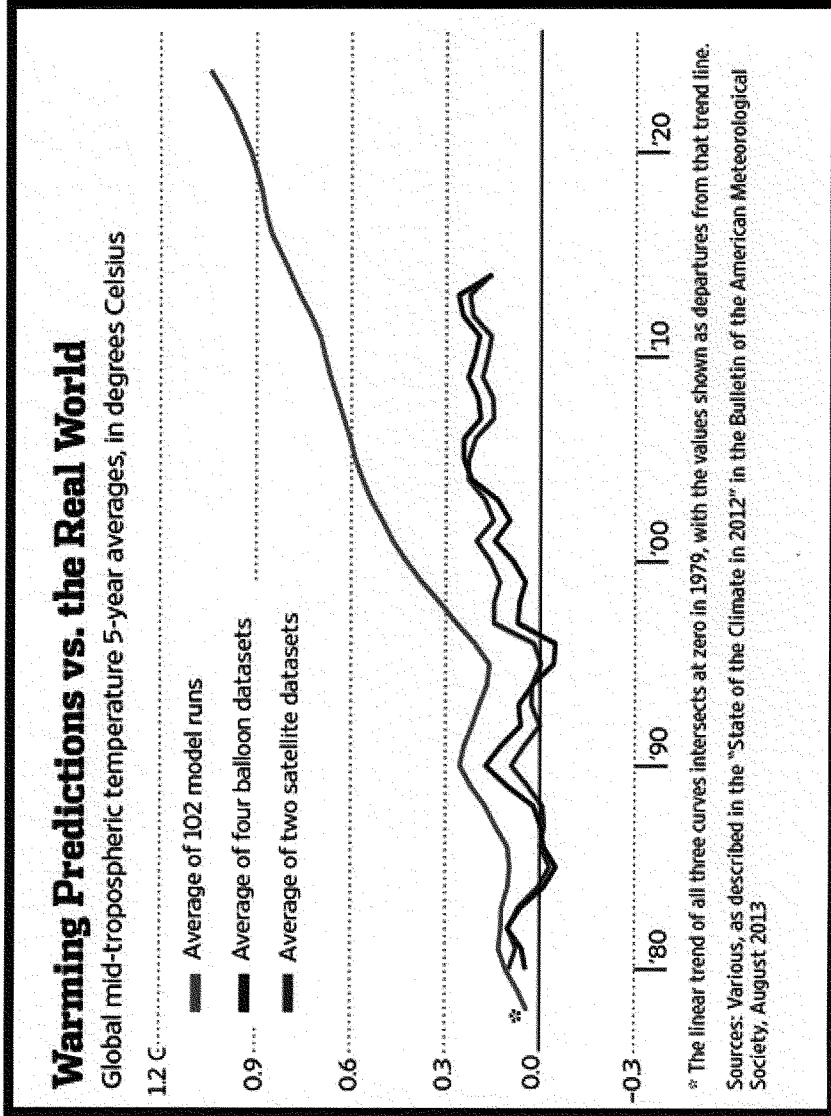
That said, neither business nor the government is very good at carrying out environmental improvements, themselves, and both should be left to manage their core competencies.

A good example of the government requiring firms to provide products and services outside their core product area is from banking is the Community Reinvestment Act, where all banks were required to make loans to lower-income consumers. While the goal of providing credit to such consumers is laudable, not *ALL* banks are good at that business. After decades of problems, Regulators and Congress finally acquiesced to that reality and allowed banks to make investments in lenders who *specialized* in those product segments in order to meet the goals of the regulation.

Thus, inevitably there will be a layer of administration with regard to the environmental projects to be funded by such levies. It may be best to motivate the economy, itself, to create an industry serving the demand for such environmental projects¹⁶, rather than expecting disparate businesses to undertake such projects on their own or adding new layers of government overhead to administer the distribution of such levies.

###

¹⁶ In order to foster efficiency in such an industry, one could take a lesson from charities and award greater credit to those with the most effective outcomes and the lowest overhead costs (in terms of the amount of funds contributed that go to administrative overhead, versus the core mission of the charity).



Senator WHITEHOUSE. Thank you, Dr. Mason.

Let me begin with a question prompted by Administrator Ruckelshaus' testimony. Mr. Ruckelshaus, you described a number of environmental improvements that took place on our watch. You mentioned that inherent in all was powerful economic interests resisting controls, to use your phrase.

You said that in all of the cases cited, the solutions to the problems did not result in the predicted economic and social calamity.

Each of you has had the firsthand experience of having to make decisions that were surrounded by fears and anxieties about perhaps dire consequences of your decision. Each of you has made that decision, each has seen the consequences as they played out in the aftermath.

My question to each of you, starting with Mr. Ruckelshaus whose testimony I think probably foretells his answer, how did the worst fears and assumptions of bad outcomes from environmental regulations turn out in reality as the rules were applied in your own experience? Mr. Ruckelshaus?

Mr. RUCKELSHAUS. Let me mention just one example. The Congress, in 1970, passed the Clean Air Act which provided that in the law itself by 1975, the cars would be 95 percent improved in three named pollutants in the law—hydrocarbons, carbon monoxide and nitrogen oxide.

The claim of the automobile companies was that this was impossible to do by 1975. I think they probably were right about that. It was an overly ambitious goal set by the Congress.

As Administrator, I was authorized to give them a 1-year extension from the meeting of those 1975 goals if the facts warranted. We had extensive hearings and decided, in the first instance, not to grant an extension and in the second instance, an extension was granted.

By 1976, with the use of the catalyst, most of the automobile companies were on the way to achieving the standards as required by the statute.

The claims during those hearings and during the passage of the laws were that the industry was going to collapse. Ford Motor Company predicted they would have to shut down their whole company if this law passed.

There was enough flexibility in the law, enough chance to give them the kind of leeway they needed to achieve the standards. Once they saw the rule was serious and we were going to pursue as vigorously as we could the achievement of the requirements under the law in the rule, then they began to focus on reducing the cost.

The motivation of trying to resist the regulation, resist the law that was passed by the Congress, changed from one of claiming the end was near to one of let us see if we can do this and do it in a cost effective way.

They did do it in a cost effective way and we achieve the standards finally. It was later than they expected. There was some leeway granted by the Congress after the original law.

We have almost three times as many cars on the road today and the emissions from the automobiles are 95 percent reduced.

Senator WHITEHOUSE. In my remaining minute, let me ask you to fill in and if we have a second round, I will come back and finish the question with the others but I am running out of time.

Ms. WHITMAN. Probably the best example I can give is when we were working on increasing the efficiency of air conditioners. We were being sued by everyone, including the DOE, saying it was absolutely impossible, that this was going to kill the industry.

We went ahead and found one company that said, no, we can do this. Carrier Air Conditioning said they could do it. They did it and started producing the more highly efficient air conditioners. Now everyone has exceeded those rules. We took them to 11 percent; they are now talking about 23 percent ratings.

The ingenuity in the American system kicked in. The minute they knew this was real, it was going to happen not only did we not see a loss in jobs or loss in dollars, we saw this whole industry achieve new levels that we did not think were possible.

Senator WHITEHOUSE. With my time expired, let me turn to my distinguished Ranking Member, Senator Sessions.

Senator SESSIONS. Thank you.

We certainly have made some great progress in the air in America and the water is so much cleaner than it has been. When we see situations in China, we are proud of what we have accomplished.

However, I would say CO₂ is a different kettle of fish. It is not particulates and NO_x and SO_x. It is plant food and it is not a pollutant in any normal definition of it, although Governor Whitman, I will acknowledge the Supreme Court by a 5-4 ruling ruled otherwise based on IPCC data.

Mr. Chairman, I would offer the letter to Gina McCarthy from West Virginia Attorney General Patrick Morrissey regarding EPA's asserted authority under Section 111(d) of the Clean Air Act to regulate CO₂ emissions from existing coal fired power plants and a white paper from 17 attorneys general and one senior environmental regulator to another State regarding the authority of States under Section 111(d) of the Clean Air Act to determine standards as applied to individual sources.

Senator WHITEHOUSE. Without objection, those documents will be made a part of our record.

[The referenced information follows:]



State of West Virginia
Office of the Attorney General

Patrick Morrissey
Attorney General

June 6, 2014

(304) 558-2021
Fax (304) 558-0410

Via Certified Mail & Email
The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, DC 20460
McCarthy.Gina@EPA.gov

**Re: EPA's Asserted Authority Under Section 111(d) Of The Clean Air Act To
Regulate CO₂ Emissions From Existing Coal-Fired Power Plants**

Dear Administrator McCarthy:

On June 2, 2014, the United States Environmental Protection Agency ("EPA") launched one of the most far-reaching and expensive regulatory projects in American history: the *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units* ("Proposed Rule").¹ The Proposed Rule seeks to impose limitations on CO₂ emitted from existing coal-fired power plants, requiring a staggering 30% reduction in the emissions from these plants across the country in a mere 15 years. West Virginia—a major consumer of coal-generated electricity and one of the leading producers of coal—will be uniquely harmed by the restrictions of the Proposed Rule.

As the chief legal officer for the State of West Virginia, I respectfully request that you withdraw the Proposed Rule immediately because EPA lacks the legal authority to adopt that Rule. In the *Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units* ("Legal Memorandum" or "Mem.") that was issued together with and incorporated by reference into the Proposed Rule,² EPA offers only one legal basis for the Rule: the rarely invoked Section 111(d) of the Clean Air Act ("CAA"). See 42 U.S.C. § 7411(d). The problem is that Section 111(d) affirmatively *excludes* precisely what EPA is attempting to do in the Proposed Rule.

¹ The Rule has not yet been published in the *Federal Register* and is currently available at <http://www2.epa.gov/sites/production/files/2014-05/documents/20140602proposal-cleanpowerplan.pdf>.

² <http://www2.epa.gov/sites/production/files/2014-05/documents/20140602tsd-legal-memorandum.pdf>.

The Honorable Gina McCarthy
June 6, 2014
Page 2

As this letter explains, EPA lacks authority under the plain text of Section 111(d), as it appears in the United States Code, to promulgate the Proposed Rule. Section 111(d) expressly prohibits EPA from regulating “any air pollutant . . . emitted from a[n] [existing] source category which is regulated under [the national emission regime in Section 112 of the CAA].” 42 U.S.C. § 7411(d). Given that EPA has imposed extensive and onerous regulations on existing coal-fired power plants under Section 112, the agency cannot now use Section 111(d) to require regulation of CO₂ emissions from those same existing plants. This conclusion is so apparent that even EPA concedes in its Legal Memorandum that a “literal reading” of Section 111(d) prohibits the Proposed Rule. Mem. 26; *see also* 70 Fed. Reg. 15,994, 16,032 (Mar. 29, 2005) (EPA making the same admission in a prior rulemaking).

The *only* textual justification that EPA’s Legal Memorandum offers for departing from the “literal” terms of Section 111(d) is unpersuasive. The agency relies entirely on a one-sentence clerical entry in the 1990 Amendments to the Clean Air Act that was not codified in the U.S. Code but appears in the Statutes at Large. That entry, even EPA has admitted, was clearly a mistake because it sought to make a technical correction rendered moot by another amendment. *See* 70 Fed. Reg. at 16,031 (describing the entry as a “drafting error”). Nevertheless, EPA now claims that it must give meaning to this mistake and, as a result, has announced an interpretation of Section 111(d) that directly conflicts with the language in the U.S. Code. EPA’s interpretation rewrites Section 111(d) from a prohibition on the regulation of “any air pollutant . . . emitted from a source category which is regulated under [Section 112],” as stated in the U.S. Code, to a more limited prohibition on the regulation of “any *hazardous* air pollutant” emitted from such a source category. This sort of reasoning would be wrong under any circumstance, but it is particularly improper here, where it is being offered as the justification for one of the most costly regulations in this Nation’s history.

In light of the profound legal infirmities with the Proposed Rule, EPA’s unprecedented policy will not survive judicial review. As such, it would be contrary to the public interest to proceed with publication in the *Federal Register*. Failure to withdraw the Proposed Rule will only cause citizens, States, industry, and environmental groups to waste valuable resources analyzing and commenting on a futile endeavor. Moreover, given the short timeframe for compliance with the Rule’s objectives, many of these parties will be required to incur significant and unnecessary costs. This will trigger unwarranted market responses and economic dislocation from coerced reduction of the use of coal as parties struggle to meet the anticipated requirements. This is unacceptable. No matter how fervent the desire by some to advance the policies underlying these regulations, EPA cannot—and should not—do so at the expense of the rule of law.

A. EPA Has Conceded That The Proposed Rule Is Unlawful Under The “Literal” Terms Of The Clean Air Act

The only authority invoked by EPA for the onerous requirements in the Proposed Rule is Section 111(d) of the Clean Air Act, a little-used provision that grants EPA limited power to require States to regulate air pollutants from existing sources. Mem. 11-12. As it appears in the U.S. Code, Section 111(d) requires the EPA Administrator under narrow circumstances to

The Honorable Gina McCarthy
June 6, 2014
Page 3

“prescribe regulations which shall establish a procedure . . . under which each State shall submit to the Administrator a plan which establishes standards of performance” for certain existing sources and certain air pollutants. Among other things, the statutory provision specifically *excludes* from the Administrator’s authority the power to prescribe regulations relating to “standards of performance for any existing source for any air pollutant . . . emitted from a source category which is regulated under section 7412 of this title [*i.e.*, Section 112 of the CAA].” 42 U.S.C. § 7411(d). EPA admits in its Legal Memorandum for the Proposed Rule that “a literal reading of that language” means that “EPA c[an] not regulate *any* air pollutant from a source category regulated under section 112” of the Clean Air Act. Mem. 26 (emphasis added); *accord* 70 Fed. Reg. at 16,032 (EPA reaching the same conclusion). Simply put, Section 111(d)’s plain text provides that if an existing source category is regulated under Section 112, that source category may not also be regulated under Section 111(d).

The regime codified in Sections 112 and 111 is part of a measured, coherent approach to regulating air pollutants from new and existing pollution sources. Section 112 of the Clean Air Act concerns national emissions standards for hazardous air pollutants (“HAPs”) emitted from any number of new and existing sources. *See* 42 U.S.C. § 7412. Whether a source category is regulated under Section 112 is generally dependent upon a number of factors. *Id.* § 7412(c). With regard to coal-fired power plants, Congress specially provided that those sources need only be regulated under Section 112 if the Administrator finds such regulation to be “appropriate and necessary.” *Id.* § 7412(n). Section 111(d) in turn addresses the emission of air pollutants emitted from *existing* sources *not* regulated under Section 112. Specifically, when EPA has chosen not to regulate a source category nationally under Section 112, emissions from existing sources within that category must be subject instead to state-by-state emission standards under Section 111(d), assuming certain other predicates have been satisfied. The rest of Section 111, which is not at issue here, is not restricted by the scope of Section 112 and concerns national emissions standards for air pollutants emitted from *new* sources.

In the present case, it is clear that EPA has no authority under Section 111(d) to regulate “any” emission from coal-fired power plants, including CO₂ emissions. EPA categorized coal-fired power plants as part of a “source category” under Section 112 in 2000, *see* 65 Fed. Reg. 79,825, 79,826 (Dec. 20, 2000), and the D.C. Circuit in 2008 rejected EPA’s attempt to withdraw that finding, *see New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008). Then, in 2012, EPA imposed significant Section 112 restrictions on coal-fired power plants, *see* 77 Fed. Reg. 9,304 (Feb. 16, 2012); 40 C.F.R. Part 63 subpart UUUUU, which the D.C. Circuit recently upheld, *see also White Stallion Energy Ctr., LLC v. EPA*, __ F.3d __, 2014 WL 1420294 (D.C. Cir. Apr. 15, 2014). Under the “literal” reading of Section 111(d), Mem. 26, these rules regulating existing coal-fired power plants under Section 112 prohibit EPA from invoking Section 111(d) to adopt the Proposed Rule.

B. EPA’s Arguments Based Upon A Clerical “Drafting Error” In The 1990 Clean Air Act Amendments Cannot Displace The “Literal” Terms Of Section 111(d)

Faced with the unambiguous terms of Section 111(d) in the U.S. Code, EPA falls back in its Legal Memorandum to an erroneous prior analysis that the agency conducted in 2005, in

The Honorable Gina McCarthy
 June 6, 2014
 Page 4

which it concluded that Section 111(d) is actually “ambiguous” and therefore subject to the agency’s “reasonable” interpretation. Mem. 8, 26. That 2005 analysis—which was part of a rule under Section 111(d) that the D.C. Circuit vacated in *New Jersey v. EPA*, 517 F.3d 574—based its conclusion entirely upon a clerical entry in the 1990 Amendments to the Clean Air Act that was not codified in the U.S. Code but appears in the Statutes at Large. According to EPA, the 1990 Amendments included two entries relevant to Section 111(d). Both entries appear in the Statutes at Large, but only the first amendment—described by EPA as the “substantive” one—was incorporated into the U.S. Code. EPA argues that the mere existence of the second, clerical amendment creates an ambiguity sufficient to call into doubt the language of Section 111(d) in the U.S. Code. EPA’s attempt to displace the plain terms of Section 111(d) was wrong in 2005 and remains so today.

1. *The Clerical “Drafting Error” In The 1990 Clean Air Act Amendments Does Not Create An Ambiguity In The Terms Of Section 111(d)*

As a threshold matter, EPA’s analysis is wrong because the one-sentence clerical entry referred to by EPA falls far short of the showing necessary to cast doubt on the plain terms of Section 111(d) as they appear in the U.S. Code. The “Code of Laws of the United States current at any time shall . . . establish prima facie the laws of the United States.” 1 U.S.C. § 204(a). As “prima facie” evidence, the language of Section 111(d) in the U.S. Code is displaced only where the U.S. Code is “inconsistent” with the Statutes at Large. See *Stephan v. United States*, 319 U.S. 423, 426 (1943). There is no inconsistency here.

A review of the two relevant entries in the Statutes at Large reveals that the clerical entry does not create an ambiguity or inconsistency, but rather is—as even EPA has admitted—a “drafting error [that] should not be considered.” 70 Fed. Reg. at 16,031.

The first relevant entry appears in the Statutes at Large among a list of other entries making *substantive* amendments to Section 111. Prior to these amendments in 1990, Section 111(d) had prohibited EPA from requiring state-by-state regulation of any air pollutant on the list of HAPs published under Section 112(b)(1)(A). This particular amendment made a significant substantive change by replacing the reference to “112(b)(1)(A)” with the language that now appears in the U.S. Code—“emitted from a source category which is regulated under section 112.” Pub. L. No. 101-549, § 108(g), 104 Stat. 2399, 2467 (1990). As a result, the restriction in Section 111(d) changed from one focused on HAPs regulated under Section 112 to one focused instead on source categories regulated under that section.

The second relevant entry appears much later in the Statutes at Large among a list of purely *clerical* changes—entitled “Conforming Amendments.” Pub. L. No. 101-549, § 302(a), 104 Stat. 2399, 2474 (1990). As explained in the Senate’s Legislative Drafting Manual, “Conforming Amendment[s]” are “amendment[s] of a provision of law that [are] necessitated by the substantive amendments or provisions of the bill.” Senate Legislative Drafting Manual § 126(b)(2)(A). They effectuate the sorts of ministerial changes required to clean up a statute after it has been substantively amended. Thus, conforming amendments “include[] amendments,

The Honorable Gina McCarthy
June 6, 2014
Page 5

such as amendments to the table of contents, that formerly may have been designated as clerical amendments.” *Id.*

Consistent with its description as a conforming amendment, this particular entry sought simply to bring up to date the cross-reference in Section 111(d) to Section 112(b)(1)(A). Other amendments to the Clean Air Act in 1990 had eliminated Section 112(b)(1)(A) entirely and replaced it with Sections 112(b)(1), 112(b)(2), and 112(b)(3). This clerical amendment was designed solely to account for those changes. Specifically, it provided that “Section 111(d)(1) of the Clean Air Act is amended by striking ‘[112](b)(1)(A)’ and inserting in lieu thereof ‘[112](b).’” Pub. L. No. 101-549, § 302(a). Unlike the substantive amendment described above, this non-substantive amendment would not have changed the restriction in Section 111(d) from its pre-1990 focus on hazardous air pollutants regulated under Section 112.

In light of the substantive amendment, however, the second non-substantive amendment was clearly an unnecessary mistake or, as EPA has put it, a “drafting error.” When the conforming amendment is applied after the substantive amendment, as is required by the very nature of conforming amendments, there is no clerical correction left to make because the cross-reference to 112(b)(1)(A) has already been removed by the substantive amendment. This is consistent with the codifier’s notation in the U.S. Code that the clerical amendment “could not be executed.” Revisor’s Note, 42 U.S.C. § 7411. Where a conforming amendment is entirely unnecessary, it is rightly understood as a clerical mistake that need not be given any effect. *See Am. Petroleum Inst. v. SEC*, 714 F.3d 1329, 1336-37 (D.C. Cir. 2013).

EPA has correctly recognized as much—noting in 2005, for example, that the clerical entry “is a drafting error and therefore should not be considered”—but it then wrongly determined that it nevertheless “must attempt to give effect to both the [substantive] and [clerical] [entries], as they are both part of the current law.” 70 Fed. Reg. at 16,031; *accord* Mem. 21 (recognizing “apparent drafting errors during enactment of the 1990 CAA Amendments”). This fundamental flaw dooms EPA’s analysis. As the D.C. Circuit recently explained, where a mistake in renumbering a statute and correcting a cross-reference conflicts with substantive provisions of that statute, the mistake should be considered most likely “the result of a scrivener’s error[]” and should not be treated as “creating an ambiguity.” *Am. Petroleum*, 714 F.3d at 1336-37. Under this reasoning, it is clear that the clerical entry simply “should not be considered,” as EPA originally concluded. 70 Fed. Reg. at 16,031. At the very minimum, the existence of such a non-substantive, “drafting error” is not enough to overcome the fact that language codified in the U.S. Code is “prima facie” evidence of “the laws of the United States.” 1 U.S.C. § 204(a).

Put another way, EPA now asserts that the non-substantive and substantive amendments—if each were implemented into Section 111(d)’s prior text standing alone—would create two separate versions of Section 111(d). Mem. 24. The first version incorporates only the non-substantive amendment and therefore retains the pre-1990 prohibition on regulating HAPs under Section 111(d), regardless of whether the source category emitting those HAPs is regulated under Section 112. The second version is the one that actually appears in the U.S.

The Honorable Gina McCarthy
 June 6, 2014
 Page 6

Code and *substantively changes* the prohibition to forbidding EPA from regulating under Section 111(d) any air pollutants emitted by any existing source regulated under Section 112. Mem. 24.

But this approach of treating both amendments as, in effect, creating two different versions of 111(d) directly contradicts EPA's concession that the inclusion of the non-substantive entry in the Statutes at Large was merely a clerical "drafting error." Critically, the *only* evidence EPA may use in its attempt to rebut the terms of Section 111(d) as expressed in the U.S. Code is the Statutes at Large, *see Stephan*, 319 U.S. at 426, and *the Statutes at Large simply do not reflect two separate versions of Section 111(d)*. Rather, they reflect only two amendments—one a substantive change and one a mere clerical entry—and the clerical entry is rendered moot by the substantive amendment.³

2. EPA's Policy Arguments Create No Ambiguity In Section 111(d)

EPA's policy arguments against the "literal" terms of Section 111(d) also cannot generate an ambiguity where none exists in the plain statutory text. As a threshold matter, even if EPA were correct that the "literal" terms of Section 111(d) produce overly harsh results for EPA's regulatory authority, EPA may not "redraft a statute in order to avoid what the agency characterized as the 'absurd results' that would flow from the statute's language" where it is, as here, "not inconceivable that Congress meant what the statute says." *Ass'n of Am. R.Rs. v. Surface Transp. Bd.*, 162 F.3d 101, 105 (D.C. Cir. 1998) (quoting *Mova Pharmaceutical Corp. v. Shalala*, 140 F.3d 1060, 1072 (D.C. Cir. 1998)). In any event, EPA's policy arguments miss the mark because the "literal" terms of Section 111(d) are part of a rational regulatory scheme.

This regime quite logically avoids subjecting *existing* sources to both new national standards for hazardous pollutants under Section 112 as well as new state-by-state standards under Section 111, while permitting regulation under both Section 111 and Section 112 of *new* sources. Unlike with new sources, the imposition of additional regulatory burdens on existing sources raises questions of fairness and lost investments, as existing sources that were built under a different regulatory regime may or may not have the technological or financial ability to come into compliance with two sets of new rules. Indeed, both Sections 112 and 111(d) recognize that the cost of compliance must be weighed against maximum achievable reductions. *See* 42 U.S.C.

³ Although some had argued in 2005 and 2008 that the clerical entry should take precedence over the substantive entry, EPA repeatedly and properly rejected those arguments as having "no merit." Final Brief of Respondent EPA, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008), 2007 WL 2155494, at *103 n.33; *accord* 70 Fed. Reg. at 16,031-32. For example, the agency has explained that the so-called "last in point of arrangement" rule of statutory construction "is inapplicable here, as it applies to discrete sections of the same Act, not competing amendments to the same section of an Act, as is the case here." 2007 WL 2155494, at *103 n.33. Indeed, EPA *emphatically* declared that it is "hard to conceive" that Congress would have intended to give effect to the clerical change over the substantive change, because, among other things, only the substantive change gives meaning to Section 112(n)(1)(A), which was also adopted during the 1990 Amendments to the Clean Air Act. Section 112(n)(1)(A) required EPA to conduct a study to determine whether coal-fired power plants "should even be regulated under section 112." 70 Fed. Reg. at 15,995. As EPA recognized, this provision is strong evidence that Congress did not wish to subject such power plants to "duplicative or overlapping regulation," but rather sought to force EPA to choose between regulating power plants as a source category under Section 112 or 111(d), consistent with the substantive change and not the clerical one. *Id.* at 16,031.

The Honorable Gina McCarthy
June 6, 2014
Page 7

§§ 7411(a)(1), 7411(d), 7412(d). In establishing this regime, under which regulation of existing sources occurs either under Section 112 or Section 111(d), Congress properly determined that requiring the same existing source categories to comply with two functionally-independent regulatory regimes would threaten these sources' economic viability. Indeed, EPA has recently imposed costly regulations on coal-fired power plants, which will cost those plants more than \$9 billion dollars *per year*. See EPA, *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards* at 3-13 (Dec. 2011), available at <http://www.epa.gov/ttn/ecas/regdata/RIAs/matsriafinal.pdf>. EPA's Proposed Rule would subject those same plants to billions of dollars of additional costs, through the imposition of duplicative regulatory requirements, forcing many of those plants to close. That is the exact scenario Congress intended to avoid when it amended Section 111(d).

In light of this understanding, EPA's policy arguments in favor of ignoring Section 111(d)'s plain language are insubstantial.

