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EPA REGULATORY OVERREACH: IMPACTS ON AMERICAN COMPETITIVENESS

HEARING

BEFORE THE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

June 4, 2015

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EPA REGULATORY OVERREACH: IMPACTS ON AMERICAN COMPETITIVENESS

THURSDAY, JUNE 4, 2015

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The Committee met, pursuant to call, at 10:09 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Lamar Smith [Chairman of the Committee] presiding.

LAMAR S. SMITH, Texas
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RANKING MEMBER

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Full Committee

EPA Regulatory Overreach: Impacts on Industry

Thursday, June 4, 2015
9:00 a.m. – 11:00 a.m.
2318 Rayburn House Office Building

Witnesses

Mr. William Kovacs, Senior Vice President, Environment, Technology and Regulatory Affairs, U.S. Chamber of Commerce

Mr. Bob Kerr, President, Kerr Environmental Services Corp.

Dr. Jerome Paulson, Chair, Council on Environmental Health Executive Committee, American Academy of Pediatrics

Mr. Ross Eisenberg, Vice President, Energy and Resources Policy, National Association of Manufacturers

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HEARING CHARTER

EPA Regulatory Overreach: Impacts on American Competitiveness

Thursday, June 4, 2015
9:00 a.m. – 11:00 a.m.
2318 Rayburn House Office Building

PURPOSE

The Committee on Science, Space, and Technology will hold a hearing entitled *EPA Regulatory Overreach: Impacts on American Competitiveness* on Thursday, June 4, 2015, in Room 2318 of the Rayburn House Office Building. The hearing will examine the U.S. Environmental Protection Agency's (EPA) recent regulatory agenda, the lack of scientific and technical justification for these regulations, and their impact on American competitiveness in the global economy.

Witnesses will provide testimony on several proposed and final rules that have significant legal and economic implications for the American people. In particular, witnesses have been asked to focus their testimony on the Clean Power Plan, the National Ambient Air Quality Standards (NAAQS) for Ozone, and the Waters of the United States, recently rebranded the "Clean Water Rule" by EPA.

WITNESS LIST

- **Mr. Bill Kovacs**, Senior Vice President, Environment, Technology and Regulatory Affairs, U.S. Chamber of Commerce
- **Mr. Bob Kerr**, President, Kerr Environmental Services Corp.
- **Dr. Jerome Paulson**, FAAP, Chair, Council on Environmental Health Executive Committee, American Academy of Pediatrics
- **Mr. Ross Eisenberg,** Vice President, Energy and Resources Policy, National Association of Manufacturers

BACKGROUND

The EPA has recently proposed and finalized various regulations that will have significant impacts on the American people and businesses.

On June 2, 2014, EPA proposed the Clean Power Plan with the intent of regulating carbon emissions from existing source electricity generating units.[1] Under Section 111(d) of the Clean Air Act, EPA proposes that states formulate implementation plans to limit carbon

[1] Clean Power Plan Proposed Rule, U.S. EPA, *available at* http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule.

emissions.[2] The scope and manner in which the rule has been conceived by the agency has been met with considerable opposition from the states and industry groups.[3] The final rule for the Clean Power Plan is anticipated to be submitted this summer.

The Clean Power Plan would require states to meet requirements for carbon emissions from electricity generating units.[4] EPA proposes that states meet these requirements through four building blocks: improving the efficiency of coal steam electric generating units on an average of six percent, using combined cycle natural gas units up to a 70 percent capacity factor, constructing more zero and low-emitting power sources, and implementing energy efficiency measures to limit annual electricity demand by 1.5 percent annually.[5] Recently, the U.S. Energy Information Administration produced a report at the request of Chairman Smith that found that EPA's Clean Power Plan would force the retirement of a significant number of coal-fired power plants, increase electricity prices, and decrease American GDP.[6]

On November 25, 2014, the agency proposed a rule for ozone NAAQS, which would considerably tighten the ozone standard.[7] EPA's own regulatory impact analysis reports that this rule would cost up to $15 billion annually.[8] However, industry groups have found that EPA's analysis vastly undercuts the costs and believe that this rule could be the most expensive ever enacted by the agency.[9] EPA's proposed ozone rule would set more stringent standards, lowering the standard from the current 75 parts per billion (ppb) to a range of 65 to 70 ppb.[10] The Clean Air Act requires EPA to review the NAAQS every five years. EPA is proposing new standards based on the advice of the Clean Air Scientific Advisory Committee.[11]

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[2] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (June 18, 2014), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.
[3] U.S. Chamber of Commerce, Comments on Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generation Units, Dec. 1, 2014, *available at* https://www.uschamber.com/sites/default/files/12.1.14-_comments_to_epa_on_proposed_carbon_emission_standards_for_existing_power_plants_clean_power_plan.pdf; Comment From the Attorneys General of the States of Okla., W. Va., Neb., Ala., Fla., Ga., Ind., Kan., La., Mich., Mont., N.D., Ohio, S.C., S.D., Utah, Wyo. on Proposed EPA Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Generating Units *available at* http://www.ok.gov/oag/documents/EPA%20Comment%20Letter%20111d%2011-24-2014.pdf.
[4] U.S. EPA, EPA Fact Sheet: Clean Power Plan National Framework for States, *available at* http://www2.epa.gov/sites/production/files/2014-05/documents/20140602fs-setting-goals.pdf.
[5] *Id.*
[6] U.S. Energy Information Administration, Analysis of the Impacts of the Clean Power Plan, May 2015, *available at* http://www.eia.gov/analysis/requests/powerplants/cleanplan/pdf/powerplant.pdf.
[7] Proposed Rule for National Ambient Air Quality Standards for Ozone, U.S. EPA, *available at* http://www.epa.gov/airquality/ozonepollution/pdfs/20141125proposal.pdf.
[8] U.S. EPA, EPA's Proposal to Update the Air Quality Standards for Ground-Level Ozone, By the Numbers, *available at* http://www.epa.gov/groundlevelozone/pdfs/20141125fs-numbers.pdf.
[9] Nat'l Assoc. of Manufacturers, Economic Impacts of a 65 ppb National Ambient Air Quality Standard for Ozone, Feb. 2015, *available at* http://www.nam.org/Issues/Energy-and-Environment/Ozone/Economic-Impacts-of-a-65-ppb-NAAQS-for-Ozone-(NERA).pdf.
[10] Nat'l Ambient Air Quality Standards, 79 Fed. Reg. 75,234 (proposed Dec. 17, 2014) (to be codified at 40 C.F.R. pts. 50, 51, 52, et. Al.) *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-12-17/pdf/2014-28674.pdf.
[11] *Id.*

On May 27, 2015, EPA released the final rule expanding the definition of the "Waters of the United States" under the Clean Water Act.[12] While the agency clarified certain aspects of the rule, the final definition represents a tremendous expansion of EPA jurisdiction with regard to the Clean Water Act. While EPA's final rule does not regulate ditches to the same extent in the proposed rule, it does clearly define Clean Water Act jurisdiction over tributaries to traditionally navigable waters, waters adjacent to jurisdictional waters within a minimum of 100 feet within the 100-year floodplain up to a maximum of 1500 feet of the ordinary high water mark, prairie potholes and other isolated waters, as well as waters with a significant nexus within the 100-year floodplain of a traditional navigable water.[13]

Since the Clean Water Act's inception, EPA and the U.S. Army Corps of Engineers have promulgated a series of rules defining the agencies' jurisdiction over certain "Waters of the United States." EPA and the Army Corps are promulgating the current rule in response to various Supreme Court decisions setting forth tests to determine the scope of the "Waters of the United States" definition.

[12] U.S. EPA, Press Release, *Clean Water Rule Protects Streams and Wetlands Critical to Public Health, Communities and Economy*, May 27, 2015, *available at* http://yosemite.epa.gov/opa/admpress.nsf/0/62295CDDD6C6B45685257E52004FAC97.
[13] U.S. EPA, Fact Sheet Clean Water Rule, May 27, 2015, *available at* http://www.epa.gov/cleanwaterrule.

Chairman SMITH. The Committee on Science, Space, and Technology will come to order.

Without objection, the Chair is authorized to declare recesses of the Committee at any time.

Welcome to today's hearing titled "EPA Regulatory Outreach: Impacts on Industry." I am going to recognize myself for five minutes for an opening statement, and then I'll do the same for the Ranking Member.

Over the last year, the Environmental Protection Agency has released some of the most expensive and expansive regulations in its history. These rules will cost billions of dollars, place a heavy burden on American families, and diminish the competitiveness of American industry around the world.

Today's hearing will examine this Administration's unprecedented regulatory agenda and the manner in which EPA has used secret science, questionable legal interpretations, and flawed analysis to promote these rules. Specifically, we will hear from our witnesses about how the Clean Power Plan, the Ozone National Ambient Air Quality Standards, and the definition of the "Waters of the United States" adversely impact the American economy with little benefit to our environment.

The so-called Clean Power Plan is a power grab that will force states to reach arbitrary and often impossible targets for carbon emissions. These measures will impose tremendous costs on everyday Americans. It will shut down large numbers of affordable power plants, which increases the cost of electricity and puts the reliability of the electric grid into question. The Clean Power Plan will have an even greater impact on those who live on fixed incomes, such as the elderly and the poor, who are the most vulnerable to increases in the price for some of our most basic necessities like electricity. EPA asserts that the Clean Power Plan will help combat climate change. However, EPA's own data demonstrates that is not the case. The EPA data shows that this regulation would eliminate much less than one percent of global carbon emissions and would reduce sea-level rise by only 1/100th of an inch, the thickness of three sheets of paper. This rule represents massive costs without significant benefits. In other words, it's all pain and no gain.

EPA also seeks to impose stricter ozone standards by lowering the standard from the current 75 parts per billion to between 65–70 ppb. Analysis conducted by EPA shows that this rule would cost at least $15 billion annually, and industry groups believe the costs will be even greater. Once again, these costs come with few benefits. In fact, EPA's own figures show that since 1980, ozone levels have decreased by 33 percent. Today's air quality will continue to improve with the expected development of practical new technologies.

Last week, the EPA submitted its final rule to define the "Waters of the United States." This is the EPA's latest attempt to expand its jurisdiction and increase its power to regulate American waterways, even if that means invading Americans' backyards. The rule will make it difficult for farmers and others to improve their land and expand their businesses. While the draft rule left many questions as to which bodies of water the EPA will claim under its ju-

risdiction, the final rule is more specific. As many had predicted, EPA has claimed unprecedented jurisdiction over many different kinds of water, including those that temporarily result from a "drizzle." The EPA actually used that word, "drizzle." EPA will now have the authority to oversee features such as prairie potholes and even areas that are not always filled with water. Under this regulatory regime, Americans will be subject to required permits and the constant threat of government intervention. The onslaught of EPA regulations continues.

I look forward to hearing from today's witnesses about the impact of these burdensome EPA regulations.

[The prepared statement of Chairman Smith follows:]

PREPARED STATEMENT OF CHAIRMAN LAMAR S. SMITH

Over the last year, the Environmental Protection Agency (EPA) has released some of the most expensive and expansive regulations in its history.

These rules will cost billions of dollars, place a heavy burden on American families and diminish the competitiveness of American industry around the world.

Today's hearing will examine this unprecedented regulatory agenda and the manner in which EPA has used secret science, questionable legal interpretations, and flawed analysis to promulgate these rules.

Specifically, we will hear from our witnesses about how the Clean Power Plan, the Ozone National Ambient Air Quality Standards and the definition of the "Waters of the United States" unreasonably impact the American economy with little benefit to our environment.

The so-called Clean Power Plan, proposed by EPA last June, is a power grab that will force states to reach arbitrary and often impossible targets for carbon emissions.

These measures will impose tremendous costs on everyday Americans. It will shut down large numbers of affordable coal-fired power plants, which increases the cost of electricity and puts the reliability of the electric grid into question.

The Clean Power Plan will have an even greater impact on those who live on fixed incomes, such as the elderly and the poor, who are the most vulnerable to increases in the price for some of our most basic necessities like electricity.

EPA asserts that the Clean Power Plan will help combat climate change. However, EPA's own data demonstrates that is not the case.

Even EPA data shows that this regulation would eliminate much less than one percent of global carbon emissions and would reduce sea level rise by only 1/100th of an inch (according to NERA economic consulting), the thickness of three sheets of paper.

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EPA will now have the authority to oversee features such as "prairie potholes" and even areas that are not always filled with water.

Under this regulatory regime, Americans will be subject to stringent permitting and the constant threat of government intervention. The onslaught of EPA regulations continues.

I look forward to hearing from today's witnesses about the impact of these burdensome EPA regulations.

Chairman SMITH. I now recognize the Ranking Member, the gentlewoman from Texas, Ms. Johnson, for her opening statement.

Ms. JOHNSON OF TEXAS. Thank you very much, Mr. Chairman.

Unfortunately, today's hearing is just a continuation of the same familiar theme we have heard in this Congress: resistance to the EPA's efforts to carry out its mission to protect the nation's environment and the public health, resistance that is unsupported by scientific evidence.

It thus should not be a surprise that this hearing, like all others on EPA's activities, will fail to offer any constructive solutions for lowering ozone and cutting carbon emissions. Instead, it will serve as one more platform for industry to voice its opposition to regulations that will make the air we breathe cleaner, the water we drink safer, and that will help address the looming challenge of climate change. Just this week, as a matter of fact, about 30 leaders of denominations throughout the African American community, the national leadership, came to the Congressional Black Caucus to announce their national movement to support cleaning up the environment.

And while Congressional oversight of EPA's activities is appropriate, the hearings held by this Committee have not met standards of serious oversight. For example, this Committee has failed to bring the expertise necessary to truly examine the research, policies and technologies needed to confront the most important environmental issue of our time: climate change. Instead, the so-called experts the Majority has brought before this Committee too often represent views from outside the mainstream of the scientific community and are industry opponents with a vested interest in maintaining the status quo. It is puzzling to me that our Committee is going down such a path just as other nations and many in the business community are stepping up to address the challenge presented by climate change. Those nations and those businesses are looking to the United States government to provide leadership.

Just last week, six major oil companies, including BP, Shell, and Total sent a letter to the United Nations recognizing climate change and the role of their companies in lowering carbon emissions. In the letter they state: "For us to do more, we need governments across the world to provide us with clear, stable, long-term, ambitious policy frameworks. This would reduce uncertainty and help stimulate investments in the right low-carbon technologies and the right resources at the right pace." It is unfortunate that instead of contributing to the development of this long-term policy that these oil companies are asking Congress for, this Committee has too often become a forum for climate change denial.

With respect to today's hearing, it is clear that a cleaner environment and a stronger economy are not mutually exclusive. Stricter pollution limits have historically led to innovation and the creation of new technologies that have wound up creating jobs while protecting our environment. I am confident American industry will

continue that record of innovation and job creation as new environmental standards are adopted.

And finally, I am proud to say that I was a nurse before I entered politics, and I can think of no mission of the federal government that is more important or noble than EPA's mission to protect human health and the environment. I look forward to Dr. Paulson's testimony on the public health benefits of the environmental regulations we will be discussing today.

In closing, I look forward to the day when this Congress and this Committee will step back from the counterproductive opposition to EPA's efforts to carry out its statutorily mandated mission. It is not a good use of our time, and I hope that we can instead come together to advance our economy and a cleaner environment and a healthier public.

Mr. Chairman, before I yield back, I'd like to enter into the record the letter that I mentioned in my remarks. I thank you, and I yield back the balance of my time.

[The prepared statement of Ms. Johnson of Texas follows:]

STATEMENT SUBMITTED BY FULL COMMITTEE RANKING MEMBER EDDIE BERNICE JOHNSON

Thank you, Mr. Chairman. Unfortunately today's hearing is just a continuation of the same familiar theme we have heard in this Congress—resistance to the EPA's efforts to carry out its mission to protect the nation's environment and the public health—resistance that is unsupported by the scientific evidence.

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Mr. Chairman, before I yield back I'd like to enter into the record the letter that I mentioned in my remarks. Thank you and I yield back the balance of my time.

Chairman SMITH. Without objection.

[The information appears in Appendix II]

Chairman SMITH. And while we're asking unanimous consent to put items into the record, I'd like to ask unanimous consent to put into the record letters or documents we received from the Small Business and Entrepreneurship Council, from the American Chemistry Council, and that does it for right now.

[The information appears in Appendix II]

Chairman SMITH. Thank you, Ms. Johnson, for your opening statement.

Let me go on and introduce our witnesses today. Our first witness is Mr. Bob Kerr, President of Kerr Environmental Services Corporation. Mr. Kerr has 29 years' experience as an environmental consultant specializing in stream and wetland mitigation, natural resources consulting, National Environmental Policy Act compliance, and environmental contaminant studies. Mr. Kerr received his bachelor's degree in biology from the State University of New York at Fredonia and his master's degree in marine environment studies from Stony Brook University.

Our next witness today is Mr. Bill Kovacs, Senior Vice President for Environment, Technology and Regulatory Affairs at the U.S. Chamber of Commerce. Mr. Kovacs initiates and leads multidimensional national issue campaigns on comprehensive energy legislation, complex environmental rulemakings, telecommunications reform, emerging technologies, and the systematic application of sound science to the federal regulatory process. Mr. Kovacs re-

ceived his bachelor's degree from the University of Scranton and his law degree from Ohio State University.

Our next witness is Dr. Jerome Paulson, Chair of the American Association of Pediatrics Council on Environmental Health Executive Committee. Dr. Paulson also directs the Mid-Atlantic Center for Children's Health and Environment, a federally funded environmental health specialty unit that provides education and outreach to health professionals, parents and the community. In addition, Dr. Paulson has served as a Special Assistant to the Director of Centers for Disease Control's National Center on Environmental Health. Dr. Paulson received his bachelor's degree in biochemistry from the University of Maryland and his M.D. from Duke University.

Our final witness today is Mr. Ross Eisenberg, Vice President of Energy and Resources Policy at the National Association of Manufacturers. Mr. Eisenberg oversees NAM's energy and environmental policy work and has expertise on issues that range from energy production and use to air and water quality, energy efficiency, and environmental regulation. Before joining NAM in 2012, Mr. Eisenberg spent more than five years as Environmental and Energy Counsel at the U.S. Chamber of Commerce. Mr. Eisenberg received his bachelor's degree in English and political science from Emery University and his law degree from Washington Lee University School of Law.

We welcome you all and look forward to your testimony today, and Mr. Kerr, we'll begin with you. Make sure your mic is on there.

TESTIMONY OF MR. BOB KERR, PRESIDENT, KERR ENVIRONMENTAL SERVICES CORP.

Mr. KERR. Thank you. Chairman Smith, Members of the Committee, I appreciate the opportunity to testify today. My name is Bob Kerr, and I'm President of Kerr Environmental Services, an environmental consulting and water resources engineering firm located in Virginia Beach, Virginia. I've provided wetlands consulting and permitting assistance throughout Virginia and North Carolina for more than 26 years.

Since 1972, the Clean Water Act has played an important role in improving the quality of the nation's water resources yet there continues to be frustration and uncertainty over the scope of the Act and the appropriate role of the federal government in protecting the nation's waters.

Decades after the enactment of the Clean Water Act, there still is no easy way to determine if certain types of waters are subject to state law or federal mandates. EPA and the Corps recently issued a rule intended to clarify what is subject to federal regulation. Unfortunately, the rule does not provide the needed predictability and certainty in the permitting process. It fails to follow the intent of Congress, ignores Supreme Court precedent, and does not respect the authority of the state to regulate their land and water resources.

The agencies claim the rule does not expand federal jurisdiction but that's simply not the case. The rule establishes a broader definition of "tributaries," which, for the first time, includes ditches and streams that only flow after it rains. It also allows the agen-

cies to regulate intermittent and ephemeral drainages by rule classifying them as tributaries whereas before the agencies required an analysis of their significant nexus to traditional navigable waters before federal jurisdiction could be established. While this certainly provides clarity, it does not limit jurisdiction.

The new definition of "neighboring" includes areas that were not previously federally regulated such as non-wetlands located more than a quarter of a mile from a traditional navigable water or similar features located within a floodplain and up to 1,500 feet from the feature. Moreover, the agencies retain extensive authority to interpret certain ambiguous definitions as they see fit. This will allow for the inconsistent application of the rule among regulators both within a Corps district and across the country. Ultimately, the rule will lead to more litigation, project delays, more landowners needing permits, and the higher costs of permitting avoidance and mitigation.

You might look at the rule and think it's a dream come true for a consultant like me because more regulation will mean more business. I fear the exact opposite. Under the new rule, I'll need to complete more jurisdictional determinations, will have to conduct multiple tests to determine whether a feature qualifies as a water of the United States. It'll take additional time and resources to complete the tests, and that will cost clients more money. Not knowing their permit costs in advance increases financial risk for my clients. As such, clients may not—may decide not to pursue some projects as a result.

Some cases may also be so complex that they are too time-consuming or costly to resolve. In such cases, clients have the option to concede federal jurisdiction and proceed with permitting and mitigation through a preliminary jurisdictional determination, but that isn't a fair program to me nor does it keep the legislative intent of the Clean Water Act, and that's not good for the economy as a whole.

To start to fix this, we need a new rule that respects the state's role in regulating waters. Many aspects of the Clean Water Act are vague but it's clear that Congress intended to create a partnership between the federal agencies and state government to protect our nation's water resources. The Supreme Court has twice affirmed that the Clean Water Act places limits on federal authority. There is a point where federal authority ends and state authority begins. The final rule published by the EPA and Corps would assert jurisdiction over many features that are isolated, carry only minor volumes of water, or have only theoretical impacts on traditional navigable waters. These waters are properly regulated by the states.

The federal government cannot just assert jurisdiction over everything, yet that appears to be the agencies' solution, and many of the bright-line limits written into the rule seem so large in scale or so vague as to have created no actual limitation. Precedent suggests that the courts will again have to rein in the overarching rule but only after countless years of litigation. The wiser path forward is for Congress to act now. Let's get the agencies to withdraw the rule, resolve the problems, provide the clarity we need as to what constitutes a water of the United States.

Thank you again for the opportunity to testify today.

[The prepared statement of Mr. Kerr follows:]

Testimony of Robert Kerr,
Owner,
Kerr Environmental Services Corporation

Before the House Committee on Science, Space, and Technology

Hearing on "EPA Regulatory Overreach: Impacts on American Competitiveness"

June 4, 2015

Chairman Smith, Ranking Member Johnson, and distinguished members of the Committee, on behalf of the 140,000 members of the National Association of Home Builders, thank you for the opportunity to testify this morning.

My name is Bob Kerr, and I am the owner of Kerr Environmental Services Corporation located in Virginia Beach and Glen Allen, Virginia. Kerr Environmental Services provides services related to natural resources investigations, permitting, mitigation, environmental due diligence, and water resources engineering. My company has extensive experience in compliance with the Clean Water Act (CWA), having performed jurisdictional determinations on approximately 45,000 acres of wetlands and 343,000 linear feet of streams and other waters throughout Virginia and North Carolina over the past 13 years. Collectively, the company staff has over 75 years of experience in delineations of wetland and waters and jurisdictional determinations of "waters of the United States."

Our clients include the United States Department of Defense; the Virginia Department of Transportation; multiple counties and cities throughout Virginia; public and private utility providers; commercial real estate developers; and home builders. I started conducting delineations and jurisdictional determinations in the summer of 1986 in the metropolitan New York area, just before promulgation of regulations on the definition of "waters of the United States" was published in November 1986.[1] It is with these experiences and perspective that I provide today's testimony regarding the recently finalized rule to define the term "waters of the United States" under the Clean Water Act.

I am pleased that the Committee is addressing this important issue, and I appreciate the opportunity to give my perspective.

[1] 51 Federal Register at 41,206 (November 13, 1986).

Final Rule Defining "Waters of the United States" under the Clean Water Act:

On May 27, 2015, the U.S. Environmental Protection Agency and U.S. Army Corps of Engineers ("the agencies") finalized a rule redefining the scope of waters protected under the CWA. For years, land owners and regulators alike have been frustrated with the ongoing uncertainty over the scope of federal jurisdiction over "waters of the United States." By improving the CWA's implementation, removing redundancy, and further clarifying jurisdictional authority, the agencies could have improved compliance while protecting and improving the aquatic environment.

Unfortunately, the rule falls well short of providing the clarity and certainty that the regulated community seeks. This rule will increase federal regulatory power over private property and will lead to increased litigation, permit requirements, and lengthy delays for any business trying to comply. Equally important, these changes will not significantly improve water quality because much of the rule improperly encompasses water features that are already regulated at the state level. The only thing that is certain is how difficult it will be for me to provide jurisdictional determinations and secure permits for my clients. This rule is so convoluted that even professional consultants with decades of experience will struggle to determine what is jurisdictional. Decisions among the profession will become more inconsistent. This alone is proof that this rule will not work.

The Rule is Inconsistent with Supreme Court Precedent

The Clean Water Act (CWA) was intended to strike a careful balance between federal and state authority. This has proven to be a difficult task, and to some extent, the efforts of the courts to provide clarity have only added to the uncertainty. The courts, however, have been clear on one issue: there is a limit to federal jurisdiction of waters. In fact, the Supreme Court has twice affirmed that both the U.S. Constitution and CWA place limits on federal authority over intrastate waters. While many were optimistic that this rule would finally translate the Court's directives into a workable framework, the proposed rule instead is a marked departure from past Supreme Court decisions and raises significant constitutional questions. In order to view the rule through this legal framework, let us review the key cases:

Solid Waste Agency of Northern Cook County v. Army Corps of Engineers (SWANCC): In 2001, for the first time, the Supreme Court limited the federal government's jurisdictional authority under the CWA through the *SWANCC* decision[2]. The case questioned whether the CWA conferred the Corps of Engineers with authority over isolated seasonal ponds at an abandoned sand and gravel pit in suburban Chicago, Ill., because they were susceptible to being used by migratory birds. The Court rejected the Corps' assertion of jurisdiction because the

[2] *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001).

agency's interpretation gave no effect to the word navigable in the term "navigable waters." In other words, the Corps could not assert jurisdiction over the area in question simply because a migratory bird might land there.

Rapanos v. United States and Carabell v. U.S. Army Corps of Engineers (collectively, Rapanos): Both the Rapanos[3] and Carabell[4] cases followed the same fact-pattern in *SWANCC*: questions of jurisdiction surrounding wetlands miles away from traditional navigable waters (TNWs) that drained through multiple ditches, culverts, and creeks, that eventually drain into a TNW. The question of this court case was over the premise that waters are jurisdictional as long as they have a "hydrological connection" to a TNW. *Rapanos* clarified that CWA jurisdiction does not reach non-navigable features merely because they may be hydrologically connected to downstream navigable waters. In short, the "any hydrologic connection" theory was rejected by the Supreme Court — just as the migratory bird rule was disapproved in *SWANCC*.