EPA first claims that a "literal reading" of Section 111(d) would be contrary to "Congress' desire in the 1990 CAA Amendments to require EPA to regulate more substances." Mem. 25-26. But the mere fact that *one* of the broad purposes behind the 1990 Amendments was to require EPA to regulate more substances under Section 112 does not mean that Congress was not cognizant of other values, such as the need to avoid costly double regulation. In fact—as EPA itself admitted in its 2005 analysis—the text, structure, and history of the 1990 Amendments indicates a desire by Congress to limit EPA's ability to doubly regulate coal-fired power plants. As explained above, the discussion and ultimate adoption of Section 112(n)(1)(A) "reveals" that Congress did not want to subject coal-fired power plants to "duplicative or otherwise inefficient regulation." 70 Fed. Reg. at 15,999. It is perfectly reasonable to understand Section 111(d) as seeking to forward this same general goal of avoiding duplicative regulation.

EPA's other policy argument is "the fact that the EPA has historically regulated non-HAPs under section 111(d), even where those air pollutants were emitted from a source category actually regulated under section 112." Mem. 26. But it is no answer to the unambiguous textual requirement in the 1990 Amendments to point to EPA's *pre-amendment* practice of regulating non-HAPs under Section 111(d). EPA at one time enjoyed the power of regulating existing source categories on separate regulatory tracks. See Mem. 9-10 & n. 17. When Congress amended the Clean Air Act in 1990 to require EPA to regulate more HAPs under Section 112, however, Congress sensibly paired that increased power with a textual limitation—embodied in Section 111(d)—against using that enhanced authority to impose duplicative regulations on the same existing source categories. EPA's argument that the "literal" terms of Section 111(d) would hamstring it from using a provision that it has only used to regulate "four pollutants from five source categories" in "forty years," Mem. 9, cannot possibly provide a basis for disregarding the literal terms of the Clean Air Act.

The Honorable Gina McCarthy
 June 6, 2014
 Page 8

3. *EPA's Attempt To Resolve The Supposed Ambiguity Is Nevertheless Impermissible*

Even if the clerical error created an ambiguity in Section 111(d)'s "literal" text, EPA's analysis would still fail. To begin with, the agency's claim to some unidentified form of "deference" for its attempt to rewrite Section 111(d) is meritless. Mem. 12. Courts defer to agencies under the test set forth in *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984), because there is reason to believe that when Congress "left ambiguity in a statute," it "understood that the ambiguity would be resolved, first and foremost, by the agency, and desired the agency (rather than the courts) to possess whatever degree of discretion the ambiguity allows." *Smiley v. Citibank (South Dakota), N.A.*, 517 U.S. 735, 740-741 (1996). EPA could not possibly argue that Congress intended EPA to resolve the import of Congress's inadvertent clerical "drafting error." Indeed, EPA does not so argue. EPA offers no justification whatsoever for its bald assertion that it is entitled to deference on this issue, and does not even cite to *Chevron* in its discussion of the issue.

In any event, EPA could not possibly prevail under *Chevron*—or some other similar form of deference—because it offers an "impermissible construction" of the supposedly ambiguous statute. *Aid Ass'n for Lutherans v. U.S. Postal Serv.*, 321 F.3d 1166, 1178 (D.C. Cir. 2003). EPA would interpret Section 111(d) as follows: "Where a source category is regulated under section 112, a section 111(d) standard of performance cannot be established to address any HAPs listed under section 112(b) that may be emitted from that particular source category." Mem. 26. This is flatly inconsistent with the substantive provision, embodied in the U.S. Code, that EPA may not "establish[] standards of performance for any existing source for *any* air pollutant . . . emitted from a source category which is regulated under [Section 112 of the CAA]." 42 U.S.C. § 7411(d) (emphasis added). EPA's proffered interpretation effectively replaces the term "*any* air pollutant" with the term "hazardous air pollutant." Even under *Chevron*, an agency is not entitled to deference when its interpretation is so "manifestly contrary to the statute." *Mayo Found. for Med. Educ. & Research v. United States*, 131 S. Ct. 704, 711 (2011) (internal quotations omitted); *accord Petit v. U.S. Dep't of Educ.*, 675 F.3d 769, 785 (D.C. Cir. 2012).

If EPA wanted to give effect to its view of both the substantive and the clerical entries in the Statutes at Large—which, as explained above, EPA nonsensically claims create two versions of Section 111(d)—without impermissibly changing the text of either, it could have done so. As one commentator has explained, all of EPA's textual concerns could be satisfied by interpreting Section 111(d) to prohibit the regulation of "any air pollutant . . . which is not included on a list published under . . . 112(b) [revision of the prior version of Section 111(d) after inputting the clerical entry] or emitted from a source category which is regulated under section 112 [revision of the prior version of Section 111(d) after inputting the substantive entry]." William J. Haun, *The Clean Air Act as an Obstacle to the Environmental Protection Agency's Anticipated Attempt to Regulate Greenhouse Gas Emissions from Existing Power Plants*, 14 Engage: J. Federalist Soc'y Prac. Groups 35, 38 (Mar. 2013) (parentheticals revised). EPA does not—and could not—dispute that this is the only interpretation that gives *full* effect and meaning to every word of both "versions" of Section 111(d) that it believes the Statutes at Large embodies. Accordingly, to the extent EPA continues to reject the position that the non-substantive entry must be discarded as an

The Honorable Gina McCarthy
 June 6, 2014
 Page 9

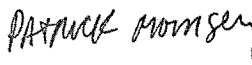
inadvertent “scrivener’s error[.],” *see Am. Petroleum*, 714 F.3d at 1337, the agency is duty-bound to adopt this alternative interpretation.

EPA’s refusal to advance or acknowledge this alternative is unsurprising, of course, because under this approach the Proposed Rule would still be unlawful. Under this alternative interpretation, EPA would be prohibited from using Section 111(d) *both*: (1) to require regulation of any HAP listed in Section 112(b), regardless of whether the HAP is being emitted from a source regulated under Section 112; *and* (2) to require regulation of *any* pollutant emitted from a source category that is regulated under Section 112. Even under this alternative reading, EPA still cannot rely on Section 111(d) as a basis for the Proposed Rule because of the regulatory scheme established under Section 112.⁴

* * *

EPA has fundamentally erred in relying upon the flawed reasoning in the vacated 2005 rule to justify the Proposed Rule. It is simply unconscionable for EPA to go forward with this massive and costly regulation based entirely upon what it has admitted to be a clerical “drafting error.” I urge you to withdraw the Proposed Rule immediately and avoid needless litigation.

Sincerely,



Patrick Morrissey
 Attorney General of West Virginia

cc: Avi Garbow
 General Counsel, Environmental Protection Agency

Hon. Eric Holder
 Attorney General, United States Department of Justice

⁴ In its prior briefing on this issue, EPA cited to *Citizens to Save Spencer County v. EPA*, 600 F.2d 844 (D.C. Cir. 1979), to justify its claim that it is entitled to deference. Final Brief of Respondent EPA, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008), 2007 WL 2155494, at *103. In its Legal Memorandum here, EPA does not cite or rely upon this case, and with good reason. In *Citizens to Save Spencer County*, EPA was forced to deal with a situation where one unquestionably substantive provision specifically conflicted with another unquestionably substantive provision. Faced with this truly irreconcilable conflict between two substantive provisions, the D.C. Circuit upheld EPA’s adoption of an interpretation that gave “maximum possible effect to both.” 600 F.2d at 872. In the present case, in contrast, the so-called conflict is between a substantive amendment and a clerical “drafting error,” in which case the substantive amendment simply prevails. *Am. Petroleum*, 714 F.3d at 1336-37. In addition, while EPA in *Citizens to Save Spencer County* had no option but to adopt a middle ground between two irreconcilable statutory commands, here EPA has ignored an interpretation that would give “maximum effect” to its own view of both the substantive and non-substantive provisions.



STATE OF NEBRASKA
Office of the Attorney General

2115 STATE CAPITOL BUILDING
LINCOLN, NE 68509-8920
(402) 471-2682
TDD (402) 471-2682
FAX (402) 471-3297 or (402) 471-4725

JON BRUNING
ATTORNEY GENERAL

September 11, 2013

The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 1101A
Washington, DC 20460

Re: EPA Performance Standards for Greenhouse Gas Emissions for Existing Electric
Generating Units

Dear Administrator McCarthy:

The Attorneys General of seventeen states and the senior environmental regulator of an eighteenth have followed with interest EPA's statements regarding its intention to promulgate guidelines for performance standards for greenhouse gas (GHG) emissions from existing electric generating units (EGUs).

We recognize EPA's obligation to promulgate these guidelines through an open and transparent process, which would include input from all stakeholders. As the statutory responsibility and authority under Section 111(d) for developing and implementing performance standards is vested at the state level, we intend to participate fully in this process as representatives for our States.

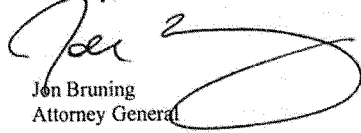
Enclosed with this letter is a white paper setting forth our position on both EPA and the states' authority under Section 111(d). The white paper responds to EPA's aggressive proposal for GHG performance standards for new EGUs and indications of a similarly aggressive stance on existing EGUs. Our concerns are justified given EPA's unwillingness to appropriately defer to State authority under the Clean Air Act in recent years.

Ms. McCarthy
Page Two
September 11, 2013

As the white paper describes, Section 111(d) is unambiguous in granting to states the sole authority to determine actual substantive standards as applied to individual sources. EPA's role is limited to establishing procedures whereby states develop and implement performance standards for existing EGUs. We trust EPA will to adhere to the limitations of its authority under the Clean Air Act when adopting guidelines for the states' development of plans for GHG performance standards for existing EGUs.

We appreciate your consideration of our position and restate our commitment to cooperative federalism as required under the CAA.

Sincerely,



Jon Bruning
Attorney General

**Perspective of 18 States on Greenhouse Gas Emission Performance Standards
for Existing Sources under § 111(d) of the Clean Air Act.**

Introduction

As State Attorneys General, we believe it is critical to bring public awareness to another example of what has unfortunately become routine: the United States Environmental Protection Agency (“EPA” or “Agency”) is poised to yet again propose new regulations that venture well beyond the limits of the agency’s authority. The President has called upon EPA to propose greenhouse gas (GHG) emission standards, regulations, or guidelines for *existing* power plants by June 1, 2014, and to finalize those rules by June 1, 2015. As this paper will show, EPA’s authority under the Clean Air Act is limited to developing a procedure for *states* to establish emissions standards for existing sources. EPA, if unchecked, will continue to implement regulations which far exceed its statutory authority to the detriment of the States, in whom Congress has vested authority under the Clean Air Act, and whose citizenry and industries will ultimately pay the price of these costly and ineffective regulations.

Last year, EPA published a proposed rule regulating carbon dioxide (“CO₂”) emissions from new electric utility generating units (“EGUs”). 77 Fed. Reg. 22,392 (April 13, 2012) (“EGU NSPS”). In light of recent comments from industry, EPA is considering the need to re-propose this standard due to its failure to finalize the action within the CAA’s 1-year timeframe. In addition, on April 15 and 17, 2013, some states and environmental groups filed 60- and 180-day Notices of Intent to sue EPA under section 304(a) of the Clean Air Act (“CAA”) for failure to perform the allegedly non-discretionary duty of and/or unreasonably delaying finalizing the

EGU NSPS and proposing standards for existing EGUs.¹ In response to these Notices, a coalition of Attorneys General has requested to be involved in any settlement discussions with advocates of broad federal GHG regulations.

EPA states that once it has issued regulations for an air pollutant from *new* sources in a particular source category under the CAA § 111(b), it has legal authority to regulate emissions from *existing* sources of that air pollutant within the same source category.² The final version of the new source performance standards for new EGUs will likely face legal challenge. However, the following analysis assumes the final EGU NSPS for GHG emissions is upheld and EPA moves forward with rulemaking for existing sources.

The purpose of this paper is to identify a timely example of a serious, ongoing problem in environmental regulation: the tendency of EPA to seek to expand the scope of its jurisdiction at the cost of relegating the role of the States to merely implementing whatever Washington prescribes, regardless of its wisdom, cost, or efficiency in light of local circumstances. The issue is not new. The States and EPA have been at odds over the scope of their respective responsibilities under the federal environmental statutes since the statutes' inception. The recent increase in the level of federal regulatory activity under the Clean Air Act has generated a

¹ A settlement agreement entered into by a number of states and environmental groups in December 2010 set forth deadlines for EPA to issue regulations with respect to GHG emissions from existing EGUs. See, 75 Fed. Reg. 82,392 (Dec. 20, 2010). The deadlines have passed.

² The authority of EPA to promulgate GHG NSPS for existing EGUs, even if it finalizes its proposed GHG NSPS rule for new EGUs, has been questioned. See William J. Hann, *The Clean Air Act as an Obstacle to the Environmental Protection Agency's Anticipated Attempt to Regulate Greenhouse Gas Emissions from Existing Power Plants*, THE FEDERALIST SOCIETY (Mar. 2013), available at <http://www.fed-soc.org/publications/detail/the-clean-air-act-as-an-obstacle-to-the-environmental-protection-agencys-anticipated-attempt-to-regulate-greenhouse-gas-emissions-from-existing-power-plants>. Without conceding that EPA does have authority to promulgate a GHG NSPS for existing EGUs, we assume for purposes of discussion here that EPA does have that authority and will exercise it.

corresponding increase in concerns among the States regarding the preservation of their role in environmental protection.

The way in which EPA has “pushed the envelope” in interpreting its legal authority under the CAA to promulgate a New Source Performance Standard for new EGUs portends a similarly aggressive and unlawful approach to the regulation of existing EGUs. EPA’s clear policy goal in establishing its new source standards is to prevent the construction of new coal plants. EPA’s proposed EGU NSPS would foreclose the construction of new coal-based electric generation absent carbon capture and storage (“CCS”), yet CCS is likely to remain commercially infeasible for a decade or more. The elimination of coal as a fuel for new electric generation would have highly concerning implications for electricity prices and for the economy and job-creation in general, as well as the competitiveness of American manufacturing.

In order to justify its proposed standard that would not allow new coal-based EGUs absent CCS, EPA has taken unprecedented steps. The Agency proposed to combine coal and combined-cycle natural-gas units into a single regulatory category, something it has never done before for coal and gas EGUs. Indeed, it did not even go so far as recently as last year when it proposed NSPS for traditional pollutants emitted by EGUs. EPA’s aggressive posture in its proposed new-source NSPS, both as to foreclosing new coal plants and in pushing the scope of its claimed legal authority, raises serious questions as to the approach EPA will eventually take when it promulgates existing-source NSPS.

If EPA proceeds against existing coal plants with the same hostility, it is likely to be reversed in court. As this paper shows, EPA does not have authority to promulgate prescriptive limitations for existing coal-fueled EGUs. Under section 111(d) of the CAA, EPA must recognize that States have broad discretion to determine the nature of NSPS requirements for

existing EGUs. EPA may require States to adopt standards, and EPA may guide how States do so procedurally, but the States are vested with the legal authority to decide the ultimate standards.

The Statutory and Regulatory Framework For Developing Performance Standards For Existing Sources

The focus of the following analysis is the limitations Congress placed on EPA's authority under Section 111(d) of the CAA. Section 111(d) provides EPA with the authority to develop standards of performance for existing sources and directs the Agency to:

prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan which establishes standards of performance for any existing source for any air pollutant...to which a standard of performance under this section would apply if such existing source were a new source.

Section 111(d) requires the existence of a performance standard for new sources as a condition precedent to the development of such standards for existing sources. Thus, the legality of the final version of EPA's EGU NSPS rule has significant implications for EPA's ability to require regulation of existing EGUs.

Most importantly, section 111(d) invokes the principle of cooperative federalism – with roles clearly delineated for both EPA and the States. The reference to § 110 refers to the general process by which States submit their State Implementation Plans (“SIPs”) for EPA review. Accordingly, EPA's authority under § 111(d) is limited to establishing, in the statute's term, a “*procedure*” by which the States submit plans for regulating existing sources. EPA cannot promulgate rules establishing the substantive standards to be imposed on existing sources.

The cooperative federalism is illustrated by EPA's general procedural regulations relating to the States' adoption and submittal of plans establishing standards of performance for existing

sources. Those regulations require EPA to issue a "guideline document" concurrently with, or after, the "proposal of standards of performance for the control of a designated pollutant from affected facilities." 40 C.F.R. § 60.22(a). The content of the guideline document is of great importance to the preservation of the States' role in the development of performance standards for existing sources.

Under EPA's regulations, the guideline document is to "provide information for the development of State plans" including a "description of systems of emissions reduction which, in the judgment of the Administrator, have been adequately demonstrated." *Id.* at (b)(2). The guideline document also shall contain an "emission guideline" providing "criteria for judging the adequacy" of § 111(d) plans. 40 C.F.R. § 60.22(b)(5); *see*, 40 Fed. Reg. 53,341 (Nov. 17, 1975). The emission guideline "reflects the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated." 40 C.F.R. § 60.22(b)(5). The emission guideline must also allow sub-categorization "when costs of control, physical limitations, geographical location, or similar factors make [it] appropriate." *Id.*

Also under EPA's regulations, the States have nine months to submit a "plan for the control of the designated pollutant to which the guideline document applies." 40 C.F.R. § 60.23(a)(1). The plan "shall include emission standards" that "shall prescribe allowable rates of emissions except when it is clearly impracticable." 40 C.F.R. § 60.24(a), (b)(1). The States have significant discretion in formulating these plans. Although the "emission standards" are to be "no less stringent than the corresponding emission guideline(s), the States may make a case-by-case determination that a specific facility or class of facilities should be subject to a less-stringent standard or longer compliance schedule due to 1) cost of control; 2) physical limitation of installing necessary control equipment; and 3) other factors making the less-stringent standard

more reasonable. *See*, 40 C.F.R. § 60.24(c), (f). EPA then has four months to determine whether the plan meets the requirements discussed above. If EPA disapproves the plan, the State may correct the deficiencies or, under EPA's construction, the Agency may issue its own plan within 6 months of the original submission deadline. *See*, 40 C.F.R. § 60.27(c), (d).

Although these regulations have never been tested in court, EPA undoubtedly has power to adopt procedural regulations governing State adoption of plans setting forth performance standards. But, importantly, and consistent with the statute, the determination of the actual substantive standards is left to the states.

Existing Source Performance Standards for CO₂ Emissions from EGUs

In contemplating regulation of existing EGUs, however, EPA appears poised to go beyond the establishment of procedures and usurp the states' authority by setting minimum *substantive* requirements for state performance standards. Having reviewed the statutory and regulatory requirements for developing standards of performance for existing sources in a general sense, we now apply that legal framework to CO₂ emissions from EGUs. Although EPA has not yet issued a proposed guideline document for CO₂ emissions from existing EGUs, we offer general observations about potential issues that have already presented themselves.

Fundamentally, § 111(d), as well as EPA's own regulations, require that emission reductions be made through adequately demonstrated systems of emission reduction technology. Under § 111(d), EPA establishes procedures for States to submit plans containing "performance standards." "Performance standards" is defined in § 111(a): "The term 'standard of performance' means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and

environmental impact and energy requirements) the Administrator determines *has been adequately demonstrated.*" (Emphasis supplied). And EPA's guideline document and the emission guideline contained therein are to "reflect[] the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated." 40 C.F.R. § 60.22(b)(5); *see also*, 42 U.S.C. § 7411(1) (definition of "standard of performance"). The crux of this requirement thus is that the system be, in fact, adequately demonstrated.

It seems incontrovertible that no post-combustion reduction system has been "adequately demonstrated" for CO₂ emissions from EGUs on a broad, commercial scale. A system of carbon capture and storage is perhaps a decade away from being technologically and economically feasible. A permitting system for storing CO₂ emissions underground and a set of legal rules governing liability for CO₂ storage has not been put in place in most states. Without an adequately demonstrated post-combustion control technology, EPA must look to standards based on cost-effective efficiency improvements at electric generating units, because more efficient units will produce lower CO₂ emissions per unit of heat input or electricity output.

EPA and others may believe that efficiency measures will not ensure the amount of CO₂ emission reductions they desire. As a result, some groups have proposed EPA be given flexibility to develop emission guidelines based on trading programs with statewide emissions caps, increased reliance on lower CO₂ emitting facilities, or demand-side and non-regulated source reductions. In short, EPA may attempt to force coal-fueled EGUs to decrease operation time or retire early, or force utilities to rely more heavily on natural gas and other resources in an effort to ensure greater CO₂ emission reductions. Such proposals, often offered as ways of providing "flexibility," do not conform to the limitations Congress has placed on EPA in the

Clean Air Act, nor do they properly preserve the primary role of States in the development of standards of performance for existing sources. Under § 111(d), it is the States, not EPA, that are authorized to adopt performance standards; therefore it is the States, not EPA, that weigh the § 111(a)(1) factors to determine what technology is adequately demonstrated. Simply put, EPA lacks statutory authority (and is limited by its own regulations) to issue emission guidelines seeking reductions of CO₂ emissions from coal-based EGUs in a manner based on something other than an adequately demonstrated reduction system for such EGUs.

To the extent § 111(d) provides authority for flexible approaches to establishing performance standards to seek reductions in CO₂ emissions, that authority is vested in States, not EPA. And of course, under § 116, States retain authority to adopt more stringent CO₂ controls than EPA has the authority to mandate.

As noted, § 111(d) specifies that EPA's regulatory authority is limited to developing a *procedure* for the submission of state plans. EPA's general regulations authorizing the issuance of emission guidelines that establish minimum requirements, depending on how EPA implements this guideline authority in a particular case, bear on substantive standard-setting. But EPA does not have the authority to establish minimum substantive requirements.

EPA cannot dictate substantive outcomes. The agency can require that States actually adopt performance standards based on application of the § 111(a)(1) factors.

States are additionally afforded the discretion to consider "among other factors, the remaining useful life of the existing source to which such standard applies" when developing performance standards for existing units. Beyond this, § 111(d) does not provide authority for EPA to reject a State plan if it does not contain a standard of performance as that term is defined, and based on the factors set forth, in § 111(a)(1).

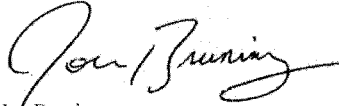
In sum, the CAA imposes responsibility for air pollution control at the State and local levels because of the proximity to existing sources and familiarity with local operating conditions. State implementation plans are thus the primary architecture of emission controls. See §§ 107(a); 110(a); 111(d). The “structure of the CAA militates against reading an extra-statutory requirement into the Act’s limitations on state discretion. Because the states enjoy ‘wide discretion’ in implementing the Act, the imposition of newfound restrictions upsets the Act’s careful balance between state and federal authority. *Union Elec. Co.*, 427 U.S. at 250; see also *Fla. Power & Light Co.*, 650 F.2d at 587 (‘The great flexibility accorded the states under the Clean Air Act is . . . illustrated by the sharply contrasting, narrow role to be played by EPA.’).” *Luminant Generation Co. v. EPA*, 675 F.3d 917, 929 (5th Cir. 2012). EPA’s role for existing sources is therefore “confine[d]...to the ministerial function of reviewing SIPs for consistency with the Act’s requirements.” *Luminant Generation Co. v. EPA*, 675 F.3d 917, 921 (5th Cir. 2012).

Conclusion

The prospect for EPA adoption of GHG performance standards for new or existing coal-based EGUs raises serious concerns. EPA’s aggressive standards for new coal-based EGUs indicate a similarly aggressive approach to existing coal-based EGUs. While EPA is authorized to require States to submit plans containing performance standards, EPA may not dictate what those performance standards shall be. Nor may EPA require States to adopt GHG performance standards that are not based on adequately demonstrated technology or that mandate, in the guise of “flexible approaches,” the retirement or reduced operation of still-viable coal-based EGUs.

These concerns are serious. EPA regulations may harm the nascent economic recovery. Moreover, our federalist system of government, as implicated in the CAA, requires that EPA


recognize the rights and prerogatives of States. The extent and form of greenhouse gas regulation is important to the States; it is critical that States be allowed to play their proper roles in making the significant policy judgments that are required in adopting any such regulation.



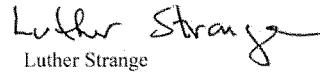
Jon Bruning
Nebraska Attorney General



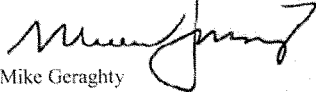
Bill Schuette
Michigan Attorney General



Scott Pruitt
Oklahoma Attorney General



Luther Strange
Alabama Attorney General



Mike Geraghty
Alaska Attorney General



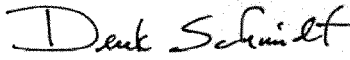
Tom Horne
Arizona Attorney General



Pam Bondi
Florida Attorney General



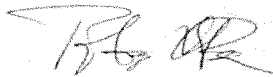
Sam Olens
Georgia Attorney General



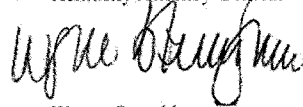
Derek Schmidt
Kansas Attorney General



Jack Conway
Kentucky Attorney General



Tim Fox
Montana Attorney General



Wayne Stenehjem
North Dakota Attorney General




Mike DeWine
Ohio Attorney General



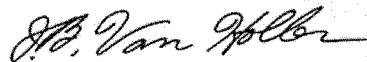
Alan Wilson
South Carolina Attorney General



Marty Jackley
South Dakota Attorney General



Patrick Morrissey
West Virginia Attorney General



J.B. Van Hollen
Wisconsin Attorney General
of Environmental Management



Tom Easterly
Commissioner, Indiana Department
of Environmental Management

Senator SESSIONS. Thank you.

The President, on November 14, 2012, said, "The temperature around the globe is increasing faster than was predicted even 10 years ago." Then on May 29, 2013, he said, "We also know that the climate is warming faster than anybody anticipated five or 10 years ago."

I want to ask each of our former Administrators if any of you agree that is an accurate statement on the climate? If you do, raise your hand. Thank you. The record will reflect no one raised their hands.

One of the things Dr. Botkin mentioned was this is difficult when we have assertions repeated that are not established by the facts. The same is true about hurricanes. If you count the number of Category 1, 2, 3, 4 or 5 hurricanes each year, this is not a matter of dispute, we don't have more. The IPCC acknowledges that.

Yet we have the President and top officials repeating that as a justification to hammer the coal industry and driving up costs in our Country.

Attorney General Strange, I had a question I wanted to ask of you. I appreciate your appearance and your fine leadership in the State.

The four EPA Administrators today say we need to act now. Would you also say it is important that we act according to the law and do you believe EPA's proposed existing power plan guidelines are consistent with the law?

Mr. STRANGE. That really is why I am here, not to debate the science or the policy. That is a matter for the scientists and for the members of this committee and members of the U.S. Senate.

My concern is whatever decision EPA makes and whatever policy it decides to implement that it follow the law. I think they failed to do that in this case. I appreciate your introducing for the record the letter from my colleague, Patrick Morrissey, the Attorney General of West Virginia which goes into great detail on the legal infirmities of this proposal as well as the letter from the 17 other AGs, bipartisan group of attorneys around the Country who feel the same way.

Our role is to make sure that whatever the EPA comes up with that it follows the law, respects the State's role in working to achieve the type of environmental regulation the Country decides it wants to have. That is the lane I am in, that is the oath I took and that is the reason I am here today.

Senator SESSIONS. Our staff has done a study on the federalism aspects of EPA. The Clean Air Act establishes a cooperative federalism between States and EPA. Do you think the proposed existing power plan guidelines adhere to the Clean Air Act's process?

Mr. STRANGE. I do not think so, Senator. In a nutshell, I think what the EPA is attempting to do in this case is to regulate at the Federal level, removing almost all the discretion that would normally reside in the States.

In my experience, maybe it was your experience as Attorney General when you preceded me, regulators like to regulate and it is an important role that we attorneys general play to ensure that when they decide to regulate, they stay within the bounds of their authority.

Oftentimes, if you are a regulator and see a problem or perceived problem, you want to regulate and at least in my experience, you naturally try to exert as much authority as you think is there and perhaps more. We think that is what is occurring in this case.

That is why it is so important not only to me in Alabama but to attorneys general across the Country.

Senator WHITESTONE. We will turn now to Senator Boxer for questions. Chairman Boxer, I should say in this room.

Senator BOXER. Thank you so much.

I am going to go rapid fire.

Dr. Mason, when you talk you so remind me of the alarmist that we heard both in the 1970's and the 1990's over the Clean Air Act. Coming from a State that is undergoing a boom in clean energy jobs, I am here to say I am going to send you some of the stats that Hon. Christine Todd Whitman put out because I want to know if you think they are incorrect.

From 1980 to 2012, the total emissions in the U.S. of six common air pollutants dropped by 67 percent, our population grew by 38 percent, our energy consumption increased by 27 percent, and our GDP more than doubled. I checked and this is my statistic that jobs increased 88 percent.

I am going to send that to you for your commentary because again, we have always heard this every time there is an initiative. It always turns out to be completely wrong. The alarmists are wrong.

I also want to ask our four EPA folks to tell me if they agree with this. Senator Sessions and I have a disagreement. He is my friend and we respect each other. We have a disagreement on carbon. He says this is not a pollutant that hurts you but there is an endangerment finding. It was started under George W. Bush and completed under Barack Obama.

Then there as a National Climate Assessment which was required by law every 4 years. Republicans voted for that 100-0 on February 6, 1990. This particular assessment calls out the dangers of carbon pollution and says it is going to increase ozone, increase asthma, increase hospital admissions, quoting directly, "Climate change is projected to harm human health by increasing ground level ozone."

They specifically cite more carbon pollution as increasing global temperatures, increasing premature deaths and worsened ozone particle pollution.

Is there any one of the four of you who has a problem with that analysis? Let the record show they agree with that analysis.

I want to talk to my friend from Alabama and ask you this question. I have great respect for your office and your opinion but isn't it true that Alabama lost all recent major Clean Air Act cases?

Alabama lost its legal challenge to EPA's CRUS, State air pollution rule in the Supreme Court. Alabama lost its legal challenge to EPA's mercury and toxic air rule in the D.C. Circuit in the White Stallion case. Alabama lost its legal challenge to EPA's endangerment finding and light duty vehicle GHG tailpipe standards in the case of Coalition for Responsible Regulation. Isn't that a fact?

Mr. STRANGE. I do not doubt what you are saying, Senator. I do not recall.

Senator BOXER. You do not recall losing those cases?

Mr. STRANGE. I do and I think you are right, yes.

Senator BOXER. I think that is important.

Let me ask a question to Mr. Thomas.

I know you have talked about the impacts in your home State of Florida that you are already seeing. I had the privilege of going in a helicopter over the Miami region. When you see how much water is there, it takes your breath away.

I wonder if you could talk about how local communities in the State of Florida are joining together to address the growing impacts of climate change. Do many of these local actions have bipartisan support?

Let me ask Mr. Thomas this. I only have 58 seconds left.

Mr. THOMAS. Senator, particularly in the south Florida area, Miami area, six counties have basically come together specifically to work on adaptation measures dealing with the problems they are already facing.

As I indicated, salt water intrusion, the drainage systems, how do they deal with today's problem, an average sea level rise of about eight inches which has a significant impact. You are talking about areas that both because of their level above sea level but also because of the terrain and subsurface, basically the limestone and subsurface causes a significant issue in that part of the State.

We see local governments struggling with the issue, spending significant amounts of money and my sense is that is going to be an expanding issue and an expanding problem, particularly in the south Florida area in the near term.

I met with a group in the Miami area, including scientists who participated in the IPCC process. Their concern is what is happening today and how it will be exaggerated over the next 10 years. They are not talking about long term, they are talking about 10 years.

Senator BOXER. Let me close by letting everyone know this. When it comes to environment, we have big differences. When it comes to preparing, we have come together and in the last WRDA bill, I wanted to mention that we have taken steps for our coastal States and also the Sacramento issue, Mr. Reilly, that you mentioned.

Senator WHITEHOUSE. Senator Vitter.

Mr. BOTKIN. May I may a scientific comment?

Senator WHITEHOUSE. It is not in order. This is the time for Senators to ask questions.

Senator Vitter, you are recognized.

Senator VITTER. Thank you, Mr. Chairman.

As I always am in these discussions, I am frustrated again, quite frankly at some of the cartoonist nature of the assertions, going after strawmen instead of having a detailed, serious discussion. I think Senator Boozman's comment and explanation of the 97 percent figure really goes to that.

Ninety-seven percent believe in this consensus about climate change. However, it is defined so broadly that all or virtually all the Republican members of this committee would be among the 97

percent. I hope we can get beyond going after strawmen and having these sorts of cartoonish conversations.

With that theme of science, real science, real discipline in mind, let me start there. Of all of our panelists, who has graduate advanced degrees in the natural sciences? Dr. Botkin, let me ask you, in my opinion one of these areas with cartoonish claims and outlandish claims is about severe weather multiplying every day.

In fact, what is the historical record about the severity and frequency overall of hurricanes, tornadoes, droughts and floods?

Mr. BOTKIN. As you had in past testimony from Roger Pielke, Jr., the analysis shows that these have not increased in terms of major storms. If that is the specific question, there has not been an increase in tornadoes and major storms according to his analysis.

Senator VITTER. I just point that out because that is one of the most common rallying cries about this cartoonish debate, severe weather.

Also, let us talk about real science. We have here obviously a huge issue which is whatever we do, what is the rest of the world doing. These posters just illustrate what China is doing but there are other countries that are a major factor—India, Brazil and so forth.

Dr. Botkin, with this in mind, will the EPA's rule, as currently constructed, have a significant effect on global average temperatures or sea level rise?

Mr. BOTKIN. The scientific analyses show that if the United States acts alone, it will have a very insignificant effect but that does leave open whether this is supposed to be a leadership action or a scientific effective but in terms of the United States acting alone, it will have a very minor effect.

Senator VITTER. Thank you.

Mr. BOTKIN. May I make a comment about sea level rise?

Senator VITTER. Go ahead but be very brief. My time is limited.

Mr. BOTKIN. Most of the comments were about sea level rise. It is well known to geologists, oceanographers and glaciologists that the sea level has been rising since the end of the last ice age, 12,500 years ago. The average estimated rate and measured rate has been a foot a century. That is natural background.

It was mentioned specifically by one of the Senators was that it has risen ten inches in one place since 1930. Actually, that is within that natural background.

Senator VITTER. Doctor, I do not mean to cut you off but this is on my limited time.

Mr. BOTKIN. I just wanted to say that is completely natural.

Senator VITTER. Let us go on to the other big impact we can measure which is economic impact. Dr. Mason, this is not a theoretical discussion. Europe has basically been living this in the last ten plus years and is in the process of essentially reversing course.

A headline from The New York Times reads "Europe Facing Economic Pain May Ease Climate Rules"; the Bloomberg News, "Coal Returns to German Utilities Replacing Low Cost Nuclear"; the Guardian, "Soaring Energy and Housing Costs Force Poorest Homes to Turn to Food Banks"; and the New York Times, "Renewable Energy in Spain Is Taking A Beating." What should we observe and learn about that European experience?

Mr. MASON. I think you have to acknowledge that in terms of the treatment in this medical analogy, prior carbon policy has been the equivalent of medieval blood letting. It has not worked, it is not constraining emissions in world markets and there are two things you have to notice.

First of all, there is already a market developed not only to argue against taking action with respect to carbon; there is a market developed in setting up these financial trading desks that trade carbon, that wants to lobby to undertake this option. It is a very strong and very large industry right now.

There are interest groups pushing for this as a solution that, in fact, will not work.

Senator WHITEHOUSE. Senator Markey.

Senator MARKEY. Thank you, Mr. Chairman.

I want to go to the EPA Administrators. Thank you all so much for your service over the years.

I have a chart here of U.S. GDP since the Great Depression in 1929. President Johnson signed the first Clean Air Act into law in 1963. It was amended in 1970, 1977 and 1990, as indicated on the chart.

I would like a quick answer from each of you. Has GDP, Mr. Ruckelshaus, gone up or down since each of these Clean Air Act laws?

Mr. RUCKELSHAUS. Senator, I am not going to argue with your chart. It has gone up.

Senator MARKEY. Thank you. Governor?

Ms. WHITMAN. I cannot disagree with that. That is a fact.

Senator MARKEY. Thank you.

Mr. REILLY. The Clean Air Act amendments we were responsible for in 1990 were followed by ten record setting years in GDP growth.

Senator MARKEY. Interesting—not a blood letting then, is that what you are saying?

Mr. REILLY. No, I would not say so.

Senator MARKEY. You would not say that. Thank you.

Mr. Thomas.

Mr. THOMAS. I certainly agree with your chart, it has gone up.

Senator MARKEY. Do you think that finding new facts of dealing with climate change can actually create jobs in our economy by unleashing innovation in the marketplace to accomplish that goal, Mr. Ruckelshaus?

Mr. RUCKELSHAUS. There is no question. It will create jobs. It will also have some impact on existing employment.

Ms. WHITMAN. I look on it as not only will it create new jobs in some of the renewable fields and fields we have not even talked about, but we have one industry already that is producing a lot of jobs and can produce a lot more. That is the nuclear energy industry which is a base power which releases none of these greenhouse gases or other regulated pollutants while producing power.

Mr. REILLY. The 1990 amendments created an enormous number of jobs both in natural gas and also in western clean coal.

Mr. THOMAS. I think without question jobs will be created. On the other hand, I think it will impact jobs and I think we have a

responsibility to focus on how we provide assistance to those whose jobs are being impacted.

Senator MARKEY. I would like to move to another example which is the Regional Greenhouse Gas Initiative across the northeast in terms of the impact that has had in reducing greenhouse gases and at the same time overlapping with an economy across the northeast which has continued to grow over those years.

Since the RGGI was put in place, there has actually been a 40 percent reduction in greenhouse gases in those States on average where it was put in place but in addition, it has helped to save consumers money, created jobs, generated over \$750 million in economic value in the State of Massachusetts alone from 2009 to 2013.

Mr. Chairman, I would like to submit all of that economic data for the record.

Senator WHITEHOUSE. Without objection.

[The referenced information follows:]

Economic Benefits of RGGI

June 2013



States participating in the Regional Greenhouse Gas Initiative (RGGI) have gained significant benefits from the program to-date, and far greater benefits will be realized by implementing recently agreed reforms.

Greenhouse gas emissions from power plants in the region have dropped significantly since RGGI was formed. Meanwhile, revenue from auctions of allowances (permits to emit CO₂) has been invested in energy efficiency and other consumer programs that reduce energy costs while increasing economic output and employment. RGGI-funded energy efficiency programs reduce expenditures for fossil fuels imported to generate power, thus making states more competitive while reducing carbon emissions. RGGI states have agreed to program improvements based on the first four years of operation – most importantly the allowance budget (the “cap”) is being reduced to account for long-lasting changes in the electricity sector that have brought emissions to historic lows.ⁱ Implementing these reforms and investing additional RGGI revenue in clean energy and other consumer programs will benefit participating states significantly.

RGGI at a Glance:

- 9 States (MD, DE, NY, CT, RI, MA, VT, NH & ME)
- Applies to CO₂ emitting power plants over 25 MW
- Went into effect Jan 1, 2009
- At quarterly auctions power plants purchase allowances to cover emissions
- Revenue reinvested according to state plans
- Reforms to cap level and other changes take effect in 2014

Benefits To-Date

Tracking RGGI dollars through state reinvestment programs makes it possible to calculate RGGI's impact on member states' economies to-date, taking into account direct effects of projects funded by RGGI, as well as broader impacts from wages and efficiency savings boosting consumer spending throughout the economy. Through June 2013 sales of allowances have generated \$1.4 billion in revenue, which has been reinvested in energy efficiency and other programs that add \$2.4 billion in net value to participating states' economies over 10 years. This increase in growth generates over 23,000 job years of employment across the economy (each job year represents one fulltime job for 1 year).ⁱⁱ

Benefits from a Strengthened RGGI

In order to account for the significant and enduring decline in CO₂ emissions since RGGI began, RGGI states agreed to reduce the oversupply of allowances and reset the cap at current emissions levels (91 million tons). **If states continue invest additional revenue from RGGI according to existing plans, through 2020 RGGI could generate an additional \$3.2 billion in funding and add over \$8 billion in net value and 57,000 job years of employment to state economies.**ⁱⁱⁱ

| | Current RGGI - Benefits To-Date | | | Improved RGGI - Additional Benefits 2013-2020 | | |
|---------------|---------------------------------|----------------------------|---------------------------|---|----------------------------|---------------------------|
| | Funding (\$ millions) | Value Add (\$ millions) | Employment (job years) | Funding (\$ millions) | Value Add (\$ millions) | Employment (job years) |
| Connecticut | \$ 80 | \$ 294 | 2,036 | \$ 225 | \$ 823 | \$ 5,702 |
| Delaware | \$ 38 | \$ 108 | 915 | \$ 137 | \$ 385 | \$ 3,271 |
| Maine | \$ 41 | \$ 140 | 1,398 | \$ 124 | \$ 420 | \$ 4,194 |
| Maryland | \$ 277 | \$ 207 | 2,235 | \$ 655 | \$ 1,655 | \$ 5,294 |
| Massachusetts | \$ 217 | \$ 758 | 5,772 | \$ 567 | \$ 1,981 | \$ 15,083 |
| New Hampshire | \$ 53 | \$ 61 | 735 | \$ 129 | \$ 202 | \$ 1,798 |
| New Jersey* | \$ 125 | \$ 159 | 1,867 | – | – | – |
| New York | \$ 499 | \$ 496 | 7,031 | \$ 1,313 | \$ 2,193 | \$ 18,520 |
| Rhode Island | \$ 22 | \$ 106 | 867 | \$ 57 | \$ 277 | \$ 2,274 |
| Vermont | \$ 10 | \$ 33 | 296 | \$ 26 | \$ 88 | \$ 779 |
| Total | \$ 1,362 | \$ 2,362 | 23,152 | \$ 3,236 | \$ 8,024 | \$ 56,914 |

*New Jersey ceased participation in RGGI and received no funding after 2011

The Role of Energy Efficiency

The majority of auction proceeds across the region are used to support **energy efficiency** programs, which directly benefit consumers in a number of ways:

- First, reduced energy consumption due to efficiency improvements brings down monthly electric bills for participating consumers.
- Second, reduced consumption decreases wholesale electricity prices, delivering additional savings to all consumers.
- Third, reduced demand for electricity brings down emissions from fossil fuel-fired power plants, decreasing the demand for allowances and the overall cost of reducing emissions.

Efficiency investments also create the highest level of **economy-wide benefits** by creating local efficiency-related jobs, by reducing expenditures on imported fossil fuels, and by boosting consumer spending on other goods and services. Direct employment benefits of efficiency programs range from energy service contractors who install insulation and efficient equipment to manufacturers of advanced energy saving technologies. Indirect employment benefits accrue across the economy as the money customers save on monthly energy bills is spent locally, benefitting everyone from bus drivers to bus boys. In New England states every \$1 spent on electric energy efficiency improvements creates \$4.30 to \$6.40 in economic activity.^{iv} While all states accrue net benefits from participation in RGGI, states investing greater proportions of auction proceeds in efficiency derive the greatest benefits.

ENE Contacts:

Peter Shattuck, Director of Market Initiatives, (617) 742-0054 x103, pshattuck@env.ne.org



8 Summer Street, PO Box 585 Rockport, ME 04856 (207) 236-6470
 Boston, MA / Providence, RI / Hartford, CT / Ottawa, ON, Canada
www.env-ne.org / admin@env-ne.org / Daniel L. Sosland, President

Environment Northeast is a nonprofit research and advocacy organization focusing on the Northeastern United States and Eastern Canada. Our mission is to address large-scale environmental challenges that threaten regional ecosystems, human health, or the management of significant natural resources. We use policy analysis, collaborative problem solving, and advocacy to advance the environmental and economic sustainability of the region.

Notes:

ⁱ Recent analysis of RGGI emissions trends and drivers by ENE finds that fuel-switching, non-emitting generation, and efficiency investments have caused emissions to fall ~35% to 45% below the cap since the program began in 2009, and these trends show no sign of reversing. Report available at: <http://www.env-ne.org/resources/detail/rggis-past-and-future-emissions-trends-and-potential-reforms>

ⁱⁱ Calculation of economic benefits in this report draws on economic multipliers from the IMPLAN model, inferred from the 2011 Analysis Group 2011 report *The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States* (available at: <http://www.analysisgroup.com/RGGL.aspx>) and assumes spending of auction revenue according to existing state plans (catalogued in ENE Auction Tracker, at: <http://www.env-ne.org/resources/detail/rggi-auction-tracker>).

ⁱⁱⁱ Estimates of 2013-2020 benefits based on IMPLAN economic multipliers, assuming allowance price of \$3.60/ton in 2014 increasing to \$10.21/ton in 2020 from RGGI states' modeling of 91 million ton cap, at: http://rggi.org/docs/ProgramReview/February11/Results_91_Cap_Alt_Bank_MR.xls.

^{iv} See ENE's *Energy Efficiency: Engine of Economic Growth*, p. 29, at: <http://www.env-ne.org/resources/detail/energy-efficiency-engine-of-economic-growth>.

Senator MARKEY. Governor Whitman, maybe you could talk about that issue, about the job creation aspect of this, especially since it seems to be a core argument here using medieval blood letting terms to describe what the impact is since the States in the RGGI have actually seen economic growth.

Ms. WHITEMAN. I think it is absolutely fair to say that obviously there are going to be jobs that will be impacted with whatever actions we take. That has always been true. When we have an obligation to ensure that we do the best we can for those who will be impacted and find other ways of earning a living and recognize that this is real and people will get hurt.

One of the things you learn as a Governor, as anybody in a position where you have to make decisions, is you cannot make a decision that has an equal impact on everyone. Some people will not see the same benefits as others and may see a down turn. It is your obligation to do what is in the best interest of the greatest number and do everything you can to mitigate the down side for those who will be negatively impacted.

I think we have seen that time and again. We have been able to do that in this Country and been able to increase jobs.

Senator MARKEY. Mr. Thomas, Dr. Botkin has argued for more direct observations of climate variables. You mentioned both sea level rise and an increase in heavy rainfall in your testimony. Sea level rise and rainfall have been measured by scientists for decades. They are not theoretical or models.

What are the impacts of those directly observed changes on your own home State, Mr. Thomas?

Mr. BOTKIN. Excuse me, Senator.

Senator WHITEHOUSE. Could you please allow Mr. Thomas to answer the question he has been asked?

Mr. THOMAS. Senator, as I indicated to Senator Boxer, clearly south Florida particularly is dealing today with sea level rise as it impacts both saltwater intrusion on our coastal areas, impacts our drinking water, draining systems that are critical to the overall well being of many of the coastal communities in south Florida.

Today's sea level rise is indeed an issue in our State just as it is in a number of other States.

Senator MARKEY. I am the son of a milkman so I know that technological change can occur. The invention of refrigerators actually made obsolete delivery of milk each morning. It does not mean there were more milkmen that were created; it meant there was an absence of jobs that were created to revolutionize the way in which that industry operated. We have seen that from the beginning of time and we have to embrace it here. The job creation is obvious.

Thank you, Mr. Chairman.

Senator WHITEHOUSE. Senator Inhofe.

Senator INHOFE. That is pretty good. I enjoyed that.

First of all, let me mention that we keep talking about the Clean Air Act amendments of 1990. I want everyone to know not only did I vote for them, but I was an original co-sponsor of those.

They worked. That was dealing with real pollutants—SOx and NOx. It was never meant to deal with CO2. I think we all understand that. The successes were there. You could actually use that as an argument against going into regulating something that most

of us do not believe is a pollutant, but we will not make that argument.

I think Senator Boozman has pretty much defused the 97 percent. We are going to hear it over and over again but he has pretty well answered that.

I had a question for the three of you but I am going to skip you, Attorney General Strange, because Jeff already asked the question. I have to say this, that Scott Pruitt holds you in the highest regard among all the attorneys general in the United States.

Dr. Botkin, you are the only scientist on this panel. I would like to ask you this. I happened to be in Copenhagen when this whole thing broke. Everything was predicated on the assumption that IPCC was going to be accurate—they were the ones who started this whole thing.

I was there when Climate Gate broke. We all remember that is where they uncovered the IPCC had manipulated reports, covered up errors and made their global warming case stronger than it was.

The way that was kind of covered up in our media here, we have kind of an alarmist bias in our media here but throughout the world, it was not. The UK Telegraph I think is the largest printed publication in the UK. It says, “The Worse Scientific Scandal of Our Generation.” The Financial Times said, “The Stink of Intellectual Corruption Is Overpowering.” The Guardian said, “It Is No Use Pretending That This Isn’t A Major Blow.”

I ask you as a scientist, why do you think there are people who still believe that this science was generated? The reason I am asking this question is because if you go back and look at my website in 2002, you will see I listed not a few but hundreds of scientists who disagreed with the IPCC. Your comments on that?

Mr. BOTKIN. Senator, I have asked myself this question many times because what I do is look at the facts and check all the facts. I found that the IPCC reports are not consistent and are biased. Are you asking me why do so many people believe that?

Senator INHOFE. That is good.

Mr. BOTKIN. I have puzzled about that a great deal. I can say that one of my favorite books is by Charles McCabe published in 1841.

Senator INHOFE. We are running out of time.

Mr. BOTKIN. I do not think there is a scientific answer to why so many people have come to believe this. It has become a popular issue. All I try to do is look at the facts. I have worked very hard to try to determine the effects of this over my career and I feel this data has changed and that it is less of an effect and danger than we thought before. I am surprised and shocked.

Senator VITTER. Dr. Mason, you being the only economist on this panel, let me ask you a question.

Years ago when this first started, a lot of us believed it was true because that was what was supposed to be believed. It happened at that time that I chaired this committee. When I found out they were talking about what the cost would be, if you remember the Wharton Econometric Survey came out, the MIT came out, Charles Rivers came out, and all came to the same conclusion on the cost

of this. We were talking about the cost of cap and trade would be between \$300-\$400 billion a year.

First, I would ask if you agreed with that analysis with them at that time?

Mr. MASON. I have not run the job losses particularly, but I would not be surprised at all by that.

Senator INHOFE. That is the one thing that is pretty consistent. We have not had a lot of people disagree with that. My question would be this. These bills we are talking about, the first was the McCain-Lieberman bill in 2003, then in 2005, the same thing, the Warner-Lieberman and it went on up to Senator Markey, when he was in the House, had a bill, all of them were talking about regulating the emissions of entities that emitted 25,000 tons or more. The Clean Air Act regulates 250 tons or more.

I would ask you as an economist, if it is true that it would be between \$300-\$400 billion a year for the 25,000 tons or more, do you have any idea what it would cost the American people if they were able to successfully regulate this under the Clean Air Act?

Mr. MASON. Orders of magnitude more.

Senator INHOFE. That is a good answer.

Thank you very much.

Senator WHITEHOUSE. Senator Boozman?

Senator BOOZMAN. Thank you, Mr. Chairman.

Professor Mason, in your testimony, you address disparate goals across States. Arkansas is one of the most difficult targets in the Country. You said there will be State level impacts that affect jobs and growth. Would you explain how these impacts can impact opportunities in States like Arkansas and what that will mean for consumers?

Mr. MASON. Very simply, to the extent that consumers in these States derive energy from plants in those States, again, those consumers will pay more for their electricity. This is where things get wonky because you will have cross State effects.

Will Arkansas be able to, for instance, buy emissions from other States to satisfy their emissions? How are we going to control that? What can they buy? Can they buy permits or offsets internationally from Hungary which defrauded investors leading to this market shutdown I cited or other Third World countries that have been known not to even bother to check validity of the permits they are selling on markets leading to this fraud and international problems?

We need to deal with these details. Until we actually sit down and look at these and look at the job losses that are very real—the Fed does this at every meeting when they talk about raising rates. They look at job losses and look at economic output.

I think that we need to look at this with each and every increase in energy cost. Just waving your hands and saying, that will be fine, is another story because we are getting to a level of policy implementation that is orders of magnitude greater than anything we have done before.

To me from my perspective on financial crises, they arise in part because of problems in the market but also scale and magnitude relative to the economic system. We have had lots of little mini securitization crises since 1990. None affected the economy until

we had it happen with mortgages, a big enough product to throw us into recession.

We can do this and we can put the economy at risk but I think we need to think about this real hard before just diving in. This is different.

Senator BOOZMAN. That is why we have a Congress and congressional hearings, to go through all that theoretically and make sure we do it not in haste but get all the intended consequences out on the table.

You mentioned it is like gravity that in order to make something not be used, you have to raise the price or that is a method of doing it. You mentioned the \$30 figure. What would that do to the cost of utilities?

Mr. MASON. RGGI right now is at about \$5, California is at about \$11. It is interesting and those might not have pushed back economic growth but they are not pricing carbon either. They are just adding to the cost of energy with no upside benefit in terms of carbon.

Thirty dollars is definitely going to raise prices further. We have seen 45 percent in the northeast cited today. I would expect prices would go up by orders of magnitude greater than that.

Let me just say that there has been a lot of talk today about leadership in terms of carbon policy. Leadership is not just grabbing this failed system out of the EU or this ineffective system out of RGGI or California and plopping it down nationwide.

Leadership is really thinking more deeply about the implementation of carbon policy and coming up with something better than the rest of the world has put together so far, implementing it and then having the rest of the world follow.

That is why I cited the National Monetary Commission with respect to the Federal Reserve. We did that. We have the best central bank in the world. Like or hate the details of it, we still lead in that throughout the world. I think we owe to our citizens to put together a very thoughtful approach, to put together a meaningful approach to carbon that can actually help the world while also pricing an economic externality that is very real.

Senator BOOZMAN. Thank you very much.