However, two theories emerged from the majority opinion in *Rapanos*. The first, written by Justice Scalia, claimed that CWA coverage extended to "...only those relatively **permanent, standing, or continuously flowing** [emphasis added] bodies of water 'forming geographic features' that are described in ordinary parlance as 'stream[s,] ... oceans, rivers, [and] lakes.'"[5] The plurality also developed a jurisdictional rule for wetlands in particular: "[O]nly those wetlands with a continuous surface connection to bodies that are 'waters of the United States' in their own right, so that there is no clear demarcation between 'waters' and 'wetlands,' are 'adjacent to' such waters and covered by the Act."[6]

The second test was authored by Justice Kennedy, who concurred in the judgment, but wrote separately for himself. He elevated the concept of "significant nexus," first used by the Court in *SWANCC*, to be the appropriate test for jurisdiction: "[W]etlands possess the requisite nexus, and thus come within the statutory phrase 'navigable waters,' if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable.'" "Consistent with *SWANCC* and with the need to give the term 'navigable' some meaning, the Corps' jurisdiction over wetlands depends on a significant nexus between the wetlands in question and navigable waters in the traditional sense."

The most noteworthy clarification that *Rapanos* provided was that the five Justices agreed CWA jurisdiction does not reach non-navigable features merely because they are hydrologically connected to downstream navigable water. However, many have maligned *Rapanos* because the Justices failed to reach a majority opinion that announced the "correct" test for CWA

[3] Rapanos v. United States, 126 S.Ct 2208 (2006)
[4] Carabell v. United States, 126 S.Ct. 1295 (2006)
[5] Rapanos 126 S.Ct. at 2225
[6] *Id.* at 2226

jurisdiction. Often, the existence of two tests only generates more confusion and disagreement regarding the scope of the CWA.

While the agencies face a difficult task in resolving this conflict, the new rule defining "waters of the United States" is obviously inconsistent with these Supreme Court decisions and will expand the scope of waters that can be regulated by the agencies. The rule will extend coverage to many features that are remote and/or carry only minor volumes of water, and contrary to the Supreme Court's findings, its provisions provide no meaningful limit to federal jurisdiction. The rule ignores the tests that were developed in *Rapanos* and reverts back to regulating any hydrologic connection. More specifically, the rule disregards Justice Kennedy's "significant nexus" test by making all connections regulable. Such a broad overreach is unacceptable.

The Proposed Rule Unnecessarily and Inappropriately Expands Federal Jurisdiction

The agencies contend that the scope of CWA jurisdiction is narrower under the proposed rule than under current practices and that it does not assert jurisdiction over any new types of waters. This claim is simply not accurate. In reality, the rule establishes expansive definitions of new regulatory categories, including for the first time a regulatory tributary definition. It also regulates new areas that are not jurisdictional under current regulations, such as most ditches, adjacent non-wetlands (heretofore isolated waters) and all water features that are located within 100 feet of a jurisdictional water, even if that water is an ephemeral stream that only flows after it rains.

The agencies created overly broad terms allowing them the authority to interpret them as they see fit in the field. For example, the new definition of "neighboring" allows the agencies to regulate isolated ponds over a quarter-mile from a the Great Lakes or a tidal creek, and using the new a(7) and a(8) categories of waters, the agencies would consider other isolated features that could be miles from a traditional navigable water jurisdictional if they are found to possess a "significant nexus." This is a far cry from what Congress intended to be covered by the CWA. For any business trying to comply with the law, the last thing it needs is a set of new, vague and convoluted definitions that only provide another layer of uncertainty. Let me discuss some of the problematic features in detail:

New Definition of Tributary:

The agencies have sought to expand their reach by adding, for the first time, a broad definition of "tributary." They define a tributary as a "water that contributes flow, either directly or through another water, . . . to a [traditional navigable water] that is characterized by the presence of the physical indicators of a bed and banks and an ordinary high water mark."[7] The agencies believe

[7] Prepublication version of the "Clean Water Rule: Definition of 'Waters of the United States,'" at page 203 (May 26, 2015) (*hereinafter*, Final Clean Water Rule).

that the presence of these physical indicators demonstrates that sufficient flow exists and therefore qualifies the feature as a tributary. While in some cases that is accurate, there are many ditches and dry channels that also exhibit these characteristics. The agencies did not provide any guidance on what the indicators are. This allows the agencies to create and alter such a list at any time in the future, without the need for public comment. This new definition will include substantial additions, such as small conveyances in the arid southwest that may flow only after certain rain events.

The agencies claim that the rule does not expand jurisdiction; however, the 2008 guidance document which has been used to make jurisdictional determinations for nearly a decade states that"[t]he agencies generally will not assert jurisdiction over… small washes characterized by low volume, infrequent or short duration flow."[8] In other words, the federal government has generally *not* asserted jurisdiction over ephemeral streams. Under the new tributary definition, however, ephemeral streams will now be categorically jurisdictional if they can be shown to possess any shelving of sediment. Ephemeral features are pervasive on the landscape, particularly in the arid southwest. Deeming these typically dry land features "waters of the U.S." will result in a significant increase in federal jurisdiction.

Ordinary High Water Mark (OHWM)

The OHWM is the linchpin concept of the rule's tributary definition, but the meaning of this key term has been debated for many years. In March 2014, the Corps recognized that OHWM is a "vague definition," leading to "inconsistent interpretation of [the] OHWM concept," and "inconsistent field indicators and delineation practices."[9] In addition, the Corps' Western Mountains OHWM Guidance states that "OHWM delineation in non-perennial (i.e., intermittent and ephemeral) streams can be especially challenging," and notes that "it is often difficult to determine what constitutes ordinary high water and to interpret the physical and biological indicators established and maintained by ordinary high water flows."[10] There is a serious disconnect between the agencies' statements that the OHWM is easy to determine and the Corps' recent statements to the contrary.

In addition to the confusion surrounding the OHWM definition, in the landmark 2006 Supreme Court decision, *Rapanos v. United States*, Justice Kennedy criticized the Agencies' use of OHWM to determine whether tributaries are jurisdictional. Justice Kennedy raised concerns that such a standard was overbroad and would leave room for the agencies to assert jurisdiction over

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[88] 2008 Post-Rapanos Guidance.

[9] Presentation by Matthew K. Mersel, U.S. Army Engineer Research and Development Center, Development of National OHWM Delineation Technical Guidance (March 4, 2014),

[10] Matthew K. Mersel and Robert W. Lichvar, U.S. Army Engineer Research and Development Center (ERDC), A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valley, and Coast Region of the United States at pages 1-2 (August 2014).Corps Western Mountains OHWM Guidance at 1-2.

waters that do not have a significant nexus to traditional navigable waters.[11] This raises additional questions of why the agencies would continue to rely on the OHWM.

Ditches

For the first time, ditches will be categorically jurisdictional under the expanded definition of tributary. The rule does contain several exemptions:

- Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.
- Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.
- Ditches that do not flow, either directly or through another water, into a [traditional navigable water]. [12]

While the agencies believe that they have provided sufficient ditch exemptions, the third exclusion is so narrow in scope that it functions as a re-capture provision of features excluded by the first two exclusions.

Very few ditches will fall into these exemption categories, and it will be onerous for applicants to prove that their ditch meets the exclusion criteria. For example, the rule excludes ditches that do not flow either directly or through another water into a downstream water. But because ditches are excavated for the sole purpose of moving water off the land to a downstream water, this exemption is virtually meaningless. In other words, all ditches lead somewhere. I cannot in my entire career think of a ditch that did not connect to other ditches, and then ultimately to a navigable water.

And the agencies would only exempt a ditch if it is not found in a relocated tributary or excavated in a tributary. While topographic maps and historical photographs might help me to determine if a ditch was once a historic tributary and therefore not exempt from the tributary definition, some of the ditches I analyze are located on Virginia croplands that have been farmed for over 200 years. Obviously, I do not have access to maps dating back that far.

The ditch exclusions are so limited and potentially hard to prove, that even I – a professional consultant with 30 years of experience performing jurisdictional determinations - would have difficulty saying with certainty that a ditch is excluded. And, to further complicate the inclusion of ditches as "waters of the U.S.," the preamble of the rule states that a ditch can be considered both a point source and a "water of the U.S." This is nonsensical and will lead to duplicative regulation of the same features under Clean Water Act Section 402 and Section 404 permitting programs.

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[11] *Rapanos v. United States*, 547 U.S. 715, 781-82 (2006) (Kennedy, J., concurring).
[12] Final Clean Water Rule at page 201.

New Concept of Adjacent Waters

In addition to the expansive "tributary" definition, the concept of regulating "adjacent waters" is completely new. In the past, the notion of "adjacent" applied only to wetlands that physically abut a jurisdictional water.

The current definition of "adjacency" is "bordering, contiguous, or neighboring." However, this has led to confusion over what is neighboring as this is a vague term. The new rule attempts to end this confusion by defining "neighboring" as either "all waters located within 100 feet of the OHWM of a jurisdictional water;" or "all waters located within the 100 year floodplain of a jurisdictional water and not more than 1,500 feet from the OHWM of such water;" or "all waters located within 1,500 feet of the high tide line of (a)(1) through (a)(3) water and all waters within 1,500 feet of the OHWM of the Great Lakes." While providing clarity on neighboring is helpful, this definition would encompass isolated waters located more than a quarter of a mile—1,500 feet—from a jurisdictional water. It is also important to keep in mind that if only a small fraction of a water is located within this quarter-mile zone, then the entire water, regardless of how far it extends, will be branded as an adjacent water and, in turn, categorically jurisdictional. This will lead to a significant increase in federal jurisdiction by-rule over isolated waters that are already regulated by the states and these waters should be subjected to a significant nexus test before being considered jurisdictional by the federal government. In another significant expansion of jurisdiction, "adjacency" will now also extend to water bodies—not just wetlands, as had been the case. In doing so, the agencies have unnecessarily redefined a term that has stood since 1986.

While the agencies claim they have provided bright lines that put limits on the "adjacent waters" definition, in actuality, it is now more likely that an isolated water feature will be captured under the "neighboring" definition. Many isolated waters are regulated by the states and should not be pulled into federal jurisdiction through a new definition that was not mandated by legislation or legal precedent.

Moreover, this definition is confusing and will be extremely difficult to apply. If I were to try to identify an adjacent water under this new definition I would have to:

- Determine whether the 100-year floodplain is present and assess what features are located within the floodplain of a jurisdictional water.
- For any water located within the 100-year floodplain, I would then have to determine if any part of the feature is within 1,500 feet of the OHWM of the nearest jurisdictional water.
- If any are found, then the entire feature will be jurisdictional
- If no 100-year floodplain is present, determine the location of the nearest jurisdictional water's OHWM or the high tide line of the nearest tidally influenced water.

- Determine what features are located within 100 feet of the OHWM or within 1,500 feet of the high tide line.
- If any are found, the entire feature will be jurisdictional.

I have no doubt that this standard will lead to confusion and inconsistency in the field. Intentionally leaving these terms so broadly defined gives the agencies relatively unbounded jurisdiction and leaves land owners perplexed as to whether their land may be federally regulated. For example, as 100-year floodplain maps are revised, so will federal CWA jurisdiction.

Case Specific Waters

The rule also provides two catchall "case specific waters" categories for areas that may not fit neatly into a specific water category but for which the agencies have retained complete discretion to find a significant nexus on a case-by-case basis. Significantly, this also includes the ability to make blanket jurisdictional determinations by considering all similarly situated waters located within the same region or watershed to determine if they, when considered collectively, have a significant nexus to a traditional navigable water. The ability to aggregate waters further illustrates the notion that there is no limit to federal jurisdiction under this rule. And, because waters can be aggregated to meet the significant nexus test, the so-called "case specific" analysis touted by the Agencies for (a)(7) and (a)(8) is not really a case specific analysis.

The cornerstone of the "case specific waters" categories is the use of the significant nexus test. The rule states that a water has a significant nexus "when any single function or combination of functions performed by the water, alone or together with similarly situated waters in the region, contributes significantly to the chemical, physical, or biological integrity of the nearest [traditional navigable water]." The functions that can be used to determine if a water has a significant nexus include: sediment trapping; nutrient recycling; pollutant trapping, transformation, filtering, or transport; retention and attenuation of flood waters; runoff storage; contribution of flow; export of organic matter; export of food resources; and provision of life cycle dependent aquatic habitat for species. Since a water need only be found to perform one of these functions in order to meet the criteria of the standard, the vast majority of waters would be determined to have a significant nexus. In fact, it is difficult to imagine that there are many waters that would fail the agencies' significant nexus test. The significant nexus standard as defined in the rule is far too low of a threshold for making a positive jurisdictional determination.

Additionally, under the "provision of lifecycle dependent aquatic habitat" criterion, it is easy to argue that the agencies have reinstated the migratory bird test and can assert jurisdiction anywhere a bird may land. If true, this runs contrary to the Supreme Court ruling in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (*SWANCC*).

As written I will need to aggregate to the nearest navigable or interstate water, including evaluating waters and wetlands on properties I have no legal access to, and that are not

accurately mapped, throughout a region that is enormous, and contrary to the guidance issued by the agencies after Rapanos.

The Proposed Rule Ignores Federal/State Balance

While many aspects of the CWA are vague, it is clear that Congress intended to create a partnership between the federal agencies and state governments to protect our nation's water resources. Congress states in Section 101 of the CWA that "[f]ederal agencies shall co-operate with state and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resource." Under this notion, there is a point where federal authority ends and state authority begins. The Supreme Court's decisions have also reinforced this notion.

Despite this history, the rule ignores the state partnership and fails to acknowledge that there are limits to federal authority. This rule will severely diminish the states' role in protecting its unique water resources in a manner that is clear and consistent for that climate and geology, which would be a huge mistake, not to mention unconstitutional. Litigation is a likely result, and while it makes its way through the court system, regulators and businesses will be left in a lurch.

In addition, because the proposed change in jurisdictional authority does not only apply to Section 404 of the CWA, but to all of its programs, the states will be required to conduct more monitoring and develop water quality standards for these newly-jurisdictional waters in addition to those that are already covered. States will also be required to develop pollution diets known as total maximum daily loads if these waters do not meet their water quality goals. This unfunded mandate will be overly burdensome for the states, costing them valuable time and resources.

Moreover, many states have adequately regulated their own waters and wetlands for decades. States take their responsibilities to protect their natural resources seriously. In fact, every state has the authority to exceed federal law. If you look around the country, you will find that many states are protecting their aquatic resources more aggressively than when the CWA was enacted – a testament to their desire and willingness to do so.

In these times of austere budgets and competing priorities, the agencies should heed the CWA's directive and allow the states to maintain their prerogatives to regulate their lands and waters within their boundaries as they see fit.

The Real World Implications of the Final Rule

From a practical perspective, this rule will fundamentally change the way I do business. Since the rule provides the agencies with a number of ways to assert jurisdiction, I will now have to

conduct multiple tests to determine whether something qualifies as a "water of the U.S." under the new definition. These additional tests will require more time to complete and will cost my clients more money. In the end, many more features will be found to be jurisdictional. Consequently clients will need permits to fill agricultural ditches and moist portions of farm fields. This leads then to both added permitting costs, and the added mitigation costs for impacts to these newly regulated federal waters.

Many people believe that this rule will benefit my business. If more projects fall under federal jurisdiction, then more land owners will require a consultant to perform jurisdictional determinations. This sentiment, however, is not entirely accurate. While more jurisdictional determinations will need to be completed, the additional layers of red tape will only increase the complexity of my job, adding more time and money to any project I take on. I will also not be sure if the feature is regulated, and will no longer be able to provide the clarity I was able to provide clients. It is worth noting that I can no longer offer a fixed rate to my clients who are obtaining the expedited Section 404 Nationwide Permit because it is simply too difficult to secure in a predictable length of time under the current guidance. Let me repeat that: the process of obtaining the supposedly simpler, expedited Nationwide Permits has already become unpredictable and complex such that I can no longer determine how much they will cost. For my clients, not knowing their permitting costs in advance increases their financial risk. I believe that in some cases, clients will decide not pursue projects as a result. And that is not good for my business.

To prove my point further, a portion of my clients are small business home builders. No industry has suffered more through the Great Recession. Home building has recently showed signs of recovery, and the industry is putting Americans back to work. Unfortunately, under the expanded "waters of the U.S." definition, many of these builders will no longer be able to afford my work and will walk away from projects. And the ones that are able to pay will be tied up in the process of validating jurisdiction for extended periods of time or be forced to "assume" CWA jurisdiction as a cost-saving measure through the "Preliminary Jurisdictional Determination" process. I anticipate losing work and clients to the cost of expensive software, analysis, and the time it will take me to conduct jurisdictional determinations.

The rule provides a mechanism for people to sue my clients if they feel the determination is in error or not performed properly. The only winners will be the lawyers because litigation will most certainly increase.

Conclusion

The agencies faced a very difficult task in setting a clear and consistent definition of a waters of the United States. Congress placed this burden on the agencies by failing to define clearly the limits of traditional navigable waters in the Clean Water Act. Past efforts by the agencies have

been overruled by the Supreme Court, which in turn provided multiple tests that are themselves subject to interpretation. Rather than thread the needle between the Constitution and the Clean Water Act, the agencies took the broad brush approach in many instances of finalizing a rule that sweeps almost all ditches, and waters under federal authority. I have significant concerns with this rule because I believe the consequences will be extremely onerous, confusing, complex and likely dire for certain properties and thus sellers and buyers of property.

Fortunately, there are solutions. The House of Representatives has passed legislation that will force the agencies to withdraw this rule, go back and consult with state and local governments, conduct meaningful discussions with small business stakeholders, and produce an accurate cost-benefit analysis.

The agencies could then re-propose an updated rule. And in the Senate, recently introduced legislation (S. 1140) by Senators John Barrasso (R-Wyo.), Joe Donnelly (D-Ind.), Jim Inhofe (R-Okla.), Heidi Heitkamp (D-N.D.), Pat Roberts (R-Kan.) and Joe Manchin (D-W.Va.) accomplishes this same goal while also providing the agencies with some guidance on how to identify a jurisdictional water.

I strongly urge the Senate to act quickly to reverse this flawed rule. Enacting the Senate bill gets us back on track to where we need to be, which is establishing a workable and sound definition of 'waters of the United States.'

Thank you again for the opportunity to testify today.

Kerr Environmental Services Corp.
Sustainable Ecological Restoration and Environmental Consulting

Robert P. Kerr, VCPWD, PWS, REP

Biography:

Mr. Kerr is President of Kerr Environmental Services, founded in 2002, with offices in Virginia Beach and Henrico County, Virginia. Mr. Kerr has been an environmental consultant for over 28 years, 26 of which has involved working primarily in Virginia and North Carolina. He received his Bachelor's Degree in Biology from the State University at New York at Fredonia and Master's Degrees in Marine Sciences, from the State University of New York at Stony Brook. Mr. Kerr's is a Virginia Certified Wetland Delineator, certified Professional Wetland Scientist, and Registered Environmental Professional. Mr. Kerr specializes in: stream and wetland mitigation, permitting and delineations; NEPA compliance; natural resources consulting; and stormwater management issues. He has extensive experience in compliance with the Clean Water Act (CWA), having performed or overseen jurisdictional determinations by his staff involving approximately 45,000 acres of wetlands and 343,000 linear feet of streams and other waters throughout Virginia and North Carolina over the past 13 years.

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Chairman SMITH. Thank you very much.
Mr. Kovacs.

**TESTIMONY OF MR. BILL KOVACS,
SENIOR VICE PRESIDENT, ENVIRONMENT,
TECHNOLOGY AND REGULATORY AFFAIRS,
U.S. CHAMBER OF COMMERCE**

Mr. KOVACS. Thank you, Chairman Smith and Ranking Member Johnson and Members of the Committee.

For my opening remarks today, I'm going to address the question many of us have been asking for a while: How did an Environmental Protection Agency acquire such great power over energy policy, state waters, land use, and the nation's economic development at the expense of states which implement over 90 percent of the federally delegated programs and are the main point of contact for the regulated community?

The purpose of regulation is to implement the laws passed by Congress in the most efficient way to achieve the Congressional intent. In the 1970s, Congress when it enacted these environmental laws had very little knowledge of how to protect the environment. It also recognized that while it was protecting the environment, it would cause, and I emphasize, they recognized in 1970 it would cause plants to shut down, jobs to be lost, and harm to impacted communities. But to deal with this dilemma, Congress gave the EPA very broad authorities to protect the environment but also mandated that the EPA continuously evaluate the potential loss or shifts in employment resulting from the regulations so that Congress could make corrections based on actual input.

Congress also authorized citizen suits by granting access to the courts to anyone protecting the environment, in effect granting special environmental enforcement authorities to private-sector entities. Then in 1984, the Supreme Court granted deference to EPA's decisions where Congress was silent or vague on any of the statutory provisions in thousands of pages of legislation. In essence, the Supreme Court authorized EPA to fill in all of the gaps in the legislation. Almost from the beginning, EPA missed a high percentage of its Congressionally mandated deadlines. Since EPA misses between 84 percent and 98 percent of its deadlines, depending on which study you believe, citizen suits were brought to force the EPA to comply with the deadlines. Rather than arguing it had discretion in meeting the conflicting priorities, EPA entered into consent decrees with advocacy groups agreeing to implement the regulations requested, thereby letting these groups set the policy for the Agency and the priorities.

The best illustration of the impact of the sue-and-settle process is that between 2000 and 2013 time frame, approximately 425 agencies issued almost 50,000 regulations but only 30 of those regulations were costing over a billion dollars a year to the regulated community or to the states, and EPA issued 17 of the 30, and those 17 account for 82 percent of all the costs for all 30 rules. Beginning in 1980 and onward, Congress passed numerous regulatory laws to provide guidance to the agencies as to the type of information needed to be developed by the agency to ensure that it complied with Congress's intent to have a sound rulemaking record based on fact,

science and economics. These statutes were the Information Quality Act, the Regulatory Flexibility Act, and unfunded mandates reform. EPA routinely ignores Congressional mandates, and, more importantly, it has never started in 35 years a continuing evaluation of the employment impacts of its regulations, thereby leaving Congress without the information needed to legislate.

Therefore, the condition we have today and the circumstances we find ourselves in is we have an agency that has been given broad delegated authority to make policy. You have a federal judiciary that has said that anything that you don't describe in clear terms, that they have—that based on deference, they have the authority to fill in the legislative gaps.

The development of secret sue-and-settle agreements allows these advocacy groups to set agency policy, and we have an agency that for 35 years has refused to evaluate the impact of regulations on employment. We also have an agency that routinely ignores Congressional mandates to try to—that fix the regulatory record through having the agency talk to small businesses, find out what the unfunded mandates are on state and local governments, and use sound and science—sound science and factual information.

If Congress wants its laws implicated according to what you believe you've legislated, it must ensure that the agency is accountable to Congress, that the rulemaking process is transparent, that it operates within integrity, and provides all of the participants the same rights as they participate in the federal rulemaking process.

Thank you.

[The prepared statement of Mr. Kovacs follows:]

Statement of the U.S. Chamber of Commerce

ON: Hearing on EPA Regulatory Overreach: Impacts on American Competitiveness

TO: U.S. House of Representatives Committee on Science, Space and Technology

DATE: June 4, 2015

1615 H Street NW | Washington, DC | 20062

The Chamber's mission is to advance human progress through an economic, political and social system based on individual freedom, incentive, initiative, opportunity and responsibility.

The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations. The Chamber is dedicated to promoting, protecting, and defending America's free enterprise system.

More than 96% of Chamber member companies have fewer than 100 employees, and many of the nation's largest companies are also active members. We are therefore cognizant not only of the challenges facing smaller businesses, but also those facing the business community at large.

Besides representing a cross-section of the American business community with respect to the number of employees, major classifications of American business—e.g., manufacturing, retailing, services, construction, wholesalers, and finance—are represented. The Chamber has membership in all 50 states.

The Chamber's international reach is substantial as well. We believe that global interdependence provides opportunities, not threats. In addition to the American Chambers of Commerce abroad, an increasing number of our members engage in the export and import of both goods and services and have ongoing investment activities. The Chamber favors strengthened international competitiveness and opposes artificial U.S. and foreign barriers to international business.

Positions on issues are developed by Chamber members serving on committees, subcommittees, councils, and task forces. Nearly 1,900 businesspeople participate in this process.

BEFORE THE HOUSE OF REPRESENTATIVES COMMITTEE ON SCIENCE, SPACE & TECHNOLOGY

Hearing on EPA Regulatory Overreach: Impacts on American Competitiveness

Testimony of William L. Kovacs
Senior Vice President, Environment, Technology & Regulatory Affairs
U.S. Chamber of Commerce

June 4, 2015

Good morning, Chairman Smith, Ranking Member Johnson, and distinguished Members of the Committee. My name is William L. Kovacs and I am senior vice president for Environment, Technology and Regulatory Affairs at the U.S. Chamber of Commerce. I am pleased to appear before you to discuss the U.S. Chamber's views on "EPA Regulatory Overreach: Impacts on American Competitiveness". This is an appropriate topic in light of the three high-impact regulations that either have been issued or will be issued within a very short time-frame.

On May 27, 2015, the U.S. Environmental Protection Agency (EPA) finalized a regulation that greatly expands the definition of "waters of the United States" (WOTUS) under the Clean Water Act. The increase in federal regulatory authority under the waters rule likely will impact land uses, undermine and complicate state and local programs, and delay or halt projects across the country.

In August, the EPA is planning to issue final regulations for greenhouse gas (GHG) emissions from new and existing power plants in the U.S. The proposed GHG rule for new power plants may very well require a technology that has yet to be proven commercially viable on a large-scale facility in the U.S., and in all likelihood will discourage the construction of any new coal-fired power plants in the U.S. The Clean Power Plan – the proposed GHG rule for existing power plants – would give the federal agency unprecedented powers over the types of energy sources used by states and could adversely impact grid reliability and the affordability of electricity in this country.

Later this year – certainly by the *court-ordered* deadline of October 1st – the EPA will finalize its proposal to revise the ozone National Ambient Air Quality Standard (NAAQS). The agency's proposal to lower the ozone NAAQS from 75 parts per billion (ppb) to a range of 65 to 70 ppb could put much of the country in "nonattainment" or noncompliance with the standard. A nonattainment designation can make it very difficult for areas to attract new business and grow existing businesses, which translates into a loss of jobs as well as an inability to grow our economy and compete globally.

All of this means that within a period of less than six months, it is almost certain that the EPA will have issued three high-impact and very costly regulations that likely will push the boundaries of federal authority further than they have ever been extended. The result could be significantly adverse impacts on the country's economy, the ability to create jobs in the U.S., and the ability of states to implement these new standards.

With all of this regulatory activity in a very short period of time, the immediate question that comes to mind is – ***how did we get here?*** How did we get to the point at which a single federal agency of unelected officials is regulating not only environmental protections, but land use, economic development, and the country's energy portfolio? The short answer is: the regulatory process is broken and it has proven difficult for Congress to fix.