Dr. Botkin, you would be one of the 97 percent that is talked about and certainly you feel like man is contributing and this and that but certainly you are not one that feels like the models are acceptable. I suspect you have many of your cohorts in the same camp.

Mr. BOTKIN. I think the key thing here is that science is not a rule by majority method. That is the important thing. It is discovery.

I would like to quote Jonas Saulk, the inventor of the polio vaccine. He said, "I get into dialog with nature and put the question to nature, not to my colleagues because that is from whence the answer must come." That is what I do. I always look at the data.

Also, Richard Feynman, one of the great 20th Century physicists, said "Science is the belief in the ignorance of experts." To keep saying it is a majority is not a scientific statement and is not correct.

I have spent 50 years working on climate change in a very constructive way. What I can tell you is that since about 1990, the

data has started to move in the other direction away from an important effect by human beings. That is just what the facts show.

Senator BOOZMAN. Thank you very much.

My concern is certainly we need to examine the increased risk of this, but I can tell you there is tremendous increased risk for the men and women sitting back there and the hard working people of Arkansas if we are talking about a 45 percent or much greater probably in our case increase in utility prices.

As far as jobs, we talk a lot about income disparity in this Country, what does that do to working moms, single moms and what does that do to people on fixed incomes?

Again, thank you, Mr. Chair.

Senator WHITEHOUSE. Thank you very much, Senator Boozman.

That will conclude the questioning. Let me just say some final thanks to our witnesses who are here. I appreciate particularly the efforts of the former Administrators. I would ask if Mr. Reilly and Mr. Thomas would answer my question for the record.

The record will be kept open for an additional 2 weeks for anyone who wishes to add material to the record.

I will ask unanimous consent to put in a review of the investigations that were prompted by what is called Climate Gate but I contend is more accurately called Climate Gate Gape. In my view, the scandal was a phony scandal that was whipped up at the expense of a lot of scientific work that was then reviewed I think by six different authorities, including American investigators, independent investigators, university investigators and British investigators, every one of which gave a full clean bill of health to the science.

I think that needs to be a part of the record if members are going to bring up so-called Climate Gate.

[The referenced information was not receive at time of print.]

Senator WHITEHOUSE. There has been some reference to the projections by the Chamber of Commerce as to what this proposed EPA regulation might cost. Some of our colleagues have leapt to cite that report but I think it is important for the hearing that we also include the Washington Post analysis of their claims which earned four Pinocchio's.

Depending on how far you get from the truth, you get more Pinocchio's relating back to the story of Pinocchio, the wooden doll, whose nose would grow when he was not being truthful. I will include the Washington Post four Pinocchio finding about that.

There is also an organization named PolitiFact which analyzes claims made, the political debate and tries to do a very neutral analysis of their accuracy. PolitiFact ruled a false for that report. I think in the interest of fairness, those should be admitted.

I will ask unanimous consent that those two documents be admitted.

[The referenced information was not receive at time of print.]

Senator SESSIONS. Mr. Chairman.

Senator WHITEHOUSE. Senator Sessions.

Senator SESSIONS. Just to wrap up, I thank the panel for your testimony. This is an important issue. I believe Dr. Botkin is correct in saying that actual empirical data is not confirming the projections we have seen so far and a host of other areas. I will be submitting some documents to that effect.

I think it is appropriate for Congress to ask questions. Also, I would just say it is unacceptable that scientists like Dr. Botkin and others are being adversely treated as a result of their statements and scientific research that sometimes contradicts the powers that be.

Thank you.

Senator WHITEHOUSE. You are very welcome. It is always a pleasure to work with my Ranking Member. However much we may disagree on things, he is a very courteous colleague and we always work well together.

I think this was not a hearing on the science. It was a hearing with the experience of previous Administrators. If we were to do a hearing on the science, then I think we would be adding scientists from NOAA, NASA, and the scientists who back our United States defense establishment and a great establishment of scientists, every major scientific organization in the Country.

Perhaps Dr. Botkin is right and they are all wrong but I am not sure that would be the prudent course for our Country.

Thank you all very much.

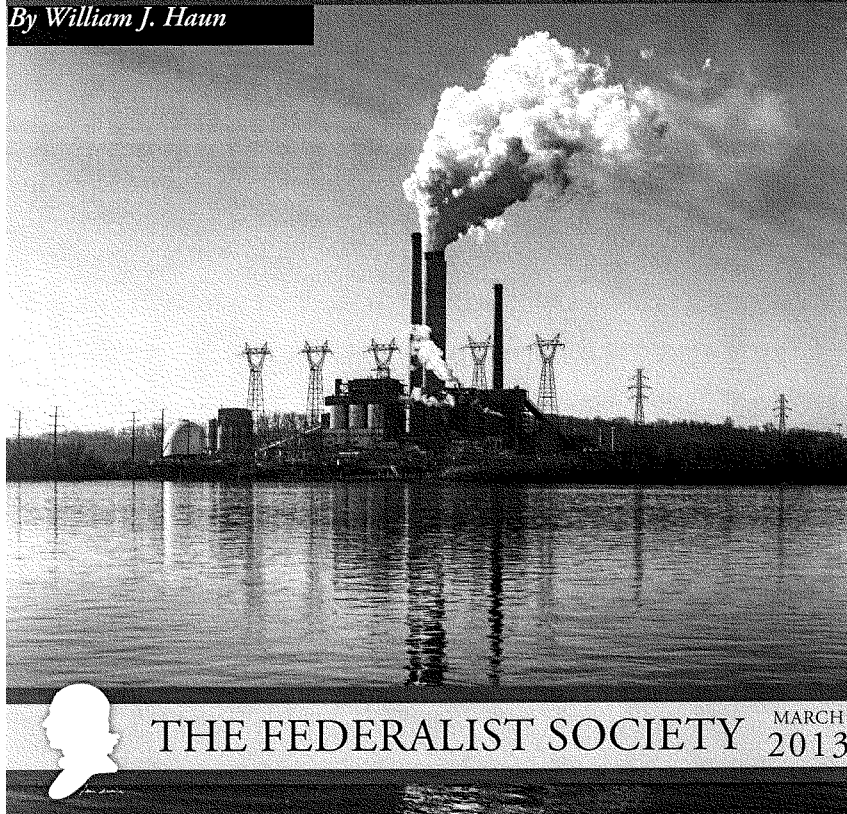
We are adjourned.

[Whereupon, at 12:29 p.m., the subcommittee was adjourned.]

[Additional material submitted for the record follows.]

THE CLEAN AIR ACT AS AN OBSTACLE
TO THE ENVIRONMENTAL PROTECTION
AGENCY'S ANTICIPATED ATTEMPT TO
REGULATE GREENHOUSE GAS EMISSIONS
FROM EXISTING POWER PLANTS

By William J. Haun



THE FEDERALIST SOCIETY

MARCH
2013

ABOUT THE FEDERALIST SOCIETY

The Federalist Society for Law and Public Policy Studies is an organization of 40,000 lawyers, law students, scholars and other individuals located in every state and law school in the nation who are interested in the current state of the legal order. The Federalist Society takes no position on particular legal or public policy questions, but is founded on the principles that the state exists to preserve freedom, that the separation of governmental powers is central to our constitution and that it is emphatically the province and duty of the judiciary to say what the law is, not what it should be.

The Federalist Society takes seriously its responsibility as a non-partisan institution engaged in fostering a serious dialogue about legal issues in the public square. We occasionally produce “white papers” on timely and contentious issues in the legal or public policy world, in an effort to widen understanding of the facts and principles involved and to continue that dialogue.

Positions taken on specific issues in publications, however, are those of the author, and not reflective of an organization stance. This paper presents a number of important issues, and is part of an ongoing conversation. We invite readers to share their responses, thoughts, and criticisms by writing to us at info@fed-soc.org, and, if requested, we will consider posting or airing those perspectives as well. To that end, we offer links below presenting different perspectives on this issue.

For more information about the Federalist Society, please visit our website: www.fed-soc.org.

RELATED LINKS ON THE TOPIC FROM A SHARPLY DIFFERENT PERSPECTIVE

GREGORY E. WANNIER ET AL., COLUMBIA LAW SCHOOL CENTER FOR CLIMATE CHANGE LAW, PREVAILING ACADEMIC VIEW ON COMPLIANCE FLEXIBILITY UNDER § 111 OF THE CLEAN AIR ACT (2011): http://www.law.columbia.edu/null/download?&exclusive=filemgr.download&file_id=60994

Jonas Monast et al., *Regulating Greenhouse Gas Emissions From Existing Sources: Section 111(d) and State Equivalency*, 42 ENV. L. REP. 10206 (2012): <http://www.eli.org/pdf/seminars/02.13.13telecon/RegulatingGHGFromExistingSources.pdf>

M. Rhead Enion, *Using Section 111 of the Clean Air Act for Cap-and-Trade of Greenhouse Gas Emissions: Obstacles and Solutions*, 30 UCLA J. ENV. L. & POL'Y 1 (2012): http://www2.law.ucla.edu/jelp/JELP/Publications/Entries/2012/4/16_Volume_30_Issue_1_files/Enion.pdf

Jake Caldwell, Center for American Progress, EPA and Greenhouse Gases 101: Why the Agency Needs to be Allowed to Reduce Carbon Pollution (Feb. 2011): <http://www.americanprogress.org/issues/green/news/2011/02/02/9121/epa-and-greenhouse-gases-101/>

ABOUT THE AUTHOR

William J. Haun is a Federal Law Clerk in Washington, D.C. The views expressed in this paper are his own.

THE CLEAN AIR ACT AS
AN OBSTACLE TO THE
ENVIRONMENTAL PROTECTION
AGENCY'S ANTICIPATED ATTEMPT
TO REGULATE GREENHOUSE
GAS EMISSIONS FROM EXISTING
POWER PLANTS



William J. Haun

Executive Summary

For roughly two decades, the U.S. Congress has possessed a bipartisan consensus on the regulation of greenhouse gases from industrial sources: It is best to let sleeping dogs lie.¹ Both Democrats and Republicans cited a variety of practical problems that would prevent the Environmental Protection Agency (“EPA” or the “Agency”) from using the Clean Air Act (“CAA”)—the awkward basis for current greenhouse gas regulation—to regulate emissions from existing “stationary sources” of energy.² Nevertheless, President Obama maintains that “America cannot resist this transition,”³ and the EPA is thus expected to take a step that many believe has not merely prudential, but also legal, problems: to reinterpret Section 111(d), a provision of the CAA previously limited to existing-source emissions of discrete and relatively rare substances, to reach ubiquitous greenhouse gases.⁴

Since the Supreme Court’s 2007 decision in *Massachusetts v. EPA*, the EPA has begun regulating greenhouse gases under various provisions in the Act, including by prescribing fuel-efficiency standards for motor vehicles and by requiring control technology

1 Since the Clean Air Act’s 1990 amendments, the U.S. Congress abandoned a variety of attempts to address greenhouse gas (“GHG”) emissions through new legislation. They include, but are by no means limited to, the American Clean Energy and Security Act of 2009, America’s Climate Security Act of 2007, and the 2003 and 2005 Climate Stewardship Acts.

2 For instance, Rep. John Dingell (D-MI) has warned that using the EPA to regulate carbon dioxide emissions could result in a “glorious mess.” See Chris Holly, *Dingell: EPA Climate Regulation Would Lead To ‘Glorious Mess,’ The Energy Daily (IHS)*, Apr. 11, 2008, available at http://www.theenergydaily.com/coal/Dingell-EPA-Climate-Regulation-Would-Lead-To-Glorious-Mess_672.html; see also George F. Allen & Marlo Lewis, *Finding the Proper Forum for Regulation of U.S. Greenhouse Gas Emissions: The Legal and Economic Implications of Massachusetts v. EPA*, 44 U. RICH. L. REV. 919, 920 (2010) (arguing “that for economic, legal, and prudential reasons, the CAA is an unsuitable instrument for addressing [greenhouse gas] emissions in the United States”).

3 *Inaugural Address by President Barack Obama*, Jan. 21, 2013, available at <http://www.whitehouse.gov/the-press-office/2013/01/21/inaugural-address-president-barack-obama>.

4 See 77 Fed. Reg. at 22,421-27 (repeatedly announcing EPA’s intention to promulgate existing-source greenhouse gas standards under 111(d) “at the appropriate time”).

for greenhouse gas emissions in some preconstruction permits. Outside environmental groups took advantage of the new uncertainty in how far the EPA could go in regulating greenhouse gases by suing the Agency in 2008. The EPA settled the case in 2010, promising regulation different from past actions: mandating emission reductions from *existing* stationary sources of greenhouse gases,⁵ the very subject that has bedeviled Congress for years. Without any new authority from Congress, the EPA is undertaking this new regulatory mission. The EPA, for its part, denies that its interpretation is a stretch, asserting in a 2008 Advance Notice of Proposed Rulemaking (“ANPR”) that cap-and-trade is a permissible form of 111(d) regulation.⁶ However, there are very strong arguments that the EPA’s current interpretation of Section 111(d) is at odds with the controlling statutory language and dilutes that language to fit the Agency’s regulatory aims.⁷

The EPA’s approach here, on this view, amounts not simply to circumventing the democratic process, but a depreciation of the practical problems this new regulation will pose—problems that the democratic process could address. In the 2008 ANPR, the Department of Energy (among others) noted the “burdensome and intrusive regulatory mechanism unlike any seen before” in the EPA’s likely course.⁸ The potential breadth of the EPA’s efforts may require it to re-construct Section 111(d) to avoid issuing permits and ensuring compliance for all sizes of “stationary sources,” which it has already had to do in its Prevention of Significant Deterioration (PSD) permit program.⁹

5 See Boiler GHG Settlement, Dec. 21, 2010, available at <http://www.epa.gov/airquality/cps/pdfs/boilerghgsettlement.pdf>; see also Refinery GHG Settlement, Dec. 21, 2010, available at <http://www.epa.gov/airquality/cps/pdfs/refineryghgsettlement.pdf>.

6 See 73 Fed. Reg. 44,354 (July 30, 2008).

7 See Part II.C *infra*.

8 73 Fed. Reg. at 44,368 (Comments of the U.S. Dept’t of Energy).

9 See Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010). The rule sets emissions thresholds for regulation of greenhouse gas emissions. The EPA retains these thresholds (and, in some ways, supplements their measurements) so as to hone in on the largest greenhouse gas emitters. See 77 Fed. Reg.

While the Obama Administration has not yet proposed standards for existing power plants, such a move is expected within the year. With the prospect of imminent action, and growing political pressure to coerce unwilling states into unprecedented greenhouse gas regulation,¹⁰ whether the EPA has the authority to take these actions must be explored.

This paper concludes that it does not: In amending Section 111(d) in the Clean Air Act Amendments of 1990, Congress unambiguously provided that the subsection could not be used to set standards for industries that are also regulated under the Clean Air Act's Section 112 air toxics program. Because existing power plants have been regulated under that program since the 2012 Utility maximum achievable control technology ("MACT") Rule,¹¹ the EPA may not lawfully regulate them under Section 111(d).

The EPA has disputed this limitation since 2005, when it sought to use cap-and-trade to regulate mercury emissions.¹² Some legal commentators have argued that

41,051 (July 12, 2012). Nevertheless, expanding the targetable sources of greenhouse gas emitters raises similar questions of how far the EPA could credibly tailor its permitting and still see meaningful greenhouse gas reduction—especially if such tailoring is informed by prioritizing administration and compliance costs over greenhouse gas reduction. *Cf. supra* note 8.

¹⁰ See, e.g., Daniel A. Lashof, Starla Yeh, David Doniger, Sheryl Carter & Laurie Johnson, *Closing the Power Plant Carbon Pollution Loophole: Smart Ways the Clean Air Act Can Clean Up America's Biggest Climate Polluters*, NATURAL RES. DEF. COUNCIL (Dec. 2012), available at <http://www.nrdc.org/air/pollution-standards/files/pollution-standards-report.pdf>.

¹¹ National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 77 Fed. Reg. 9,304 (Feb. 16, 2012).

¹² On March 15, 2005, the EPA issued the "Clean Air Mercury Rule" that provided for the capping and reduction of mercury emissions from coal-powered plants. As mercury was listed as a "hazardous air pollutant" ("HAP") under Section 112 of the Act, the EPA needed to delist mercury from Section 112 to reach it under Section 111(d), as discussed *infra*. See also Final Brief of Respondent Envtl. Prot. Agency, *New Jersey v. EPA*, 517 F.3d 574, 583 (D.C. Cir. 2008), 2007 WL 3231264, at *101-02 (explaining that the 1990 CAA amendments provide language prohibiting a Section 112 HAP from being regulated

cap-and-trade is within the province of EPA's regulatory authority.¹³ But they do not address whether *Congress actually delegated* to the EPA authority to construe Section 111(d) to regulate greenhouse gas emissions of existing stationary sources. While the U.S. Court of Appeals for the D.C. Circuit vacated the EPA's reformulation of power plant regulation on procedural grounds, it did not address the problems posed by the EPA's interpretation of Section 111(d).¹⁴

This paper will explore the EPA's anticipated efforts to interpret its own authority to reach the goal of regulating of greenhouse gas emissions from existing stationary sources. This initiative raises serious questions of statutory interpretation, practical implementation, and the legitimacy of an administrative agency taking action without delegated authority from Congress. At the outset, a brief history of the EPA's efforts to regulate greenhouse gas, and an outline of what cap-and-trade regulation would look like under Section 111(d), are required to grasp how the statute works.

I. A BRIEF HISTORY OF THE CLEAN AIR ACT AND GREENHOUSE GAS REGULATION

A. *Greenhouse Gas Regulation Before Massachusetts v. EPA*

The Clean Air Act Amendments of 1970¹⁵ essentially established the modern Clean Air Act. The 1970 Amendments built on 1950s and 1960s legislation addressing air pollution, but expanded the

under Section 111(d) as an existing source). This delisting, vacated on procedural grounds, 517 F.3d at 583, allowed the EPA to fashion a construction of 111(d)'s language that would permit cap-and-trade regulation of existing stationary sources—a position the EPA still maintains. See *supra* note 6; see also 73 Fed. Reg. at 44,495 n.253 (noting that "many sources may be subject to standards under both section 111 and 112; however these standards establish requirements for the control of different pollutants."). This is the EPA's current interpretation, though as discussed *infra* it must be an incorrect construction because it dilutes the effect of the U.S. Senate's amended language and renders the House's language a nullity.

¹³ See, e.g., M. Rhead Enion, *Using Section 111 of the Clean Air Act for Cap-and-Trade of Greenhouse Gas Emissions: Obstacles and Solutions*, 30 UCLA J. ENVTL. L. & POL'Y 1, 34-45 (2012).

¹⁴ See Part II.C *infra*.

¹⁵ Pub. L. 91-604.

scope of federal authority in this area to such an extent that they are recognized as the true beginning of the modern regime.

The starting point for understanding the Clean Air Act is the principle of cooperative federalism.¹⁶ The Act “establishes a partnership between EPA and the states for the attainment and maintenance of national air quality goals.”¹⁷ “[A]ir pollution prevention . . . and air pollution control at its source is the *primary* responsibility of States and local governments[.]”¹⁸ Stationary sources—for example, power plants—are therefore primarily regulated through state-specific implementation of general federal guidelines, formulated and implemented by the states, with the EPA playing an oversight role after its promulgation of initial guidelines. By contrast, mobile sources—“planes, trains, and automobiles”—are subject to more direct federal regulation, for example in the form of fuel quality standards.

The Clean Air Act accordingly divides national policy into two primary titles: Title I for control of stationary sources of pollution,¹⁹ and Title II for control of mobile sources of pollution.²⁰ The fundamental control program in Title I of the Act is the national ambient air quality standards (“NAAQS”) program, which sets air quality standards at the level “requisite to protect the public health.”²¹ Because every stationary source of air pollution is local, and decisions about what sources are economically and environmentally desirable implicate state and local concerns, the NAAQS are primarily implemented through state implementation plans. In this regard, Congress “carefully balanced State and national interests by providing for a fair and open process in which State and local governments

16 See generally John P. Dwyer, *The Practice of Federalism Under the Clean Air Act*, 54 *Md. L. Rev.* 1183 (1995).

17 *Natural Res. Def. Council, Inc. v. Browner*, 57 F.3d 1122, 1123 (D.C. Cir. 1995).

18 42 U.S.C. § 7401(a)(3) (emphasis added).

19 42 U.S.C. §§ 7401-7515.

20 42 U.S.C. §§ 7521-7590.

21 42 U.S.C. § 7409(b)(1). This is the level for primary standards; secondary standards are to be set at the level “requisite to protect the public welfare,” *id.* § 7409 (b)(2).

and the people they represent will be free to carry out the reasoned weighing of environmental and economic goals and needs.”²²

Title I of the Act also includes several other major regulatory programs for stationary sources. For the control of hazardous air pollutants (“HAPs”), Section 112 of the Act provides for the establishment of National Emissions Standards for Hazardous Air Pollutants (“NESHAPs”).²³ Section 112 mandates that the EPA regulate most, but not all, emitters of 189 listed hazardous air pollutants.²⁴

Additionally, Title I provides for New Source Performance Standards (NSPS) in Section 111. These NSPS regulate emissions from newly constructed or substantially modified stationary sources without reference to existing local air quality.²⁵ Although the bulk of Section 111 concerns emissions standards for new sources, subsection 111(d) provides the EPA with authority to set standards for certain categories of existing sources. This authority is subject, however, to significant limitations, the details of which are addressed in the bulk of this paper.

B. Massachusetts v. EPA Introduces Greenhouse Gas Regulation to the CAA

For the first three and a half decades of the Act’s existence, it was used to control the emission of substances that directly injure public health and welfare—e.g., those that aggravate asthma, damage crops, or reduce visibility. In 2006, the EPA issued a

22 H.R. Rep. No. 95-294, at 146 (May 12, 1977), reprinted in 1977 U.S.C.C.A.N. 1077, 1225.

23 This program is governed under 42 U.S.C. § 7412. Where a source category is regulated under Section 112, emissions standards for major sources are set at “the maximum degree of reduction in emissions . . . achievable.” 42 U.S.C. § 7412(d)(2). This “MACT” (Maximum Achievable Control Technology) standard has become common parlance for the Act’s Section 112 air toxics program.

24 The list is codified at 42 U.S.C. § 7412(b)(1), with revision governed by (b)(2)-(3).

25 42 U.S.C. § 7411; 40 C.F.R. Part 60. Under this section, the Administrator is directed to publish a list of categories of all stationary sources which “in his judgment . . . cause[], or contribute[] significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” 42 U.S.C. § 7411(b)(1)(A).

final rule setting performance standards for the emission of certain substances from existing power plants.²⁶ Greenhouse gases were not among them.²⁷ A coalition of petitioners—comprised of three environmental groups (the Natural Resources Defense Council, the Sierra Club, and the Environmental Defense Fund), eleven states (NY, CA, CT, DE, MA, ME, NM, OR, RI, VT, WA), the District of Columbia, and the City of New York—challenged the EPA’s rulemaking on several grounds in the United States Court of Appeals for the District of Columbia Circuit.²⁸ One of their complaints was the argument that the Clean Air Act obligated the EPA to set standards for greenhouse gas emissions.

In September 2006, the portions of the challenge relating to greenhouse gas emissions were severed from the other challenges and held in abeyance pending the Supreme Court’s decision in *Massachusetts v. EPA*.²⁹ The Court held in 2007 that greenhouse gases fit within the Act’s expansive definition of “air pollutant.”³⁰ Although the opinion directly concerns the emission of greenhouse gases from motor vehicles under Title II, since 2007 *Massachusetts* has “spurred a cascading series of greenhouse gas-related rules and regulations,”³¹ most notably in the Act’s preconstruction permitting program for major stationary sources, such as many power plants and factories. Following the Supreme Court’s decision, the D.C. Circuit remanded the power plant challenge to the EPA for further proceedings.

Rather than set its own regulatory agenda, the EPA chose to settle. In December 2010, the EPA entered into a settlement agreement that required it to set standards for greenhouse gas emissions under 111(b) for new and modified power plants and 111(d)

26 71 Fed. Reg. 9,866 (Feb. 27, 2006).

27 See *id.* at 9,869 (noting commenters’ argument that EPA was required to set standards for greenhouse gas emissions but concluding that Agency “does not presently have the authority to set [New Source Performance Standards] to regulate CO₂ or other greenhouse gases that contribute to global climate change”).

28 See *New York v. EPA*, No. 06-1322 (D.C. Cir. 2007).

29 549 U.S. 497.

30 *Id.* at 528-29.

31 *Coal. for Responsible Regulation, Inc. v. EPA*, 684 F.3d 102, 114 (D.C. Cir. 2012) (per curiam).

for existing power plants by July 26, 2011. It further undertook to establish final rules following public comment, first for new and then for existing plants, by May 26, 2012.³² The settlement agreement itself announces that the EPA has initially determined “that there are cost-effective control strategies for reducing” greenhouse gas emissions from power plants and that “it would be appropriate for it to concurrently propose performance standards for [greenhouse gas] emissions from new and modified [plants] under [Clean Air Act] section 111(b) . . . and . . . from existing [plants] pursuant to [Clean Air Act] section 111(d)[.]” Unlike other regulatory actions, this settlement agreement was not subject to public notice or comment, and there is therefore no record showing that the Agency’s leadership seriously analyzed its legal authority to carry out the settlement. In these respects and others, the settlement appears to be a typical example of “sue and settle” regulation, under which the EPA settles actions—often under a consent decree but sometimes, as in this case, by voluntary settlement without judicial approval—in a way that binds it to significant regulatory commitments without appropriate input from Congress, other federal agencies, and other stakeholders.³³ Resources for the

32 See *Boiler GHG Settlement*, Dec. 21, 2010, available at <http://www.epa.gov/airquality/cps/pdfs/boilerghgsettlement.pdf>. The Refinery schedule for new EPA rules was slightly different, giving the EPA until December 10, 2011 to sign new GHG rules, and until November 10, 2012 to establish a final rule after soliciting public comment by. See *Refinery GHG Settlement*, Dec. 21, 2010, available at <http://www.epa.gov/airquality/cps/pdfs/refineryghgsettlement.pdf>.

33 See, e.g., Testimony of Roger R. Martella, Jr., Hearing of the Courts, Commercial and Administrative Law Subcommittee of the House Judiciary Committee, “Federal Consent Decree Fairness Act, and the Sunshine for Regulatory Decrees and Settlements Act of 2012” (Feb. 3, 2012) (“[I]n December of 2010 EPA announced a consent decree with several groups committing the agency to propose and finalize the first-ever new source performance standards for greenhouse gases without any prior input from the affected stakeholders.”); Testimony of Andrew M. Grossman, *id.*, “The Use and Abuse of Consent Decrees in Federal Rulemaking” (observing generally that “consent decrees (and in some instances, settlement agreements) that bind the federal government to undertake particular future actions present special risks and concerns that are simply not present in litigation between private parties” and that “[w]hen, for reasons of convenience or advantage, public officials attempt

Future observed that the EPA's settlement agreement was "hard to describe as anything other than a victory for the states and environmental plaintiffs."³⁴

C. The Use of "Performance Standards" to Regulate Greenhouse Gas Emissions

The EPA's prior attempt to regulate mercury emissions through cap-and-trade highlights how Section 111(d) would theoretically handle a cap-and-trade scheme.³⁵ Yet Section 111(d)'s characteristics also reveal the scheme's fatal flaws in the context of greenhouse gases and existing stationary sources.