Regulatory dysfunction started to occur decades ago when there were no environmental laws. Congress had little knowledge of how to proceed so it delegated massive amounts of power to EPA. The problem was later compounded by courts granting deference to agency decisions instead of acting as a check on regulatory powers. Possessing broad regulatory power, EPA aggressively implemented environmental laws but refused to implement federal regulatory laws designed to guide agencies in the development of their rules.

On top of broad congressional delegation of legislative authority and court deference, there is the fact that EPA misses most of the statutory deadlines imposed by Congress while tasking the states with implementing most of these federal environmental programs. All of this combines to allow EPA to impose many mandates on business and state and local governments without having the responsibility to implement or fully pay for an almost impossible task. Imagine being a state environmental official currently tasked with administering thousands of federal environmental regulations and now being mandated, with no additional resources, to almost simultaneously implement the WOTUS rule, the Clean Power Plan and a new Ozone standard.

As discussed in more detail below, the EPA could be following and employing existing laws and executive orders, which would improve considerably the rulemaking process. Those laws and orders include the following:

- Continuous evaluations of the employment impacts of EPA regulations, i.e. 321(a) of the Clean Air Act;
- Information Quality Act;
- Unfunded Mandates Reform Act;
- Regulatory Flexibility Act;

- Use of the Clean Air Science Advisory Committee;
- Executive Order 12,866 on inconsistent or incompatible regulations; and
- Executive Order 13,563 on cumulative impacts of regulations.

Unfortunately, these regulatory mandates have been generally ineffective because Congress failed to provide the public with a mechanism to ensure enforcement. If Congress is to maintain "checks and balances" on the power of agencies and continue our system of federalism, then the regulatory process must be reformed and laws, such as the ones identified above, must be enforced.

I. EPA REGULARLY MISSES ITS STATUTORY DEADLINES

Under several of the major environmental laws, such as the Clean Air Act and the Clean Water Act, the EPA is required to promulgate regulations or review existing standards by statutorily-imposed deadlines. Without a doubt, the EPA more often than not misses those deadlines. For example, according to a 2014 *Harvard Journal of Law & Public Policy* article, "[i]n 1991, the EPA met only 14% of the hundreds of congressional deadlines" imposed upon it.[1]

Another study by the Competitive Enterprise Institute examined the EPA's timeliness in promulgating regulations or reviewing standards under three programs administered through the Clean Air Act: the National Ambient Air Quality Standards, the National Emissions Standards for Hazardous Air Pollutants, and the New Source Performance Standards.[2] The CEI study concluded that since 1993, "98 percent of EPA regulations (196 out of 200) pursuant to these programs were promulgated late, by an average of 2,072 days after their respective statutorily defined deadlines."[3] When the EPA misses these deadlines, it is its subsequent actions that can cause the real harm.

a. Citizen Suits and Sue and Settle Agreements

Once a deadline is missed, outside groups, using the "citizen suit" provisions in twenty environmental statutes,[4] will sue the agency for failure to promulgate the subject regulation or to

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[1] Henry N. Butler and Nathaniel J. Harris, *Sue, Settle, and Shut Out the States: Destroying Environmental Benefits of Cooperative Federalism*, HARVARD JOURNAL OF LAW & PUBLIC POLICY, Vol. 37, No. 2 at 599 (2014) (*available at* http://www.harvard-jlpp.com/wp-content/uploads/2014/05/37_2_579_Butler-Harris.pdf) (citing Richard J. Lazarus, *The Tragedy of Distrust in the Implementation of Federal Environmental Law* 54 LAW & CONTEMP. PROBS. 311, 323 (1991) (*available at* http://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=1158&context=facpub). According to Lazarus, "the 14% compliance rate refers to all environmental statutory deadlines, 86% of which apply to EPA." *Id.* at 324 (citing *Statutory Deadlines In Environmental Legislation: Necessary But Need Improvement* 13-14 (ENVIR. & ENERGY STUDY INST. AND ENVIR. L. INST., 1985)).

[2] William Yeatman, *EPA's Woeful Deadline Performance Raises Questions about Agency Competence, Climate Change Regulations, "Sue and Settle"* (July 10, 2013) (*available at* https://cei.org/web-memo/epas-woeful-deadline-performance-raises-questions-about-agency-competence-climate-change-re).

[3] *Id.*

[4] Act to Prevent Pollution from Ships 33 USC § 1910; Clean Air Act 42 USC § 7604; Clean Water Act 33 USC § 1365; Superfund Act 42 USC § 9659; Deepwater Port Act 33 USC § 1515; Deep Seabed Hard Mineral Resources Act 30 USC § 1427; Emergency Planning and Community Right-to-Know Act 42 USC § 11046; Endangered Species Act 16 USC § 1540(g); Energy Conservation Program for Consumer Products 42 USC § 6305; Marine

review the standard at issue. While limited resources, budgetary constraints, and time restrictions may play into some of these missed deadlines, EPA consistently fails to argue in opposition that it is using its discretion in determining which environmental regulation or standard should be addressed in a preferential order. Instead, the Agency more often than not will enter into a "sue and settle" agreement, the effect of which is to allow private advocacy groups to set agency policy through court supervised orders, negotiated, in secret, behind closed doors.

Our research shows that from 2009 to 2012, a total of 71 lawsuits were settled under circumstances such that they can be categorized as sue and settle cases under the Chamber's definition.[5] These cases include EPA settlements under the Clean Air Act and the Clean Water Act, along with key Fish and Wildlife Service settlements under the Endangered Species Act. Significantly, settlement of these cases directly resulted in more than 100 new federal rules, many of which are major rules estimated to cost more than $100 million annually to comply with.

Examples of Sue and Settle Agreements Create Costly Federal Rules

1. Utility MACT rule - up to **$9.6 billion** annual costs[6]
2. Lead Repair, Renovation & Painting rule - up to **$500 million** in first-year costs[7]
3. Oil and Natural Gas MACT rule - up to **$738 million** annual costs[8]
4. Florida Nutrient Standards for Estuaries and Flowing Waters - up to **$832 million** annual costs[9]
5. Regional Haze implementation rules: **$2.16 billion** cost[10]
6. Chesapeake Bay Clean Water Act rules - up to **$18 billion** cost to comply[11]
7. Boiler MACT rule - up to **$3 billion** cost to comply[12]
8. Standards for Cooling Water Intake Structures - up to **$384 million** annual costs[13]
9. Revision to the Particulate Matter ($PM_{2.5}$) NAAQS - up to **$350 million** annual costs[14]
10. Reconsideration of 2008 Ozone NAAQS - up to **$90 billion** cost[15]

Protection, Research and Sanctuary Act 33 USC § 1415(g); National Forests, Columbia River Gorge National Scenic Area 16 USC § 544m(b); Natural Gas Pipeline Safety Act 49 USC § 60121; Noise Control Act 42 USC § 4911; Ocean Thermal Energy Conservation Act 42 USC § 9124; Outer Continental Shelf Lands Act 43 USC § 1349(a); Powerplant and Industrial Fuel Use Act 42 USC § 8435; Resources Conservation and Recovery Act 42 USC § 6972; Safe Drinking Water Act 42 USC § 300j-8; Surface Mining Control and Reclamation Act 30 USC § 1270; Toxic Substances Control Act 15 USC § 2619.

[5] U.S. Chamber of Commerce, *Sue and Settle: Regulating Behind Closed Doors* (May 2013) (*available at* https://www.uschamber.com/sites/default/files/documents/files/SUEANDSETTLEREPORT-Final.pdf.)

[6] Letter from President Obama to Speaker Boehner, *supra* note 10.

[7] 75 Fed. Reg. 24,802, 24,812 (May 6, 2010).

[8] Fall 2011 Regulatory Plan and Regulatory Agenda, "Oil and Natural Gas Sector-NSPS and NESHAPS," RIN: 2060-AP76.

[9] EPA, Proposed Nutrient Standards for Florida's Coastal, Estuarine & South Florida Flowing Waters (Nov. 2012).

[10] William Yeatman, *EPA's New Regulatory Front: Regional Haze and the Takeover of State Programs* (July 2012).

[11] Sage Policy Group, Inc., *The Impact of Phase I Watershed Implementation Plans on Key Maryland Industries* (April 2011); *Chesapeake Bay Journal* (Jan. 2011).

[12] Letter from President Obama to Speaker Boehner, *supra* note 10.

[13] 2012 Regulatory Plan and Unified Agenda, "Standards for Cooling Water Intake Structures," RIN: 2040-AE95.

[14] EPA, "Overview of EPA's Revisions to the Air Quality Standards for Particle Pollution (Particulate Matter) (2012).

b. *Chevron* Deference Allows for More Aggressive Regulation

The U.S. Supreme Court's decision in *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984) ("*Chevron*") has played an important role in the expansion of federal agencies' regulatory missions and claimed authority. As Justice Scalia noted in a subsequent case, "Under *Chevron* . . . if a statute is unambiguous the statute governs; if, however, Congress' silence or ambiguity has 'left a gap for the agency to fill,' courts must defer to the agency's interpretation as long as it is 'a permissible construction of the statute.'"[16]

It should come as no surprise that agencies have invoked *Chevron* to pursue increasingly aggressive regulatory agendas, claiming Congress vested them with policy-making power through alleged "ambiguities" in statutes written in the 1970s and 1980s. Unfortunately, some courts have been willing to play along, finding so-called "gaps" in statutes where Congress did not intend them. The exceptionally broad deference afforded agency decision-making by some courts clearly diminishes the ability of both Congress and the courts to effectively oversee agency action. The result is that poorly-conceived and poorly-drafted rules too often survive legal challenges and take effect. If Congress desires to regain even minimal control over agencies, the scope of court deference to agency interpretations of statutes must be clearly delineated and limited.

II. STATES IMPLEMENT MOST FEDERAL ENVIRONMENTAL REGULATIONS

The real victims of these missed deadlines and the consequential sue and settlement deals are the states. States implement approximately **96.5%** of the environmental laws that are delegated to them.[17] As a result, the success of the EPA often depends on the states to which the Agency provided $3.6 billion in 2013 for the administration of its programs.[18] That means that federal grants represent between 26% - 29% of the environmental budgets of the states.[19] The bottom line: states continue to do the lion's share of the implementation of federal environmental programs without being fully compensated.

As shown in the chart below, states implement approximately **96.5%** of federal environmental programs.[20] This is a tremendous burden for states, particularly from a time, money and resource perspective. To add to the difficulties that states face, according to the Environmental Council of States (ECOS), states have seen a trend in declining funds from the federal government to implement these programs.[21] Federal budget documents confirm that the EPA's State and Tribal Assistance Grants (STAG) budget has decreased significantly in recent years.[22] While the largest funding source for state environmental agencies is permit fees, federal

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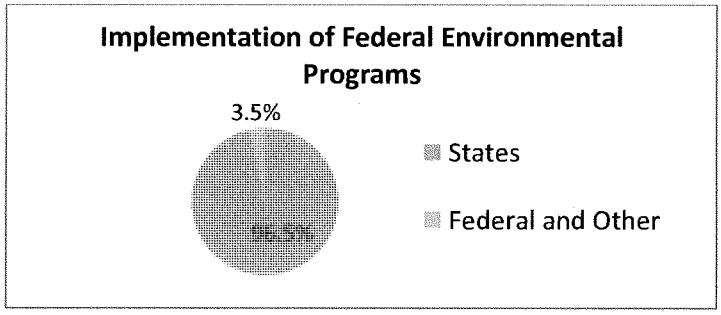
[15] Letter from President Obama to Speaker Boehner, *supra* note 10.
[16] *Stinson v. United States*, 508 U.S. 36, 44 (1993).
[17] *See* https://www.dropbox.com/s/jgdbu4rql29oexh/EEnterprise%20One%20Pager%205_21%20FINAL.docx.
[18] *See* EPA FY 2014 Budget in Brief, p. 87 (http://www2.epa.gov/planandbudget/fy2014).
[19] *See* https://www.dropbox.com/s/jgdbu4rql29oexh/EEnterprise%20One%20Pager%205_21%20FINAL.docx.
[20] *Id.* The chart on page 4 ("Implementation of Federal Environmental Programs") is based upon information from ECOS (https://www.dropbox.com/s/jgdbu4rql29oexh/EEnterprise%20One%20Pager%205_21%20FINAL.docx).
[21] *Id.*
[22] *See* EPA FY 2014 Budget in Brief, p. 87 (http://www2.epa.gov/planandbudget/fy2014).

funding is the second largest source. ECOS reports that "[d]ecreasing funds from the federal government jeopardize states' ability to implement federally delegated programs and policies."[23] These problems will be significantly compounded by the fact that soon the states also will have to administer EPA's Clean Water Rule, Clean Power Plan and new Ozone Standards.



We, the regulated community, recognize and appreciate the fact that states are carrying such a huge burden and doing so with shrinking resources. Indeed, that burden is only going to grow in the future as the EPA issues many more complex and costly regulations. As discussed above, the agency is poised to finalize three historically significant regulations – the WOTUS rule, the Clean Power Plan, and the ozone NAAQS – within the next six months. This reality amounts to a sobering conclusion – EPA issues mandate after mandate on the states and regulated community, but the states can only do so much with their resources. There has to be a limit to EPA mandates. States are being asked to do more and more with less and less when it comes to implementing federal environmental programs and policies.

States bear the burden of implementing 96.5% of federal environmental programs, and with fewer and fewer resources. The EPA should be considering this fact in its regulatory process, i.e. refrain from revising the ozone NAAQS until the current standard is fully implemented.

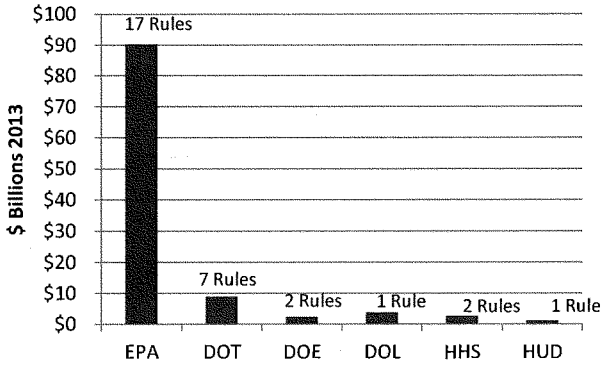
III. HISTORICAL IMPACTS OF THE REGULATORY PROCESS

In 2014, the U.S. Chamber conducted a detailed analysis of federal rulemakings to assess the cumulative impact of the many thousands of regulations finalized over the past few decades:[24] The data shows that from 2000 to 2013, a total of **30** rules from Executive Branch agencies, each with a cost of more than **$1 billion** per year, are now imposing nearly **$110 billion** in costs each year on the U.S. economy.[25] While the high cost of these rules is important,

[23] *See* https://www.dropbox.com/s/jgdbu4rql29oexh/EEnterprise%20One%20Pager%205_21%20FINAL.docx.
[24] U.S. Chamber of Commerce, *Charting Federal Costs and Benefits* (August 2014), *available at* https://www.uschamber.com/sites/default/files/021615_fed_regs_costs_benefits_2014reportrevise_jrp_fin_1.pdf
[25] Independent regulatory agencies (e.g. the Federal Communications Commission (FCC), Securities and Exchange Commission (SEC), and Commodities Futures Trading Commission (CFTC)) are not subject to Executive branch

these rules are typically also highly complex and burdensome. Regulated entities—including small businesses and small governmental entities like city and county governments—must spend time and resources to comprehend what is required by a new regulation and to take steps to comply. The rules are far more intrusive than smaller rules and have the potential to have profound effects (often unintentional) on fundamental sectors of our national economy (e.g., energy, financial institutions, healthcare, education, and the Internet).

Rules Costing More Than $1 Billion by Agency
2000–2013[26]



Significantly, 17 out of 30 of the $1 billion or more per year rules issued by federal Executive Branch agencies were issued by the EPA. Based on the government's data, the 17 EPA rules made up 82.5% of the cost of all 30 rules. And EPA is set to impose much more regulatory burden in just the coming months.

IV. AND NOW THE PERFECT REGULATORY STORM

By the end of 2015, within just a six-month time span, EPA plans to finalize and issue three massive, sweeping regulatory programs. Each of these new programs has the potential to profoundly affect people in every region of the country, and in virtually every community.

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oversight by the Office of Management and Budget (OMB) and do not routinely perform RIAs as directed by OMB Circular A-4 guidance on cost-benefit analysis. Consequently, even in the cases when independent regulatory agencies estimate the costs and benefits of their regulations, they generally do not adhere to the standards established and enforced by OMB and the cost estimates are often not complete or comparable.

[26] Sources: EPA rules from agency RIAs; other agencies' rules from OMB *Draft 2013 and Draft 2014 Reports to Congress on Costs and Benefits of Regulations*.

A. *Ozone NAAQS Revision*

The EPA is currently undertaking the five-year review of the NAAQS for ground-level ozone. In December 2014, the EPA proposed lowering the ozone NAAQS from its current level of 75 parts per billion (ppb) to a range between 65-70 ppb. Lowering the ozone standard to those levels could lead to nonattainment designations for many areas of the country. A nonattainment designation can hamper severely economic development and construction in an area. According to a February 2015 National Association of Manufacturers economic study, a 65 ppb standard could reduce U.S. GDP by $140 billion annually, result in 1.4 million fewer jobs, and cost the average U.S. household $830 in lost consumption – each year from 2017 to 2040. That would mean a total of $1.7 trillion in lost U.S. GDP between 2017 and 2040.

The Chamber, along with other business and industry stakeholders, have advocated for EPA to retain the current 2008 ozone standard (75 ppb) for a number of reasons, including that the current standard still has not been fully implemented due to EPA's self-inflicted delays. Counties were not designated as nonattainment under the 2008 standard until April 2012. Also, EPA did not finalize the 2008 implementation guidance until just recently in February 2015. States are committing time and resources to meet the 75 ppb standard; the proposed rule would strain limited state resources and fail to give states a chance to meet the current standard. Furthermore, other concerns with the proposed rule include EPA's failure to justify the need for a lower standard in the record, its failure to address the fact that the proposed standard is approaching natural background levels of ozone in certain areas, and its failure to consider significant evidence showing the movement of ozone from foreign sources, including Asia, Canada and Mexico. Failing to address these issues means EPA may be setting an ozone standard with which it is impossible for much of the country to comply.

B. *The Waters of the United States Rule*

The revised definition of "Waters of the United States" issued jointly on May 27, 2015 by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers (Corps), expands federal Clean Water Act jurisdiction far beyond the limits explicitly established by Congress and affirmed by the courts. The rule will, for the first time, give federal agencies direct permitting and enforcement authority over many land use decisions that Congress intentionally reserved to the States. It will intrude so far into traditional State and local land use authority that it is difficult to imagine that any discretion would be left to State, county and municipal governments.

The WOTUS rule will affect many sectors of the U.S. economy, including construction, homebuilding, agriculture, transportation, real estate, energy production and transmission, and manufacturing. The rule will have a chilling effect on project development and force property owners to hire consultants, specialists, and lawyers to understand how they will be impacted and whether current or planned land uses will trigger federal permitting or enforcement. The rule puts heavy new burdens on states and localities to comply with federal requirements, including having to wait for federal approval before undertaking critical infrastructure maintenance projects. In sum, the waters rule creates confusion and an unwillingness to move forward with ordinary activities and projects for businesses, property owners, and state and local governments.

C. *Proposed Greenhouse Gas Regulations on Power Plants*

In September 2013, EPA proposed a rule for regulating greenhouse gas emissions from new power plants. The proposed emission limit for new coal-fired power plants is so stringent that any new coal-fired power plant would require carbon capture and sequestration (CCS) technology in order to comply. EPA, however, failed to show that CCS is a commercially-viable and adequately-demonstrated technology for new coal-fired power plants. The proposed regulation also has raised serious concerns about the ability to maintain a diverse energy supply in order to ensure steady and reliable streams of electricity to power the country.

In June 2014, EPA proposed the "Clean Power Plan (CPP)," a proposed rule under the Clean Air Act that would regulate greenhouse gas emissions from existing power plants. The proposed rule sets a goal of a 30% nationwide reduction of 2005 GHG emission levels by 2030. Using Section 111(d) of the Clean Air Act, the proposed CPP would create state-specific reduction goals that "reflect the EPA's calculation of the emission reductions that a state can achieve through the application of 'best system of emissions reduction (BSER).'" Portions of those reduction goals would have to be met on an interim basis in 2020, and then the full reductions achieved between 2020 and 2030.[27]

There are many significant concerns with EPA's proposed Clean Power Plan and the impacts that it will have on reliable and affordable electricity in the U.S. for industrial and residential consumers. For example, the Clean Air Act does not allow EPA to regulate GHG emissions from existing power plants under Section 111(d) because these same power plants are already regulated by EPA under Section 112 of the Clean Air Act. Additionally, even if EPA believes it has the basic authority to regulate existing facilities, Section 111(d) allows EPA to set emission standards based solely on emission reductions that can be achieved "inside the fence" at power plants. The CPP proposal, however, requires substantial reductions "outside the fence," which in turn requires the regulation of entities separate and apart from the emissions purportedly subject to regulation and otherwise not even subject to Clean Air Act regulation. These are just two examples of scores of legal issues that have been raised regarding the CPP.

Economically, the proposed CPP threatens to cause serious harm to the U.S. economy, raising energy prices and costing jobs.[28] Regarding electric reliability, EPA has failed to conduct much-needed comprehensive and independent reliability analyses to determine the impacts of the proposed CPP on the country's electrical grids, particularly given that EPA itself projects that the proposal would cause up to 49,000 megawatts of additional coal-fired electric generating capacity to retire by 2020. The proposed CPP also suffers from rushed timelines and deadlines: (1) states repeatedly have said that they need more time to develop state implementation plans; (2) many states also have called for elimination of the interim emissions reduction goals because

[27] EPA developed those state-specific goals using four "building blocks": (1) heat rate improvements at coal-fired electricity generating units (EGUs); (2) replacing coal-fired electricity with increased generation at existing natural gas combined cycle EGUs; (3) increasing nuclear and renewable EGU capacity; and (4) demand-side energy efficiency.

[28] EPA's own estimates project that its proposed rule will cause nationwide electricity price increases averaging between 6-7% in 2020, and up to 12% in some areas. EPA also estimates annual compliance costs between $5.4 and $7.4 billion in 2020, rising up to $8.8 billion in 2030. Notably, these are power sector compliance costs only; they do not include the cascading impacts of higher electricity rates on overall economic activity.

compliance with them is impossible; and (3) there are serious questions about whether the infrastructure needed to comply with the CPP can be built within the proposed rule's deadlines.

V. EPA HAS NOT CONSIDERED THE CUMULATIVE IMPACT OF THE THREE REGULATORY ACTIONS

Since the first agency was established, Congress has attempted to control agency rulemakings through legislation, oversight and funding, but with little to no impact. Many of the adverse impacts of the regulations being discussed today would have been addressed by EPA had it merely implemented congressional mandates concerning the impact on jobs, the use of the best data in rulemakings, the impact of the regulations on small business, state and local governments, and the cumulative impact of regulations.

Because it elected to issue these three rules on the current, compressed timetable, EPA chose to ignore several statutory and administrative requirements to carefully consider the cumulative impacts of these rules, along with relevant rules the agency previously issued. Before taking the unprecedented step of issuing three such sweeping and complex new programs within months of one another, the agency should have taken the time to fully understand how each of these rules would complement—or conflict with—the others. Congress has mandated such consideration numerous times but EPA refuses to comply with the direction being given by Congress.

A. EPA Failed to Conduct the Congressionally Mandated Ongoing Employment Impacts Evaluation

Congress has debated whether regulations cause adverse impacts on industry, communities and job loss since at least 1970. In the 95th Congress (1977-1978) the debate over the employment impacts of regulation was clear, direct, and extensive. The Committee noted:

> Among the issues which have arisen frequently since the enactment of the 1970 Amendments is the extent to which the Clean Air Act or other factors are responsible for plant shutdowns, decisions not to build new plants, and consequent losses of employment opportunities.
>
> * * *
>
> [I]t has been argued that environmental laws have in fact been responsible for significant numbers of plant closings and job losses.
>
> In any particular case in which a substantial job loss is threatened, in which a plant closing is blamed on Clean Air Act requirements, or possible new construction is alleged to have been postponed or prevented by such requirements, the committee recognized the need to determine the truth of these allegations. For this reason, the committee agreed to . . . a mechanism for determining the accuracy of any such allegation.[29]

[29] 95 Cong. House Report 294; CAA77 Leg. Hist. 26 at 227.

The Committee went on to state:

> [T]he Administrator is mandated to undertake an ongoing evaluation of job losses and employment shifts due to requirements of the act. This evaluation is to include investigations of threatened plant closures or reductions in employment allegedly due to requirements of the act or any actual closures or reductions which are alleged to have occurred because of such requirements.[30]

In conference, the Senate concurred with the House employment effects provision that addressed the EPA Administrator's evaluations and investigations of loss of employment and plant closure.[31]

Subsequently, in the Clean Air Act Amendments of 1977, Congress enacted a provision, now codified as section 321(a) of the Clean Air Act, which reads:

> **(a) Continuous evaluation of potential loss of shifts of employment**
>
> The Administrator shall conduct continuing evaluations of potential loss or shifts of employment which may result from the administration or enforcement of the provision of this chapter and applicable implementation plans, including where appropriate, investigating threatened plant closures, or reductions in employment allegedly resulting from such administration or enforcement."[32]

Over the years EPA has chosen to ignore the Congressional mandate to conduct a continuous evaluation of loss or shifts in employment from the implementation of environmental statutes. For this reason, the debate over the impacts on jobs due to regulations has continued without EPA ever providing Congress with the mandated information, which is critical for effective oversight of the agency. In *Whitman v. American Trucking Association*, Justice Scalia, writing for a near-unanimous Court, settled the debate, writing:

> In particular, the economic cost of implementing a very stringent standard might produce health losses sufficient to offset the health gains achieved in cleaning the air – for example, by closing down whole industries and thereby impoverishing the workers and consumers dependent upon those industries.
>
> That is unquestionably true, and Congress was unquestionably aware of it. Thus, Congress had commissioned in the Air Quality Act of 1967 (1967 Act) 'a detailed estimate of the cost of carrying out the provisions of this Act; a comprehensive study of the economic impact of air quality standards on the Nation's industries, communities and other contributing sources of pollution.' Sec.2, 81 Stat. 505. The 1970 Congress, armed with the results of this study, see The Cost of Clean Air, S. Doc. No. 91 – 40 (1969) not

[30] *Id.*
[31] 95 Cong. Conf. Bill H.R. 6161; CAA77 Leg. Hist. 24.
[32] Section 321(A) of the Clean Air Act; 42 U.S.C. § 7621. This section became law as part of the 1977 Amendments to the Clean Air Act.

only anticipated compliance costs could injure the public health, but provided for that precise exigency.[33]

In 2009 when a large number of regulations were being issued by EPA, six U.S. Senators wrote to EPA requesting the results of its continuing Section 321(a) evaluation of potential loss or shifts of employment which may result from the suite of regulations EPA had proposed or finalized.[34] On October 26, 2009, EPA responded to the six Senators stating "EPA has not interpreted CAA section 321 to require EPA to conduct employment investigations in taking regulatory actions."[35]

Therefore, a debate that started 45 years ago and which resulted in Congress directly mandating a study of the employment effects of regulations so as to determine the truth of conflicting allegations about whether regulations adversely impact jobs is still unresolved. EPA, the agency charged with doing the continuous evaluation of potential loss or shifts in employment due to its regulations, has steadfastly refused to conduct such an evaluation.

If EPA had been conducting Section 321(a) employment evaluations since 1977, Congress would be in a much better position to understand how the three new rules—taken individually or in combination with one another—would affect the lives of ordinary Americans. Congress and the public would have a good baseline against which new regulatory actions could be measured.

EPA must comply with its statutory obligation under section 321(a) of the Clean Air Act and conduct a continuing evaluation of the employment impacts of CAA regulations.

B. EPA Failed to Utilize the Information Quality Act

Perhaps the most effective mechanism for ensuring federal agencies use high quality data in their rulemakings is to vigorously implement the Information Quality Act (IQA).[36] The IQA was designed to impose greater transparency and improve the quality of agency information, especially with respect to non-regulatory information disseminated by administrative agencies with respect to scientific and statistical matters. It requires:

- Compliance with OMB's information quality guidelines that mandate transparency, full disclosure of all data and reports used to justify or formulate an agency position on a given topic, and full disclosure of all uncertainties or error sources so that a member of the public may evaluate and reproduce the results of an agency analysis or study.

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[33] *Whitman v. American Trucking Association*, 531 U.S. 457 (2001) at 466 (emphasis added).
[34] Letter from Senators Vitter, Riech, Johanns, Inhofe, Ensign and Hatch to EPA Administrator Lisa Jackson, October 13, 2009.
[35] Letter from EPA Assistant Administrator Gina McCarthy to Senator Inhofe (October 26, 2009) at 2.
[36] 44 U.S.C. §§ 3504(d)(1), 3516.

- Use of the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices and data collected by accepted methods or best available methods.

- For claims, statements or policies regarding human health or environmental risks, the agency must specify (1) each population addressed by any estimate of public health effects; (2) the expected risk or central estimate of risk for the specific populations; (3) each appropriate upper-bound or lower-bound estimate of risk; (4) each significant uncertainty identified in the process of the assessment of public health effects and studies that would assist in resolving the uncertainty; and (5) peer-reviewed studies that support, are directly relevant to, or fail to support any estimate of public health effects and the methodology used to reconcile inconsistencies in the scientific data.[37]

- A procedure to allow affected persons to "seek and obtain" correction or disclosure of information that fails OMB information quality requirements.

Unfortunately, federal agencies have taken the position that they need not comply with IQA because there is no private right of action to enforce the statute.[38]

EPA should follow the IQA by fully disclosing data and reports used to justify its positions and utilizing the best peer-reviewed science.

C. EPA Failed to Comply with the Unfunded Mandates Reform Act

The Unfunded Mandates Reform Act ("UMRA") requires federal agencies to access the effects of the rule on state and local governments and the private sector before imposing mandates on them of $100 million or more per year without providing federal funding for state and local governments to implement the mandate. In essence, UMRA is intended to prevent federal agencies from shifting the costs of federal programs to the states. In the WOTUS rule, EPA and the Corps certified that "[t]his action does not contain any unfunded mandate under the regulatory provisions of Title II of the Unfunded Mandates Reform Act of 1995, (12 U.S.C. §§ 1531-1538), and does not significantly or uniquely affect small governments."[39] This definitive statement is clearly at odds with the facts, however. For example, according to the National Association of Counties, 1,542 of the 3,069 counties in the nation (50%) have populations of less than 25,000,[40] and are therefore protected by both the UMRA (and RFA). These counties are

[37] Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and integrity of Information Disseminated by Federal Agencies; Republication, 67 Fed. Reg. 8452, 8457-58 (Feb. 22, 2002).
[38] *Harnoken v. Dep't of Justice*, No. C 12-629 CW. 2012 U.S. Dist. LEXIS 17145, at *24 (N.D. Cal. Dec. 3, 2012) (ruling on the DOJ and OMB's assertion that IQA does not provide a private right of action or judicial review).
[39] U.S. Environmental Protection Agency & U.S. Department of the Army, Economic Analysis of the EPA-Army Clean Water Rule (May 2015), at 61, *available at* http://www2.epa.gov/sites/production/files/2015-05/documents/final_clean_water_rule_economic_analysis_5-15_2.pdf. *See also* Definition of "Waters of the United States" Under the Clean Water Act; Proposed Rule, 79 Fed. Reg. 22,220 (April 21, 2014).
[40] Testimony of Warren Williams, General Manager, Riverside County Flood Control & Water Conservation District, submitted on behalf of the National Association of Counties, before the House Transportation and Infrastructure Committee, Subcommittee on Water Resources and Environment (June 11, 2014) at page 2.

responsible for building and maintaining 45% of the roads and associated ditches in 43 states,[41] which is where some of the largest permitting impacts of the WOTUS rule are expected to be felt.

These counties and districts are liable under the law to maintain the integrity of ditches to prevent flooding, even if they are unable to obtain a section 404 permit in a timely manner to do the work. In *Arreola v. Monterey County*, 99 Cal. App.4th 722 (2002), a California appeals court held that a county is liable for not maintaining a levee that failed due to overgrowth of vegetation, even though the county had been forced to wait to obtain a section 404 permit to do the necessary work. These counties will be required to bear the cost of obtaining Clean Water Act permits in greatly-expanded areas, but will receive no federal funding for the increased responsibility imposed by the rule.

EPA should fulfill its statutory obligation under UMRA by not imposing unfunded mandates over $100 million on state and local governments without providing funding.

D. EPA Failed to Comply with the Regulatory Flexibility Act

Congress passed the Regulatory Flexibility Act ("RFA") in 1980 to give small entities a voice in the federal rulemaking process.[42] Put simply, the RFA requires federal agencies to assess the economic impact of their planned regulations on small entities and to consider alternatives that would lessen those impacts. The RFA requires each federal agency to review its proposed and final rules to determine if the rule in question will have a "significant economic impact on a substantial number of small entities."[43] If the rule is expected to have such an impact, the agency must assess the anticipated economic impacts of the rule and evaluate whether alternative actions that would minimize the rule's impact would still achieve the rule's purpose.

Since 1996, EPA specifically has been required to conduct Small Business Advocacy Review Panels when a planned rule is likely to have a significant impact. Small entity representatives —who speak for the sectors that are likely to be affected by the planned rule— advise the Panel members on real-world impacts of the rule and potential regulatory alternatives. The Panel process is the best opportunity for EPA to get face-to-face interaction with small entities and get a sense of the ways that small entities differ from their larger counterparts in their ability to comply with regulatory mandates. Because the Panel occurs early, before the planned rule is publicly proposed, it also represents the best opportunity for small entities to have real input into the final design of a rule.

In the case of the CPP, EPA argues that the "emissions guidelines established under CAA Section 111(d) do not impose any requirements on regulated entities and, thus, will not have a significant economic impact upon a substantial number of small entities,"[44] so the RFA does not

[41] *Id.*
[42] 5 U.S.C. §§ 601-612.
[43] 5 U.S.C. §605(b).
[44] 79 Fed. Reg. 34,947 (June 18, 2014).

apply. As EPA itself admits, however, electricity prices – one of the largest concerns of small businesses – will go up as a result of this proposal. It is also very possible that small businesses themselves (e.g., small refiners) will be called upon to shoulder some of the compliance burden for the proposal. If individual states choose to go beyond EGUs to achieve emissions reductions under the proposal, small businesses, particularly industrial and manufacturing facilities, could be faced with the expenses associated with reducing emissions from their facilities. These are all issues that the EPA is required by law to evaluate and analyze through the RFA and a Small Business Advocacy Review Panel process. Only until recently and after much of the CPP rulemaking process had been undertaken, however, the agency simply ignored the impacts and the RFA requirement.

Likewise, EPA certified without any factual evidence that the WOTUS rule actually represents a *reduction* in the regulatory burdens affecting small entities, and that the rule would not have a substantive or direct regulatory effect on any small entity, so the RFA doesn't apply. Yet, because the WOTUS rule defines "tributaries" to include ditches, flood channels, and other infrastructure, businesses and small governmental jurisdictions will be subject to section 404 permitting requirements for work in ditches, on roads adjacent to ditches, on culverts and bridges, etc. that disturbs soil or otherwise affects the "tributary." These permits can take more than a year to obtain, at a median cost of $155,000.[45] This is why the U.S. Small Business Administration's Office of Advocacy has publicly advised EPA and the Corps that they improperly certified the WOTUS proposal under the RFA.[46]

EPA should satisfy its statutory obligations under the RFA by convening a Small Business Advocacy Review Panel for important proposed regulations, like the Clean Power Plan and the WOTUS rule.

E. EPA Failed to Comply with Clean Air Act section 109(d)(2)(C)

Section 109 of the Clean Air Act provides that, in advising the EPA Administrator about the adequacy of an existing National Ambient Air Quality Standard (NAAQS) and potential revision of the NAAQS, the independent Clean Air Science Advisory Committee, review committee created pursuant to section 109(d)(2)(a) will "advise the Administrator of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment and maintenance of such national ambient air quality standards."[47] While section 109 would appear to be an excellent tool for understanding how a major revision in a NAAQS standard—such as the upcoming ozone revision—is likely to affect the welfare, social stability, and economic health of people across the nation, EPA has declined to ask the

[45] EPA and U.S. Army Corps of Engineers, *Economic Analysis of Proposed Revised Definition of Waters of the United States* (March 2014) at 12.
[46] Letter from Winslow Sargeant, Chief Counsel for Advocacy, to Gina McCarthy, Administrator, EPA and General John Peabody, Deputy Commanding General, Corps of Engineers, on Definition of "Waters of the United States" Under the Clean Water Act (October 1, 2014) at 4.
[47] 42 U.S.C. § 7409(d)(2)(C)(iv).

Clean Air Science Advisory Committee to provide this important information.[48]

EPA should consult the Clean Air Science Advisory Committee pursuant to Clean Air Act section 109(d)(2)(C), and consider any adverse public health, welfare, social, economic or energy effects which may result from strategies to attain or maintain national air quality standards.

F. EPA Failed to Examine Inconsistent or Incompatible Regulations as Required by Executive Order 12,866

Executive Order 12,886[49] requires federal agencies to conduct several analyses prior to proposing or finalizing new regulations. The Executive Order makes agencies responsible to ensure that a new regulation will not conflict with other requirements, specifying that "each agency shall avoid regulations that are inconsistent, incompatible, or duplicative with its other regulations or those of other Federal agencies."[50]

In the case of the three rules at issue, EPA should have fully considered how each rule, if finalized, might affect regulated entities' ability to comply with the other two. For example, as noted above, EPA itself projects that the Clean Power Plan will cause up to 49,000 megawatts of coal-fired electric generating capacity to retire by 2020. To replace this generating capacity, utilities will need to construct fuel delivery infrastructure such as pipelines, storage, railroad track, and improved roads. These infrastructure projects will have to be completed before the existing coal-fired generating units are taken off-line. Yet these projects will be subject to more extensive permitting and reviews by virtue of the WOTUS rule. EPA did not properly account for the increased costs and delays that utilities, pipeline companies, railroads, and other companies will face in complying with the WOTUS rule, which is made necessary because of the need to comply with the Clean Power Plan.

EPA should consider whether a conflict exists regarding regulated entities' ability to comply with stricter ozone standards, the redefinition of WOTUS, and the Clean Power Plan at the same time pursuant to Executive Order 12,866.

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[48] *EPA Science Advisory Panels: Preliminary Observations of the Processes for Providing Scientific Advice Before the U.S. Senate Subcommittee on Superfund, Waste Management, and Regulatory Oversight, Committee on Environment and Public Works*, 114th Cong. (2015) (statement of J. Alfredo Gomez, Director of Natural Resources and Environment, GAO) *available at* http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=cc9167e9-7dd1-4c53-8cca-8a2820b69108&CFID=181664324&CFTOKEN=79870804.

[49] Executive Order 12,866, "Regulatory Planning and Review," 58 Fed. Reg. 51,735 (Sept. 30, 1993).

[50] *Id.* at section 1(b)(10).

G. EPA Failed to Analyze the Cumulative Impacts of the Regulations as Required by Executive Order 13,563

Executive Order 13,563, issued by the Obama administration in 2011,[51] even more clearly calls on federal agencies to review and understand the cumulative impacts of their regulatory programs. Section 1(b)(2) provides that each agency must, among other things, "tailor its regulations to impose the least burden on society, consistent with obtaining regulatory objectives, *taking into account, among other things, and to the extent practicable, the costs of cumulative regulations*."[52] Again, EPA should have complied with this Executive Order when it planned to develop three massive rulemakings that would be timed to take effect virtually one on top of the other.

EPA should conduct a cumulative review of costs imposed on regulated entities by stricter ozone standards, the redefinition of WOTUS, and the Clean Power Plan pursuant to Executive Order 13,563.

H. What EPA Would Have Discovered If It Had Used Congressionally Mandated Regulatory Processes

If EPA had not chosen to ignore the vast array of analytical requirements under the RFA, UMRA, Clean Air Act sections 109 and 321, as well as Executive Orders 12,866 and 13,563, it would have discovered serious inconsistencies and conflicts between its three rules. Here are a few examples of those inconsistencies:

- As noted above, the massive new infrastructure requirements that are at the heart of the Clean Power Plan will be complicated and delayed by the expanded number of Clean Water Act permits under the WOTUS rule. In addition to the cost of applying for federal permits, infrastructure developers will have to pay mitigation costs for wetlands restoration, which often approach or exceed all other project costs.

- When EPA was estimating the attainment area impact of Ozone NAAQS, it completely ignored the probable shifts in criteria pollutant levels resulting from the Clean Power Plan. Because the CPP requires such a massive reorganization of the nation's electric generation infrastructure, the reshuffling of the deck will dramatically shift the current map of criteria pollutant concentrations as power companies site new generation facilities away from existing sites. In particular, this could undermine the ability of many air districts to meet the current standards, let alone the tightened Ozone NAAQS standards EPA will be finalizing around the same time as the CPP.

- This reshuffling will make it extremely difficult for states to properly model their ozone reduction efforts. The Ozone NAAQS standard will also make the job of obtaining preconstruction permits for new power plants under Section 165 of the Clean Air Act

[51] Executive Order 13,563, "Improving Regulatory and Regulatory Review," 76 Fed. Reg. 3,821 (Jan. 18, 2011).
[52] *Id.* at 3,821 (emphasis added).

much more difficult and costly, because more areas will either be classified in non-attainment—thus requiring costly offsets (if they are available)—or the area will be much closer to non-attainment. More extensive modeling and air monitoring will be required to show that a new project made necessary by the CPP can be built, adding significantly to the cost and delays for each project.

- In its economic analysis of the WOTUS rule, EPA based its conclusion that the rule would only increase the amount of federal jurisdictional waters under the CWA by 2.84% to 3.65% on a *very* small sample of negative determinations from two preceding years, essentially using just a tiny slice of pre-WOTUS determinations. EPA ignored conflicting evidence from federal and state authorities that the rule could impose anywhere from a 300% to 800% increase in federal jurisdictional waters. By ignoring these congressional mandates for developing effective regulations, EPA fails to secure an understanding of the real world impacts of its rules.

Undoubtedly, more examples of inconsistencies will be discovered as these three major regulations continue to move through the regulatory process and eventually must be implemented. Much of the confusion and deficiencies stemming from these inconsistencies could have been avoided had the EPA conducted a more thorough analysis of the cumulative impacts of these regulations.

VI. LEGISLATIVE RECOMMENDATIONS

A. The Regulatory Accountability Act (H.R. 185)

A modernized APA is needed to restore the kinds of checks and balances on federal agency action that the 1946 APA—the "bill of rights" for the regulatory state—intended to provide the American people. Congress has a huge stake in getting the rulemaking process right if it is to preserve its Article 1 Constitutional Responsibility. H.R. 185, the "Regulatory Accountability Act of 2015," which passed the House in January, would address this deficiency. The legislation would put balance and accountability back into the federal rulemaking process, without undercutting vital public safety and health protections. The bill focuses on the process agencies must use when they write the biggest regulations. Compelling agencies to carefully follow process will produce better substance, which results in better regulations.

The Act would require federal agencies do a better job of explaining the rationales for new rules and being more open and transparent when they write those rules. The Act simply requires additional process to ensure a better rulemaking product; it does ***not*** compel any particular rulemaking outcome. The Act will bring the Administrative Procedure Act of 1946 into a modern era where Congress must oversee over 425 agencies and hundreds of thousands of rules.

B. The Sunshine for Regulatory Decrees and Settlements Act (H.R. 712)

On February 4, 2015, the Sunshine for Regulatory Decrees and Settlements Act of 2015 was introduced in the House as H.R. 712 and in the Senate as S. 378. The bill would (1) require

agencies to give notice when they receive notices of intent to sue from private parties, (2) afford affected parties an opportunity to intervene *prior to the filing* of the consent decree or settlement with a court, and (3) publish notice of a proposed decree or settlement in the *Federal Register* and take (and respond to) public comments at least 60 days prior to the filing of the decree or settlement. The bill also would require agencies to do a better job showing that a proposed agreement is consistent with the law and in the public interest.

C. Secret Science Bill (H.R. 1030)

In furthering the goal of better regulatory governance through transparency and sound justification for rules, the Chamber supports H.R.1030, the "Secret Science Reform Act of 2015." The Chamber supports Chairman Lamar Smith's efforts through the Secret Science Reform Act to provide greater transparency and accountability to EPA's regulatory structure. The Secret Science Reform Act would require that before the EPA proposes, finalizes or disseminates covered risk, exposure, or hazard assessments as well as criteria documents, standards, limitations, regulations, regulatory impact analyses, or guidance all scientific and technical information relied upon in support of the action be: (1) grounded in the best available science; (2) specifically identified; and (3) made publicly available for independent analysis and substantial reproduction. Such critical safeguards, as the Chamber has previously noted, will assure the public that the data federal agencies rely on is scientifically sound and unbiased.

VII. CONCLUSION

The goal of a regulatory agency should be to produce regulations that implement the intent of Congress in the most efficient way possible. Congress has provided significant guidance as to the analysis agencies must undertake to achieve Congressional intent. The analysis required by Congress is to guide the agency to make decisions based on fact, sound science and economic reality.

Unfortunately, over the decades EPA has manipulated the regulatory process through the use of citizen suits; sue and settle agreements; reliance on court deference; avoidance of congressional mandates such as IQA, Regulatory Flexibility Act, UMRA; and the outright refusal to undertake the continuing analysis of the potential loss or shifts in employment due to its regulations. The result of such conduct is an agency that issues unrestrained mandates that the states and the business community must implement regardless of cost. By ignoring the guidance provided by Congress as to how to develop regulations, EPA fails to provide Congress with the information it needs to legislate. While that is a travesty, Congress has the ability to protect itself.

There is an even deeper harm inflicted by EPA's failure to fully analyze the impact of its regulations. That harm is the deliberate avoidance of any attempt to reach out to the people and the communities that will be adversely impacted by its actions. If the goal of every agency is to produce quality rules that implement the intent of Congress, why would an agency fail to evaluate job impacts, the cumulative impacts of regulations, or develop regulations using peer reviewed studies, the best science and economics?

William L. Kovacs

Senior Vice President, Environment, Technology & Regulatory Affairs, U.S. Chamber of Commerce

William L. Kovacs provides the overall direction, strategy, and management for the Environment, Technology & Regulatory Affairs Division at the U.S. Chamber of Commerce.

Since coming to the Chamber in March 1998, Kovacs has transformed a small division concentrated on a handful of issues and committee meetings into one of the most significant in the organization. The Environment, Technology & Regulatory Affairs Division initiates and leads multidimensional, national issue campaigns on comprehensive energy legislation, complex environmental rulemakings, telecommunications reform, emerging technologies, and the systematic application of sound science to the federal regulatory process among others.

Kovacs has focused on finding new leadership opportunities for the Chamber. He pioneered the use of cybercasting for Chamber events, recruited and assembled the first science team to work in tandem with policy staff to ensure that federal regulations are based on sound science, formed and chaired the Chamber's Technology Coordinating Group, and helped develop numerous national coalitions in the areas of environment, energy, regulatory affairs, and technology.

Before joining the Chamber, Kovacs was director of worldwide legal affairs for Sunshine Makers, Inc., manufacturer of the Simple Green line of nontoxic cleaning products. Previously, he held the position of partner in several Washington, D.C., law firms where his practice focused on environmental law.

In government service, Kovacs served as vice chairman and chairman of the Commonwealth of Virginia's Hazardous Waste Facilities Siting Board, as chief counsel and staff director for the House Subcommittee on Transportation and Commerce, and as legislative director and counsel for a member of Congress.

During his tenure as chief counsel, Kovacs was the primary counsel on two landmark laws that were enacted in a single session of Congress: the Resource Conservation and Recovery Act, the primary federal law that regulates solid and hazardous waste; and the Rail Revitalization and Regulatory Reform Act, which reorganized the bankrupt Penn Central Railroad into Conrail, the largest corporate reorganization in the United States at that time.

Kovacs is a frequent commentator on national environmental, energy, and regulatory issues that impact the business community. He is regularly quoted in the nation's leading newspapers and appears on talk radio and television as a spokesperson for American business. He is listed in Who's Who in the World, Who's Who in America, Who's Who in American Law, and Who's Who in Emerging Leaders.

Kovacs has a law degree from the Ohio State University College of Law and a bachelor of science degree from the University of Scranton, magna cum laude.

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Chairman SMITH. Thank you, Mr. Kovacs.
Dr. Paulson.

**TESTIMONY OF DR. JEROME A. PAULSON,
FAAP CHAIR, AMERICAN ACADEMY OF PEDIATRICS
COUNCIL ON ENVIRONMENTAL
HEALTH EXECUTIVE COMMITTEE**

Dr. PAULSON. Good morning, Chairman Smith, Ranking Member Johnson and Committee members. Chairman Smith, thank you for your kind introduction of me, and I will just add that for 30 to 35 years I also practiced——

Ms. EDWARDS. Mr. Chairman, is the mic on?

Dr. PAULSON. I practiced and taught primary care pediatrics, so I was directly involved in the day-to-day pediatric care of children.

And so with the background that you described and my work as a pediatrician that I mentioned, I'm going to comment today on the child health benefits of the Clean Power Plan and the EPA's proposed ozone rule.

We know very clearly that children are disproportionately at risk from environmental pollutants. Children are not little adults, and we cannot extrapolate from what we know about adults and assume that that information applies to children, particularly as it relates to respiratory illnesses. Children breathe faster than adults, they have higher levels of physical activity, and they spend more time outdoors. Their lungs are still developing. Therefore, children have different outcomes from exposures to ozone and other air pollutants than adults do, and these effects on children last a lifetime. Problems that develop in children manifest themselves in adulthood. The work of EPA is essential to protecting children from pollutants and ensuring that children have an optimal environment in which to live, learn and play.

Reducing carbon emissions of fossil fuel power plants represents a major step towards addressing a key component of climate change in the United States. According to the World Health Organization, over 80 percent of the current health burden from the changing climate is on children less than five years old, and that's children here in the United States as well as globally. These burdens on children include injury and death from natural disasters, increases in air pollution-related illness, and more heat-related potentially fatal illness.

Reducing carbon pollution will have an immediate impact on child health by reducing emissions of other pollutants and the resultant creation of harmful ozone. When fully implemented in 2030, EPA's proposed rule for existing power plants will result in 6,600 fewer premature deaths, 150,000 fewer childhood asthma attacks, and 180,000 fewer missed school days, 3,700 fewer cases of bronchitis. This also means that when children are not sick, their parents can go to work, keep their jobs and earn money for the family.

Let me tell you about a phone call that I received from a physician about a little girl with asthma. The family and the physician were having difficulty keeping her asthma under control in spite of adequate medical management. The astute mother reported that her daughter's asthma got worse when the smoke from the power

plant that was located near her home changed from white to black. We were able to determine that the power plant usually burned natural gas but was approved to burn coal under certain circumstances. We believe that this little girl's asthma was exacerbated by the coal burning because of the increase in particulate and other air pollutants associated with that fuel.

It is also clear and compelling scientific evidence that supports the need for a strong ozone standard of 60 parts per billion or lower. High levels of ozone in the air including levels above 60 parts per billion can lead to decreased lung function in children, coughing, burning and shortness of breath as well as inflammation and swelling of the airways. In 2025, a 60-part-per-billion standard could prevent 7,900 premature deaths, 1.8 million child asthma attacks, and 1.9 million missed school days.

I know that the distinguished members of this Committee have given many speeches over the course of your careers, and I am sure that all of you would be horrified, as I was, to look out at a crowd that you were addressing to see a woman in the audience sobbing but that was my experience during a luncheon presentation talking about ozone as a cause of asthma and a reason for exacerbation of asthma. This mom was blaming herself for being a good mother and encouraging her son to be physically active and involved in outdoor sports only to have him develop asthma.

The EPA has a fundamental role in ensuring that the environment in which children live, learn and play is safe and healthy and allows children to enter adulthood free from environmentally related health problems. The Clean Power Plan and stronger ozone NAAQS are essential child health policies that the AAP strongly supports.

Thank you.

[The prepared statement of Dr. Paulson follows:]

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

June 4, 2015

Statement of
Jerome Paulson, MD, FAAP
Chair, AAP Council on Environmental Health Executive Committee

On behalf of the
American Academy of Pediatrics

Testimony before the
House Science, Space, and Technology Committee

"EPA Regulatory Overreach: Impacts on American Competitiveness"

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Jerome Paulson, MD, FAAP
American Academy of Pediatrics
Testimony before the House Science, Space, and Technology Committee
June 4, 2015

Good Morning Chairman Smith, Ranking Member Johnson, and Committee Members:

My name is Dr. Jerome Paulson and I am here today on behalf of the American Academy of Pediatrics, which represents 64,000 pediatricians around the country. I currently chair the AAP's Council on Environmental Health Executive Committee. I also serve as the Medical Director for the Eastern region of the Pediatric Environmental Health Specialty Units (PEHSUs), as part of a contract the AAP shares with the American College of Medical Toxicology and which contract is funded by a grant from the Agency for Toxic Substances and Disease Registry. In addition to my role within the AAP, I am a professor emeritus of pediatrics and of environmental and occupational health at George Washington University. I am grateful for the opportunity to testify today about the U.S. Environmental Protection Agency's (EPA) important work in improving children's health.