Section 111(d) does not provide for cap-and-trade explicitly, but the EPA would likely consider it a "system of emission reduction," an open-ended term within Section 111.³⁶ Under Section 111(d), a state would theoretically implement cap-and-trade as part of its "standards of performance for any existing source for any air pollutant" that other CAA sections do not classify as criteria pollutants or HAPs.³⁷

The Clean Air Act is an awkward tool with which to regulate greenhouse gases. The greenhouse gas of primary concern is carbon dioxide, which is not an exotic compound produced in a few industrial processes, but is inevitably produced by the combustion of coal, gas or any other fossil fuel. The EPA has (correctly) refrained from suggesting that greenhouse gases³⁸ are

to make policy in private sessions between government officials and (as is often the case) activist groups' attorneys, it is the public interest that often suffers" because it "may not have a seat at the table as the agency reorganizes its agenda by committing to take particular regulatory actions at particular times"). For "sue and settle" tactics generally, see "EPA's New Regulatory Front: Regional Haze and the Takeover of State Programs," U.S. Chamber of Commerce (July 3, 2012).

³⁴ Nathan Richardson, EPA Greenhouse Gas Performance Standards: What the Settlement Agreement Means, Issue Brief 11-02, Feb. 2011, available at www.rff.org/RFF/Documents/RFF-IB-11-02.pdf.

³⁵ *Cf. supra* note 12.

³⁶ 42 U.S.C. § 7411(a)(1).

³⁷ *Id.* § 7411(d)(1)(a).

³⁸ The EPA has defined greenhouse gases, for purposes of its regulatory activities, as carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Prevention of Significant Deterioration and Title V Greenhouse

criteria pollutants subject to the NAAQS regime, or classifying them as hazardous air pollutants subject to the NESHAP regime. In light of the December 2010 settlement, it seems unlikely that the EPA will attempt to fit the square peg of greenhouse gases into the Act's round holes through any other means than "performance standards" under Section 111.³⁹

In 2012, as required by the settlement agreement, the EPA proposed standards for new plants under Section 111(b) of the Act.⁴⁰ The EPA has not yet proposed standards for *existing* plants, but given President Obama's insistence, is widely anticipated to do so in the near future. In doing so, the Agency will likely assert that it has authority under Section 111(d) of the Act. Part II of this paper explains why this assertion is incorrect.

II. SECTION 111(D) DOES NOT AUTHORIZE PERFORMANCE STANDARDS FOR EXISTING POWER PLANTS

While the EPA asserted in a 2008 Advance Notice of Proposed Rulemaking that cap-and-trade is a permissible form of 111(d) regulation,⁴¹ it will likely rely on its December 2010 settlement as the impetus for any new rules in this regard. Reliance upon the settlement, from the EPA's perspective, affords it the path of least resistance—the EPA will argue that it is

Gas Tailoring Rule, 75 Fed. Reg. 31,514, at 31,519 (June 3, 2010).

³⁹ See Richardson, *supra* note 34, at 9 (footnote omitted):

The agency is unlikely to pursue existing-source GHG regulation under other CAA programs. Issuing a GHG NAAQS is no longer a plausible option, if it ever was. A NAAQS would supersede GHG ESPS. The agency would not spend scarce administrative resources devising an ESPS regulatory program only to junk it in favor of something else. § 115 regulation is similarly unlikely, though it is not mutually exclusive with ESPS. The settlement agreement also reflects a consensus among the agency, many states, and key environmental groups on using the § 111 performance standards pathway for GHGs.

Id. at 9.

⁴⁰ Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22,392 (Apr. 13, 2012).

⁴¹ See *supra* note 6.

legally bound to carry out its settlement bargain, lest a court order force it to do so, and is thus immune from “political” concerns over cap-and-trade. Yet this would leave important statutory and separation of powers questions unaddressed.

The EPA’s 2010 settlement committed the Agency to rulemaking on a matter that the Congress has repeatedly (and explicitly) failed to address: regulating greenhouse gas emissions from existing stationary energy sources. The EPA cannot bargain with authority it never possessed. It cannot commit itself to doing something it has no power to do. In short, the EPA will use the color of one branch’s authority (the judiciary) to sidestep lacking authority from another branch (the legislature) in an effort to inflate the power of its own branch (the executive). As this transgression of separated powers is rather obvious, the EPA will claim instead that Section 111(d) *already* allows the Agency to craft performance standards for existing stationary sources.

But a close analysis of the text of Section 111(d) suggests the EPA misreads its authority. In the 1990 Amendments, Congress expressly barred the EPA from setting Section 111(d) standards for source categories—like power plants—that are regulated under the Act’s Section 112 air toxics program.

A. *The History of Section 111(d)*

The history of Section 111(d) is critical to understanding how and why Congress barred the EPA from duplicative regulation of sources under Sections 111(d) and 112. As originally enacted in 1970, subsection (d)(1) read as follows:

The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 110⁴² under which each State shall submit to the Administrator a plan which (A) establishes emission standards for any existing source for any air pollutant (i) for which air quality criteria have not been issued *or which is*

⁴² As codified at 42 U.S.C. § 7410, this section provides a two-stage process: (1) The EPA promulgates national standards; (2) states then submit implementation plans for EPA approval. This assignment of primary responsibility for implementation to the states is in keeping with Congress’s finding that “air pollution control at its source is the primary responsibility of States and local governments.” 42 U.S.C. § 7401(a)(3).

not included on a list published under section 108(a) or 112(b)(1)(A) but (ii) to which a standard of performance under subsection (b) would apply if such existing source were a new source, and (B) provides for the implementation and enforcement of such emission standards.⁴³

Accordingly, under the version of this subsection enacted in 1970, the EPA is precluded from using the 111(d) program to set standards for pollutants already regulated under either section 108 (the “criteria pollutants” of the NAAQS regime) or section 112 (the list of “hazardous air pollutants” or HAPs).

In 1990, Congress amended Section 111(d) as part of the Clean Air Act Amendments of 1990. As presented in the current version of the United States Code, 42 U.S.C. § 7411(d)(1) provides that:

The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan which (A) establishes standards of performance⁴⁴ for any *existing source* for any air pollutant (i) for which air criteria have not been issued or which is not included on a list published under section 7408(a) of this title *or emitted from a source category which is regulated under section 7412 of this title*.[.]

(Emphases added.) The substitution of “or 112(b)(1)(A)” with “or emitted from a source category which is regulated under section 7412 of this title” originated in the House of Representatives’ version of the Amendments. Importantly, it alters the focus of the limitations on the EPA’s authority to regulate existing sources of air pollutants under Section 111. From its creation in 1970 until its amendment in 1990, this portion of the Act spoke only in terms of *pollutants* whose emission from existing sources fell outside the scope of Section 111(d)—i.e., those pollutants already subject to regulation under Sections 108 and 112 (the NAAQS and NESHAP regimes). The current text of

⁴³ Pub. L. 91-604 § 4(a); 84 Stat. 1684 (emphasis added).

⁴⁴ In 1977, Section 111(d)(1) was amended to replace “emission standards” (the 1970 language) with “standards of performance.” Pub. L. 95-95 § 109(b)(1); 91 Stat. 699.

the Code keeps the focus on pollutants already regulated under Section 108, but for the first time expands the “carve-out” from 111(d) regulatory authority to include *sources*—i.e., those sources regulated under Section 112. On its face, therefore, Section 111(d) as reflected in the current Code does not provide the EPA with authority to establish performance standards for greenhouse gas emissions from existing power plants, since that source category *is* “regulated under section 7412” of Title 42.⁴⁵

In addition to the amendments to Section 111(d) that are set forth in the U.S. Code, Congress also included a separate conforming amendment striking the term “112(b)(1)(A)” and inserting “112(b).” This provision, which originated in the Senate, maintained Section 111(d)’s preexisting limitation on duplicative regulation of pollutants that are regulated under the Section 112 air toxics program by striking 111(d)(1)’s reference to the former Section 112(b)(1)(A) and replacing it with a reference to that section’s current equivalent.

The bill as signed by President George H.W. Bush contained both amendments, each surrounded by brackets, with this footnote: “The amendments . . . appear to be duplicative; both, in different language, change the reference to section 112.”⁴⁶ The codifier’s notes to the executed law state that the Senate amendment “could not be executed,” which is why the Code presents only the House version.⁴⁷ Neither of these views of the amendments is correct.

B. The 1990 Amendments Plainly Preclude Regulating Power Plants Under 111(d)

A fundamental principle of statutory interpretation is that courts should, to the extent possible, give effect to a law in its entirety.⁴⁸ Chief Justice John Marshall made

45 40 C.F.R. Part 63 Subpart UUUUU; 77 Fed. Reg. at 9,464.

46 1 Legislative History of the Clean Air Act Amendments of 1990 (“Legislative History”), at 46.

47 See 70 Fed. Reg. at 16,030.

48 See, e.g., *United States v. Menasche*, 348 U.S. 528, 538-39 (1955) (“The cardinal principal of statutory interpretation is to save and not to destroy. It is our duty to give effect, if possible, to every clause and word of a statute[.]” (internal quotation marks omitted)).

the point well: “It would be dangerous in the extreme, to infer from extrinsic circumstances, that a case for which the words of an instrument expressly provide, shall be exempted from its operation.”⁴⁹ Supplementing this principle is another: Statutes should be construed according to the plain meaning of their text where that meaning is unambiguous.⁵⁰ When Section 111(d) is examined, it is clear that its language precludes the regulation of existing stationary sources (such as power plants) for greenhouse gas emissions.

Prior to 1990, the relevant portion of Section 111(d) read: “The Administrator shall prescribe regulations which shall establish a procedure . . . under which each state shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant . . . which is not included on a list published under section 7408(a) or 112(b)(1)(A) of this title[.]” (Emphasis added.) The House amendment struck the italicized portion (including the “or”) and replaced it with “or emitted from a source category which is regulated under section 112.” The Senate amendment also struck the reference to 112(b)(1)(A)—but did not strike the “or”—and replaced it with a reference to 112(b).

As such, the correct plain language of Section 111(d) from the Statutes at Large is that the EPA is prohibited from regulating

any air pollutant . . . which is not included on a list published under section 7408(a) or 112(b) [Senate amendment] or emitted from a source category which is regulated under section 112 [House amendment] of this title[.]

49 *Sturges v. Crowninshield*, 17 U.S. (4 Wheat.) 122, 202 (1819).

50 See, e.g., *United States v. Braxtonbrown-Smith*, 278 F.3d 1348, 1352 (D.C. Cir. 2002) (“In construing a statute, the court begins with the plain language of the statute. Where the language is clear, that is the end of the judicial inquiry in all but the most extraordinary circumstances.” (citation omitted) (internal quotation marks omitted)); *Tyler v. Douglas*, 280 F.3d 116, 122 (2d Cir. 2001) (“In determining the proper interpretation of a statute, [a] court will look first to the plain language of a statute and interpret it by its ordinary, common meaning. If the statutory terms are unambiguous, . . . review generally ends and the statute is construed according to the plain meaning of its words.” (internal quotation marks omitted)).

(Emphases added.) This reading, which fully enacts both amendments, is the correct and valid law. Although it is not reflected in the current text of the United States Code, the Code is only prima facie evidence of the law. Where the Code and the Statutes at Large conflict, the latter must prevail.⁵¹ Here, the text of the Statutes at Large contains both amendments.⁵² Moreover, this text of the amendments is the only one that is consistent with Congress's intent in enacting both provisions.⁵³

This reading evinces that the two amendments to Section 111(d) place *different* limitations on the scope of EPA's authority; these limitations are motivated by different purposes, address different aspects of EPA's regulatory authority elsewhere in the Act, and are entirely capable of co-existing. As such, statutory construction compels they be read compatibly.⁵⁴

In enacting the House amendment, Congress added a limitation on the reach of 111(d): where a *category of sources* is being regulated under Section 112, Section 111(d) cannot be used to impose additional performance standards on that source category. The purpose of the House amendment is clear. In the 1990 Amendments, Congress changed the broader way that Section 112 operated, switching from a risk-based model to a technology-based one.⁵⁵ Under

51 *Stephan v. United States*, 319 U.S. 423, 426 (1943) (per curiam).

52 104 Stat. 2467 (House Amendment), 2574 (Senate Amendment).

53 See *Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 843 n.9 (1984) ("If a court, employing traditional tools of statutory construction, ascertains that Congress had an intention on the precise question at issue, that intention is the law and must be given effect.")

54 See Thomas M. Cooley, A TREATISE ON THE CONSTITUTIONAL LIMITATIONS WHICH REST UPON THE LEGISLATIVE POWER OF THE STATES OF THE AMERICAN UNION 58 (1868) ("[O]ne part is not to be allowed to defeat another, if by any reasonable construction the two can be made to stand together.")

55 "Prior to 1990, the Clean Air Act required the EPA to set standards for each toxic air pollutant individually, based on its particular health risks. This approach proved difficult and minimally effective at reducing emissions. As a result, when amending the Clean Air Act in 1990, Congress directed the EPA to use a 'technology-based' and performance-based approach to significantly reduce emissions of air toxics from major sources of air pollution, followed by a risk-based approach to address

the new approach, pollutant standards under Section 112 must reflect the "maximum achievable control technology," or MACT. Aware that this change would significantly increase compliance burdens, the House intended with its amendment to ensure that existing source categories regulated under Section 112 would not face the prospect of additional costly regulation under Section 111.⁵⁶

Congress' objective in precluding source category regulation is all the more obvious in light of the recent promulgation of new source performance standards for greenhouse gases. The EPA's recently-enacted Utility MACT Rule imposes \$11 billion in annual compliance costs, the vast majority of which are born by existing power plants.⁵⁷ Preventing the EPA from "double-dipping" and imposing billions more in compliance costs on this source category through Section 111(d) is a feature of the 1990 Amendments, not a bug.

In contrast, in enacting the Senate amendment, Congress intended to maintain the pre-1990 prohibition on using Section 111(d) to regulate emissions from existing sources of those *substances* regulated as hazardous pollutants under Section 112. Failing to retain the existing limit on EPA authority to regulate hazardous air pollutants under Section 112 would allow the Agency to undo Congress' considered decision to regulate only certain sources of hazardous air pollutants—the 1990 Amendments require the EPA to regulate all major sources of hazardous air pollutants, but only 90 percent of emissions of area sources.⁵⁸

Thus, in accordance with this reading of Section 111(d), the EPA lacks authority to establish standards of performance for existing sources of air pollutants which

any remaining, or residual, risks." EPA, *Taking Toxics out of the Air* (Aug. 2000), available at <http://www.epa.gov/oar/oaqps/takingtoxics/p1.html>.

56 As further evidence that the House amendments had a deregulatory emphasis and were designed to ease the burden on regulated industries, note that the House amendment to 111(d) took place in the context of the House's replacement of the Senate's draft amendment to Section 112 with regard to power plant regulation. See 70 Fed. Reg. at 16,030 (EPA discussion of legislative history of 1990 amendments to Section 112).

57 See 77 Fed. Reg. 9,304 (Feb. 16, 2012) (final rule).

58 Pub. L. 101-549 § 301; 104 Stat. 2537; codified at 42 U.S.C. § 7412(c)(3).

are included on a list published under Sections 108(a) or 112(b) (a substance-focused limitation on authority) or which are emitted from source categories regulated under Section 112 (a source-focused limitation). Since power plants are regulated under Section 112,⁵⁹ therefore, Section 111(d) does not provide the EPA with authority to establish standards of performance for greenhouse emissions therefrom.

C. Even If Congress's Intent Is Unclear, the Statute as Amended Can Be Read To Give Full Effect to Both Amendments to Section 111(d)

Congress acted with intelligible and distinct intent in 1990 in enacting both the Senate and House amendments to Section 111(d). Yet even if the intent is unclear, courts are compelled by accepted rules of statutory construction to “harmonize” textual provisions “and give meaningful effect to all of the provisions” therein.⁶⁰ Here, again, the EPA’s interpretation fails in properly applying the harmonization canon.

The EPA will use its 2005 “harmonization” of Section 111(d)’s House and Senate amendments to combine the provisions into an unrecognizable regulation. In 2005, the EPA attempted to delist power plants from the list of sources of hazardous air pollutants subject to regulation under Section 112. Simultaneously, it sought to establish a cap-and-trade program for power plants’ mercury emissions under Section 111(d). The EPA based that program on the following interpretation of Section 111(d):

Where a source category is being regulated under section 112, a section 111(d) standard of performance cannot be established to address any HAP listed under section 112(b) that may be emitted from that particular source category.⁶¹

That construction suited EPA’s purposes in the delisting decision: The delisting decision was a precursor to the Agency’s Clean Air Mercury Rule (referenced *supra* as a precedent for cap-and-trade under Section 111(d)), and because mercury compounds are listed under Section 112(b), EPA’s interpretation

⁵⁹ See 42 U.S.C. § 7412(n)(1); see also *supra* note 45.

⁶⁰ *New Process Steel, L.P. v. Nat’l Labor Relations Bd.*, 130 S. Ct. 2635, 2640 (2010).

⁶¹ 70 Fed. Reg. at 16,031.

allowed it to establish Section 111(d) standards of performance for their emission from power plants after the delisting decision. In this way, the EPA did what the harmonization canon works to avoid: only giving “some effect to both provisions” rather than giving “meaningful effect to all of the provisions.”⁶² The result is the creation of an unidentifiable, alternative provision from what Congress passed.

The D.C. Circuit vacated the EPA’s mercury cap-and-trade program because it held that the EPA’s delisting decision proceeded under the incorrect statutory authority.⁶³ The court did not, however, rule on the EPA’s construction of Section 111(d). Now, to carry out its settlement agreement, the EPA will look to use this reformulation of Section 111(d) to put stationary, existing energy sources like power plants regulated under Section 112 in its sights for greenhouse gas regulation.

A proper application of the harmonization canon is the same as in the plain-meaning interpretation of the Clean Air Act: both the Senate and the House amendments limit the reach of Section 111(d). As explained *supra*, Congress’ two amendments to Section 111(d) accomplish separate goals: The amendment originating in the House of Representatives is a deregulatory provision that precludes industries from being hit by the double-punch of Section 112 and Section 111(d); the amendment originating in the Senate preserves Section 112 as the exclusive mechanism for regulating hazardous air pollutants under the Act. These provisions do not conflict in any way. Rather, they complement each other.

In contrast, the EPA weakens both of Congress’s Section 111(d) amendments in its construction from the delisting decision. The amendment originating in the House, which Congress intended as a deregulatory provision for industries that were subject to Section 112 regulation, is given no effect at all—under the previous version of Section 111(d) and the Senate Bill, regulation

⁶² *New Process Steel*, 130 S. Ct. at 2640 (emphasis added); *Cook Inlet Native Ass’n v. Bowen*, 810 F.2d 1471, 1474 (9th Cir. 1987) (“The words of a statute should be harmonized internally and with each other to the extent possible.” (emphasis added)).

⁶³ *New Jersey v. EPA*, 517 F.3d 574, 579-81, 583 (D.C. Cir. 2008).

of hazardous air pollutants was already precluded for all source categories. Also, the amendment originating in the Senate, which was intended to maintain Section 112 as the exclusive program for hazardous air pollutant regulation from stationary sources, is given diluted effect through a source category limitation imported from the House's amendment.

In other words, the EPA offered a construction that neither retains those limitations (as would the Senate amendment standing alone), nor alters them (as would the House amendment alone), but rather *shrinks* them. This construction is not permissible under either classic statutory construction canons or the administrative law analysis of delegated agency authority.

Under step one of a *Chevron* analysis, “[i]f the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.”⁶⁴ Thus, as long as the intent of the amendments taken individually is clear, and as long as they are capable of simultaneous implementation, “that is the end of the matter.” As described *supra*, and as the EPA recognized in its delisting decision,⁶⁵ neither amendment read independently evinces intent to weaken the existing limitations on 111(d). No permissible attempt to harmonize the two can achieve that result.

Finally, even if, under the first step of a *Chevron* analysis, the intent of Congress is not clear, a court will not simply accept an agency's interpretation of its governing statute without further inquiry. Instead, in the second step of *Chevron* analysis, a court must consider “whether the agency's [interpretation] is based on a *permissible* construction of the statute.”⁶⁶ The interpretation of the two amendments offered by the EPA in 2005 is not permissible, since it weakens the pre-1990 limitations on Section 111(d) and, in so doing, gives meaningful effect to neither amendment.

The EPA's likely response to this analysis would be to emphasize the Agency's entitlement to deference in defining the scope of vague and ambiguous statutes.

⁶⁴ *Chevron*, 467 U.S. at 842-43.

⁶⁵ See 70 Fed. Reg. at 16,031 (discussing purpose of amendments viewed individually).

⁶⁶ 467 U.S. at 843 (emphasis added).

Here, the EPA could follow the arguments of some commentators that look at the history of Section 111(d) and conclude that the section's language is meant to provide a “gap filler” for incremental cap-and-trade implementation within the CAA amendments.⁶⁷

It is true that “even without express authority to fill a specific statutory gap, circumstances pointing to implicit congressional delegation” may require courts to defer to agencies' interpretations of their governing statutes.⁶⁸ But here, there is neither express nor implicit delegation of “gap-filling” authority. The admittedly unusual drafting history here calls not for discretionary administrative decision-making, but rather the traditional exercise of core judicial functions of statutory construction. Failing to exercise *de novo* review over the EPA's interpretation of the statute would be to claim without proof that Congress desired the Agency to resolve what it never could through the transparency of democracy: whether the federal government should enact a cap-and-trade regulatory regime. Yet, as the Supreme Court has confirmed, “Congress . . . does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions—it does not, one might say, hide elephants in mouseholes.”⁶⁹ In short, two decades of failed Congressional attempts at cap-and-trade do not make it magically manifest in Section 111(d).

D. Alternatively, the House Amendment Can Be Read as Implicitly Repealing the Senate Amendment

There is a third and final possible reading of the statute if the EPA or a court were convinced that Congress did not intend to enact both amendments to Section 111(d) and that the amendments cannot be harmonized: that the amendment originating in the House of Representatives implicitly repeals the Senate amendment. In that case, the plain meaning of Section 111(d), as amended to preclude existing source performance standards for industries regulated

⁶⁷ See, e.g., Robert B. McKinstry, Jr., *The Clean Air Act: A Suitable Tool for Addressing the Challenges of Climate Change*, 41 ENVTL. L. REP. 10,301, 10,305-06 (2011).

⁶⁸ See *U.S. v. Mead Corp.*, 533 U.S. 218, 237 (2001).

⁶⁹ *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 468 (2001).

under the Clean Air Act's Section 112 air toxics program—reflected by the U.S. Code only containing the House amendment—would preclude the EPA's anticipated greenhouse gas standards. While this interpretation of the statute and its amendments is not ideal, in that it would not honor the intent of the Senate amendment and would remove an important substance-focused limitation on the Agency's authority under the subsection, it is at least a coherent theory of what Congress intended—and it results in a workable statute. The EPA's response to this argument would likely be that the amendments can be harmonized, but its theory of harmonization must fail for the reasons discussed above. If the amendments are not both honored in full, the House amendment should take precedence over the one that originated in the Senate.

The canon of implied repeal applies where there is “an irreconcilable conflict between the two federal statutes at issue.”⁷⁰ Although the Supreme Court has suggested that it applies only in the case of “earlier and later statutes [that] are irreconcilable,”⁷¹ there is no case law directly stating that this canon is inapplicable to irreconcilable earlier and later amendments to a single bill.

In this regard, if Congress did not intend both amendments to Section 111(d) in the 1990 Amendments to be enacted, it would have intended the House of Representatives' amendment to control. The 1990 Amendments originated in the Senate, which passed S.1630 on April 3, 1990.⁷² This version of S.1630 contained the revised text of Section 112, which removed the old Section 112(b)(1)(A) and replaced it with a new Section 112(b)(1) containing a list of hazardous air pollutants, as explained above.⁷³ It also contained the conforming amendment to Section 111(d),⁷⁴ which—under this interpretation—did nothing more than alter the reference to Section 112

found in Section 111(d) to reflect the new organization of Section 112.

The House, in turn, amended and passed S.1630 on May 23, 1990.⁷⁵ The version passed by the house added the House amendment,⁷⁶ which removed the (now-obsolete) reference to “112(b)(1)(A)” found in Section 111(d) and replaced it with the phrase “or emitted from a source category which is regulated under Section 112.” In so doing, the House amendment effected a substantive change in the limitations imposed on Section 111(d), where the Senate amendment merely altered a reference to conform to changes made elsewhere in the Act. But the House neglected to strike the Senate's “conforming amendment,” and the bill was reconciled at conference with the now-obsolete Senate amendment left intact.⁷⁷ As between a technical and conforming amendment in a prior version of the legislation, and a substantive amendment designed to alter the scope of Section 111(d), the substantive amendment should be the one that is given full force and effect if the two amendments are irreconcilable.

As such, whether the different amendments to Section 111(d) in the Clean Air Act Amendments of 1990 are complementary, harmonized, or conflict, the common theme is that the EPA cannot promulgate existing source performance standards for source categories that are regulated under Section 112, such as power plants.

III. CONCLUSION

While the courts will grant the EPA broad deference to determine a permissible reading of Section 111(d), the Agency cannot adopt an interpretation repelled by the statute's text.⁷⁸ Here, the controlling Statutes-At-Large text of Section 111(d) precludes the EPA's contorted attempt to reformulate the listing of stationary energy sources so as to include them in a

⁷⁰ *Matsushita Elec. Indus. Co., Ltd. v. Epstein*, 516 U.S. 367, 381 (1996) (internal quotation marks omitted).

⁷¹ *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 141-42 (internal quotation marks omitted).

⁷² See 3 Legislative History at 4119.

⁷³ *Id.* at 4410.

⁷⁴ *Id.* at 4534.

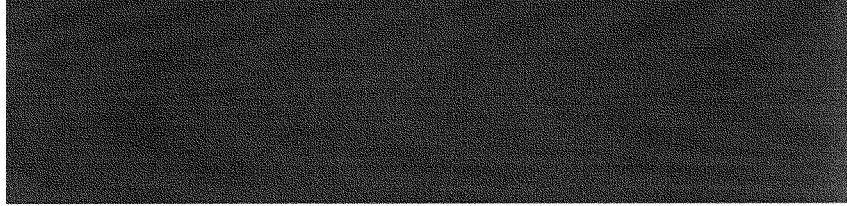
⁷⁵ See 2 Legislative History at 1809.

⁷⁶ *Id.* at 1979.

⁷⁷ Compare 1 Legislative History at 1523 (portion of conference report containing House amendment) with *id.* at 1633 (portion containing Senate amendment).

⁷⁸ See, e.g., *Anderson Bros. Ford v. Valencia*, 452 U.S. 205, 219 (1981) (noting that “obvious repugnance to the statute” in question will void an agency's interpretation).

cap-and-trade scheme Congress never authorized. The EPA thus cannot rely on its December 2010 settlement agreement to expand the breadth of its own power, and a court cannot be used to enforce authority that the Agency never had to bargain in the first instance. President Obama may ultimately be right to think that “America cannot resist this transition” to a highly regulated energy sector in the name of “greener” energy. Nevertheless, the Administration will need the authority of Congress to set that transition in motion.



The Federalist Society for Law & Public Policy Studies
1015 18th Street, N.W., Suite 425 • Washington, D.C. 20036

June 11, 2014 12:39PM

0.02°C Temperature Rise Averted: The Vital Number Missing from the EPA's "By the Numbers" Fact Sheet

By [Paul C. "Chip" Knappenberger](#) and [Patrick J. Michaels](#)
<http://www.cato.org/blog/002degc-temperature-rise-averted-vital-number-missing-epas-numbers-fact-sheet>

Global Science Report is a feature from the Center for the Study of Science, where we highlight one or two important new items in the scientific literature or the popular media. For broader and more technical perspectives, consult our monthly "Current Wisdom."

Last week, the Obama Administration's U.S. Environmental Protection Agency (EPA) unveiled a new set of proposed regulations aimed at reducing carbon dioxide emissions from existing U. S. power plants. The motivation for the EPA's plan comes from the President's desire to address and mitigate anthropogenic climate change.

We hate to be the party poopers, but the new regulations will do no such thing.

The EPA's regulations seek to limit carbon dioxide emissions from electricity production in the year 2030 to a level 30 percent below what they were in 2005. It is worth noting that power plant CO₂ emissions already dropped by about 15% from 2005 to 2012, largely, because of market forces which favor less-CO₂-emitting natural gas over coal as the fuel of choice for producing electricity. Apparently the President wants to lock in those gains and manipulate the market to see that the same decline takes place in twice the time. Nothing like government intervention to facilitate market inefficiency. But we digress.

The EPA highlighted what the plan would achieve in their "[By the Numbers](#)" Fact Sheet that accompanied their big announcement.

For some reason, they left off their Fact Sheet how much *climate change* would be averted by the plan. Seems like a strange omission since, after all, without the threat of climate change, there would be no one thinking about the forced abridgement of our primary source of power production in the first place, and the Administration's new emissions restriction scheme wouldn't even be a gleam in this or any other president's eye.

But no worries. What the EPA left out, we'll fill in.

Using a simple, publically-available, climate model emulator called MAGICC that was in part developed through support of the EPA, we ran the numbers as to how much future temperature rise would be averted by a complete adoption and adherence to the EPA's new carbon dioxide restrictions*.

The answer? Less than two one-hundredths of a degree Celsius by the year 2100.

0.018°C to be exact.

We're not even sure how to put such a small number into practical terms, because, basically, the number is so small as to be undetectable.

Which, no doubt, is why it's not included in the EPA Fact Sheet.

It is not too small, however, that it shouldn't play a huge role in every and all discussions of the new regulations.

* Details and Additional Information about our Calculation

We have used the Model for the Assessment of Greenhouse-gas Induced Climate Change (MAGICC)—a simple climate model emulator that was, in part, developed through support of the EPA—to examine the climate impact of proposed regulations.

MAGICC version 6 is available as an on-line tool.

We analyzed the climate impact of the new EPA regulations by modifying future emissions scenarios that have been established by the United Nation's Intergovernmental Panel on Climate Change (IPCC), to reflect the new EPA proposed emissions targets.

Specifically, the three IPCC scenarios we examined were the Representative Concentration Pathways (RCPs) named RCP4.5, RCP 6.0 and RCP8.5. RCP4.5 is a low-end emissions pathway, RCP6.0 is more middle of the road, and RCP8.5 is a high-end pathway.

The emissions prescriptions in the RCPs are not broken down on a country by country basis, but rather are defined for country groupings. The U.S. is included in the OECD90 group.

To establish the U.S. emissions pathway within each RPC, we made the following assumptions:

- 1) U.S. carbon dioxide emissions make up 50 percent of the OECD90 carbon dioxide emissions.
- 2) Carbon dioxide emissions from electrical power production make up 40 percent of the total U.S. carbon dioxide emissions.

Figure 1 shows the carbon dioxide emissions pathways of the original RCPs along with our determination within each of the contribution from U.S. electricity production.

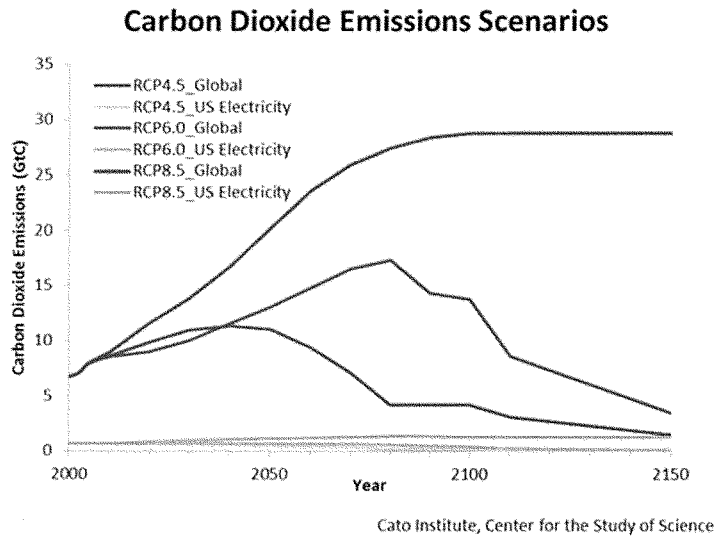


Figure 1. Carbon dioxide emissions pathways defined in, or derived from, the original set of Representative Concentration pathways (RCPs), for the global total carbon dioxide emissions as well as for the carbon dioxide emissions attributable to U.S. electricity production.

As you can pretty quickly tell, the projected contribution of U.S. carbon dioxide emissions from electricity production to the total global carbon dioxide emissions is vanishingly small.

The new EPA regulations apply to the lower three lines in Figure 1.

To examine the impact of the EPA proposal, we replace the emissions attributable to U.S. power plants in the original RCPs with targets defined in the new EPA regulations. We determined those targets to be (according to the EPA's Regulatory Impacts Analysis accompanying the regulation), 0.4864 GtC in 2020 and 0.4653 GtC in 2030. Thereafter, the U.S. power plant emissions were held constant at the 2030 levels until they fell below those levels in the original RCP prescriptions (specifically, that occurred in 2060 in RCP4.5, 2100 in RCP6.0, and sometime after 2150 in RCP8.5).

We then used MAGICC to calculate the rise in global temperature projected to occur between now and the year 2100 when with the original RCPs as well as with the RCPs modified to reflect

the EPA proposed regulations (we used the MAGICC default value for the earth’s equilibrium climate sensitivity (3.0°C)).

The output from the six MAGICC runs is depicted as Figure 2.

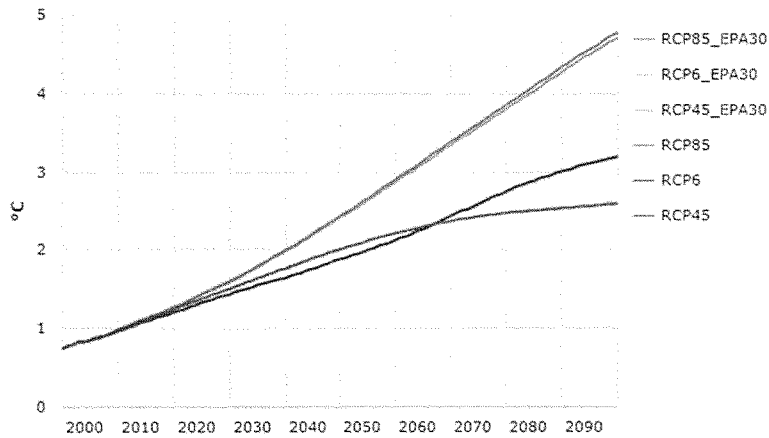


Figure 2. Global average surface temperature anomalies, 2000-2100, as projected by MAGICC run with the original RCPs as well as with the set of RCPs modified to reflect the EPA 30% emissions reductions from U.S power plants.

In case you can’t tell the impact by looking at Figure 2 (since the lines are basically on top of one another), we’ve summarized the numbers in Table 1.

Table 1. Projected surface temperature anomaly (°C).

| Scenario | 2013 | 2100 | Temp. Change (°C) |
|--------------|-------|-------|-------------------|
| RCP4.5 | 1.060 | 2.598 | 1.538 |
| RCP6.0 | 1.042 | 3.203 | 2.161 |
| RCP8.5 | 1.072 | 4.777 | 3.705 |
| RCP4.5 – EPA | 1.060 | 2.591 | 1.531 |
| RCP6.0 – EPA | 1.042 | 3.185 | 2.143 |
| RCP8.5 – EPA | 1.072 | 4.710 | 3.638 |

Center for the Study of Science, Cato Institute

In Table 2, we quantify the amount of projected temperature rise that is averted by the new EPA regulations.

Table 2. Future global temperature rise averted by EPA power plant regulations.

| | Averted Temperature Rise (°C) |
|--------------|-------------------------------|
| RCP4.5 – EPA | 0.007 |
| RCP6.0 – EPA | 0.018 |
| RCP8.5 – EPA | 0.067 |

Center for the Study of Science, Cato Institute

The rise in projected future temperature rise that is averted by the proposed EPA restrictions of carbon dioxide emissions from existing power plants is less than 0.02°C between now and the end of the century assuming the IPCC's middle-of-the-road future emissions scenario.

While the proposed EPA plan seeks only to reduce carbon dioxide emissions, in practice, the goal is to reduce the burning of coal. Reducing the burning of coal will have co-impacts such as reducing other climatically active trace gases and particulate matter (or its precursors). We did not model the effects of changes in these co-species as sensitivity tests using MAGICC indicate the collective changes in these co-emissions are quite small and largely cancel each other out.

CHINA: Nation announces plan to cap carbon emissions

Published: Tuesday, June 3, 2014

<http://www.eenews.net/greenwire/stories/1060000611/print>

China today announced plans to set a nationwide cap on carbon emissions in 2016, a move that could be a turning point in U.N. climate change negotiations starting this week in Germany.

The cap will go into effect when China's next five-year economic growth plan starts in 2016, He Jiankun, chairman of China's Advisory Committee on Climate Change, said at a conference in Beijing. Details of the plan, including the level of the CO2 cap, likely won't be finalized until next year.

China's announcement comes on the eve of 10-day U.N. climate talks among 190 nations scheduled to start tomorrow in Bonn, Germany (*ClimateWire*, June 2).

The plan also follows the Obama administration's announcement yesterday of a proposed rule curbing greenhouse gas emissions from existing power plants. China and the United States are the world's two largest emitters of carbon dioxide.

The proposals could mark a breakthrough in efforts to reach an international climate change treaty, experts said.

"It sends a very powerful signal to the rest of the world to get serious," said John Connor, CEO of the Melbourne-based Climate Institute (Chen/Reklev, *Reuters*, June 3). -- **DB**

NATIONS: Some indications that China may be preparing to cap its carbon emissions

Lisa Friedman, E&E reporter

Published: Wednesday, June 4, 2014

<http://www.eenews.net/climatewire/stories/1060000681/print>

A leading Chinese scholar's assertion that China is poised to enact a carbon emissions cap was met with praise and caution in the United States yesterday.

He Jiankun, a professor at Tsinghua University and deputy director of China's National Expert Committee on Climate Change, set off alarm bells when Reuters reported his comments that China will make its greenhouse gas emissions peak in 2030.

Coming on the heels of the Obama administration's announcement of a 30 percent cut in power plant emissions by 2030, He's statement heightened hope for the international climate negotiations.

But He is not a government official. And in a country not known for its transparency, observers said deciphering whether the professor spoke with the government's blessing or was merely repeating a position he has long advocated and researched -- publishing a report on the subject in the journal *Energy Policy* in 2012 -- is a tricky business.

"What he said shouldn't be considered official, but he is one of the most important advisers on climate change. His views are very important, and his team is very involved in this research," said Ailun Yang, a senior associate at the World Resources Institute think tank.

Speaking at a conference in Beijing, He said an emissions cap would be included in the China's next five-year plan, which covers the years 2016-20. The peak will likely come in 2030, he told Reuters, with China's emissions at about 11 billion metric tons of CO2 equivalent.

"The government will use two ways to control CO2 emissions in the next five-year plan, by intensity and an absolute cap," he said.

Yang said part of the Chinese government's strategy includes using advisers to float policies before they are official and called He's comments significant. Others, though, noted that the Chinese government has given no indication that an official policy is forthcoming.

Mixed signals

"There are a handful of scholars in China who are really important to the [climate change] policy discussion," and He is one of them, said Joanna Lewis, an assistant professor at Georgetown University and expert on Chinese energy policy. But, she noted, "Their academic work is certainly influential to policy. It doesn't set policy."

The comments also sparked a wave of inaccuracies. A number of news outlets reported that the cap would come in 2016; others erroneously described He's comments as China's official emissions pledge to the U.N. climate change treaty talks.

Yang Fuqiang, a senior adviser on energy and climate change at the Natural Resources Defense Council in Beijing, said, "I think Reuters misinterpreted He Jiankun's point. He did not say China will set a total emissions cap in 2016. He said China will set the cap in the nation's next five-year development plan, which ranges from 2016 to 2020."

Indeed, by evening yesterday, He had backpedaled, telling Reuters that his comments had been only his "personal view."

He could not be reached by *ClimateWire* for comment.

Still, climate analysts said that whether or not He's statements were an indication of policy to come, China does have major new policies in the works.

Lewis noted that last year, for the first time ever, the country known for building "a power plant per week" installed more non-fossil-fuel power capacity than fossil-fuel capacity. Meanwhile,

she said, the government in light of devastating air pollution problems is considering a total cap on coal consumption by 2020. That, she noted, opens the door to a peak emissions year.

NRDC's Yang agreed, saying that He's predictions are also in line with his expectations. He said that if China's coal consumption peaks by 2020, which many researchers believe will happen, there is near certainty that emissions will then peak by 2030.

"The possibility that China's coal consumption will peak by 2020 is very high," he said. "In the past, there was no consensus among government institutes, companies and the general public in terms of reducing coal use. But since air pollution has become a crisis in China, we have that consensus now," Yang said. "The central government has exerted so much effort, spent so much money and got the Chinese society on its side. If this still can't bring a peak on coal consumption, I don't know what can."

In Bonn, Germany, where diplomats are meeting for a midyear U.N. climate negotiating session, both the U.S. power plant targets and the suggestion from China were greeted with circumspection by representatives of the countries most affected by climate change.

"We welcome the emission reduction announcements by the two top GHG emitters, because these provide high hopes for the success of 2015 agreement," Prakash Mathema, who leads the group of least-developed countries in the negotiations, told *ClimateWire*.

But he said both possible targets, "whilst useful, may not be enough to put the world on a less-than-2-degree-Celsius pathway. So we look forward to further improvements in these policies, and announcements from other big emitters, as well."

Reporter Coco Liu contributed.

Behind the Mask – A Reality Check on China's Plans for a Carbon Cap

By ANDREW C. REVKIN

June 3, 2014

<http://mobile.nytimes.com/blogs/dotearth/2014/06/03/behind-the-mask-a-reality-check-on-chinas-plans-for-a-carbon-cap/>

BEIJING — Having covered China's stance on global warming since 1988, I've gotten attuned to the need to tread carefully when something is said that feels like a shift in the official position of this greenhouse gas giant.

The ancient Chinese mask-changing dance that I saw here Tuesday night (at a dinner for participants in a meeting on science and sustainable development) came to mind in considering the unraveling of news a few hours earlier of an official Chinese plan for a firm cap on emissions

of carbon dioxide, hard on the heels of President Obama's proposed carbon pollution rules for existing American power plants.

Here's how things played out. An adviser to the Chinese government on climate change was quoted by Reuters as saying the following at a Beijing climate-policy conference on Tuesday:

The government will use two ways to control CO2 emissions in the next five-year plan, by intensity and an absolute cap.

The comment came from He Jiankun, a professor at Tsinghua University and deputy director of China's Expert Committee on Climate Change, speaking at an international forum on market mechanisms for low-carbon development sponsored by Tsinghua and Harvard University.

The story quickly pivoted to how significant this would be given the context of President Obama's move and informal climate talks starting on Wednesday in Bonn, Germany, aimed at setting the stage for fresh climate treaty work later this year at the United Nations and in Lima, Peru.

The Guardian quickly followed Reuters with "China pledges to limit carbon emissions for first time," a piece canvassing climate campaigners but offering no reinforcing input from the Chinese government.

I consulted with The Times's Beijing bureau. Christopher Buckley, a reporter [based in Hong Kong] who in 2011 had covered China's emissions plans [and similar pushes from advisers to adopt a cap] while with Reuters, spoke with He Jiankun, who told him repeatedly that he did not in any way speak for the government, or the full expert climate committee.

Here's Buckley's translation:

It's not the case that the Chinese government has made any decision. This is a suggestion from experts, because now they are exploring how emissions can be controlled in the 13th Five Year Plan.... This is a view of experts; that's not saying it's the government's. I'm not a government official and I don't represent the government.

A Reuters reporter told me tonight that a correction was being posted [it's here], but not before other newspapers – including USA Today with a piece on China's "emissions pledge" – built on the report.

Other, more recent news coverage has reflected that this isn't China's position, although many experts in Beijing (including at the meeting I'm participating in) foresee an eventual cap and a peak in China's emissions sometime after 2030.

Here's more from other news outlets. The China News Service, a state-run news agency, also reported on the comments made by Professor He at the Tsinghua-Harvard forum but made no mention of proposals for a quantitative cap on carbon dioxide emissions.

The Financial Times posted "[China climate adviser urges emissions cap.](#)"

Recalling that all energy forecasts need to be treated with a healthy dose of skepticism, best guesses for a peak in China's greenhouse gas emissions tend to center on the 2030s, as reflected in this paper earlier this year in the journal Energy Policy: "[Peak energy consumption and CO2 emissions in China.](#)"

Here's the abstract:

China is in the processes of rapid industrialization and urbanization. Based on the Kaya identity [*a formula drawing on economic activity, energy use and other factors to determine a country's greenhouse-gas impact*], this paper proposes an analytical framework for various energy scenarios that explicitly simulates China's economic development, with a prospective consideration on the impacts of urbanization and income distribution. With the framework, China's 2050 energy consumption and associated CO2 reduction scenarios are constructed. Main findings are: (1) energy consumption will peak at 5200–5400 million tons coal equivalent (Mtce) in 2035–2040; (2) CO2 emissions will peak at 9200–9400 million tons (Mt) in 2030–2035, whilst it can be potentially reduced by 200–300Mt; (3) China's per capita energy consumption and per capita CO2 emission are projected to peak at 4tce and 6.8t respectively in 2020–2030, soon after China steps into the high income group.

Things could potentially speed up, [as some have noted](#), but there are limits to the pace at which China can develop enough cleaner energy alternatives to cut back on coal burning. Professor He noted this in the Reuters article:

He said China's greenhouse gas emissions would only peak in 2030, at around 11 billion tonnes of CO2-equivalent. Its emissions currently stand at around 7-9.5 billion tonnes. But He said that would depend on China achieving a real reduction in coal consumption from sometime around 2020 or 2025, and on the nation meeting its target of having 150-200 gigawatts of nuclear power capacity by 2030. The share of non-fossil fuels in China's energy mix would reach 20 to 25 percent in 2030, He added.

Once an emissions peak and rough timeline are clearer, you can be sure a cap will be announced — but only when the trajectories are already in place to make it a sure bet.

We're already locked in for substantial human-driven climate change, but the intensifying focus on a post-fossil future in both China and the United States points to a real prospect that much of the world's remaining coal [will stay in the ground in the end](#).

Addendum | To get a clearer view of China's stance on who needs to do what, and when, on CO2 emissions, click back to my interview last fall with Zou Ji, the deputy director of China's National Center for Climate Change Strategy:

Environment and Public Works Committee Hearing June 18, 2014
 Follow-Up Questions for Written Submission

To: Senators Barbara Boxer, Chairman, and David Vitter, Ranking Member, Environment and Public Works Committee.

Thank you for the opportunity to testify at this Senate hearing. Since the topic of the hearing, "Climate Change: The Need to Act Now," concerned a scientific topic and the application of science to policy, and since I was the only professional scientist testifying at the hearing, and since there was as a result a question as to who is a scientific expert, I would like to add the following information to the record, with the hope that this will be useful to the Committee in its future consideration of this important question.

My doctorate is in biology (Rutgers University 1968) and since 1968 I have done research on the theory of global warming and its possible ecological effects, I would like to put into the record a list of my scientific publications that have dealt with many aspects of this topic, as follows:

DANIEL B. BOTKIN GLOBAL WARMING RELATED BOOKS AND ARTICLES

Publications: Books

1. West, D.C., H.H. Shugart and D.B. Botkin (eds.), 1981, *Forest Succession: Concepts and Applications*, Springer-Verlag, NY., 517 pp.
2. Botkin, D.B. and E.A. Keller, 1987, *Environmental Studies: Earth as a Living Planet*, Charles E. Merrill, Pub. Co., Columbus, Ohio, 500 pp. (2nd edition; 1st edition published 1982).
3. Botkin, D.B., Caswell, M., Estes, J.E., and A. Orio, (Eds.) 1989, *Changing the Global Environment: Perspectives on Human Involvement*, Academic Press, N.Y.
4. Botkin, D.B., 1990, *Discordant Harmonies: A New Ecology for the 21st Century*, Oxford University Press.
5. Botkin, D.B., 1993. *Forest Dynamics: An Ecological Model*, Oxford University Press.
6. Botkin, D. B., 1993, *JABOWA-II: A Computer Model of Forest Growth*, Oxford University Press, N.Y. (Software and manual)
7. Skinner, B., S. Porter, and D.B. Botkin, 1999, *The Blue Planet*, John Wiley & Sons, N.Y.
8. Botkin, D. B. and E. A. Keller, 1995 (1st edition) 1997 (2nd edition), 1999 (3rd edition), 2003 (4th edition), 2004 (5th edition), 2007 (6th edition), 2009 (7th edition), 2011 (8th edition), 2014 (9th edition) *Environmental Sciences: The Earth as a Living Planet*, John Wiley, New York.

9. Keller, E. A., and D. B. Botkin, 2007. *Essential Environmental Science* John Wiley, New York.
10. Botkin, D. B., 2010 *Powering The Future: A Scientist's Guide to Energy Independence*, FT Press, Upper Saddle River, NJ.
11. Botkin, D. B., 2012, *The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered*, Oxford University Press, in press.

Publications: Published Articles:

12. Botkin, D.B., J.F. Janak and J.R. Wallis, 1973, Estimating the effects of carbon fertilization on forest composition by ecosystem simulation, pp. 328 - 344, In: G.M. Woodwell and E.V. Pecan, eds., *Carbon and the Biosphere*, Brookhaven National Laboratory Symposium No. 24, Technical Information Center, U.S.A.E.C., Oak Ridge, TN.
13. Botkin, D.B., 1976, The role of species interactions in the response of a forest ecosystem to environmental perturbation, pp. 147 - 171. In: B.C. Patten, (ed.), *System Analysis and Simulation in Ecology*, vol. IV. Academic Press, NY.
14. Botkin, D.B., 1977, Forests, lakes and the anthropogenic production of carbon dioxide, *BioScience* 27: 325 - 331.
15. Woodwell, G.M., R.H. Whittaker, W.A. Reiners, G.E. Likens, C.A.S. Hall, C.C. Delwiche, and D.B. Botkin, 1978, The biota and the world carbon budget, *Science* 199: 141 - 146.
16. Ralston, Charles W.; G. M. Woodwell; R. H. Whittaker; W. A. Reiners; G. E. Likens; C. C. Delwiche; D. B. Botkin 1979 Where has all the carbon gone? *Science*, New Series, Vol. 204, No. 4399. (Jun. 22, 1979), pp. 1345-1346.
17. Botkin, D.B., 1982, Can there be a theory of global ecology? *J. of Theor. Biol.* 96: 95 - 98.
18. Botkin, D.B., 1984, The Biosphere: The New Aerospace Engineering Challenge. *Aerospace America*, July 1984, p. 73-75.
19. Botkin, D.B., J.E. Estes, R.M. MacDonald, M.V. Wilson, 1984, Studying the Earth's Vegetation from Space, *BioScience* 34(8):508-514.
20. Botkin, D.B. and S.W. Running, 1984, Role of Vegetation in the Biosphere, *Purdue University Machine Processing of Remotely Sensed Data (Symposium)*, pp. 326-332.

21. Davis, M. B. and D. B. Botkin, 1985, Sensitivity of the Cool--Temperate Forests and Their Fossil Pollen to Rapid Climatic Change, *Quaternary Research* 23:327-340.
22. Botkin, D. B., 1985, The Need for A Science of The Biosphere, *Interdisciplinary Science Reviews*,10(3):267-278.
23. Yool, S.R., J.L. Star, J.E.Estes, D.B.Botkin, 1985, Analysis of Image Processing Algorithms for Classifying the Forests of Northern Minnesota, *Proceedings, Tenth Wm. T. Pecora Memorial Remote Sensing Symposium, Fort Collins, Colorado.*
24. Yool, S. R. , J. L. star, J. E. Estes, D. B. Botkin, D. W. Eckhardt, and F. W. Davis, 1986, "Performance analysis of image processing algorithms for classification of natural vegetation in the mountains of Southern California," *Int. J. Remote Sensing*, 7 (5): 683-702
25. Botkin, D.B., 1985, The Science of the Biosphere, *Origin of Life* 15:319-325.
26. A.A.Orio and D. B. Botkin (eds.),1986, Man's Role in Changing The Global Environment, *Proceedings International Conference, Venice, Italy, 21-26 October, 1985; The Science of the Total Environment* 55: 1-399 and vol 56:1-415.
27. Botkin, D. B.(ed.), M. B. Davis, J. Estes, A. Knoll, R. V. O'Neill, L. Orgel, L. B. Slobodkin, J. C. G. Walker, J. Walsh, and D. C. White. 1986. *Remote Sensing of the Biosphere*, National Academy of Sciences, Washington, D.C.
28. Botkin, D.B., 1989, "Science and The Global Environment," pp. 3 - 14 (Chapter 1) in
29. Botkin, D.B., M. Caswell, J.E.Estes, A.Orio (eds) *Man's Role in Changing The Global Environment:Perspectives on Human Involvement*, Academic Press, Boston.
30. Stolz, J.F. Botkin, D.B. and M.N.Dastoor, 1989, "The Integral Biosphere", pp. 31-49 (Chapter 3) in M. B. Rambler and L. Margulis (eds.), *Global Ecology:Towards a Science of the Biosphere* , Academic Press Pub., Boston.
31. Botkin, D. B., R. A. Nisbet, and T. E. Reynales, 1989, "Effects of Climate Change on Forests of the Great Lake States, pp.2-1 to 2-31 in *The Potential Effects of Global Climate Change on the United States*, J. B. Smith and D. A. Tirpak (eds.) U. S. Environmental Protection Agency, Washington, D. C., EPA -203-05-89-0.
32. Rosenfeld, A. H., and D. B. Botkin, 1990, Trees Can Sequester Carbon, Or Die, Decay, and Amplify Global Warming: Possible Positive Feedback Between Rising Temperature, Stressed Forests, and CO₂, *Physics and Society* 19:4pp.