The EPA's regulatory work is critically important to protecting and improving the health of our nation's children. As a pediatrician, my expertise is in child health. My experience and credentials equip me to speak to the child health benefits of the cleaning up our nation's air by reducing carbon and ozone pollution. We know that children are at particular risk from environmental contaminants, and the EPA's work to reduce the pollution to which they are exposed will generate significant economic benefits in the form of reductions in: premature deaths; avoidable hospital admissions and other medical expenditures; and missed school and work days. Other witnesses today may speak to the impact of environmental health regulatory improvements on the balance sheets of U.S. businesses. My comments today will focus on the AAP's support for the EPA's efforts on clean air issues, including the child health benefits of the Clean Power Plan and the EPA's proposed ozone rule.

Jerome Paulson, MD, FAAP
American Academy of Pediatrics
Testimony before the House Science, Space, and Technology Committee
June 4, 2015

Children Are Disproportionately Vulnerable to Environmental Pollutants

Every child needs a safe environment, and children are disproportionately at risk from environmental pollutants. All aspects of the environment have especially profound effects on children's health. Children have more exposure to air pollution than adults; they breathe at a faster rate than adults, have higher levels of physical activity, and spend more time outdoors[i]. Children's lungs also continue to grow until they reach their adult height. This increased exposure and ongoing lung development mean that children have different outcomes from these exposures than adults, with lifelong effects[ii].

Outdoor air pollution is linked to respiratory problems in children, including decreased lung function, coughing, wheezing, more frequent respiratory illness, and asthma exacerbation.[iii] Children bear the burden of negative health outcomes resulting from exposure to pollutants across their lifespan. For example, some of the increases in the prevalence of chronic obstructive lung disease in adults who live in more polluted areas could be the result of exposures that occurred during childhood. Particulate pollution has also been linked to low-birth weight, preterm birth, and infant mortality in children, and increased cardiovascular diseases in adults.[iv] Such effects compound over time, contributing significant negative economic effects in the lives of children and their families, as well as to the national economy. The work of the EPA is essential to protecting children from pollutants and ensuring that children have an optimal environment in which to live, learn, and play. For these reasons, the AAP is a strong supporter of the Clean Air Act and the EPA's work under it to protect children from the negative health effects of carbon and ozone pollution.

Let me tell you about a phone call that I received from a physician about a little girl with asthma. The family and the physician were having difficulty keeping her asthma under control in spite of appropriate medical management. The astute mother reported that her daughter's asthma got worse when the smoke from the power plant that was located near her home changed from white to black. We were able to determine that the power plant usually burned natural gas, but was approved to burn coal under

Jerome Paulson, MD, FAAP
American Academy of Pediatrics

certain circumstances. We believe that this little girl's asthma was exacerbated by the coal burning because of the increase in particulate and other air pollutants associated with that fuel.

I know that the distinguished members of this Committee have given many speeches over the course of your careers. And I am sure that each and every one of you would be horrified, as I was during one talk, to look out at the luncheon crowd that you were addressing to see a woman in the audience sobbing. I was talking about ozone as a cause of and exacerbating factor for asthma. "What had I said to make this woman so upset?" Clearly, I wanted members of the audience respond to what I was saying about the need to have cleaner air in the US, but I had not intended to make anyone cry. As soon as I got off the dais, I found the woman, apologized and asked her what I had done. She is the mom of a very athletic teenager whose sports practices took place outside. While in high school, doing what every parent would want; being a scholar-athlete, her son had developed asthma. She was using the information that I was presenting to blame herself for something over which she had no control. She was blaming herself for being a good mother and encouraging her son to be physically active and involved in a positive extracurricular activity, only to have him develop a chronic disease. As a country, we should not force our citizens to make such a fraught choice; we must be willing to require that the air be kept cleaner than we now do.

The Living Legacy of the Clean Air Act is Improved Health

It has been more than 40 years since Congress first passed the Clean Air Act, which gave EPA the authority to regulate air pollution. Twenty-five years ago, a bipartisan Congress passed the Clean Air Act Amendments of 1990, which granted EPA new authority and responsibility to improve air quality and mandated that the agency reduce mercury and other toxic emissions from our nation's power plants. Since these laws were enacted, we have learned much about the relationship between air pollution and health through thousands of epidemiologic and controlled studies. In addition, we have learned a great deal about the health benefits that the Clean Air Act has already generated. A 1997 EPA report to Congress

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found that the first 20 years of the Clean Air Act led to the prevention in 1990 of 205,000 premature deaths, 672,000 cases of chronic bronchitis, 21,000 cases of heart disease, 843,000 asthma attacks, 18 million childhood respiratory illnesses, and prevention of the loss of 10.4 million IQ points for children from lead exposure. Following the Clean Air Act Amendments of 1990, emissions of six common pollutants dropped by 41 percent through 2008.[v] This law has a living legacy of health benefits of which we, our children, and grandchildren are all beneficiaries. But more remains to be done, as we now know from scientific evidence that current levels of air pollution are still making children sick. The Clean Power Plan and the proposed stronger ozone rules are needed improvements upon those prior efforts to address what we know based on the latest science and research are the standards we need to protect child heath.

The AAP Supports the Clean Power Plan

The AAP supports the EPA's Clean Power Plan, and has expressed public support for the proposed rules on both new and existing power plants. There is broad scientific consensus that Earth's climate is warming rapidly and at an accelerated rate. Human activities, primarily the burning of fossil fuels, are very likely (>90% probability) to be the main cause of this warming[vi]. Research by the National Climatic Data Center indicates that global surface temperatures increased by a rate of 1.1° Fahrenheit per century over the past century. This rate has been three times larger since 1976[vii]. Conservative environmental estimates of the impact of climate changes that are already in process indicate that they will result in numerous health effects to children.

This rising rate of climate change is anticipated to contribute to significant negative health outcomes. According to the World Health Organization, over 80 percent of the current health burden from the changing climate is on children younger than five years old[viii]. These outcomes include injury and death from natural disasters, increases in climate-sensitive infectious diseases, increases in air-pollution related illness and more heat-related, potentially fatal, illness. Additionally, global climate change will

contribute to reductions in food availability as land and ocean food productivity patterns shift and species diversity declines[ix]. Water availability will also change, with increases in some regions that could result in flooding and decreases in others that could result in drought[x].

Power plants are the largest U.S. carbon pollution source, and they generate approximately one third of all U.S. greenhouse gas pollution. In 2009, EPA determined that greenhouse gas pollution threatens Americans' health and welfare by leading to climate change, causing negative health and environmental effects. Reducing the carbon emissions of existing fossil fuel-fired power plants represents a major step toward addressing a key component of climate change in the U.S and stemming the tide of climate change and its myriad attendant negative health effects.

In the near term, there are also compelling positive co-benefits to reducing carbon pollution that have an immediate impact on child health, such as reducing emission of other pollutants and the resulting creation of harmful ozone. When fully implemented in 2030, EPA's proposed rule for existing power plants will result in 6,600 fewer premature deaths, 150,000 fewer child asthma attacks, 180,000 fewer missed school days, and 3,700 fewer cases of child bronchitis. EPA's proposals would cut carbon emissions and generate public health benefits, while also allowing states the flexibility to use multiple tools and innovative options in their approaches to doing so.

The AAP Supports an Ozone NAAQS of 60 ppb

The AAP supports the EPA's ongoing efforts to address the child health impact of ozone pollution and supports an 8-hour average ozone National Ambient Air Quality Standard (NAAQS) of 60 parts per billion (ppb). There is clear and compelling scientific evidence that supports the need for a strong ozone standard of 60 ppb or even lower.[xi,xii] The EPA's current proposal to bring down the allowable ozone pollution level below the current limit of 75 ppb to a range between 65 and 70 ppb will improve children's health. High levels of ozone in the air, including levels above 60 ppb, can lead to

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decreased lung function in children, coughing, burning and shortness of breath, as well as inflammation and swelling of the airways.

With long-term exposure to ozone pollution, children can experience permanent scarring of their lungs. For children who already have asthma, the health consequences of ozone pollution are even more pronounced than in children without asthma, often requiring trips to the emergency room or intensive care unit for treatment. On high ozone days, many of these children are forced to stay home or to see their pediatrician, missing school or other recreational activities. Their parents are also forced to miss work, which puts a significant economic strain on low- and middle-income families and on the economy as a whole. In their research, Drs. Trasande and Liu concluded that the best estimate of childhood asthma costs in 2008 that could be associated with environmental factors was $2.2 billion (sensitivity analysis: $728 million– $2.5 billion).[xiii] Simply put, continuing to pollute the air as we are now is not without costs to American families, in the form of diminished health, lost productivity for parents, and lost education time for children. By preventing worse air pollution in the future, we will reap dividends in our children's future.

In 2007, 2010, and now again in 2015, the medical community has recommended that the EPA adopt an 8-hour ozone NAAQS of 60 ppb in order to adequately protect public health[xiv,xv]. While the recommended standard endorsed by the physician community has not changed during this time, the scientific evidence supporting this recommendation has only gotten stronger. The scientific evidence available eight years ago justifying this recommendation has been supplemented by an even greater understanding of health effects of ozone exposures, including infant respiratory problems, worse childhood asthma control, reduced lung function, and increased mortality in adults.

The current review of the ozone standard is the first to consider new scientific evidence since 2006. Since 2006, much more evidence has accumulated that ozone exposures in the range of 60 to 75 ppb have adverse physiologic effects across the entire age spectrum—from infants to older adults.

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Highlights of this new body of evidence include a study of emergency department visits among children aged 0 to 4 in Atlanta, which found that each 30 ppb increase in the 3-day average of ozone was associated with an 8% higher risk of pneumonia and a 4% higher risk for upper respiratory infection.[xvi] Several studies have demonstrated dose-response relationships between ozone exposure and childhood asthma admissions at exposure levels in the 60 to 80 ppb range.[xvii,xviii,xix, xx]

EPA's own analysis demonstrates the child health benefit of acting to reduce ozone pollution.[xxi] The table below illustrates some of these benefits:

Ozone Pollution Limit	Premature Deaths Prevented in 2025	Child Asthma Attacks Prevented in 2025	Missed School Days Prevented in 2025
70 ppb	1,440	320,000	330,000
60 ppb	7,900	1.8 million	1.9 million

The Clean Air Act directs the Administrator to set standards that are "requisite to protect public health" with "an adequate margin of safety" (42 U.S.C. § 7409 (b) (1)). The weight of overwhelming scientific evidence that EPA's independent experts have extensively reviewed indicates that the current ozone pollution standard does not meet that statutory requirement. The AAP, along with many partners in the medical and public health community, strongly supports a 60 ppb ozone standard as an essential public health policy to protect children. EPA has the authority and obligation to set a standard that protects children from the adverse health effects of ozone. Every child deserves the opportunity to play outside without the risk of breathing in harmful air, and EPA's proposed rule to strengthen the ozone standard is an important step toward that goal. These are public health benefits with a significant economic impact.

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American Academy of Pediatrics
Testimony before the House Science, Space, and Technology Committee
June 4, 2015

Conclusion

The EPA has a fundamental role in assuring that the environment in which children live, learn, and play is safe and facilitative of healthy activity, satisfactory growth and development, and allows children to enter adulthood free from environmentally-related health problems. The Clean Power Plan and stronger ozone NAAQS are critical child health policies that the AAP strongly supports. Healthier air will reduce the health burden of diseases such as asthma on children, and lead to fewer related chronic conditions that begin in childhood. This in turn ensures that children can spend their time in school and their parents can work, both of which benefit the economy as a whole. Families will not face the burden of debt from preventable health care costs that they cannot afford. EPA's work generates important health benefits that we need to support the growth and development of the workforce of tomorrow. Thank you for the opportunity to comment here today, and I would be happy to answer any questions you may have.

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[xxi] *Taken from Table ES-11 of the U.S. EPA, Regulatory Impact Analysis of the Proposed Revision to the National Ambient Air Quality Standards for Ground-level Ozone, November 2014. EPA -452/P-14-006. Estimates based on modeling and assumptions explained in detail in the document. California was excluded because it is not expected to meet these standards in 2025.*

BIOGRAPHICAL SKETCH

JEROME A. PAULSON, MD, FAAP

Jerome A. Paulson, MD, FAAP is the medical director of the Pediatric Environmental Health Specialty Unit-East Program for the American Academy of Pediatrics. He is Professor Emeritus of Pediatrics at the George Washington University School of Medicine & Health Sciences and Professor Emeritus of Environmental & Occupational Health at the Milken Institute School of Public Health at GW.

He served for over a decade as the director of the Mid-Atlantic Center for Children's Environmental Health, the PEHSU that serves Federal Region 3 – DC, VA, WV, MD, DE and PA.

Dr. Paulson is the chairperson of the executive committee of the Council on Environmental Health for the American Academy of Pediatrics. He served on the Children's Health Protection Advisory Committee for the US Environmental Protection Agency. In October 2004 he was a Dozor Visiting Professor at Ben Gurion University in Beer Sheva, Israel. He lectured there and throughout Israel on children's environmental health. He was a recipient of a Soros Advocacy Fellowship for Physicians from the Open Society Institute and worked with the Children's Environmental Health Network. He has also served as a special assistant to the director of the National Center on Environmental Health of the CDC working on children's environmental health issues. He has served on numerous boards and committees related to children's environmental health, has chaired or been on the steering committee of many meetings about children's environmental health, and has published and edited papers, book chapters and journals on the topic.

Chairman SMITH. Thank you, Dr. Paulson.
And Mr. Eisenberg.

**TESTIMONY OF MR. ROSS EISENBERG,
VICE PRESIDENT, ENERGY AND RESOURCES POLICY,
NATIONAL ASSOCIATION OF MANUFACTURERS**

Mr. EISENBERG. Good morning, Chairman Smith, Ranking Member Johnson, members of the Committee. Thank you for the opportunity to be here today to present the views of the National Association of Manufacturers and our 14,000 members.

Manufacturers believe regulation is critical to the protection of worker safety, public health, and our environment. We believe in the mission of the EPA and we support reasonable environmental regulation. However, we also bear an unmistakably high burden of compliance with the Agency's regulations. Manufacturers spend, on average, over $19,000 per employee per year on regulatory compliance and over $10,000 of this is for environmental regulations. The smaller the manufacturer, though, the larger the burden. Manufacturers with less than 50 employees spend over $34,000 per employee per year and over $20,000 of this is due to environmental regulations.

So when the EPA issues a new regulation with new costs and new burdens, manufacturers have to pay these costs not op of what we're already doing, the tens of thousands of dollars that we've already assumed. So we're not starting from zero. In fact, our plants are already equipped with the best available pollution control technology. We maximize our efficiency and we limit waste and we recycle. And so while we'll always strive for improvement, in some cases we're really already pushing up against or beyond what technology can deliver, and so we need—what we need as manufacturers more than ever are smarter regulations.

We just don't believe we're getting that from the EPA with respect to the three regulations that we're here to talk about today: ozone, the Cleaner Power Plan, and the "waters of the United States" definition. In all three cases, the costs and burdens placed on manufacturers as a result of these regulations are very significant and could make us significantly less competitive.

Manufacturers are committed to reducing ozone levels, and we've been doing so for decades. We've been reducing the emission that cause ozone by more than half since 1980. However, the progress we've made, it also means that both the low-hanging fruit and the high-hanging fruit are pretty much gone and so the controls that are needed to reduce ozone levels are already in place. In fact, with this rule, EPA can only identify about 35 percent of the controls and technologies needed to achieve this new 65-parts-per-billion standard. You heard that right. A solid two-third of the controls that will be needed to comply to this are called unknown controls. We don't know what they are.

Economic analysis of this new standard shows that it would be the most expensive regulation in history. Second place isn't even close. It would cost about $140 billion per year, about $1.7 trillion over the next 23 years, placing the equivalent of 1.4 million jobs in jeopardy each year and reducing annual household income—consumption—I'm sorry—by an average of about $830 per year. Very

few low-cost control options exist for this tightening of ozone standard, so if controls aren't invented in time, what winds up happening is, manufacturers are forced to consider scrapping equipment, scrapping existing plants, replacing them, or just plain old shutting them down. And then there's nonattainment for ozone, which is essentially a synonym for no growth. There has to be a better way for this than this, and really there is. The current standard is only being implemented. It's going to drive ozone precursor emissions, the emissions that cause ozone, down by another 36 percent over the next decade. We believe we should let that standard work before moving the chains one more time.

On climate, we're committing to addressing climate change through improved energy efficiency, greater sustainability and reducing our greenhouse gas emissions. We've done that. We reduced our emissions ten percent over the past decade, but our competitiveness is threatened by the Clean Power Plan as it's currently drafted. Independent analysis of this rule places total compliance costs as high as about $366 billion through 2031. Forty-three states could experience double-digit electricity prices. That's very difficult for us as we are major, major energy users. And even worse, many sectors in my membership, manufacturing, are due to get follow-on regulations under the Act that will be modeled off of this one, meaning we're going to be hit twice.

We believe EPA needs to fix this rule. We agree that adoption of a strong and fair international climate agreement should be a priority, but we also must be very careful not to lock into place policies that will send production and emissions overseas if the rest of the world doesn't play by those same rules in Paris in December.

Finally, manufacturers are disappointed with the final Waters of the United States regulation. We would welcome a clear rule that resolves disagreement over scope of the Clean Water Act. Instead, we ended up with a final regulation that fails to do this. It fails to clear up the problems and may have even created new ones. The regulation certainly expands the scope of the Clean Water Act to areas that are not even wet, and it fails to provide clear exclusions as to what actually qualifies. We're going to face, manufacturers are going to face increased uncertainty, permitting costs, and supply-and consumer-chain disruptions. Ambiguities in the new regulation will give rise to third-party lawsuits, even in cases where EPA agrees with us and believes that it is not a water of the United States.

I assure you, we do not enjoy having to have an adversarial position to the EPA on these regulations. We prefer to work with them as a partner toward a shared goal of protecting the environment. However, we desperately need the EPA to choose a different regulatory path.

Sadly, we are nearing the time where legislation may be our only hope, and we ask this Committee for its help in that pursuit.

Thank you.

[The prepared statement of Mr. Eisenberg follows:]

NATIONAL ASSOCIATION OF
Manufacturers

Leading Innovation. Creating Opportunity. Pursuing Progress.

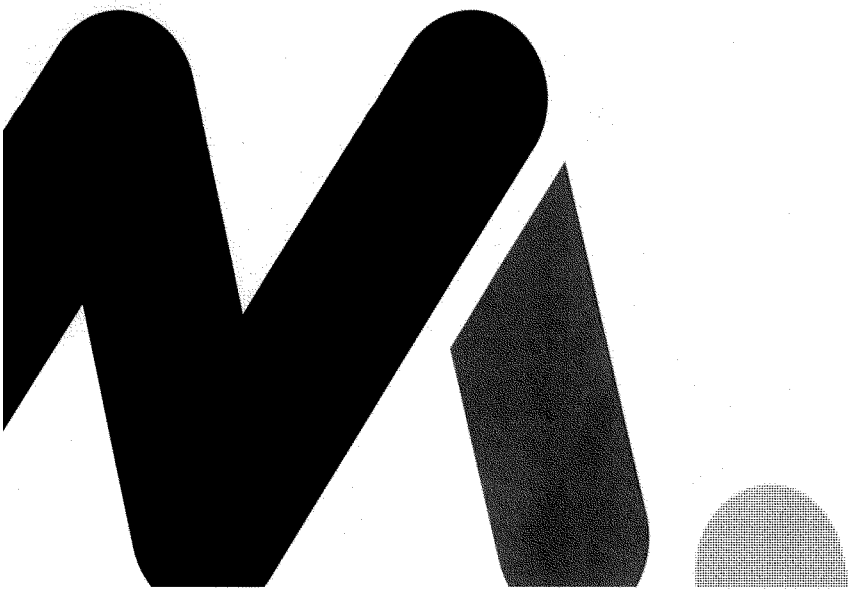
Testimony

of Ross Eisenberg
Vice President
Energy and Resources Policy
National Association of Manufacturers

before the House Committee on Science, Space and Technology

on "EPA Regulatory Overreach: Impacts on American Competitiveness"

June 4, 2015



SUMMARY OF TESTIMONY

Manufacturers spend, on average, $19,564 per employee per year on regulatory compliance, with $10,497 of this amount attributable to environmental regulations. However, the smaller the manufacturer, the larger the burden: manufacturers with fewer than 50 employees must spend $34,671 per employee per year, with $20,361 of this attributable to environmental regulations. When the Environmental Protection Agency (EPA) issues a new regulation with new costs and burdens, manufacturers must pay these costs on top of the tens of thousands of dollars per employee we have already assumed. Manufacturers are not starting from zero; in some sectors, we are at or near capacity—meaning our plants are already equipped with the best available pollution control technologies, our facilities operate at peak efficiency, and we limit waste and recycle.

Manufacturers have taken an adversarial position to three recent EPA regulations: (1) ozone air quality standards, (2) greenhouse gas regulations for existing power plants and (3) the definition of "waters of the United States." In each case, the National Association of Manufacturers takes issue not with the EPA's decision to regulate but rather the manner in which the EPA has crafted each specific regulation.

Manufacturers are committed to reducing ozone levels and have been doing so for decades, reducing the emissions that cause ozone by more than half since 1980. We have urged the EPA not to tighten the current standard for ozone because doing so would result in the most expensive regulation ever ($140 billion per year, 1.4 million jobs at risk), hundreds of counties will be plunged into nonattainment, a new standard is approaching background levels of ozone, and existing policies will continue to drive ozone precursor emissions down another 36 percent over the next decade.

Manufacturers have urged the EPA to re-propose its "Clean Power Plan" to develop a lawful and reasonable rule that will allow U.S. companies to remain competitive in the global marketplace. Manufacturers have reduced our greenhouse gas emissions 10 percent over the past decade while increasing our value to the economy by 19 percent. But our competitiveness is threatened by the Clean Power Plan as drafted, which dramatically reshapes the energy grid on unnecessarily strict timelines and could cause price increases and reliability concerns for manufacturers.

Finally, manufacturers were disappointed with the final "waters of the United States" regulation issued last week by the EPA and the U.S. Army Corps of Engineers. We would welcome a clear rule that resolves disagreement over the scope of the Clean Water Act. Despite months of productive dialogue between the agencies and manufacturers, farmers, small businesses and other stakeholders, we ended up with a final regulation that fails to clear up existing jurisdictional problems and may even create new ones.

TESTIMONY OF ROSS EISENBERG
BEFORE THE HOUSE COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY

Hearing on:
"EPA Regulatory Overreach: Impacts on American Competitiveness"

JUNE 4, 2015

Good morning, Chairman Smith, Ranking Member Johnson and members of the Committee on Science, Space and Technology. My name is Ross Eisenberg, and I am the vice president of energy and resources policy at the National Association of Manufacturers (NAM). The NAM is the nation's largest industrial trade association, representing nearly 14,000 small, medium and large manufacturers in every industrial sector and in all 50 states. I am pleased to represent the NAM and its members at today's hearing to discuss the impacts of recent Environmental Protection Agency (EPA) regulations on manufacturing competitiveness.

Manufacturers believe regulation is critical to the protection of worker safety, public health and our environment. We believe some critical objectives of government can only be achieved through regulation, but our regulatory system is in need of considerable improvement and reform. Manufacturing in the United States lost 2.3 million jobs in the last recession; since the end of 2009, we have gained back 843,000 manufacturing jobs. To maintain manufacturing momentum and encourage hiring, we need government policies that meet regulatory objectives yet minimize unnecessary burdens. We need smarter regulations.

It is with this background that manufacturers find ourselves in an adversarial position with respect to three recent EPA regulations: (1) National Ambient Air Quality Standards (NAAQS) for Ozone; (2) Section 111(d) New Source Performance Standards (NSPS) for existing power plants (also known as the "Clean Power Plan"); and (3) the Definition of "Waters of the United States" (also known as the "Clean Water Rule"). For each, the issue is not *whether* the EPA should be issuing regulations to protect air or water; rather, it is the manner in which the EPA has crafted these regulations, which we believe could be substantially improved.

Environmental Regulation as a Portion of Manufacturers' Overall Burden

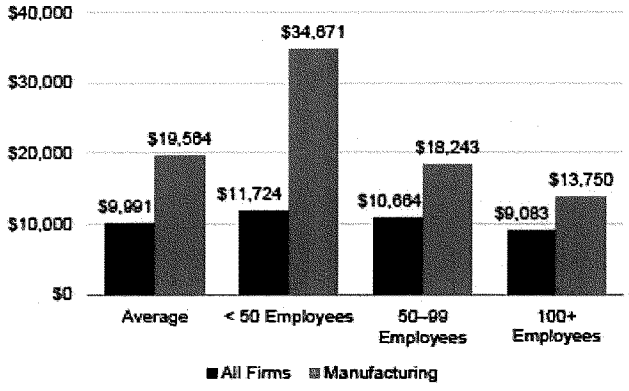
Last September, the NAM released *The Cost of Federal Regulation to the U.S. Economy, Manufacturing and Small Business*,[1] an update to a series of reports previously issued by the Small Business Administration (SBA) on the overall regulatory burden facing employers.[2] The NAM report found U.S. government regulations cost the economy $2.028 trillion in 2012 (in 2014 dollars), an amount equal to 12 percent of gross domestic product (GDP). The average business spends $9,991 per employee per year on regulations; however, the average manufacturer spends $19,564 per employee per year, roughly double that amount. The smaller the firm, the greater the regulatory

[1] NAM, *The Cost of Federal Regulation to the U.S. Economy, Manufacturing and Small Business* (September 2014), *available at* http://www.nam.org/Data-and-Reports/Cost-of-Federal-Regulations/Federal-Regulation-Full-Study.pdf.

[2] The SBA commissioned four studies to examine the distribution of federal regulatory costs in small versus larger firms: Hopkins (1995b); Crain and Hopkins (2001); Crain (2005); and Crain and Crain (2010).

burden: because many of these regulations are fixed costs, a 20-person firm incurs roughly the same expense as a 500-person firm, and larger firms are able to provide economies of scale, spreading the fixed costs over larger revenues, output or employee base. As a result, manufacturers with fewer than 50 employees must spend $34,671 per employee per year on regulatory compliance—152 percent more than large manufacturing firms and 247 percent more than the cost borne by the average U.S. company.

Chart 1. Regulatory Cost per Employee, 2012 (in 2014 Dollars)



The NAM report also found that environmental regulations make up the dominant share of manufacturers' regulatory burden. The burden of compliance with environmental regulations disproportionately impacts the manufacturing sector (5.5 times greater than the average firm) and increases substantially the smaller the manufacturer ($20,361 per employee per year for firms with fewer than 50 employees).