33. Botkin, D. B. and L. Simpson, 1990, Biomass of the North American Boreal Forest: A step toward accurate Global Measures: *Biogeochemistry* 9:161-174.
34. Botkin, D. B. and L. G. Simpson, 1990, Distribution of Biomass in the North American Boreal Forest, pp. 1036-1045 in G. Lund (ed.) Proceedings of the International Conference on *Global Natural Resource Monitoring and Assessments: Preparing for the 21st Century*, American Society for Photogrammetry and Remote Sensing.
35. Botkin, D. B. and R. A. Nisbet, 1990, Response of Forests to Global Warming and CO₂ Fertilization, Report to EPA.
36. Botkin, D. B., D. A. Woodby, and R. A. Nisbet, 1991, Kirtland's Warbler Habitats: A Possible Early Indicator of Climatic Warming, *Biological Conservation* 56 (1): 63-78.
37. Botkin, D. B. 1991, Global Warming and Forests of the Great Lakes States: An example of the use of Quantitative Projections in Policy Analysis
38. An Essay Submitted for the George and Cynthia Mitchell International Prize Competition, 1991, which won first prize and was published by the Mitchell Foundation, Houston, TX.
39. Hall, F.G., D. B. Botkin, D. E. Strebler, K. D. Woods, and S. J. Goetz, 1991, Large Scale Patterns in Forest Succession As Determined by Remote Sensing, *Ecology* 72: 628 - 640.
40. Botkin, D. B., 1991, A New Balance of Nature, *The Wilson Quarterly*, XV: 61-65; 68-72.
41. Botkin, D. B., 1991, Global Warming: What it is, What is Controversial About it, and What We Might Do In Response To It, *UCLA J. of Environmental Law and Policy*, 9: 119-142.
42. Woods, K.D., A. H. Fieveson, and D. B. Botkin, 1991, Statistical error analysis for biomass density and leaf area index estimation, *Canad. J. Forest Research*, 21: 974-989.
43. Botkin, D. B., R. A. Nisbet, S. Bicknell, C. Woodhouse, B. Bentley, and W. Ferren, 1991, Global Climate Change and California's Natural Ecosystems, pp. 123 - 149 in J. B. Knox (ed.), *Global Climate Change and California: Potential Impacts and Responses*, University of California Press, Berkeley.
44. Botkin, D. B., and R. A. Nisbet, 1992, Forest response to climatic change: effects of parameter estimation and choice of weather patterns on the reliability of projections, *Climatic Change* 20: 87-111.

45. Botkin, D. B., R. A. Nisbet and L. G. Simpson, 1992, Forests and Global Climate Change, Chapter 19, pp. 274- 290 in S. K. Majumdar, L. S. Kalkstein, B. M. Yarnal, E. W. Miller, and L. M. Rosenfeld (eds.) *Global Climate Change: Implications, Challenges and Mitigation Measures*, Pennsylvania Academy of Sciences, Philadelphia.
46. Botkin, D. B., Simpson, L. G., and H. J. Schenk, 1992, Estimating Biomass, *Science Letters*.
47. Botkin, D. B. and R. A. Nisbet, 1992, Projecting the effects of climate change on biological diversity in forests, pp. 277 - 293 in R. Peters and T. Lovejoy, (Eds.) Consequences of the Greenhouse Effect for Biological Diversity, Yale University Press, New Haven.
48. Botkin, D. B., 1992, "A Natural Myth," *Nature Conservancy* : 42: 92.
49. Botkin, D. B., Simpson, L. G., and R. A. Nisbet, 1993, Biomass and Carbon Storage of the North American Deciduous Forest, *Biogeochemistry* 20: 1-17.
50. Simpson, L.G., D. B. Botkin, R. A. Nisbet, 1993, The Potential Aboveground Carbon Storage of North American Forests, *Water, Air, and Soil Pollution* 70:197-205.
51. Nisbet, R.A. and D. B. Botkin, 1993, Integrating a Forest Growth Model With a Geographic Information System, pp.265-269 in Goodchild, M.S. , B.O. Parks, L.T. Steyaert (eds.) *Environmental Modeling with GIS*, Oxford University Press, N.Y.
52. Hunsaker, C.T.,R. A. Nisbet, D. C. L. Lam, J. A. Browder, W. L. Baker, M. G. Turner, D. B. Botkin, 1993, pp.248-264 in Goodchild, M.S. B.O. Parks, L.T. Steyaert (eds.) *Environmental Modeling with GIS*, Oxford University Press, N.Y.
53. Guggenheim, D. and D. B. Botkin, 1996, CO₂ Offset Opportunities in Siberian Forests, Report to the Electric Power Research Institute, Center for the Study of the Environment, Santa Barbara, CA, EPRI report # TR-106059.
54. Sedjo, R. A, and D. B. Botkin, 1997, "Using Forest Plantations to Spare the Natural Forest", *Environment* 39(10): 14 - 20.
55. Botkin, D.B. 1998. People and Nature: How to Find a Balance. In *Forest Policy: Ready for Renaissance*, ed. John M. Calhoun. pp. 9-24. Institute of Forest Resources Contribution No. 78. Seattle, Washington.
56. Botkin, D. B., 2000, "Preface," *Forces of Change: A New View of Nature*, National Geographic Society, Washington, D. C. , pp. 15-19

57. Botkin, D. B., Henrik Saxe, Miguel B. Araújo, Richard Betts, Richard H.W. Bradshaw, Tomas Cedhagen, Peter Chesson, Terry P. Dawson, Julie Etterson, Daniel P. Faith, Simon Ferrier, Antoine Guisan, Anja Skjoldborg Hansen, David W. Hilbert, Craig Loehle, Chris Margules, Mark New, Matthew J. Sobel, and David R.B. Stockwell. 2007 "Forecasting Effects of Global Warming on Biodiversity." *BioScience* 57(3): 227-236.
58. Botkin, D. B. (2010) Book Review of *Heatstroke: Nature in an Age of Global Warming*. Anthony D. Barnosky. Island Press, 2009. 288 pp., *BioScience* 60 (7) 552-553.
59. Ngugi, Michael R. and Daniel B. Botkin, 2011, "Validation of a multispecies forest dynamics model using 50-year growth from Eucalyptus forests in eastern Australia," *Ecological Modelling*. 222: 3261– 3270.
60. Mahoney, Andrew R., John R. Bockstoce, Daniel B. Botkin, Hajo Eicken, and Robert A. Nisbet. "Sea Ice Distribution in the Bering and Chukchi Seas: Information from Historical Whaleships' Logbooks and Journals," *Arctic*. 64, (4): 465 – 477. (DECEMBER 2011).
61. Botkin, D. B., 2013. "What Forestry Needs in the Anthropocene," *The Forestry Source*. September 2013 • Vol. 18, No. 9. p. 11.
http://www.nxtbook.com/nxtbooks/saf/forestrysource_201309/index.php#11
62. Botkin, D. B., 2014 (in press) "Adapting Forest Science, Practice, and Policy to Shifting Ground: From Steady-State Assumptions to Dynamic Change." Sample, V. Alaric and R. Patrick Bixler (eds.). *Forest Conservation and Management in the Anthropocene*. General Technical Report. Fort Collins, CO: US Department of Agriculture, Forest Service. Rocky Mountain Research Station.

At the hearing, the statement was made repeatedly that 97% of scientists agreed that human-caused global warming was happening. I would like to clarify the basis for that assertion and what the facts actually are. The publication: David R. Legates, Willie Soon, William M. Briggs, Christopher Monckton of Brenchley 2013, Climate Consensus and 'Misinformation': A Rejoinder to Agnotology, Scientific Consensus, and the Teaching and Learning of Climate Change, *Science & Education*. (10.1007/s11191-013-9647-9) August 2013, reanalyzes the basis for this statement and concludes "Inspection of a claim by Cook et al. (Environ Res Lett 8:024024, 2013) of 97.1 % consensus, heavily relied upon by Bedford and Cook, shows just 0.3% endorsement of the standard definition of consensus: that most warming since 1950 is anthropogenic."

THINKPROGRESS
THE PROGRESS REPORT
Here Come The Kochs

BY CAP ACTION WAR ROOM ON JUNE 17, 2014 AT 5:59 PM

Billionaire Koch Brothers Gear Up To Spend Hundreds Of Millions in 2014

It's a been busy month for the billionaire right-wing donors and industrialists Charles and David Koch. The brothers, along with their spiderweb of dark money groups, are actively raising vast sums of money to influence federal, state, and even local elections and promote policies that benefit their bottom line at the expense of everyone else.

Here is some of the latest reported news of what the Kochs are up to these day:

- **Planning To Spend Nearly \$300 Million On The 2014 Elections.** In an exclusive retreat at a fancy California resort near Laguna Beach last week, the Koch brothers and wealthy allies unveiled a new strategy for the 2014 elections with an initial fundraising target of \$290 million. The retreat, which featured political allies including Sen. Marco Rubio of Florida and libertarian political scientist Charles Murray, is the most recent of a number of big and small gatherings so far to appeal to select wealthy conservative donors.
- **Starting A New Dedicated Anti-Environment Effort.** As leaders of a vast oil-and-gas conglomerate, the Koch brothers have a direct financial interest in blocking regulations to curb carbon pollution. They already fund a multitude of right-wing anti-environment groups, including the American Energy Alliance, which has targeted Democrats for potentially supporting a carbon tax. Now, the Kochs are dedicating a new initiative under their central fundraising network Freedom Partners that will aim to repeal successful state renewable energy standards and block the president's proposed regulations to cut carbon emissions from power

- **Launching A New Super PAC: Billions In Direct Support For Right-Wing Candidates.** Previously, the Koch brothers mostly funneled their unprecedented political spending into issue-based attack ads slamming progressive policies. That's now changing. As reported yesterday, the Koch network is starting a new Super PAC called Freedom Partners Action Fund that plans to spend at least \$15 million in 2014 supporting right-wing candidates (as well as attacking progressives, as you might expect).
- **Continuing To Invest Heavily In State And Local Policymaking.** Americans For Prosperity, traditionally the Koch brothers' most active political arm, is ramping up staff in states across the country to prepare for the 2014 elections and give a more intense focus toward state and local politics and policy. Paid staff is now at 240 in 32 states, up from 100 in 2010. The group's president, Tim Phillips, isn't shy about their desire to influence policy at any level: "at the state level, I would argue, it's been a once-in-a-generation moment of free-market policy victories."

Meanwhile, Senate Majority Leader Harry Reid has been working to expose the influence that the Koch brothers have on American politics. In the wake of the recent Supreme Court decisions striking down contribution limits, he has forcefully pushed for a constitutional amendment to put limits on campaign spending and called the flood of dark money like the Koch brothers' "the greatest threat to our democracy that I have witnessed during my time in public service."

BOTTOM LINE: The Koch brothers' enormous spending to influence elections and policy outcomes is not slowing down at all in 2014. If anything, it is becoming more expansive, with new organizations joining the network and an increased focus on the state and local level. The more they spend trying to influence our political system to protect their bottom lines at the expense of everyone else, the more important it becomes to expose their goal and work to stop their outsized influence.

Like CAP Action on [Facebook](#) and follow us on [Twitter](#)!

| | | | |
|----------------------|---------------------|--|-----------------|
| POLITICO presents... | CAMPAIGN Pro | JUNE 25 | RSVP> |
| | | 5:30 p.m. | |
| | LAUNCH EVENT | Sponsored by  Microsoft | |

POLITICO

Kochs launch new super PAC for midterm fight

By: Kenneth P. Vogel and Darren Goode
June 16, 2014 09:20 PM EDT

During a closed-door gathering of major donors in Southern California on Monday, the political operation spearheaded by the Koch brothers unveiled a significant new weapon in its rapidly expanding arsenal — a super PAC called Freedom Partners Action Fund.

The new group aims to spend more than \$15 million in the 2014 midterm campaigns — part of a much larger spending effort expected to total \$290 million, sources told POLITICO.

It's an evolution for billionaire industrialists Charles and David Koch. The vast network of political nonprofit groups they helped build has mostly funneled its unprecedented political spending into issue-based campaigns that usually slam Democrats for supporting big government but seldom explicitly ask voters to support GOP candidates.

(Also on POLITICO: Inside the money wars)

That's expected to change under Freedom Partners Action Fund, according to Marc Short, president of Freedom Partners Chamber of Commerce, an increasingly powerful force in the Koch network that will operate in association with the new super PAC.

"The Freedom Partners Action Fund will support candidates who share our vision of free markets and a free society and oppose candidates who support intrusive government policies that push the American Dream out of reach for the American people," Short told POLITICO after a presentation to donors at the St. Regis Monarch Beach resort in Dana Point, California.

The gathering is the latest in a series of twice-annual so-called seminars that the Kochs started holding in 2003 to raise cash from wealthy donors after treating them to a series of slickly produced presentations from handpicked politicians, conservative media stars and operatives from Koch-backed groups.

(Also on POLITICO: Hobby Lobby aims for Obamacare win, Christian nation)

Freedom Partners, which was created in 2011, now organizes and hosts the seminars. The theme of the St. Regis seminar — "American Courage; Our commitment to a free society" — was printed on massive posters evoking an idyllic turn-of-the-century immigration motif. The posters, which depicted an immigrant family gazing in awe at the Statue of Liberty in the distance, were displayed throughout the St. Regis. A photo of one was provided upon request to POLITICO by Freedom Partners spokesman James Davis, who explained that the purpose of the seminar was "continued discussions about advancing a free society with the theme of American Courage."

6/19/2014

Kochs launch new super PAC for midterm fight - POLITICO.com Print View

Among the dignitaries who was scheduled to address the crowd was Sen. Marco Rubio (R-Fla.), whose office declined to comment on his appearance. It was initially reported by the Daily Beast, which also first reported the \$290 million overall spending goal.

Democrats are sure to seize on the new Freedom Partners super PAC as yet more fodder in their mounting campaign to caricature the brothers as evil puppeteers manipulating Republicans. The Democratic Congressional Campaign Committee sent a fundraising missive Sunday declaring the Daily Beast's report "AWFUL NEWS" and pleading "if we can't start closing this gap TODAY, the Koch brothers WILL buy the election for John Boehner and the GOP."

A spokesman for Koch Industries, the Koch brothers' privately held industrial conglomerate, referred all questions to Freedom Partners. A Koch Industries website entry posted before Freedom Partners took over responsibility for the seminars describes them as an opportunity for "America's greatest philanthropists and most successful business leaders" to "discuss solutions to our most pressing issues and strategies to promote policies that will help grow our economy, foster free enterprise and create American jobs."

Follow @politico

The events are typically held under extremely tight security and attendees are warned not to divulge the proceedings. They typically conclude with pledge sessions that have almost a revival-type feel where it's not unusual for donors to promise six- and seven-figure checks into the political cash pool that is now administered by Freedom Partners. Since most of the groups in the network don't disclose individual donations, the names of the donors are often kept secret.

The new super PAC, by contrast, will be obligated to disclose its donors, which makes it unique in Koch World and seems to be part of a move by Freedom Partners to introduce some transparency into the network's activities.

Freedom Partners Chamber of Commerce, unlike the super PAC, is registered as a 501(c)6 trade association, a section of the Tax Code that allows groups to shield donors' names. It initially acted as something of a bank for the Koch network, mostly writing grants to other groups to air ads or mobilize activists around small-government, free-market issues. But Freedom Partners, which doled out \$236 million in grants in 2012, is playing an increasingly larger role, including airing its own ads, as the Koch network moves to centralize its political operations.

During breakout sessions Sunday at the St. Regis, Freedom Partners research director Karen Steward joined veteran Koch aide Nancy Pfotenhauer, now a senior adviser to the group, to talk about its expanded spending on energy-related issues, which is expected to include more than \$13 million in spending ahead of the midterms.

The energy initiative is seen by Koch Kremlinologists as emblematic of Freedom Partners' growth. Whereas in 2012, the group donated \$1.5 million to American Energy Alliance, a nonprofit group that aired \$3.6 million of ads attacking President Barack Obama over rising gas prices, now Freedom Partners is increasingly also taking on such campaigns itself.

AEA president Tom Pyle welcomed Freedom Partners' expanded footprint, which he cast as important in winning an increasingly contentious debate around energy issues and greenhouse gas emissions that has drawn big-spending by deep-pocketed environmental groups and liberal donors. The retired San Francisco hedge fund billionaire Tom Steyer is planning to underwrite a \$100-million campaign to elect candidates who support aggressive efforts to

6/19/2014

Kochs launch new super PAC for midterm fight - POLITICO.com Print View

combat climate change. Steyer has sought cash for his political effort from rich donors who attend secretive gatherings of the liberal Democracy Alliance club, which bears some similarities to the Koch network and its meetings.

"The fact that the Freedom Partners network has recognized this and is throwing their hat into the ring on energy and environmental issues is welcoming news," said Pyle. "We're pleased that they are joining the fight to promote free market energy policies that will improve the lives of millions of Americans."

The Koch network raised \$70 million at its first donor seminar of the 2014 election cycle in April 2013, as revealed in the new book, "Big Money: 2.5 Billion Dollars, One Suspicious Vehicle, and a Pimp — on the Trail of the Ultra-Rich Hijacking American Politics." And the Daily Beast reported that the network collected nearly \$170 million in pledges at its January seminar, making \$290 million a seemingly attainable goal.

The projected tally underscores the migration of power and money away from the political party committees to major donors and outside groups, generally, and the Koch network specifically. In 2012, the biggest spending party congressional campaign arm — Democratic Congressional Campaign Committee — spent only \$183 million.

© 2014 POLITICO LLC



State of West Virginia
Office of the Attorney General

Patrick Morrissey
Attorney General

June 6, 2014

(304) 558-2021
Fax (304) 558-0410

Via Certified Mail & Email
The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, DC 20460
McCarthy.Gina@EPA.gov

**Re: EPA's Asserted Authority Under Section 111(d) Of The Clean Air Act To
Regulate CO₂ Emissions From Existing Coal-Fired Power Plants**

Dear Administrator McCarthy:

On June 2, 2014, the United States Environmental Protection Agency ("EPA") launched one of the most far-reaching and expensive regulatory projects in American history: the *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units* ("Proposed Rule").¹ The Proposed Rule seeks to impose limitations on CO₂ emitted from existing coal-fired power plants, requiring a staggering 30% reduction in the emissions from these plants across the country in a mere 15 years. West Virginia—a major consumer of coal-generated electricity and one of the leading producers of coal—will be uniquely harmed by the restrictions of the Proposed Rule.

As the chief legal officer for the State of West Virginia, I respectfully request that you withdraw the Proposed Rule immediately because EPA lacks the legal authority to adopt that Rule. In the *Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units* ("Legal Memorandum" or "Mem.") that was issued together with and incorporated by reference into the Proposed Rule,² EPA offers only one legal basis for the Rule: the rarely invoked Section 111(d) of the Clean Air Act ("CAA"). See 42 U.S.C. § 7411(d). The problem is that Section 111(d) affirmatively *excludes* precisely what EPA is attempting to do in the Proposed Rule.

¹ The Rule has not yet been published in the *Federal Register* and is currently available at <http://www2.epa.gov/sites/production/files/2014-05/documents/20140602proposal-cleanpowerplan.pdf>.

² <http://www2.epa.gov/sites/production/files/2014-05/documents/20140602tsd-legal-memorandum.pdf>.

State Capitol Building 1, Room E-26, 1900 Kanawha Boulevard East, Charleston, WV 25305

The Honorable Gina McCarthy
June 6, 2014
Page 2

As this letter explains, EPA lacks authority under the plain text of Section 111(d), as it appears in the United States Code, to promulgate the Proposed Rule. Section 111(d) expressly prohibits EPA from regulating “any air pollutant . . . emitted from a[n] [existing] source category which is regulated under [the national emission regime in Section 112 of the CAA].” 42 U.S.C. § 7411(d). Given that EPA has imposed extensive and onerous regulations on existing coal-fired power plants under Section 112, the agency cannot now use Section 111(d) to require regulation of CO₂ emissions from those same existing plants. This conclusion is so apparent that even EPA concedes in its Legal Memorandum that a “literal reading” of Section 111(d) prohibits the Proposed Rule. Mem. 26; *see also* 70 Fed. Reg. 15,994, 16,032 (Mar. 29, 2005) (EPA making the same admission in a prior rulemaking).

The *only* textual justification that EPA’s Legal Memorandum offers for departing from the “literal” terms of Section 111(d) is unpersuasive. The agency relies entirely on a one-sentence clerical entry in the 1990 Amendments to the Clean Air Act that was not codified in the U.S. Code but appears in the Statutes at Large. That entry, even EPA has admitted, was clearly a mistake because it sought to make a technical correction rendered moot by another amendment. *See* 70 Fed. Reg. at 16,031 (describing the entry as a “drafting error”). Nevertheless, EPA now claims that it must give meaning to this mistake and, as a result, has announced an interpretation of Section 111(d) that directly conflicts with the language in the U.S. Code. EPA’s interpretation rewrites Section 111(d) from a prohibition on the regulation of “any air pollutant . . . emitted from a source category which is regulated under [Section 112],” as stated in the U.S. Code, to a more limited prohibition on the regulation of “any *hazardous* air pollutant” emitted from such a source category. This sort of reasoning would be wrong under any circumstance, but it is particularly improper here, where it is being offered as the justification for one of the most costly regulations in this Nation’s history.

In light of the profound legal infirmities with the Proposed Rule, EPA’s unprecedented policy will not survive judicial review. As such, it would be contrary to the public interest to proceed with publication in the *Federal Register*. Failure to withdraw the Proposed Rule will only cause citizens, States, industry, and environmental groups to waste valuable resources analyzing and commenting on a futile endeavor. Moreover, given the short timeframe for compliance with the Rule’s objectives, many of these parties will be required to incur significant and unnecessary costs. This will trigger unwarranted market responses and economic dislocation from coerced reduction of the use of coal as parties struggle to meet the anticipated requirements. This is unacceptable. No matter how fervent the desire by some to advance the policies underlying these regulations, EPA cannot—and should not—do so at the expense of the rule of law.

A. EPA Has Conceded That The Proposed Rule Is Unlawful Under The “Literal” Terms Of The Clean Air Act

The only authority invoked by EPA for the onerous requirements in the Proposed Rule is Section 111(d) of the Clean Air Act, a little-used provision that grants EPA limited power to require States to regulate air pollutants from existing sources. Mem. 11-12. As it appears in the U.S. Code, Section 111(d) requires the EPA Administrator under narrow circumstances to

The Honorable Gina McCarthy
June 6, 2014
Page 3

“prescribe regulations which shall establish a procedure . . . under which each State shall submit to the Administrator a plan which establishes standards of performance” for certain existing sources and certain air pollutants. Among other things, the statutory provision specifically *excludes* from the Administrator’s authority the power to prescribe regulations relating to “standards of performance for any existing source for any air pollutant . . . emitted from a source category which is regulated under section 7412 of this title [*i.e.*, Section 112 of the CAA].” 42 U.S.C. § 7411(d). EPA admits in its Legal Memorandum for the Proposed Rule that “a literal reading of that language” means that “EPA c[an] not regulate *any* air pollutant from a source category regulated under section 112” of the Clean Air Act. Mem. 26 (emphasis added); *accord* 70 Fed. Reg. at 16,032 (EPA reaching the same conclusion). Simply put, Section 111(d)’s plain text provides that if an existing source category is regulated under Section 112, that source category may not also be regulated under Section 111(d).

The regime codified in Sections 112 and 111 is part of a measured, coherent approach to regulating air pollutants from new and existing pollution sources. Section 112 of the Clean Air Act concerns national emissions standards for hazardous air pollutants (“HAPs”) emitted from any number of new and existing sources. *See* 42 U.S.C. § 7412. Whether a source category is regulated under Section 112 is generally dependent upon a number of factors. *Id.* § 7412(c). With regard to coal-fired power plants, Congress specially provided that those sources need only be regulated under Section 112 if the Administrator finds such regulation to be “appropriate and necessary.” *Id.* § 7412(n). Section 111(d) in turn addresses the emission of air pollutants emitted from *existing* sources *not* regulated under Section 112. Specifically, when EPA has chosen not to regulate a source category nationally under Section 112, emissions from existing sources within that category must be subject instead to state-by-state emission standards under Section 111(d), assuming certain other predicates have been satisfied. The rest of Section 111, which is not at issue here, is not restricted by the scope of Section 112 and concerns national emissions standards for air pollutants emitted from *new* sources.

In the present case, it is clear that EPA has no authority under Section 111(d) to regulate “any” emission from coal-fired power plants, including CO₂ emissions. EPA categorized coal-fired power plants as part of a “source category” under Section 112 in 2000, *see* 65 Fed. Reg. 79,825, 79,826 (Dec. 20, 2000), and the D.C. Circuit in 2008 rejected EPA’s attempt to withdraw that finding, *see New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008). Then, in 2012, EPA imposed significant Section 112 restrictions on coal-fired power plants, *see* 77 Fed. Reg. 9,304 (Feb. 16, 2012); 40 C.F.R. Part 63 subpart UUUUU, which the D.C. Circuit recently upheld, *see also White Stallion Energy Ctr., LLC v. EPA*, ___ F.3d ___, 2014 WL 1420294 (D.C. Cir. Apr. 15, 2014). Under the “literal” reading of Section 111(d), Mem. 26, these rules regulating existing coal-fired power plants under Section 112 prohibit EPA from invoking Section 111(d) to adopt the Proposed Rule.

B. EPA’s Arguments Based Upon A Clerical “Drafting Error” In The 1990 Clean Air Act Amendments Cannot Displace The “Literal” Terms Of Section 111(d)

Faced with the unambiguous terms of Section 111(d) in the U.S. Code, EPA falls back in its Legal Memorandum to an erroneous prior analysis that the agency conducted in 2005, in

The Honorable Gina McCarthy
 June 6, 2014
 Page 4

which it concluded that Section 111(d) is actually “ambiguous” and therefore subject to the agency’s “reasonable” interpretation. Mem. 8, 26. That 2005 analysis—which was part of a rule under Section 111(d) that the D.C. Circuit vacated in *New Jersey v. EPA*, 517 F.3d 574—based its conclusion entirely upon a clerical entry in the 1990 Amendments to the Clean Air Act that was not codified in the U.S. Code but appears in the Statutes at Large. According to EPA, the 1990 Amendments included two entries relevant to Section 111(d). Both entries appear in the Statutes at Large, but only the first amendment—described by EPA as the “substantive” one—was incorporated into the U.S. Code. EPA argues that the mere existence of the second, clerical amendment creates an ambiguity sufficient to call into doubt the language of Section 111(d) in the U.S. Code. EPA’s attempt to displace the plain terms of Section 111(d) was wrong in 2005 and remains so today.

1. *The Clerical “Drafting Error” In The 1990 Clean Air Act Amendments Does Not Create An Ambiguity In The Terms Of Section 111(d)*

As a threshold matter, EPA’s analysis is wrong because the one-sentence clerical entry referred to by EPA falls far short of the showing necessary to cast doubt on the plain terms of Section 111(d) as they appear in the U.S. Code. The “Code of Laws of the United States current at any time shall . . . establish prima facie the laws of the United States.” 1 U.S.C. § 204(a). As “prima facie” evidence, the language of Section 111(d) in the U.S. Code is displaced only where the U.S. Code is “inconsistent” with the Statutes at Large. See *Stephan v. United States*, 319 U.S. 423, 426 (1943). There is no inconsistency here.

A review of the two relevant entries in the Statutes at Large reveals that the clerical entry does not create an ambiguity or inconsistency, but rather is—as even EPA has admitted—a “drafting error [that] should not be considered.” 70 Fed. Reg. at 16,031.

The first relevant entry appears in the Statutes at Large among a list of other entries making *substantive* amendments to Section 111. Prior to these amendments in 1990, Section 111(d) had prohibited EPA from requiring state-by-state regulation of any air pollutant on the list of HAPs published under Section 112(b)(1)(A). This particular amendment made a significant substantive change by replacing the reference to “112(b)(1)(A)” with the language that now appears in the U.S. Code—“emitted from a source category which is regulated under section 112.” Pub. L. No. 101-549, § 108(g), 104 Stat. 2399, 2467 (1990). As a result, the restriction in Section 111(d) changed from one focused on HAPs regulated under Section 112 to one focused instead on source categories regulated under that section.

The second relevant entry appears much later in the Statutes at Large among a list of purely *clerical* changes—entitled “Conforming Amendments.” Pub. L. No. 101-549, § 302(a), 104 Stat. 2399, 2474 (1990). As explained in the Senate’s Legislative Drafting Manual, “Conforming Amendment[s]” are “amendment[s] of a provision of law that [are] necessitated by the substantive amendments or provisions of the bill.” Senate Legislative Drafting Manual § 126(b)(2)(A). They effectuate the sorts of ministerial changes required to clean up a statute after it has been substantively amended. Thus, conforming amendments “include[] amendments,

The Honorable Gina McCarthy
June 6, 2014
Page 5

such as amendments to the table of contents, that formerly may have been designated as clerical amendments.” *Id.*

Consistent with its description as a conforming amendment, this particular entry sought simply to bring up to date the cross-reference in Section 111(d) to Section 112(b)(1)(A). Other amendments to the Clean Air Act in 1990 had eliminated Section 112(b)(1)(A) entirely and replaced it with Sections 112(b)(1), 112(b)(2), and 112(b)(3). This clerical amendment was designed solely to account for those changes. Specifically, it provided that “Section 111(d)(1) of the Clean Air Act is amended by striking ‘[112](b)(1)(A)’ and inserting in lieu thereof ‘[112](b).’” Pub. L. No. 101-549, § 302(a). Unlike the substantive amendment described above, this non-substantive amendment would not have changed the restriction in Section 111(d) from its pre-1990 focus on hazardous air pollutants regulated under Section 112.

In light of the substantive amendment, however, the second non-substantive amendment was clearly an unnecessary mistake or, as EPA has put it, a “drafting error.” When the conforming amendment is applied after the substantive amendment, as is required by the very nature of conforming amendments, there is no clerical correction left to make because the cross-reference to 112(b)(1)(A) has already been removed by the substantive amendment. This is consistent with the codifier’s notation in the U.S. Code that the clerical amendment “could not be executed.” Revisor’s Note, 42 U.S.C. § 7411. Where a conforming amendment is entirely unnecessary, it is rightly understood as a clerical mistake that need not be given any effect. *See Am. Petroleum Inst. v. SEC*, 714 F.3d 1329, 1336-37 (D.C. Cir. 2013).

EPA has correctly recognized as much—noting in 2005, for example, that the clerical entry “is a drafting error and therefore should not be considered”—but it then wrongly determined that it nevertheless “must attempt to give effect to both the [substantive] and [clerical] [entries], as they are both part of the current law.” 70 Fed. Reg. at 16,031; *accord* Mem. 21 (recognizing “apparent drafting errors during enactment of the 1990 CAA Amendments”). This fundamental flaw dooms EPA’s analysis. As the D.C. Circuit recently explained, where a mistake in renumbering a statute and correcting a cross-reference conflicts with substantive provisions of that statute, the mistake should be considered most likely “the result of a scrivener’s error[]” and should not be treated as “creating an ambiguity.” *Am. Petroleum*, 714 F.3d at 1336-37. Under this reasoning, it is clear that the clerical entry simply “should not be considered,” as EPA originally concluded. 70 Fed. Reg. at 16,031. At the very minimum, the existence of such a non-substantive, “drafting error” is not enough to overcome the fact that language codified in the U.S. Code is “prima facie” evidence of “the laws of the United States.” 1 U.S.C. § 204(a).

Put another way, EPA now asserts that the non-substantive and substantive amendments—if each were implemented into Section 111(d)’s prior text standing alone—would create two separate versions of Section 111(d). Mem. 24. The first version incorporates only the non-substantive amendment and therefore retains the pre-1990 prohibition on regulating HAPs under Section 111(d), regardless of whether the source category emitting those HAPs is regulated under Section 112. The second version is the one that actually appears in the U.S.

The Honorable Gina McCarthy
 June 6, 2014
 Page 6

Code and *substantively changes* the prohibition to forbidding EPA from regulating under Section 111(d) any air pollutants emitted by any existing source regulated under Section 112. Mem. 24.

But this approach of treating both amendments as, in effect, creating two different versions of 111(d) directly contradicts EPA's concession that the inclusion of the non-substantive entry in the Statutes at Large was merely a clerical "drafting error." Critically, the *only* evidence EPA may use in its attempt to rebut the terms of Section 111(d) as expressed in the U.S. Code is the Statutes at Large, *see Stephan*, 319 U.S. at 426, and *the Statutes at Large simply do not reflect two separate versions of Section 111(d)*. Rather, they reflect only two amendments—one a substantive change and one a mere clerical entry—and the clerical entry is rendered moot by the substantive amendment.³

2. EPA's Policy Arguments Create No Ambiguity In Section 111(d)

EPA's policy arguments against the "literal" terms of Section 111(d) also cannot generate an ambiguity where none exists in the plain statutory text. As a threshold matter, even if EPA were correct that the "literal" terms of Section 111(d) produce overly harsh results for EPA's regulatory authority, EPA may not "redraft a statute in order to avoid what the agency characterized as the 'absurd results' that would flow from the statute's language" where it is, as here, "not inconceivable that Congress meant what the statute says." *Ass'n of Am. R.R.s. v. Surface Transp. Bd.*, 162 F.3d 101, 105 (D.C. Cir. 1998) (quoting *Mova Pharmaceutical Corp. v. Shalala*, 140 F.3d 1060, 1072 (D.C. Cir. 1998)). In any event, EPA's policy arguments miss the mark because the "literal" terms of Section 111(d) are part of a rational regulatory scheme.

This regime quite logically avoids subjecting *existing* sources to both new national standards for hazardous pollutants under Section 112 as well as new state-by-state standards under Section 111, while permitting regulation under both Section 111 and Section 112 of *new* sources. Unlike with new sources, the imposition of additional regulatory burdens on existing sources raises questions of fairness and lost investments, as existing sources that were built under a different regulatory regime may or may not have the technological or financial ability to come into compliance with two sets of new rules. Indeed, both Sections 112 and 111(d) recognize that the cost of compliance must be weighed against maximum achievable reductions. *See* 42 U.S.C.

³ Although some had argued in 2005 and 2008 that the clerical entry should take precedence over the substantive entry, EPA repeatedly and properly rejected those arguments as having "no merit." Final Brief of Respondent EPA, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008), 2007 WL 2155494, at *103 n.33; *accord* 70 Fed. Reg. at 16,031-32. For example, the agency has explained that the so-called "last in point of arrangement" rule of statutory construction "is inapplicable here, as it applies to discrete sections of the same Act, not competing amendments to the same section of an Act, as is the case here." 2007 WL 2155494, at *103 n.33. Indeed, EPA *emphatically* declared that it is "hard to conceive" that Congress would have intended to give effect to the clerical change over the substantive change, because, among other things, only the substantive change gives meaning to Section 112(n)(1)(A), which was also adopted during the 1990 Amendments to the Clean Air Act. Section 112(n)(1)(A) required EPA to conduct a study to determine whether coal-fired power plants "should even be regulated under section 112." 70 Fed. Reg. at 15,995. As EPA recognized, this provision is strong evidence that Congress did not wish to subject such power plants to "duplicative or overlapping regulation," but rather sought to force EPA to choose between regulating power plants as a source category under Section 112 or 111(d), consistent with the substantive change and not the clerical one. *Id.* at 16,031.

The Honorable Gina McCarthy
June 6, 2014
Page 7

§§ 7411(a)(1), 7411(d), 7412(d). In establishing this regime, under which regulation of existing sources occurs either under Section 112 or Section 111(d), Congress properly determined that requiring the same existing source categories to comply with two functionally-independent regulatory regimes would threaten these sources' economic viability. Indeed, EPA has recently imposed costly regulations on coal-fired power plants, which will cost those plants more than \$9 billion dollars *per year*. See EPA, *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards* at 3-13 (Dec. 2011), available at <http://www.epa.gov/ttn/ecas/regdata/RIAs/matsriafinal.pdf>. EPA's Proposed Rule would subject those same plants to billions of dollars of additional costs, through the imposition of duplicative regulatory requirements, forcing many of those plants to close. That is the exact scenario Congress intended to avoid when it amended Section 111(d).

In light of this understanding, EPA's policy arguments in favor of ignoring Section 111(d)'s plain language are insubstantial.

EPA first claims that a "literal reading" of Section 111(d) would be contrary to "Congress' desire in the 1990 CAA Amendments to require EPA to regulate more substances." Mem. 25-26. But the mere fact that *one* of the broad purposes behind the 1990 Amendments was to require EPA to regulate more substances under Section 112 does not mean that Congress was not cognizant of other values, such as the need to avoid costly double regulation. In fact—as EPA itself admitted in its 2005 analysis—the text, structure, and history of the 1990 Amendments indicates a desire by Congress to limit EPA's ability to doubly regulate coal-fired power plants. As explained above, the discussion and ultimate adoption of Section 112(n)(1)(A) "reveals" that Congress did not want to subject coal-fired power plants to "duplicative or otherwise inefficient regulation." 70 Fed. Reg. at 15,999. It is perfectly reasonable to understand Section 111(d) as seeking to forward this same general goal of avoiding duplicative regulation.

EPA's other policy argument is "the fact that the EPA has historically regulated non-HAPs under section 111(d), even where those air pollutants were emitted from a source category actually regulated under section 112." Mem. 26. But it is no answer to the unambiguous textual requirement in the 1990 Amendments to point to EPA's *pre-amendment* practice of regulating non-HAPs under Section 111(d). EPA at one time enjoyed the power of regulating existing source categories on separate regulatory tracks. See Mem. 9-10 & n. 17. When Congress amended the Clean Air Act in 1990 to require EPA to regulate more HAPs under Section 112, however, Congress sensibly paired that increased power with a textual limitation—embodied in Section 111(d)—against using that enhanced authority to impose duplicative regulations on the same existing source categories. EPA's argument that the "literal" terms of Section 111(d) would hamstring it from using a provision that it has only used to regulate "four pollutants from five source categories" in "forty years," Mem. 9, cannot possibly provide a basis for disregarding the literal terms of the Clean Air Act.

The Honorable Gina McCarthy
 June 6, 2014
 Page 8

3. *EPA's Attempt To Resolve The Supposed Ambiguity Is Nevertheless Impermissible*

Even if the clerical error created an ambiguity in Section 111(d)'s "literal" text, EPA's analysis would still fail. To begin with, the agency's claim to some unidentified form of "deference" for its attempt to rewrite Section 111(d) is meritless. Mem. 12. Courts defer to agencies under the test set forth in *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984), because there is reason to believe that when Congress "left ambiguity in a statute," it "understood that the ambiguity would be resolved, first and foremost, by the agency, and desired the agency (rather than the courts) to possess whatever degree of discretion the ambiguity allows." *Smiley v. Citibank (South Dakota), N.A.*, 517 U.S. 735, 740-741 (1996). EPA could not possibly argue that Congress intended EPA to resolve the import of Congress's inadvertent clerical "drafting error." Indeed, EPA does not so argue. EPA offers no justification whatsoever for its bald assertion that it is entitled to deference on this issue, and does not even cite to *Chevron* in its discussion of the issue.

In any event, EPA could not possibly prevail under *Chevron*—or some other similar form of deference—because it offers an "impermissible construction" of the supposedly ambiguous statute. *Aid Ass'n for Lutherans v. U.S. Postal Serv.*, 321 F.3d 1166, 1178 (D.C. Cir. 2003). EPA would interpret Section 111(d) as follows: "Where a source category is regulated under section 112, a section 111(d) standard of performance cannot be established to address any HAPs listed under section 112(b) that may be emitted from that particular source category." Mem. 26. This is flatly inconsistent with the substantive provision, embodied in the U.S. Code, that EPA may not "establish[] standards of performance for any existing source for *any* air pollutant . . . emitted from a source category which is regulated under [Section 112 of the CAA]." 42 U.S.C. § 7411(d) (emphasis added). EPA's proffered interpretation effectively replaces the term "*any* air pollutant" with the term "hazardous air pollutant." Even under *Chevron*, an agency is not entitled to deference when its interpretation is so "manifestly contrary to the statute." *Mayo Found. for Med. Educ. & Research v. United States*, 131 S. Ct. 704, 711 (2011) (internal quotations omitted); *accord Petit v. U.S. Dep't of Educ.*, 675 F.3d 769, 785 (D.C. Cir. 2012).

If EPA wanted to give effect to its view of both the substantive and the clerical entries in the Statutes at Large—which, as explained above, EPA nonsensically claims create two versions of Section 111(d)—without impermissibly changing the text of either, it could have done so. As one commentator has explained, all of EPA's textual concerns could be satisfied by interpreting Section 111(d) to prohibit the regulation of "any air pollutant . . . which is not included on a list published under . . . 112(b) [revision of the prior version of Section 111(d) after inputting the clerical entry] or emitted from a source category which is regulated under section 112 [revision of the prior version of Section 111(d) after inputting the substantive entry]." William J. Haun, *The Clean Air Act as an Obstacle to the Environmental Protection Agency's Anticipated Attempt to Regulate Greenhouse Gas Emissions from Existing Power Plants*, 14 Engage: J. Federalist Soc'y Prac. Groups 35, 38 (Mar. 2013) (parentheticals revised). EPA does not—and could not—dispute that this is the only interpretation that gives *full* effect and meaning to every word of both "versions" of Section 111(d) that it believes the Statutes at Large embodies. Accordingly, to the extent EPA continues to reject the position that the non-substantive entry must be discarded as an

The Honorable Gina McCarthy
June 6, 2014
Page 9

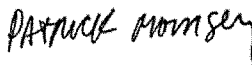
inadvertent “scrivener’s error[.],” *see Am. Petroleum*, 714 F.3d at 1337, the agency is duty-bound to adopt this alternative interpretation.

EPA’s refusal to advance or acknowledge this alternative is unsurprising, of course, because under this approach the Proposed Rule would still be unlawful. Under this alternative interpretation, EPA would be prohibited from using Section 111(d) *both*: (1) to require regulation of any HAP listed in Section 112(b), regardless of whether the HAP is being emitted from a source regulated under Section 112; *and* (2) to require regulation of *any* pollutant emitted from a source category that is regulated under Section 112. Even under this alternative reading, EPA still cannot rely on Section 111(d) as a basis for the Proposed Rule because of the regulatory scheme established under Section 112.⁴

* * *

EPA has fundamentally erred in relying upon the flawed reasoning in the vacated 2005 rule to justify the Proposed Rule. It is simply unconscionable for EPA to go forward with this massive and costly regulation based entirely upon what it has admitted to be a clerical “drafting error.” I urge you to withdraw the Proposed Rule immediately and avoid needless litigation.

Sincerely,



Patrick Morrissey
Attorney General of West Virginia

cc: Avi Garbow
General Counsel, Environmental Protection Agency

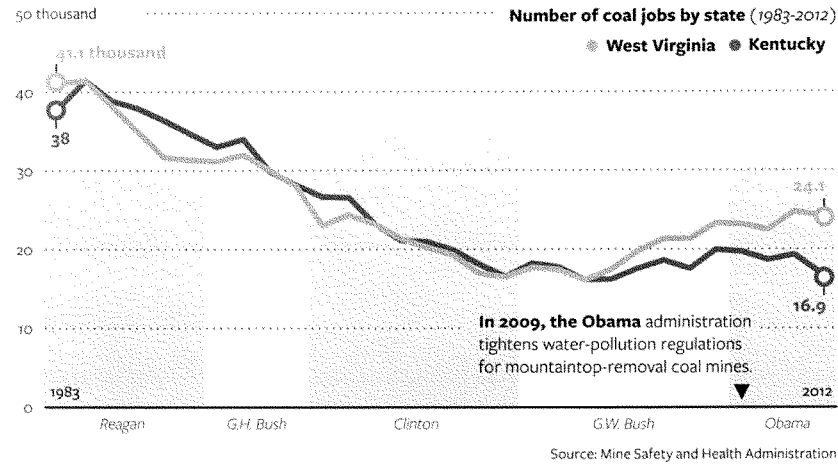
Hon. Eric Holder
Attorney General, United States Department of Justice

⁴ In its prior briefing on this issue, EPA cited to *Citizens to Save Spencer County v. EPA*, 600 F.2d 844 (D.C. Cir. 1979), to justify its claim that it is entitled to deference. Final Brief of Respondent EPA, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008), 2007 WL 2155494, at *103. In its Legal Memorandum here, EPA does not cite or rely upon this case, and with good reason. In *Citizens to Save Spencer County*, EPA was forced to deal with a situation where one unquestionably substantive provision specifically conflicted with another unquestionably substantive provision. Faced with this truly irreconcilable conflict between two substantive provisions, the D.C. Circuit upheld EPA’s adoption of an interpretation that gave “maximum possible effect to both.” 600 F.2d at 872. In the present case, in contrast, the so-called conflict is between a substantive amendment and a clerical “drafting error,” in which case the substantive amendment simply prevails. *Am. Petroleum*, 714 F.3d at 1336-37. In addition, while EPA in *Citizens to Save Spencer County* had no option but to adopt a middle ground between two irreconcilable statutory commands, here EPA has ignored an interpretation that would give “maximum effect” to its own view of both the substantive and non-substantive provisions.

NationalJournal

THE NEW ENERGY PARADIGM

Coal Country's Decline Has a Long History



A loss of jobs in the coal industry is not a recent development. Employment in this sector has been declining steadily for the past 30 years. (Stephanie Spangola)



By Patrick Reis
Follow on Twitter

October 31, 2013

Sen. Rand Paul sees a "depression" in Appalachia's coal country, and he says there's one man to blame for it: President Obama.

The Kentucky Republican isn't alone in his fury over Obama's treatment of the coal industry. A bipartisan bloc of elected officials from across the region shares his views, including two influential West Virginia Democrats, Sen. Joe Manchin and Rep. Nick Rahall. The critics argue that by tightening rules on mountaintop-removal coal mining and imposing greenhouse-gas emission limits on coal-fired power plants, Obama and his allies are regulating the industry out of business—and putting legions of coal miners out of work.

The president's regulatory push has left him and his party deeply unpopular across the region: Bill Clinton won Kentucky and West Virginia in both of his presidential elections; Obama lost both states, twice, in landslides.

But for all the rage over Obama's environmental agenda, mining jobs began disappearing in the region long before he entered the White House, for reasons that have nothing to do with regulations now coming out of Washington.



SHARE THIS STORY



In fact, coal mining jobs in Appalachia fared far worse under the Reagan, Clinton, and George H.W. Bush administrations than they have under Obama.

According to employment counts from the Mine Safety and Health Administration, from 1983—the earliest year for which MSHA had data—to 1989, combined coal jobs in West Virginia and Kentucky fell from 79,000 to 64,000.

In the following four years under the first President Bush, coal jobs in the two states fell to 56,000. And by the final year of the Clinton administration, the states' combined total of mining jobs had fallen to a nadir of 33,000.

By comparison, West Virginia and Kentucky coal-mining payrolls have been relatively stable during Obama's first four years in office: In 2009, there were just under 43,000 coal miners in the two states combined. In 2012, the latest year for which MSHA has final data, the count totaled just over 41,000.

So what's driving the decline? First and foremost: changes in the industry.

Despite mining employment being cut nearly in half since 1983, the two states' combined coal output has basically held steady, dropping from 245 million short tons in 1983 to 240 million short tons in 2011.

Advances in mining technology have made miners more efficient.

Indeed, the traditional images of coal mines—dark holes filled with men swinging pickaxes and pushing carts—are no more. Today, it is machines that are ripping coal from the mines' walls, and then automatic conveyor belts whipping the fuel back to the surface.

And much of the production has moved above ground entirely, thanks to a practice known as mountaintop-removal mining, in which miners use controlled explosions to open mountains and mine the newly exposed coal seams.

For the miners and other industry employees who still hold jobs, the increased productivity has paid off. According to the Bureau of Labor Statistics, nominal average annual coal industry employee wages in West Virginia sat at \$54,000. By 2012, the average employee was taking home nearly \$85,000.

The starring role of mechanization, however, does not mean that federal policies have no effect on the number of coal jobs.

The region saw its fortunes reverse under President George W. Bush, who in 2002 relaxed rules on mountaintop-removal mining to give companies more leeway to dump their leftovers into the region's waterways. From 2001 to 2008, West Virginia and Kentucky's combined coal industry experienced a mini-revival, adding an average of about 1,000 mining jobs per year.

But as industry officials argue they could experience another such revival, they face a new hurdle that had not yet fully taken off in the early 2000s. Today, they face stiffer competition from natural gas, which is both more abundant and less expensive due to the fracking boom.

This article appears in the November 1, 2013 edition of NJ Daily



June 16, 2014

Honorable Barack Obama
 President of the United States
 The White House
 1600 Pennsylvania Avenue, NW
 Washington, DC 20500

Dear Mr. President:

As Governors leading diverse States that both produce and consume energy, we ask that you pursue a pragmatic energy policy that balances our nation's economic needs, energy security, and environmental quality objectives.

As you know, the energy industry is a major source of job creation in our country, providing employment to millions of our citizens and bolstering U.S. economic competitiveness. America was able to meet almost 90 percent of its energy needs last year—the most since March 1985—in large part because of increased domestic energy production. We take pride in the fact that domestic production largely powers America and increasingly other economies as well, helping to eradicate poverty and to provide political stability around the globe.

Development of our resources has put more money in the pockets of working families and has helped the poor and elderly on fixed incomes, who can now more easily afford to run their air conditioning in the heat of the summer. For example, American natural gas production is reducing average retail electricity prices by 10 percent, saving households, on average, nearly \$1,000 per year between 2012 and 2015.

This significant accomplishment of increased U.S. energy independence, with its associated economic and health benefits, has been achieved largely by State policies—despite redundant and burdensome

federal regulation. Your proposed rules for regulating greenhouse gas (GHG) emissions from existing power plants and redefining the Waters of the United States (WOTUS) would unnecessarily expand federal authority over the States in energy policymaking and risk undermining our success.

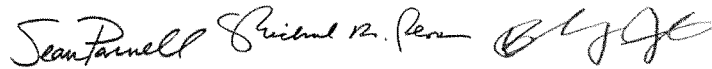
In an unprecedented move, your GHG emissions plan would largely dictate to the States the type of electricity generation they could build and operate. In addition, you seek to essentially ban coal from the U.S. energy mix. Your pursuit of this objective will heavily impact those of our states that rely primarily on coal for electricity generation—such a decision should not be made by unaccountable bureaucrats. Your Administration is also pushing for Washington to seize regulatory control of nearly all waters located in the States by expanding the definition of WOTUS. If successful, the federal government would become the arbiters of how our citizens, State highway departments, county flood control and storm water agencies, utilities, irrigation districts, and farmers use their water and their land.

Although we are still examining the impacts of the GHG proposal released on June 2 and the proposed expansion of WOTUS, we can confidently say that, according to the best available data, millions of jobs will be lost and billions of dollars will be spent over the coming decades in an effort to comply with these and other federal regulations. And those numbers stand to increase with every tightening of those standards – hitting particularly hard working families, poor, and elderly.

Perhaps most disturbing is the fact that your Administration is content to force Americans to bear these substantial costs where there are highly questionable associated environmental benefits. In fact, your EPA Administrator admitted during testimony to the U.S. Senate that there would be no climate mitigation benefits to America pursuing unilateral action. Moreover, in 2008, you personally guaranteed that under your energy plan, “electricity rates would necessarily skyrocket.” You admitted that your energy plan would have the following impact: “[Energy industries] would have to retrofit their operations—that will cost money. They will pass that money onto consumers.”

You rightly acknowledge that American citizens will literally pay the price of your energy agenda. They will also pay the price in the form of lost jobs and less reliable electricity. As representatives of the citizens who stand to lose so much while gaining next to nothing, it is our duty to confront this issue and to ask that you rescind the regulations you have put forth. Disposing of these regulations will protect Americans from the costs and burdens the rules would impose upon them and will ensure the continuation of America’s energy renaissance, which is indispensable to our country’s economic recovery and job creation and which is largely a result of State policies.

Sincerely,



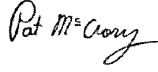
Governor Sean Parnell
Alaska

Governor Mike Pence
Indiana

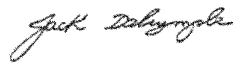
Governor Bobby Jindal
Louisiana



Governor Phil Bryant
Mississippi



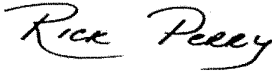
Governor Pat McCrory
North Carolina



Governor Jack Dalrymple
North Dakota



Governor Tom Corbett
Pennsylvania



Governor Rick Perry
Texas



Governor Matthew H. Mead
Wyoming