Table 1. Regulatory Costs in Small, Medium-Sized and Large Firms, 2012* (Cost per Employee per Year in 2014 Dollars)

Type of Regulation	Cost per Employee for All Business Types			
	All Firms	< 50 Employees	50–99 Employees	100+ Employees
All Federal Regulations	$ 9,991	$ 11,724	$ 10,664	$ 9,083
Economic	$ 6,381	$ 5,662	$ 7,464	$ 6,728
Environmental	$ 1,889	$ 3,574	$ 1,338	$ 1,014
Tax Compliance	$ 960	$ 1,518	$ 1,053	$ 694
OSHHS**	$ 761	$ 970	$ 809	$ 647

Notes to Table 1:

* The cost per employee for each firm-size category uses employment shares for the respective business sectors to compute the weighted averages.

** OSHHS stands for occupational safety and health and homeland security regulations.

Table 2. Regulatory Costs in the Manufacturing Sector by Firm Size, 2012* (Cost per Employee per Year in 2014 Dollars)

Type of Regulation	Cost per Employee for Manufacturing			
	All Firms	< 50 Employees	50–99 Employees	100+ Employees
All Federal Regulations	$ 19,564	$ 34,671	$ 18,243	$ 13,750
Economic	$ 7,958	$ 12,885	$ 9,399	$ 6,544
Environmental	$ 10,497	$ 20,361	$ 7,625	$ 6,239
Tax Compliance	$ 295	$ 378	$ 346	$ 289
OSHHS**	$ 813	$ 1,048	$ 873	$ 698

Notes to Table 2:

* The cost per employee for each firm-size category uses employment shares for the respective business sectors to compute the weighted averages.

** OSHHS stands for occupational safety and health and homeland security regulations.

• Columns might not total due to rounding.

Manufacturers believe in the mission of the EPA and support reasonable environmental regulation. However, we also bear an unmistakably high burden of compliance with the agency's regulations. When the EPA issues a new regulation with new costs and burdens, manufacturers must pay these costs on top of the tens of thousands of dollars per employee we have already assumed. Manufacturers are not starting from zero; in some sectors, we are at or near capacity—meaning our plants are already equipped with the best available pollution control technologies, our facilities operate at or near peak energy efficiency, and we limit waste and recycle wherever possible. We do these things

because we are committed to ensuring a sustainable environment in the communities where we operate and live and because it's the smart business thing to do. Less waste and greater energy efficiency make us more competitive. While manufacturers will always strive for improvement, in some cases we are already pushing up against or beyond what technology can deliver. To strike the critical balance of environmental protection and economic stability, any new environmental regulation must contain certain elements. It must be grounded in the best possible science and data, its costs and benefits must be accurately assessed, its benefits must outweigh its costs, and it must be the least burdensome policy available that accomplishes the environmental goal.

Ultimately, it is this test that the Ozone NAAQS, Clean Power Plan and "Waters of the United States" regulations each fail. The costs and burdens placed on manufacturers as a result of these regulations are significant and could make us less competitive.

Ozone NAAQS

Ground-level ozone is formed through a chemical reaction when oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) interact with sunlight. Emissions from power plants, industrial facilities, automobiles, gasoline vapors and solvents are all sources of NO_x and VOCs. Natural sources, such as plant life and fires, also contribute to the formation of ozone; today, given how much ozone levels in the United States have already been reduced, a significant portion of a given area's ozone concentration is made up of natural background

ozone and ozone that has traveled from other states and, increasingly, from overseas.

Under the Clean Air Act, the EPA is instructed to select a primary NAAQS for ground-level ozone that protects the nation's public health within an "adequate margin of safety." In March 2008, the EPA lowered the primary NAAQS for ground-level ozone from 84 parts per billion (ppb) to the current standard of 75 ppb. The Act requires the EPA to evaluate the NAAQS every five years; we are now at the tail end of one of these statutory five-year cycles. In December 2014, the EPA proposed to tighten the Ozone NAAQS to a new range of 65 to 70 ppb.

Manufacturers have demonstrated a commitment to protecting the environment and reducing ozone levels. We are building cleaner and more efficient automobiles: since 1990, highway vehicle emissions of the primary precursors of NO_x and VOCs are down 48 and 30 percent, respectively,[3] while an additional 60 million vehicles have been added to U.S. roadways.[4] We are operating cleaner and more efficient factories: since 1990, manufacturers' NO_x emissions are down 52 percent and VOC emissions have been reduced by 70 percent,[5] while our value added to the economy has more than doubled.[6] As a

[3] EPA, National Emissions Inventory (NEI) Air Pollutant Emissions Trends Data, February 2014.
[4] U.S. Department of Transportation, Office of the Assistant Secretary for Research and Technology, Bureau of Transportation Statistics, National Transportation Statistics, Table 1-11: Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyances.
[5] EPA, National Emissions Inventory (NEI) Air Pollutant Emissions Trends Data, February 2014.
[6] U.S. Department of Commerce, Bureau of Economic Analysis, Value Added by Industry.

country, ozone levels are down nearly 25 percent since 1990[7] and our economy has grown by 43 percent.[8]

However, the progress manufacturers have made also means that most of the existing technologies and controls needed to reduce ozone levels are already in place. In fact, according to the EPA's own regulatory impact analysis, the agency can only identify about 35 percent of the necessary technologies to achieve a 65 ppb standard. The EPA relies on so-called "unknown controls" for as much as 65 percent of its path to compliance.[9]

The NAM retained David Harrison, Jr., Ph.D., and Anne E. Smith, Ph.D., of NERA Economic Consulting to model the impacts of a new ozone regulation set at 65 ppb.[10] Their analysis confirmed our worst fears: the EPA's proposed Ozone NAAQS would be the most expensive regulation ever, costing states tens of billions of dollars annually in potential compliance costs. Specifically, NERA found that a 65 ppb ozone standard could:

- Reduce U.S. GDP by about $140 billion per year on average over the period from 2017 through 2040, and about $1.7 trillion total over that period in present value terms;
- Place 1.4 million jobs (i.e., job-equivalents) in jeopardy each year; and

[7] EPA, Air Quality Trends, available at http://www.epa.gov/airtrends/aqtrends.html#comparison.
[8] U.S. Department of Commerce, Bureau of Economic Analysis, Gross Domestic Product by Year.
[9] NERA Economic Consulting, "Economic Impacts of a 65 ppb National Ambient Air Quality Standard for Ozone," February 2015, available at www.nam.org/ozone. Study and estimates based on data from the EPA's Regulatory Impact Analysis of the Proposed Revision to the National Ambient Air Quality Standards for Ground-Level Ozone, pp. ES-8, ES-9 (November 2014).
[10] Study available at www.nam.org/ozone.

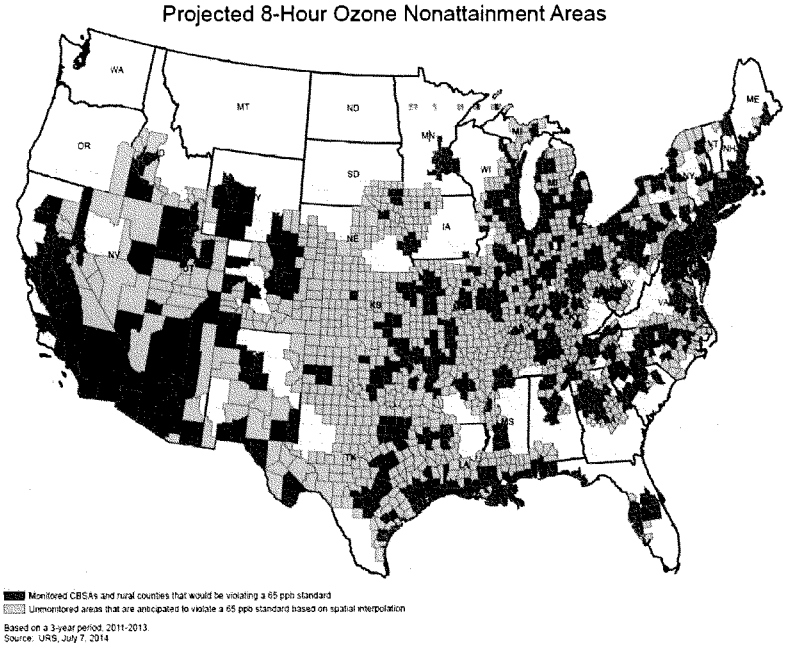
- Reduce annual household consumption by an average of $830 per household per year.

These costs are extremely high for two key reasons: (1) the lack of known controls and (2) the severe costs and penalties from nonattainment. Attaining a tighter ozone standard will require large reductions in NO_x and VOC emissions from power plants, manufacturing facilities, mobile sources like cars, trucks and off-road vehicles and reformulation of products like paints, coatings and adhesives. These reductions come at a high cost per ton because significant investments have already been made to reduce emissions, leaving few low-cost control options as the ozone standard tightens.

As a result, if controls are not invented in time, businesses will be forced to consider scrapping existing plants and equipment. There is no forgiveness for technical infeasibility: once the EPA sets a NAAQS, ozone must be reduced to the new level regardless of the cost. If that means shutting down equipment because technologies do not exist, that is what will be required.

A new ozone standard means that, as soon as 2017, many new areas across the United States will be thrust into "nonattainment."

Projected 8-Hour Ozone Nonattainment Areas



The map above, which assesses attainment of a 65 ppb standard, looks substantially different than the one the EPA produced when it rolled out the rule in December 2014. The differences are that the EPA's map is what the agency projects attainment to look like in 2025—ten years after the rule is finalized and eight years after initial attainment designations are made and only accounts for counties with monitored data. The map above was compiled using current monitored data as well as modeling projections of air quality and is a more accurate reflection of which counties are at risk for nonattainment designations should the EPA lower the standard to 65 ppb.

Why does this matter? Because nonattainment is a significant barrier to growth. Nonattainment is a significant deterrent to manufacturers to build or expand in an area because the permits are so difficult to obtain compared to those in an attainment area. Companies building or expanding facilities in nonattainment areas are required to install specific technologies regardless of cost, and projects cannot move forward unless ozone is reduced from other sources. These "offsets" are neither cheap nor easy to obtain. Currently, offset prices in the Houston-Galveston-Brazoria nonattainment area are close to $175,000 per ton of NO_x and $275,000 per ton of VOC. Offset prices in southern California nonattainment areas are approaching $125,000 per ton of NO_x. Rural areas, which could become new nonattainment areas under a tighter standard, may lack offsets altogether, making the offset requirement a total barrier to new projects.

Even manufacturers not looking to expand will be subject to restrictive new regulations in nonattainment areas. For instance, in the Houston nonattainment area, existing facilities are subject to additional controls under the Highly Reactive VOC (HRVOC) rule, and combustion units, such as boilers and ethylene crackers, must install SCRs and low-NOx burners. In the most severe cases, states with nonattainment areas could lose federal highway and transit funding.

The NAM has urged the EPA to retain the current ozone standard of 75 ppb. States have only now begun to implement the 75 ppb standard; even though the current standard of 75 ppb was finalized in 2008, the EPA stopped

implementing it from 2010 to 2012 while it pondered an out-of-cycle rulemaking to make it more stringent. The EPA did not restart implementation until early 2012, six months after the White House rejected the EPA's more stringent ozone standard. The EPA's delay put state implementation of the 2008 ozone standard well behind the normal schedule. States did not find out which of their counties would be designated nonattainment under the 2008 standard until April 2012. Implementing regulations from the 2008 standard—necessary for states to submit their State Implementation Plans—were only released by the EPA to states a few months ago.

The EPA's proposed standard is also approaching background ozone levels. The EPA's proposal is so stringent that the Grand Canyon would fail the proposed 70 ppb standard, and Yellowstone National Park would fail the proposed 65 ppb standard. The National Oceanic and Atmospheric Administration released a study showing that Las Vegas would exceed the EPA's proposed range of Ozone NAAQS almost entirely due to background ozone.[11] As the EPA notes in its proposed rule, "some locations in the U.S. can be substantially influenced by sources that may not be suited to domestic control measures. In particular, certain high-elevation sites in the western U.S. are impacted by a combination of non-local sources like international transport, stratospheric O_3 and O_3 originating from wildfire emissions."[12] The EPA also notes that analysis suggests that in some parts of the country and at certain

[11] Langford, A.O., et al., An overview of the 2013 Las Vegas Ozone Study: Impact of stratospheric intrusions and long-range transport on surface air quality, *Atmospheric Environment* (2014), http://dx.doi.org/10.1016/j.atmosenv.2014.08.040.
[12] EPA Proposed Rule, p. 33 (2014).

times, background concentrations of ozone approach, or even exceed, the current 75 ppb standard.[13]

Existing, on-the-books regulations will sufficiently reduce ozone levels, making a new standard unnecessary. In the proposed rule, the EPA identifies dozens of recent regulations on vehicles, industrial processes, consumer and commercial products and the electric power sector that will drive major reductions of the pollutants that cause ozone over the next decade—regulations like the Mercury and Air Toxics Standards, the Boiler MACT, fuel economy standards for cars and trucks, regional haze rules, the Cross-State Air Pollution Rule, Tier 3 tailpipe emissions standards, VOC emission standards for consumer products and many others. Even in the absence of new ozone regulations, ozone precursor emissions are projected to be roughly 36 percent lower in 2025 than they are today.

Manufacturers need regulations that are realistic. Executive Order 13563, issued by President Obama on January 18, 2011, requires each federal agency to "tailor its regulations to impose the least burden on society, consistent with obtaining regulatory objectives."[14] The EPA's regulatory objective of reducing ozone will happen by implementing the current standard of 75 ppb along with the dozens of other existing policies that will continue to drive ozone levels down over the next several years. A stricter Ozone NAAQS will obtain a similar regulatory objective, but it will also impose strict regulatory deadlines and permitting hurdles that result in massive costs and burdens to manufacturers.

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[13] EPA Proposed Rule, p. 33 (2014).
[14] Executive Order 13563, 76 Fed. Reg. 3,821 (Jan. 18, 2011).

The NAM believes the current standard of 75 ppb should remain in place until it is fully implemented; the NAM also supports H.R. 1388, the Clean Air, Strong Economies Act, which would delay the implementation of a new Ozone NAAQS until 85 percent of U.S. counties come into attainment with the current standard.

The Clean Power Plan

Manufacturers are committed to addressing climate change through improved efficiency, greater sustainability and reductions in greenhouse gas (GHG) emissions. The United States has reduced more GHGs over the past decade than any other nation on earth. Manufacturers have done their part as well, reducing our emissions 10 percent over the past decade while increasing our value to the economy by 19 percent. We are the only sector of the U.S. economy with lower GHG emissions today than in 1990.[15]

Manufacturers know the United States cannot solve the climate change issue alone. The establishment of any climate change policies to reduce GHG emissions must be done in a thoughtful, deliberative and transparent process that ensures a competitive level playing field for U.S. companies in the global marketplace.

Therefore, climate change policies must be implemented in concert with all major emitting nations. Otherwise, we only make ourselves less competitive while doing little to address the global nature of the challenge. While adoption of a strong and fair international agreement is a priority, we must ensure that the

[15] EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2013*, at ES-11 (April 2015).

rest of the world is serious about addressing this issue before we adopt policies that may only serve to send production and emissions overseas. In an effort to demonstrate good faith in the months leading up to the Paris climate negotiations, the EPA has proposed the so-called "Clean Power Plan," the first-ever standards of performance for existing power plant GHG emissions under Clean Air Act Section 111(d). The Clean Power Plan would require the utility sector to reduce its GHG emissions 30 percent from 2005 levels by 2030.

Manufacturers are deeply troubled by the EPA's proposed Clean Power Plan. The rule not only dramatically reshapes the energy grid by forcing retirements, redispatch and new electricity generation, but also introduces potential requirements on the end-users—in this case, manufacturers—to modify their operations as a means of compliance for the electric utility. The proposal indicates that manufacturers and other "outside the fence" third parties can be held liable by states in a legally enforceable manner to account for GHG reductions sought by the electric utility sector.

The EPA asserts that it is giving states ultimate flexibility with this rule, a concept manufacturers can support. However, the emissions targets and the timetables for those reductions are so strict that, in reality, there is little to no flexibility available. In many cases, states will only be able to comply with the rule by mandating the construction of the EPA's preferred sources of electricity, in the EPA's preferred dispatch order, without regard to costs.

The EPA estimates the rule will cost anywhere from $5 billion to $9 billion per year.[16] However, this estimate appears to be conservative: a recent analysis by the U.S. Energy Information Administration, requested by this committee's chairman, predicts that the Clean Power Plan will force the retirement of 90 gigawatts (GW) of coal-fired power, more than double the EPA's estimate of 40 GW.[17] Third-party analyses of the Clean Power Plan place total compliance costs as high as $366 billion through 2031.[18] Forty-three states could experience double-digit electricity price increases.

Not surprisingly, a majority of states have come out against the rule.[19] Governors or attorneys general from 28 different states raised major concerns with the rule's legal foundations; a dozen have already filed suit. Thirty-four states complained about the rule's rushed regulatory timeline. Thirty-two states expressed concerns about the rule's impact on electric reliability. Thirty-three states disagreed with the EPA's use of 2012 as the baseline year, effectively penalizing states that acted early and took strong steps to reduce GHGs before 2012. Twenty-four states expressed concerns with the rule's treatment of nuclear generation, a carbon-free baseload energy source that states receive absolutely no credit for having in place. And 28 states worried about the rule's impact on electricity prices, jobs and the economy.

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[16] Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants, at ES-7.
[17] http://www.eia.gov/todayinenergy/detail.cfm?id=21372.
[18] NERA Economic Consulting, *Potential Energy Impacts of the EPA Proposed Clean Power Plan*, October 2014, *available at* http://www.americaspower.org/issues-policy.
[19] *In Their Own Words: A guide to states' concerns regarding the Environmental Protection Agency's Proposed Greenhouse Gas Regulations for Existing Power Plants*, U.S. Chamber of Commerce Institute for 21st Century Energy, *available at* http://www.energyxxi.org/their-own-words-guide-states-concerns-regarding-environmental-protection-agencys-proposed-greenhouse.

Manufacturers use one-third of the energy consumed in this country. Many energy-intensive manufacturing sectors are also trade exposed. Any impact on the electric power sector's ability to deliver affordably priced, reliable energy to manufacturers will harm our competitiveness. Energy is one of the few areas in which manufacturers in the United States have an advantage over our international competitors; policies like the Clean Power Plan must be crafted to bolster this advantage, not take it away. Manufacturers are not only exposed as downstream energy users, but also because the Clean Power Plan is very likely the template for similar 111(d) regulations on other industrial sectors.

In comments filed with the EPA, the NAM and 16 other associations[20] raised significant concerns over the Clean Power Plan's ability to pass legal muster as currently drafted. We are concerned that the rule exceeds the scope of the EPA's authority under Section 111(d) of the Clean Air Act. We are concerned that the EPA is precluded from regulating electric-generating units under Section 111(d) because those sources are already subject to regulation under Section 112 of the act. We believe the law requires the EPA to make a source- and pollutant-specific endangerment determination and significance finding, which it did not do. We believe it is unlawful to base its analysis of what is the best system of emission reduction and emissions rate reduction targets on reductions that the EPA lacks authority to implement as part of a federal implementation

[20] Those associations are: the American Chemistry Council, American Forest & Paper Association, American Fuel & Petrochemical Manufacturers, American Iron and Steel Institute, American Petroleum Institute, American Wood Council, Brick Industry Association, Corn Refiners Association, Council of Industrial Boiler Owners, Electricity Consumers Resource Council, National Association of Home Builders, National Lime Association, National Oilseed Processors Association, Portland Cement Association, The Fertilizer Institute and the U.S. Chamber of Commerce.

plan. And we are concerned that the EPA has proposed a rule under Section 111(d) for existing units that differs sharply from the rule it proposed under Section 111(b) for new units.

For these reasons, the NAM has urged the EPA to withdraw the proposed rule and engage instead in a process with all interested stakeholders regarding the development of a lawful and reasonable rule that will allow U.S. companies to remain competitive in the global marketplace.

To the extent the EPA intends to issue a final rule, manufacturers have urged the agency to fix many of the flaws and shortcomings in the Clean Power Plan. Among other things, the EPA should:

- Set more reasonable compliance schedules, and eliminate the interim emission reduction target;
- Allow credit for early action;
- Be reasonable and technically achievable;
- Promote an "all of the above" energy strategy that avoids unnecessary retirements of any fuel source that would not happen absent regular market forces;
- Be supported by a thorough, accurate and realistic cost-benefit analysis;
- Set a standard for state implementation plans containing only what the EPA would have the authority to implement in a federal implementation plan; and

- Be cost-effective, attainable and protect American jobs and the economy.

A rule that meets the above-cited criteria will likely require re-proposal. Manufacturers are concerned that the Administration's desire to "lead" heading into international climate negotiations in Paris will tie the EPA's hands on the Clean Power Plan, and will result in a final rule that is rushed, unworkable and potentially vulnerable to legal challenges. If that is the case, we hope Congress will step in and require the EPA to fix the rule. Manufacturers support H.R. 2042, the Ratepayer Protection Act of 2015, which would delay implementation of the Clean Power Plan until all lawsuits challenging the rule have been resolved, and would allow states to opt out of compliance with the rule if the governor determines compliance would have a significant adverse effect on ratepayers or the reliability of the state's electricity system.

Waters of the United States

Last year, the EPA and the Army Corps of Engineers (Corps) proposed to redefine the words in the Clean Water Act (CWA) that decide what is regulated by the federal government. By law, the CWA applies to "navigable waters," which is in turn defined as "the waters of the United States, including the territorial seas."[21] However, in the four decades since enactment of the CWA, stakeholders have grappled with what that phrase actually means.

[21] 33 U.S.C. § 1362(7).

For example, there have been times when some tried to call isolated gravel pits "waters of the United States."[22] In other instances, the application of CWA jurisdiction prevented landowners from preparing their land to build a home.[23] Fortunately, the judicial system has operated as an effective buffer to these sorts of misinterpretations of the law. It has not, however, resolved the need for clarity.

Manufacturers therefore would welcome a clear rule that resolves disagreement over the scope of the CWA. The official policy of the NAM is that the term "waters of the United States" should be interpreted to mean waters that are navigable in fact or that have a relatively permanent surface connection to a water that is navigable in fact.

The "waters of the U.S." rule proposed in 2014, charitably, needed a great deal of work. To the agencies' credit, they spent a great deal of time with manufacturers, farmers, small businesses and other stakeholders to clarify the proposal and improve it. Heading into last week's final rule, we were hopeful that the "Waters of the U.S." story would have a happy ending.

Unfortunately, it did not. The final "Waters of the United States" regulation released last week by the EPA and the Corps fails to clear up existing jurisdictional problems and may even create new ones. The regulation expands the scope of the CWA to areas that are not always wet, but also fails to provide clear exclusions to determine specifically which waters qualify. Manufacturers will

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[22] *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001).
[23] *Sackett v. United States Environmental Protection Agency*, 132 S. Ct. 1367 (2012).

face increased regulatory uncertainty, permitting costs, and supply and customer chain disruptions. Ambiguities in the new regulation will give rise to third-party lawsuits, even in cases where the EPA decides a water is *not* a water of the U.S.

The EPA and the Corps claim the final rule does not expand CWA jurisdiction. Consider the following, however:

- Relatively minor activities such as clearing sediment from stormwater basins or moving stormwater drains now require additional reviews or permitting. This increases time and money required to complete work;
- Ditches, including roadside ditches that have perennial flow, are regulated. The rule includes exemptions for certain ditches, but there are many other types of ditches that are now regulated as tributaries. Even dry ditches that are either a relocated tributary or were excavated in a tributary are now regulated by the EPA. It is up to landowner to prove that their ditches do not excavate or relocate a historic tributary. This allows the federal government to assert jurisdiction based on past conditions, not present;
- Increased stream numbers and tributary lengths could prevent fast-track nationwide permits in some cases. This stalls transmission line maintenance, infrastructure expansion, and other projects that currently rely on nationwide permits;
- At a minimum, oil and gas exploration and production companies expect the number of permits required to double. Managing the nine-to-eighteen-month individual permitting process is difficult and could lead to loss of leases and associated product sales. For the increases in permitting, site

delineations, and modified construction practices, one NAM member informs us that costs could increase in the range of 100 to 750 percent.

- Breweries worry about how this rule will impact their ability to get the grains they need to make beer. When homebuilders face increased site costs, homeowners could be forced to sacrifice other items to stay within budget;
- If a manufacturer needs to install a larger loading dock and some additional space to manufacture products, the new rule could force the manufacturer to seek permits and potentially put major systems in place to treat stormwater unless certain exemptions are met; and
- A heavy equipment manufacturer's site for testing equipment and moving dirt has rain flow, and as a result may now be covered. Even if the agencies say it is not a problem, citizen suits could hamper operations and maintenance work or prevent clearing out ponds and holes used for testing.

The final "Waters of the U.S." regulation substitutes the new definition into all CWA programs and regulations across the entire country, which in turn changes the jurisdictional application of all other CWA rules. Implementation will be difficult: in the past, typically only CWA Section 404 dredge-and-fill permits sought jurisdictional determinations, but now other programs will start seeing the need for more determinations. An influx of new requests will mean more delay. And applicants with pending permits will have to start over based on the new rule.

Ultimately, this translates into greater legal costs and fewer profits to reinvest into communities. It means consumers pay more, but get less. For manufacturers, more money will be spent on permitting instead of innovation, and projects that create jobs in communities could be delayed or shelved.

Conclusion

The NAM thanks the Committee for its interest in manufacturers' competitiveness and the critical balance that must be achieved in the regulatory space to ensure both environmental protection and economic growth. We will continue to work with Congress and the Administration to achieve these important dual goals.

Ross E. Eisenberg
Vice President, Energy and Resources Policy

Ross E. Eisenberg is vice president of energy and resources policy at the National Association of Manufacturers, the largest industrial trade organization in the United States, representing over 13,000 small, medium and large manufacturers in all 50 states. Ross oversees the NAM's energy and environmental policy work, and has expertise on issues ranging from energy production and use to air and water quality, climate change, energy efficiency and environmental regulation. He is a key voice for manufacturing on Capitol Hill, at federal agencies and across all forms of media.

Before coming to NAM in 2012, Ross spent over five years as environmental and energy counsel at the U.S. Chamber of Commerce, the world's largest business federation. He was also executive for the Chamber's Environment & Energy Committee, the Chamber's primary vehicle for the creation and development of environmental and energy policy.

Prior to joining the Chamber, Eisenberg spent five years as an environmental, energy, and insurance coverage attorney in the Washington, D.C., office of Greenberg Traurig LLP, a full-service international law firm with more than 1,700 lawyers. At Greenberg Traurig, Eisenberg represented large and small companies on a wide range of environmental and energy matters, including permitting and compliance with federal, state, and local laws and regulations; pesticide registration; rights of way and ratemaking; environmental insurance coverage; and assorted litigation.

Eisenberg is a member of the State Bar of the District of Columbia. He has a B.A. from Emory University and a J.D. from Washington & Lee University School of Law.

Chairman SMITH. Thank you, Mr. Eisenberg, and I'll recognize myself for questions, and Mr. Kerr, let me direct my first question to you.

The EPA claims that under the Waters of the United States final rule, it does not expand the scope of federal jurisdiction. Give me a couple of quick examples as to why it does expand jurisdiction.

Mr. KERR. Sure. Under the SWANCC Supreme Court ruling, the Supreme Court found that isolated wetlands are not under the jurisdiction of the Clean Water Act, and if they're to be regulated at all, they need to be regulated by the state. Those types of isolated wetlands can now be regulated under the Clean Water Act. Under the new rule, they can be regulated as an adjacent water. So that's one type of situation where scope's broadened.

Chairman SMITH. By the way, I'm just curious. Have we seen the word "drizzle" before, water that's accumulated as a result of drizzle?

Mr. KERR. Not to my knowledge.

Chairman SMITH. Okay. That might be another example.

Mr. KERR. Yeah, and actually I've got three or four others. There has never been an adjacent feature regulated under the Clean Water Act other than wetlands. The only adjacent feature could be a wetland. Under the new rule, a pond can be considered adjacent. Virtually any kind of other water of the United States can be considered adjacent. That's a new precedent and was not dictated by a court decision.

Ditches flowing into tributaries can now be regulated as a jurisdictional water. I've got a lot of concern with that because by definition, ditches connect into waters of the United States so that they drain agriculture, roads, stormwater, you know, a number of features. If they connect to a traditionally navigable water or a tributary, the EPA is saying they can regulate them now. That creates at a minimum a lot of confusion.

Chairman SMITH. And that's another expansion.

Mr. Kerr, I know you could go on and on and on. Let me see if I can get to some other questions.

Mr. Kovacs, real quickly, you say that the modeling system used by the EPA is biased. What's an example, and specifically the way that it's biased?

Mr. KOVACS. Well, I mean, there's several. One is when we did our own modeling on costs several years ago, we found that the EPA used what they call a limited model where the only thing they looked at was what are the impacts on job growth, and that was very narrow in the sense that it asked how many consultants are you going to have. So when they modeled the mackerel, for example, it found that it created 8,000 jobs. When we used whole-economy modeling, we found that it lost 240,000 jobs, and that's one of the huge debates that's going on right now with the Science Advisory Board. They've been instructed by Congress to determine whether or not EPA is modeling's is incorrect.

Chairman SMITH. Okay. Thank you, Mr. Kovacs.

Dr. Paulson, first of all, you mention in your testimony—I just want to bring it out for everybody's information—that since 1990, emissions of six common pollutants have dropped by 41 percent through 2008. I think that's good news.

You also mention the heartfelt case of a girl with asthma, and whenever the smoke from the power plant located near her home changed from white to black, when they went from burning natural gas to coal, her asthma worsened. We've done some research, and our research indicates that typically a coal-fired plant produces white smoke, not black smoke, and I'll show a couple photographs. Do you know where this plant was located that you referred to?

Dr. PAULSON. Yes, sir, I do.

Chairman SMITH. What city or what area? You don't need to give anybody's identity. I'm just curious where it's located.

Dr. PAULSON. Washington, D.C.

Chairman SMITH. Okay. And we'll have to check because my information is that even when they're burning coal, the smoke is white, not black, and that might be of interest. Anyway, I just wanted to bring that out. I appreciate that.

My last question goes to Mr. Eisenberg, and this is, does the EPA have the legal authority to implement the proposed Clean Power Plan?

Mr. EISENBERG. Certainly that is an open question, I mean, and I fear that if they finalize the rule that they proposed, we're going to get some litigation on that. There —we and others have posed a number of potential legal obstacles that this thing could go through. You know, they have the—they certainly have the authority to regulate greenhouse gases. That's been settled by the Supreme Court. The issue is, can they be using this statute the way they're using it? They've certainly made a lot of interesting choices in terms of going——

Chairman SMITH. Do you have a legal opinion yourself as to——

Mr. EISENBERG. You know, it's going to be a complicated case. I think, you know, certainly there are a lot of potential flaws, legal flaws, in this language.

Chairman SMITH. Okay. What's an example of one?

Mr. EISENBERG. So a very easy one is whether or not the section 111 can be used in light of the fact that they're already regulating power plants under section 112 for hazardous air pollution, can you actually do that under section 111, and if so, can you do that for everybody else. They didn't make an independent endangerment finding for this one so they just basically said well, cars cause this and so power plants must too. There's a lot of stuff they did in there that I think is going to be a real challenge.

Chairman SMITH. Thank you, Mr. Eisenberg, and the gentlewoman from Texas, the Ranking Member, Ms. Johnson, is recognized for her questions.

Ms. JOHNSON OF TEXAS. Thank you very much, Mr. Chairman.

Dr. Paulson, in your—in testimony of Mr. Kovacs, he recommended EPA retain the current 2008 ozone standard of 75 parts per billion, in large part because EPA is just now starting to implement the 2008 standard. Those who support retaining the current standard say it is unfair for EPA to move the goalpost by calling for a more stringent standard. As most people know, I'm from Dallas, Texas, an area that is all too familiar with poor air quality. Dallas County alone is home to more than 60,000 children and over 130,000 adults with asthma who are at risk of missing school, missing work, ending up in the emergency room or hospital, and

even dying prematurely on days with dangerous ozone levels at government expense.

Unfortunately, the State of Texas is not helping to protect my constituents nor anybody else's and has been intensely opposed to a lower ozone standard. In fact, the chairman of the Texas Commission on Environment Quality, Bryan Shaw, has stated that there will be little to no public health benefit from lowering the current standard. Was the current standard of 75 parts per billion sufficient to protect public health when it was finalized in 2008 is one question, and the second question, how has the body of scientific evidence changed since the last time the EPA revised the ozone standard, and would it make sense based on the science for EPA to retain the current standard until the states have fully implemented, as some have suggested?

Dr. PAULSON. Ms. Johnson, if the states retain the current standard until it's fully implemented, people are going to die and people are going to be sick. We knew before the current standard was set by EPA based on the science that was available prior to that time that that standard was inadequate to protect the health of human beings in the United States. We now have additional scientific information, both from human epidemiologic studies and other research that shows that a level of 60 is where health protection starts.

Ms. JOHNSON OF TEXAS. Thank you very much.

Are you likely aware that critics of the Clean Power Plan and virtually any other EPA rule often claim that the economy and the American consumer will suffer as a result of efforts to make our environment cleaner and safer? This "sky is falling" attitude toward protecting the health of Americans runs counter to reality. As the economy has tripled in size since the adoption of the Clean Air Act in 1970, claims that regulations kills jobs are equally misleading. As a matter of fact, I've known it to create jobs. In fact, just last year, we heard from the witnesses that wise environmental protection and robust economic development can and should go hand in hand.

That being said, one cost is abundantly clear, and that is the cost of American lives, if we do not enact regulations to protect their public health.

Now, can you please expand upon the cost to public health if we do not act and implement stronger emission regulations and what are the costs to the taxpayers, especially medical costs, if businesses are allowed to continue to pollute?

Dr. PAULSON. Ms. Johnson, the issues around ozone in particular and all of the rest of the air pollutants that come under the Clean Power Plan, each and every one of them adversely affects human health and therefore cost money, cost money in terms of direct out-of-pocket costs for payment of medical expenses or the government pays those expenses if it's not direct out of pocket or business pays those expenses in terms of insurance premiums. Businesses also pay an expense for these health problems when their workers can't show up or show up sick and can't do the work that they need to do. Businesses also pay for these health problems when children are ill because their parents need to stay home with the children, need to take their children to a healthcare professional, need to

take their children to an emergency room, or need to sit by their child's bedside in the hospital.

One of my colleagues, Dr. Leonardo Trasande from NYU Medical School, and a colleague of his, Dr. Lu, concluded that the best estimate of childhood asthma costs in 2008, and recognized that they've only gone up since then, that could be associated just with environmental factors—this is not the total cost of asthma, this is the cost attributable to environmental factors—was around $2.2 billion per year in the United States with a range from about $728 million to $2.5 billion.

So by not protecting our people, there is an extensive economic burden on businesses and on the country as a whole.

Ms. JOHNSON OF TEXAS. Thank you very much. My time is expired.

Chairman SMITH. Thank you, Ms. Johnson.

And the gentleman from California, Mr. Rohrabacher, is recognized.

Mr. ROHRABACHER. Years ago, when I was in high school, which seems, really, I guess it was in another century, I remember when I was in Los Angeles when in high school, and we were not permitted to go out and do strenuous exercises because the pollution levels in Los Angeles were so high that perhaps once or twice a week they called a pollution emergency. Today, I think it happens once or twice a year, so there has been a dramatic reduction in the air pollution, at least in southern California, and I take it from the testimony that we've heard that that's true throughout the rest of the country as well.

We have to attribute that to the fact that there has been regulation that has been successful, and those of who have a natural inclination against regulation need to be honest about that, and the question is, is whether or not we have come to a point or when we did come to that point where such regulation actually does not clean the air but there are natural sources of pollution when you have to want to maintain a certain standard of living for people. If we're going to have civilization, there will be— manufacturing will take place. If you do not have manufacturing, people will get sick for other reasons other than just the air.

The question is for you, Dr. Paulson. Has there been a decrease in the number of illnesses, air-pollution-related illnesses that has been recorded in these last 10, 15 years as the pollution level's gone down?

Dr. PAULSON. It depends what pollutant you're looking at and what particular health outcome you are looking at, but we do know that the pollution levels have come down and we also know that the current pollution levels are not healthy, actually still——

Mr. ROHRABACHER. Excuse me. You're not answering my question, please. I'm asking you specifically, because the pollution levels have gone down and now do we see as the pollution level's gone down this decrease in the number of diseases related to that pollution?

Dr. PAULSON. There's been some leveling off, for example, of people with asthma but there are——

Mr. ROHRABACHER. So we have a leveling off and not—there's been this dramatic decrease in the pollution but there's only been

a leveling off, so maybe we have reached a point that the pollution level is more of a natural level that human beings can relate to. Perhaps maybe the other witnesses——

Dr. PAULSON. There——

Mr. ROHRABACHER. Go right ahead.

Dr. PAULSON. These levels of pollution are dangerous to human beings, Mr. Rohrabacher. These levels of pollution are produced by human beings and can be controlled by human beings.

Mr. ROHRABACHER. Well, there are also, as we know, natural—for example, we are called deniers over here if you don't go along with the fact that CO_2 is changing our climate, but we know that 90 percent of the CO_2 in the air comes from natural sources and not human sources, and at some point you have to relate what level of whatever we're talking about actually relates directly to people's health, and do the other witnesses have any——

Dr. PAULSON. Mr. Rohrabacher——

Mr. ROHRABACHER. Listen, can I ask the other witnesses to comment on that as well?

Mr. KOVACS. We did a study using EPA's own data just to figure out that exact question. We asked in each of the studies that the EPA was doing in terms of reducing pollution, whether it be ozone or mercury or whatever, EPA—let's use mercury. EPA—the entire utility MACT was mercury but only $6 million out of $10 billion in EPA's claimed benefits came from mercury. The rest came from particulate matter, and what's happened is, we've taken particulate matter down to whether—where it's 30 percent below where EPA says it's safe and 20 percent below where the World Health Organization says it's safe. We're still reducing it, so we're spending billions of dollars to reduce something that's already 30 percent below what they say is safe.

Mr. ROHRABACHER. So at some point where if you have a problem and at some point you come to a position where it is no longer cost-effective to do that, to have that activity, and while we have to admit that from the time when I was in high school until now when the pollution levels are lower, that maybe that was very cost-effective and many of the things that the good doctor is telling us about has resulted from that but maybe we now have reached a point here it's so costly that it's counterproductive, and on our side of the aisle at least, we believe that entrepreneurs and manufacturers, when you actually put them in contest with the bureaucracy, they usually lose, and bureaucracy—where manufacturers can give us good products to use, usually bureaucracy is able to turn pure energy into solid waste, and that's about all.

Chairman SMITH. Thank you, Mr. Rohrabacher.

Mr. ROHRABACHER. Thank you, Mr. Chairman.

Chairman SMITH. The gentlewoman from Maryland, Ms. Edwards, is recognized.

Ms. EDWARDS. Thank you very much, Mr. Chairman, and thank you to the witnesses this morning.

I just want to make sure that we really understand, because I think sometimes there are quite overstatements in these hearings, and so I just want to clarify from the EPA that the Clean Water Rule does not regulate most ditches. In fact, the text of the rule says, and I quote, "The following are not waters of the United

States. The following ditches. A. Ditches with ephemeral flow that are not relocated tributary or excavated in a tributary. B. Ditches with intermittent flow that are not relocated tributary excavated in a tributary or drain wetlands. And C. Ditches that do not flow either directly or through another water into a traditional navigable water, interstate water, or territorial seas."

And so let's not overstate the regulation of so-called ditches. I've heard that so many times and it is completely inaccurate.

Furthermore, the rule doesn't protect any types of waters that have not historically been covered by the Clean Water Act. Any new requirements for agriculture, in fact, all of the agriculture that was exempt before is exempt now under the rule, interfere with or change property rights, regulate most ditches, as I said, change policy on irrigation or water transfers, address land use, cover erosional features such as gullies, rills, and non-wetlands swales, and include groundwater, shallow subsurface flow, and tidal drains. Those are things that the rule does not do, and so we should be careful about those overstatements.

Mr. Chairman, I know also a number of my colleagues on the other side also deny that climate change is happening or at least that humans are causing it. We've already heard that this morning and have adamantly opposed the Obama Administration's efforts to lower the nation's carbon emissions. Fortunately, according to a recent poll by the Yale Project on Climate Change Communication, the majority of Republican voters actually support climate action to reduce carbon pollution. Additionally, a majority of moderate Republicans support setting limits on carbon emissions from coal-fired power plants. This poll also shows that not all Republican voters oppose EPA's Clean Power Plan.

And so Mr. Chairman, I'd ask unanimous consent to enter these two charts from the Yale Project into the record.

Chairman SMITH. Without objection, that'll be made a part of the record.

[The information appears in Appendix II]

Ms. EDWARDS. Thank you.

I also want to enter into the record a survey by Hart Research Associates that actually says that voters in fact support the Clean Water Rule and not just that, but an overwhelming number of voters trust the EPA and the U.S. Army Corps of Engineers to do that and not Congress. I think that we should listen to the public.

Chairman SMITH. Without objection—and by the way, I'm looking at the poll that you're referring to. The wonder is that the answers were not——

Ms. EDWARDS. Mr. Chairman, that's——

Chairman SMITH. —100 percent, given the way the questions were worded.

Ms. EDWARDS. That's my time——

Chairman SMITH. Who's opposed to clean water?

Ms. EDWARDS. Are you entering that into the record?

Chairman SMITH. It will be made——

[The information appears in Appendix II]

Ms. EDWARDS. And I'd ask for the remainder of my time to be added back to the clock.

Chairman SMITH. I'll give you ten more seconds.

Ms. EDWARDS. Thank you.

Mr. Chairman, I'd also like to add into the record, as we've seen this morning again, that our industry representatives here make the argument that the cost of complying with regulations will "kill the economy and jobs." But this argument has been proven false over and over again. Again, I have a facts sheet from the Pew Charitable Trust describing industry's long history of overestimating the cost of regulations. According to Pew, compliance costs have been less and benefits greater than industry predictions and regulation typically poses little challenge to economic competitiveness. The fact sheet goes on to outline a number of very specific examples of this pattern of the overexaggeration from acid rain and airbags to seat belts and catalytic converters.

For example, chemical production plants predicted that controlling benzene emissions would cost $350,000 per plant. But the chemical plants ended up actually developing a process that substituted other chemicals for benzene and virtually eliminated control costs. In this instance, as in a number of instances, regulation actually drove the kind of innovation, Mr. Chairman, that you pointed to.

I'd ask unanimous consent to enter these facts sheets from the Pew Charitable Trust into the record.

Chairman SMITH. Without objection.

[The information appears in Appendix II]

Ms. EDWARDS. Thank you, Mr. Chairman.

I just want to finish by saying we've had so many of these hearings about regulation, and I would suggest that we'd allow the rule to go into effect and we don't have any predictions at all about what the outcome will be if they are challenged in court, but after—especially with the Clean Water Rule. After thousands and thousands of comments that have been reviewed, changes that were made from the rule on its introduction to the final proposed rule, hundreds of witnesses testifying, it's time that we move after a decade and a half of twiddling around and not knowing what to do and what the rules are to a point where we have some certainty that industry has certainty, that the public has certainty and that all of us get the clean air and the clean water that we deserve.

Thank you, and I yield.

Chairman SMITH. Thank you, Ms. Edwards.

The gentleman from California, Mr. Knight, is recognized for questions.

Mr. KNIGHT. Thank you, Mr. Chair.

I would go on a line of questioning of kind of what we've done in California. I think that my statement would be that California has probably gone about this as stringent as any state in the union as far as our clean air, clean water, clean energy, clean everything that we have done, not just of course on EPA standards because everyone has to go along with that but what the legislature has done in California to go about this.

So I guess my questions would be, and we can start with Mr. Kerr, that we have seen a loss in the last ten years of about 80,000 manufacturing jobs in California due in part to what we have done in California, not just by our regulations but what we have mandated on business and how they can interact with the air and the

water in California. Do you think that—and I think Mr. Rohrabacher was going down the right line of questioning. Do you think we have hit a line in the road where if we go too far, then we're not going to just continue to hemorrhage jobs but America and many parts of America will be so uncompetitive that businesses' only choice will be to look elsewhere.

Mr. KERR. Thank you, Congressman. With regard to the question, I have to say I'm not an air pollution consultant so I'll just yield my time to the others here who could speak to that.

Mr. KOVACS. Congressman, I think you're going to be surprised with my answer. I think we don't know, and the reason why I say that is part of—when Congress first legislated these acts in the 1970s, you asked for very specific information. There was a debate on the Floor that was really fascinating, and one of the members—one of the Democrats got up and said, you know, I'm tired of this issue being fought in this way—this is the end of the world or this is going to protect the world. They specifically said we know we're going to impact jobs, we know that, but Congress has a major role and we need information to come back to us from the Agency. You never got that.

And in the 1980s and the 1990s, Congress again said we're going to pass the Information Quality Act, and that said is, the Agency has to take information from the public and the public has a right to challenge the Agency's information. The agencies, not just EPA, have refused to do that. You've asked for input under the unfunded mandates and the impact on states. States implement 92 percent of all the environmental laws, and EPA does not look at unfunded mandates. It generally dismisses and says there's no impact on the states. Even for ozone, EPA says there's no impact on the states. There's no unfunded mandate for a rule that they say is going to cost approximately $90 billion a year.

So you don't know, and one of the things that's really needed in this issue is, we fought over the issue for too long. We need the information on data quality to work. We need the information on 321(a) in the Clean Air Act to tell you how it's impacted jobs because regulations aren't just something that happens to the whole country. Regulations are something that happens to an industry. So if an industry is hit and it's in Wisconsin or Idaho or wherever, that industry and that community's affected. There may be jobs created elsewhere but you still have an industry and a community that's been hurt, and you don't have that information and EPA has never given it to you.

Mr. KNIGHT. Thank you very much.

Mr. EISENBERG. So I'll try to give you a very simple answer specifically for manufacturing. You're absolutely right in terms of manufacturers. We use about a third of the energy in this country. We are extremely energy-intensive. For some manufacturers, it is our single largest cost. There is a reason why a lot of the new manufacturing that is coming online is going to states where energy is cheap. If you are a state that does not have cheap energy, that is a very big difference maker for a lot of folks in industries that are highly energy intensive.

That is not the driver; it is a driver of why manufacturers go into places that may not be California, which absolutely has extraordinarily high energy costs.

Dr. PAULSON. Mr. Knight, we know very well that air pollution is not confined by political borders. We know this very well in the United States, but it is true internationally as well, and we can only do what we can do in the United States to protect our own citizens, and Congress gave the Environmental Protection Agency a responsibility to protect the health of human beings in our country, and that is what they are attempting to do by lowering these pollutant limits.

Mr. KNIGHT. Absolutely, Dr. Paulson, and I agree. I just think that we possibly—and I wouldn't say "possibly." I would say we have achieved a level that is very healthy in this country, and going further, we will be hurting this country and its ability to economically be a factor.

And I will say what we have done in California has worked very well. We have six of the dirtiest ten cities in this country.

Thank you, Mr. Chair.

Chairman SMITH. Thank you, Mr. Knight.

The gentlewoman from Oregon, Ms. Bonamici, is recognized for questions.

Ms. BONAMICI. Thank you very much, Mr. Chairman, and I'm going to follow up on the discussion we were just having, and Mr. Chairman, you mentioned this in your opening statement too about diminishing the competitiveness of U.S. businesses, and we hear these claims that the Clean Power Plan or other environmental laws are going to kill jobs, hurt the economy. There's a suggestion that our businesses will go overseas.

I just read this morning that Ikea just pledged a billion euros, which is $1.13 billion, to help slow climate change through renewable energy and steps to help poor nations cope with climate change. They said this is good for customers, good for the climate, and good for their company. So they found that customers actually value environmental responsibility, and I suggest that we look at that and what our customers value.

And I also want to talk about how the numbers speak for themselves. The Union of Concerned Scientists just released an analysis that shows that most states are already making significant progress toward cutting carbon emissions from power plants, and according to that analysis, 31 states including my State of Oregon are already more than halfway toward meeting the 2020 benchmarks set out by the EPA under the Clean Power Plan. All but four states have already made decisions that will help cut their power plant emissions. Fourteen states including California, Kentucky, Ohio and New York are already ahead of the emission rate reduction trajectory because of current carbon-cutting decisions and actions.

I find this very encouraging and again highlights how the environmental regulations can bring about positive results. Mr. Chairman, I ask unanimous consent to enter this analysis into the record.

Chairman SMITH. Without objection.

[The information appears in Appendix II]

Ms. BONAMICI. Thank you.

And Mr. Eisenberg, I was glad to hear you say that the National Association of Manufacturers believes in the mission of the EPA. You say that plants have the best available pollution control technologies, and as we were just discussing, history shows that regulation drives innovation. Without the regulation, those who are working on new technologies don't have a market, but with the regulation, they do, and we have found that new technologies are developed to meet the needs of regulation.

So I want to ask, Dr. Paulson, you know, many are arguing that it's not just worth it, that costs are too high, and as you've noted, there's evidence showing that on balance, jobs are created, the economy expands following the passage of major environmental reforms. For example, in a report to Congress on the costs and benefits of federal regulations, OMB estimated that major rules promulgated by the EPA in the decade between 2003 and 2013 had benefits between $165 billion to $850 billion compared to costs of $38 to $46 billion. That is a pretty significant return on investment.

So Dr. Paulson, alternatively, we've talked about the costs of ignoring our changing climate and the public health risks related to increases in global temperatures, and I note that the death toll in India is now up to 2,500 people. Tragic over there.

Climate change also has the potential to exacerbate existing health conditions as you've discussed such as asthma. Now, we've had hearings in this Committee before where we've talked about how the EPA is not allowed to consider the costs when they, for example, set the standard under the Clean Air Act, the ozone standard. That's sort of compared to the idea that you're going to make a medical diagnosis depending on how much the treatment's going to cost.

So can you comment on the importance of separating the costs associated with attaining an ozone standard from the assessment of what level is appropriate to protect public health?

Dr. PAULSON. Health needs to be a priority, and as a physician, I am sworn and I took an oath long ago and still very much believe that oath I took to protect the health of the individuals that I work with, and for me, that's the kids but it's also their families. I cannot ethically take the consideration of cost into account. I certainly work with the families to try and make sure that they have or can access the financial resources for whatever it is that I or my colleagues may be recommending, but my responsibility is to do what is in the best interest of children.

Ms. BONAMICI. Thank you. I'm going to try to get one more quick question in to you, Dr. Paulson.

There was a study by Syracuse and Harvard University about the major co-pollutants that could be reduced. So can you talk about some of the health co-benefits that are likely to result from these kinds of carbon regulations?

Dr. PAULSON. Yes. I'm a pediatrician, but let me mention something particular to adults, and that relates to particulate pollution. We know that when particle levels go up in the air, the next day more people are going to be admitted to the hospital with heart attack and strokes and die from those heart attacks and strokes as

a result of that exposure to the particulates. So that's just one example.

Another example is that we know that children grow up in areas of the country that have higher air pollution when they are finished growing, 18, 20, their lungs are smaller than kids who grow up in a less polluted area, and that raises the concern of, are these kids then set up for what we think of as adult-onset pulmonary disease but actually it goes back to the pollution that they were exposed to as children.

Ms. BONAMICI. Thank you very much.

I see my time is expired. I yield back. Thank you, Mr. Chairman.

Chairman SMITH. Thank you, Ms. Bonamici.

And I'd like unanimous consent to put in the record a New York Times article just a few days ago that reveals that the EPA solicited positive comments from outside organizations, perhaps in violation of lobbying laws. Without objection.

[The information appears Appendix II]

Chairman SMITH. And the gentleman from Texas, Mr. Babin, is recognized.

Mr. BABIN. Yes, sir. Thank you very much, Mr. Chairman, and thank you to all you witnesses for being here.

The EPA Administrator, Ms. McCarthy, Gina McCarthy, wrote an op-ed recently saying that the Agency's air standards attract new business, new investment and new jobs. I don't think that Administrator McCarthy is living in the same world as the rest of us.

I represent the 36th District in the State of Texas, and we have one of the largest numbers of petrochemical plants and refineries in the country. Most of my district is not in attainment with these new regulations. I will also add that neither is Yellowstone National Park in attainment with these new regulations.

There is no concrete evidence to support the lower standard for ozone that the EPA is calling for, not to mention the cost that is associated with it, given the strenuous economic times. I would now ask for a slid be placed on the screen to describe my district, the State of Texas, District 36. We have the largest manufacturing industry in the State of Texas in the chemical and refining industry. We directly employ or indirectly employ over 10,000 people down there in this portion of my district, and we pay $934 million in wages in this district with an average wage of nearly $100,000.

These proposed new rules promise to be the most expensive regulations in the history of the United States, likely costing us thousands of jobs and prolonging a recession. This is bureaucratic overreach in the extreme.

I would ask Mr. Kovacs and Mr. Eisenberg whether this is worth putting all of this at risk with these new regulations. Mr. Kovacs?

Mr. KOVACS. Well, I think in terms of ozone, we've really had probably 30 years of what you're describing. I mean, look, going back to the early 1980s, many sectors of the economy—steel, foundries, carpets, furniture—you pick it, because nonattainment areas could not get the credits to stay operating, were forced either, one, to other areas of the country or two, they were forced overseas. And so that's been going on for quite some time.

Again, I come back to the fact that these are issues that really should be resolved, and let me just give you one example as to how

hard it is to resolve it. We've talked a lot today about science and transparency, and we've challenged EPA for years, but in 1999, when the Pope and Daugherty study was first issued, I wrote a FOIA to EPA and was denied everything. So all the scientific basis for a lot of what they're talking about in PM and ozone has been denied to the public, and the only people who can have access to it are EPA and their researchers. Chairman Smith issued a subpoena last year and couldn't get the information.

One of the things that we need to have in this country is complete and total transparency. The Agency needs to be able to put its models, its science in the record. It needs to implement the environmental—or the Informational Quality Act. They need to accept information from the public and they need to sit down and talk about it. These—if the data's there, then they shouldn't be afraid of it. If it's not there then they should be afraid of it.

Mr. BABIN. Which is what the Secret Science Act is all about we're proposing.

Mr. Eisenberg.

Mr. EISENBERG. Thank you. To your question of whether or not we believe that this is the right thing for manufacturing, no, we don't need them to change the ozone standard if you want to have a manufacturing sector. I mean, that is the simple and straight answer, and this is not about health for us. We are getting the benefits of continued reductions between the existing ozone standard and the three dozen other regulations that reduce NOX emissions. We're going to be reducing ozone precursors by 36 percent over the next decade, so we're going to get there. We're going to actually be doing what we need to do. The only difference between that and getting—and moving the chains now is that you impose a significant amount of struggle for manufacturers to try to expand or build things to get basically the same result.

So we're going to get there anyway. We can just get there without all of the pain that we would have to face if you don't move the chains on us.

Mr. BABIN. Thank you very much, and I yield back my time, Mr. Chairman. Thank you.

Chairman SMITH. Thank you, Mr. Beyer—thank you, Mr. Babin.

Mr. Beyer, the gentleman from Virginia, is recognized.

Mr. BEYER. Thank you, Mr. Chairman.

Mr. Chairman, Mr. Eisenberg and Mr. Kovacs both cited a study prepared on behalf of NAM in their written testimonies, and this study estimates the compliance costs associated with an ozone standard of 65 parts per billion.

I have an article from Bloomberg News that discusses NAM's study and a number of groups criticize the study and its methodology, saying that the study doesn't include an estimate of the anticipated benefits of the 65 standard, it overestimates compliance costs, and that it makes "unrealistic assumptions." For example, the use of the Cash for Clunkers program, with which I'm very familiar, is used as the basis for estimating the cost of unknown pollution controls. This is described as "insane and unmoored from economic reality."

Also, it's important to understand well what the new standards might cost and the savings that might generate. Please allow me

to point out that the 2001 Supreme Court, the same court that put George W. Bush in the White House in Bush v. Gore ruled that the Clean Air Act prohibits the EPA from considering the cost of compliance with setting National Ambient Air Quality Standards.

So Mr. Chairman, I ask unanimous consent to have this article entered into the record.

Chairman SMITH. Without objection.

[The information appears Appendix II]

Mr. BEYER. Thank you.

Dr. Paulson, thank you for being here. The Committee received testimony from Dr. Mary Rice on the health impacts of ozone, and she indicated that the research has only grown stronger since the last time the EPA considered revising the current standard, and one area she highlighted was the new evidence between higher ozone levels and increased mortality.

I grew up here in Washington, DC. There will be a number of times this coming summer when every TV station will be telling us all to stay inside because of high ozone levels. As I understand it, the Integrated Science Assessment for Ozone states that "The current body of evidence indicates there's a likely causal relationship between short-term exposures to ozone and total mortality." Can you talk about this evidence?

Dr. PAULSON. Yes. Ozone causes inflammation, irritation, particularly in the lungs. I think an analogy that everybody I hope can understand is sunburn. Sunburn causes inflammation and irritation of the skin, and likewise, ozone does that but it does that in the breathing tubes in the lungs, and acutely that—if it's a one-time thing, if it's a few-times thing, that heals up and goes away just like a sunburn heals up and goes away. But on a chronic basis, that leads to permanent changes in the breathing tubes in the lung so that they no longer function the way they need to function to remove other pollutants from the lung. They become scarred. They don't transfer oxygen and carbon dioxide the way they should. So overall, pulmonary function declines and that impacts on a whole range of adult health issues.

So I think that we need to bring the ozone level down. Levels below 60 are much safer than levels above 60, and we should have a standard of 60 in the United States.

Mr. BEYER. Thank you, Dr. Paulson, very much.

Mr. Kovacs, thank you for being here representing the Chamber. I was President of the Falls Church Chamber, on the board of Fairfax Chamber. My wife used to work for you guys at the U.S. Chamber.

But I'm having trouble reconciling a number of facts. On the one hand, EPA's promulgated regulations in clean air, clean water, greenhouse gases, and all allegedly are job killers and profit killers. On the other hand, corporate profits are at an all-time high, the Dow is over 18,000 last night, 62 straight months of job creation, the fastest and best recovery of any Western economy since the Great Recession. In fact, Governor McCall from Virginia has now created private-sector jobs, not him but our economy in Virginia has created more private-sector jobs in these first 17 months than any government in Virginia history, any governor.

In my business when we receive a new regulation, we adapt and we figure out the most effective way to implement and respond to the new rule and then we figure out how to make money off of it. To Mr. Knight, who I guess is gone, my California dealer friends are the most profitable dealers in the country despite their regulations. I would love to be a California car dealer.

My question is, don't you give too little credit to the business community, to their imagination, to their operational excellence? Can't we have business and job success and better health at the same time?

Mr. KOVACS. Well, thank you for the question. First of all, I give tremendous credit to the business community. They are extraordinarily innovative, and I am absolutely thrilled that your wife worked with the Chamber and you were with the Falls Church Chamber.

Now, having said that, we at the Chamber, we don't really—when we talk about job impact and regulatory impact, we talk about a system that the United States constantly creates jobs and we're constantly creating more jobs and hope we will even do better in the future, but when a regulation comes out, it actually affects specific industries. When ozone comes out, for example, it's going to—initially we have the history of it coming out and literally knocking out, let's just say California or anyplace else—chemical manufacturing in certain areas, oil manufacturing, paint and coatings. And what happens is, those people truly are out of jobs, and when you look at the fact that if you're over 55 and you're out of a job, your chances are only about 25 percent of having a job the rest of your life, and what we're trying to impress upon them is, yes, it's easy to say wow, we have a lot of great technology companies and they're creating a lot of jobs. What's happening is, the regulations are putting people and communities out of business, and that should be just as much of a concern because the health impacts when a community goes out of business is drug abuse, heart attacks, hypertension, and all we're trying to say is, let's get the facts on the table and let's have an honest discussion. Let's put the health-related effects out, let's put the job-related effects out. This should not be a problem. This should be a problem that Congress can solve. This shouldn't be a problem we fight over. That's been my testimony.

Chairman SMITH. Thank you, Mr. Beyer, and the gentleman from Ohio, Mr. Johnson, is recognized.

Mr. JOHNSON OF OHIO. Thank you, Mr. Chairman.

You know, the discussion that we're having today about the EPA's overreach, it's a continuing dialog, and it's disturbing.

I went to Europe just a few weeks ago and talked with many of our friends and allies in Europe about energy policy, and I learned something there that I wasn't expecting to learn. Over the last 20 years, they have been advancing beyond the United States in shutting down coal-fired power and investing in renewable energies and those kinds of things, reducing the amount of coal that they had in their energy portfolio. When we talked energy policy with many of our friends there, we learned that a lot of those countries, some of those countries are increasing their mix of coal-fired power in their energy profiles, and when we asked them why, they said our

ratepayers are simply unwilling to bear the burden of the high cost of providing energy to their homes and to their businesses. Europe has learned this lesson, that coal-fired power is still the most reliable, affordable energy on the planet.

Do we need to keep our air clean? Absolutely we do. Do we need to keep our water clean? Absolutely we do. Dr. Paulson, you made some impassioned comments about the health implications. Not everybody, though, Dr. Paulson, agrees with some of the statistics that you said. For example, today the average life expectancy in the United States is 80 years, one of the highest in the world. There's a New York Times article that came out October 8, 2014, that said a child born in America today will live longer than at any other time in history, and these are scientists saying this. That report came from the Centers for Disease Control.

In the USA Today on April 9, 2015, it cites an EPA report says the EPA reports that are our air quality has substantially improved, aggregate emissions of common pollutants have decreased 62 percent between 1980 and 2015. It goes on to say it is unlikely that cleaner air is causing an increase in asthma.

So, you know, what I have to wrestle with, and I think what the American people are wrestling with is, when is enough enough? When does it become—when does the scale tip towards irresponsibility to continue trying to cripple the American economy and eliminate opportunities for millions of Americans just to move the CO_2 emission needle a smidgen?

Folks, I submit that we have reached that breaking point. We've passed that breaking point. There are serious legal questions to the EPA's jurisdiction and their legal basis for their Clean Power Plan, and I think it's something that's got to be seriously considered by this body and by the American people.

Let me get to some specific questions. Mr. Kovacs and Mr. Eisenberg, by the year 2030, the EPA believes their proposed Clean Power Plan will allow the United States to reduce carbon emissions from the power sector by 30 percent or below the 2005 levels, a roughly 17 percent cut from 2013 levels.

To achieve these reductions, EPA calculated a specific emissions rate for each state by totaling the CO_2 emissions produced by each State's electricity-generating units and dividing it from the total amount of electricity generated by the EGUs. Then the EPA proposed emissions reduction targets based on the carbon intensity of each state's electricity sector.

My question to you gentlemen, do you believe the proposed performance standards are achievable? Mr. Kovacs?

Mr. KOVACS. I think the easiest way to address your question is to start off with one of your conclusions where "enough is enough," and I think at that point in time, I don't think you can get to dealing with the present regulatory system without a change in the Administrative Procedure Act, and Chairman Smith is very familiar with this. But right now you can't get the kind of data into the system that you need. You can't get the Agency to participate and you can't get the Agency to look and talk to the public the way it needs to. Until you can get the kind of early-on input where people say here's what we think and the Agency says here's what we have, and you begin the discussion 90 days before rule, and then you

begin to have the Information Quality Act put into the system where people can actually say oh, this is the data.

You have—Congress has to find some way to get the process to work. There is nothing with the law that court decisions have come down on deference and with the way the agencies ignore Congress. Congress has to make a fundamental change in how rules are made.

And the last point, because I don't want to just filibuster, but the last point is, there are 4,000 rules coming out every year. Three thousand seven hundred really work. Ninety-five percent of the system works. It's — we're talking two or three or four major rules a year, and most of those rules come out of EPA. So when you look at the whole regulatory system, you don't need to throw it all away, but for those major rules that are over a billion dollars that fundamentally change society, you have to have a new way of approaching it.

Mr. JOHNSON OF OHIO. My time's expired, but Mr. Eisenberg, would you want to respond to that?

Mr. EISENBERG. Sure. I mean, certainly in the case of ozone, these rules are not achievable, and it's actually a good opportunity to explain what our studies had. Our study actually had the same methodology as EPA's study. I mean, it was exactly the same. As far as known controls, we used the same stuff, same numbers because we believed them. Where we differ with EPA is on the 65 percent of controls that you need to comply that are unknown controls. You don't have to—it's not—you still have to do it. We just had to figure out how to do it at that point. I would love to be able to tell you we can innovate, and maybe we will, and if we don't——

Chairman SMITH. Mr. Eisenberg, thank you, and Mr. Johnson as well.

The gentleman from New York, Mr. Tonko, is recognized.

Mr. TONKO. Thank you, Mr. Chair, and thank you to our witnesses.

Mr. Chair, in his testimony, Mr. Eisenberg cites a study, a study released by the National Association of Manufacturers last September, I believe. It's titled "The Cost of Federal Regulation to the United States Economy, Manufacturing and Small Business." According to the study, regulations cost the economy $2 trillion in 2012. Now, fortunately, a review of that study was done. The results of that study indicate clearly that that number is not accurate and that number is based on a flawed analysis.

I have here in front of me a review of the National Association of Manufacturers study by Professor Kolstad from Stanford University. Professor Kolstad in this study was asked to grade it and gave it a C minus. In his review of the study, he states that the—and I quote—"study reads as an advocacy document. The authors focus only on the costs of regulation, ignoring the benefits. The authors also don't follow the standard in academic practice of discussing uncertainties in their analyses and their results are highly uncertain. All of these factors make it difficult to determine the quality of the responses and lead to the conclusions that the results are unreliable."

Mr. chair, I ask that—by unanimous consent that the review of the National Association of Manufacturers' study be entered into the record.

Chairman SMITH. Without objection.

[The information appears Appendix II]

Mr. TONKO. Dr. Paulson, as you are well aware, beyond the economic costs associated with climate change, there are very serious public health risks related to increases in the global temperature, for example, longer heat waves, changes in water and air quality, and foodborne and insectborne disease. Climate change also has the potential to exacerbate existing health conditions such as asthma and adversely impact vulnerable populations like children that you serve and the elderly.

What kinds of ongoing health risks are expected if the current climate trends continue, and do these risks, in your opinion, vary by region of our country?

Dr. PAULSON. Mr. Tonko, yes, they do vary by region. We are already seeing significant impacts in terms of injuries and deaths among native populations in Alaska because of changes in the ice and other factors there. We will and are seeing in the rest of the country—we will see more problems with asthma, as you have mentioned. We have seen over the last 5 to ten years a change in the range, the number of counties and states that—where Lyme disease is a problem and as the climate continues to change, we will see continued changes in that disease and other diseases such as we may begin to see indigenous malaria here in the United States. We will start to have problems from sea-level rise. We are—I'm a resident of Virginia and I live in Mr. Beyer's district, so we don't quite see that so much in Alexandria but certainly in the Norfolk region, the Hampton Roads region. We are seeing that, and that will continue and impact on other parts of the country with sea-level rise. We lose quality of water for agriculture and for drinking. So there's going to be a vast array of impacts, it will vary by part of the country, and it will disproportionately—and these impacts will disproportionately fall on children and other vulnerable populations.

Mr. TONKO. Right, and we've also seen some of the proposals, the expected impacts on coastal areas of New York State.

How can implementing the Clean Power Plan help states address these public health impacts of climate change?

Dr. PAULSON. First and foremost, all reductions in CO_2 production will slow the rate of temperature change associated with excess CO_2, and if we can get CO_2 levels down in the long run, while some of these issues will continue to occur for a while, we can stop the progress of climate change in the long run.

I think that again in the long run, we need to be very concerned about food availability and quality of food that's going to be impacted from higher temperatures. People are literally—and we're seeing this unfortunately now in India, people are literally not going to be able to go out and plant and harvest when the temperatures are extremely high. The plants will not grow and produce the bountiful resources that we require and derive from them. The quality of the food may be decreased. So there are a lot of impacts that we're going to have to deal with.

Mr. TONKO. I thank you, and with that, Mr. Chair, I yield back.

Chairman SMITH. Thank you, Mr. Tonko, and the gentleman from Texas, Mr. Neugebauer, is recognized—oh, I'm sorry. I skipped over Mr. Loudermilk from Georgia.

Mr. LOUDERMILK. Thank you, Mr. Chairman.

One of the issues that we run into I've found out in my brief time here in Congress is getting down to the true facts, and part of getting the true facts in science is that getting away from presenting facts that justify an end but making your end justified off the facts that are before you.

I live ten miles from one of the largest coal-fired plants in the nation, and Mr. Chairman, to your point earlier, this plant, you really can't see the smoke when it comes out, but what comes out is white but it's steam that's used to cool that.

But Dr. Paulson, you brought up something that was concerning to me because I live ten miles from one of the largest coal-fired plants in the nation. My one-year-old granddaughter lives about 11 miles from it. And you brought up in your statement, you said that outdoor air pollution is linked to respiratory problems in children including decreased lung function, coughing, wheezing, more frequent respiratory illnesses and so on, and that is true. A quick check—you are absolutely right. It is linked to air pollution. But Dr. Paulson, can you tell me what is the greatest contributing factor to asthma worldwide according to the World Health Organization?

Dr. PAULSON. I don't know exactly what the World Health Organization has said is the greatest contributing factor. Genetics is certainly an issue. Smoking is clearly issue. That's another form of——

Mr. LOUDERMILK. Do you know where air pollution ranks?

Dr. PAULSON. No, sir, I don't.

Mr. LOUDERMILK. Last. The greatest contributor to asthma—and I was surprised to find out that asthma is one of the top causes of deaths in children worldwide. I was very shocked. The top seven contributors are all related to poor sanitary conditions in the home which are linked to poverty. It is greatest in the most impoverished nations in the world. Number seven is outdoor allergens, which if somebody could do something about pollen in Georgia, I'd really appreciate it, but the only thing you can do is cut down trees, and we've been stopped from doing that as well. Tobacco smoke is number eight. Number nine is chemical irritants in the workplace, which again goes back to industrialized nations that don't have the regulations that we have in place. Number ten and last is air pollution.

I live, as I said, ten miles from the largest coal-fired plant in the nation, but it happens to be the cleanest, one of the cleanest coal-fired plants in the nation. Georgia Power, who runs that plant, has spent twice as much money in cleaning up the emissions from that plant as it cost to build the plant when it was first constructed.

But a few years ago, because of this Administration's regulations, Georgia Power has to shut down three coal-fired plants, which cost 700 jobs. Now, I don't have anything to enter into the record, Mr. Chairman, other than what I've seen with my own eyes. If you've ever gone into an area, especially in our part of Georgia, to where

a plant has shut down and a lot of cases it's because they couldn't afford to operate because of the regulatory environment in this nation, you go into those areas where those workers, which are usually factory workers who are skilled in that particular job, have no other job to go to. When you go in those towns, you start seeing these type of issues. You see poor sanitary conditions because they're unemployed or they're underemployed or they have no job at all. They're doing what they can to scrape by, and we start seeing an increase in poverty.

So my question is, are we throwing out the baby with the bathwater because we're focusing on what is the least contributing factor toward a disease which would result in a greater contributing factor as more Americans lose their jobs, as more jobs go overseas? In fact, the President signed an agreement with China that they would promise to start limiting their emissions by 2030 while we're lowering our emissions pushing more jobs overseas.

So my question to the panel is, am I off base? Are we going to lose more jobs in this nation because of the direction we're going, which will result in a problem greater than what we have right now? Mr. Eisenberg, you're in the manufacturing arena, and that's where we've seen the greatest impact?

Mr. EISENBERG. Look, understand what I'm saying today. In almost every case, we're comfortable with regulation but we have regulations and those regulations are working, and it's really about figuring out where that sweet spot is between having a regulation that protects the environment and health and making sure that we can actually do our jobs. In the cases that we've cited today, they've gone a step too far. We're asking them to take a step back towards normalcy.

Mr. LOUDERMILK. With that, Mr. Chairman, I see I'm out of time. I would love to continue this on but I'll yield back.

Chairman SMITH. Thank you, Mr. Loudermilk. I appreciate that.

The gentleman from Texas, Mr. Neugebauer, is recognized for questions.

Mr. NEUGEBAUER. Thank you, Mr. Chairman.

Mr. Kerr, you know, since 1986, EPA and the Corps has only had jurisdiction over the wetlands adjacent to other jurisdictional waters. Can you explain in detail the rule's new concept of adjacent waters?

Mr. KERR. Yes.

Mr. NEUGEBAUER. I'm over here in the cheap seats.

Mr. KERR. Thank you, Congressman. Yeah, prior to the new rule, through court precedent, the Corps regulated wetlands that were adjacent to waters that themselves were not wetlands. What does that mean? If you go to a major river and there's a large wetland next to the river, there's a dike built through that wetland, the wetland on the other side of the dike, the landward side was regulated. But if there was a small pond that had been abandoned because the farmer stopped working a certain area or he moved hogs off of that area and that pond was in a field that became wooded and he didn't use it for more than five years, the Corps would typically consider that an isolated water, and that's the way it's been working up until May 27th with the new rule. Under the new rule,

that pond can now be regulated as an adjacent water so it's a change in how they approach it.

The other thing is that there's a site that I worked on with a development client where there were several small isolated wetlands. The Corps of Engineers back in the late 1990s confirmed them to be isolated wetlands, and the Commonwealth of Virginia regulated those wetlands. Under today's rule, those wetlands would also be considered adjacent and under the jurisdiction of the federal government. So those are two ways that it's changed.

Mr. NEUGEBAUER. So to your knowledge, is there legal precedent for the agencies to establish jurisdiction over these waters?

Mr. KERR. The short answer is no. There is no court decision that required the Corps of Engineers to change how adjacency was determined, to my knowledge, and I've been doing it for 26 years.

Mr. NEUGEBAUER. So as a wetlands delineator, or can you describe how the new adjacent-waters definitions including the neighboring definition will change the way you make your jurisdictional determinations?

Mr. KERR. Yeah, those two examples are two clear examples. The third is the portion, much like manufacturers—I mean, there are certain parts of this rule that are understandable, they're relatively reasonable. The one issue with adjacency that gives me greatest concern is the criteria that says any water within 1,500 feet of a traditionally navigable water is by definition, by rule adjacent and therefore jurisdictional under the Clean Water Act. In the coastal areas—and I come from the coastal plain of Virginia—but this goes from Texas to, you know, the coast of New York, you are now extending this measuring stick out 1,500 feet, and anything that falls within that—and you measure 1,500 feet from the innermost limits of tidal waters, tidal creeks, tidal bays miles inland from the ocean, you extent this measuring stick 1,500 feet, and anything within that zone is jurisdictional as an adjacent water by rule. That's a dramatic change.

Mr. NEUGEBAUER. I want to get to talking about ditches, and I think one of the things that my agriculture community thinks, has concerns that by—those people that believe that EPA has exempted some of the ditches from their jurisdiction, or EPA is telling, I guess, the agriculture community that. Do you believe that's in fact true?

Mr. KERR. If I could give you just a little context for my opinion on that, our firm just recently completed a delineation that involved over 56,000 linear feet of ditches. So just around ten miles of ditches. We had to walk them all, and we asserted they were non-jurisdictional. It took about a year, I think, to get the confirmation that in fact they were non-jurisdictional. Under today's rule, I can tell you, I can walk you to these ditches that are now jurisdictional. As has been said, there are two criteria about ditches that I think are fine, and they're the first two. The last one to me is the recapture provision, and in fact, I went through the entire preamble, 200 pages. I've read what I can find on it, and there's not a specific mention of how they arrived at the third criteria, and the issue with it is, that it says ditches that don't flow through another water are exempt. Ditches virtually by definition flow into a water of the United States, and we have an example

where the water in the United States was a channelized stream, was eight feet below grade. There are some ditches three feet below grade that, you know, kind of like a waterfall discharge into this creek. The water never—you know, this ditch does not touch the bottom of that ditch. The water falls through the air about five feet, runs down the edge of the embankment when there's water. These are intermittent streams—or ditches. Those ditches would be regulated as a tributary of the United States under this rule. I am sure of it.

Mr. NEUGEBAUER. So there is still confusion out there and uncertainty when it comes to the ditches issue?

Mr. KERR. Yes, sir. If I could, one suggestion I would have, it seems to work in Virginia. I don't want to claim that it would work nationally. But I would like to see, as someone else here mentioned, an opportunity where the EPA gets a roundtable together, a technical advisory committee, and allows that technical advisory committee to provide direct input, and it would have conservation groups, industry, consultants, the entire gamut, work on an issue for—in Virginia it's up to 180 days before a rule goes out for public comment. So you would still have public comment. I think 180 days is better than 90. I don't think—I think with these large regulatory issues, they're too complicated to do too quickly.

Chairman SMITH. Mr. Kerr, I think that's a good idea. Thank you. Thank you, Mr. Neugebauer.

The gentleman from Texas, Mr. Weber, is recognized.

Mr. WEBER. Thank you.

Mr. Kerr, you said earlier isolated wetlands were not regulated by the EPA according to a Supreme Court case. Can you give me the name of that case?

Mr. KERR. Yes, SWANCC.

Mr. WEBER. S-w-a-n-k?

Mr. KERR. S–W–A–N–C–C, I think, Southern Water — Southern Waste Management Authority. It was a county in Chicago.

Mr. WEBER. Perfect. Thank you.

Mr. Eisenberg, you said manufacturers use one-third of the energy in the United States. You know, I have five ports in Texas. We export a whole lot of things and we have a lot of petrochemical industry and oil and natural gas and on and on and on. When I speak to groups, I often say that the things that make America great are the things that America makes. How do we do that with a stable, reliable, affordable, dependable energy supply? Mr. Kerr, would you agree with that, that America is great because of the things we make and we have a good energy supply to fuel, for lack of a better word, our industry?

Mr. KERR. Yes.

Mr. WEBER. Mr. Kovacs, would you agree with that?

Mr. KOVACS. Yes.

Mr. WEBER. Dr. Paulson, would you agree with that?

Dr. PAULSON. I don't know enough to comment. I think you're right but I don't know.

Mr. WEBER. Mr. Eisenberg, would you agree with that?

Mr. EISENBERG. I do.

Mr. WEBER. Good. Mr. Eisenberg, you also said that 65 percent of the controls the EPA was mandating were not identifiable. Is that true?

Mr. EISENBERG. Yes. It's EPA term of art. They call them unknown controls. They just——

Mr. WEBER. Okay.

Mr. EISENBERG. —can't tell us what they are.

Mr. WEBER. And Mr. Kovacs, if I remember your testimony, you said that the EPA itself said this was going to be the most expensive regulation in history but that it wouldn't impact states.

Mr. KOVACS. Yes, that's—they have this technical where if it's a mandate, they don't—and the state has to do it, they don't count it as——

Mr. WEBER. So that was your comment, right?

Mr. KOVACS. Yes.

Mr. WEBER. Okay. Good. So let me come back to you, Mr. Kovacs. It's the most expensive regulatory rule in history but it's not going to impact states. Does that sound commonsensical to you, Mr. Kovacs?

Mr. KOVACS. Well, that's been the point of my testimony, that Congress has legislated for years common sense and you haven't gotten it.

Mr. WEBER. So is your answer no, it's not commonsensical?

Mr. KOVACS. It's not common sense.

Mr. WEBER. Mr. Kerr, would you agree that that statement doesn't sound commonsensical? It's the most expensive regulation in history but it won't impact states.

Mr. KERR. I think that's nonsensical.

Mr. WEBER. Dr. Paulson, would you agree with that?

Dr. PAULSON. Sir, I have no idea what the context is so I can't comment.

Mr. WEBER. Mr. Eisenberg, would you agree with that?

Mr. EISENBERG. I would agree.

Mr. WEBER. Mr. Eisenberg, when an energy plant builds a plant—and I had a nuclear plant in my district when I was state rep. When an energy plant—when someone comes in to build an energy plant, permitting and all, the process takes three to five years?

Mr. EISENBERG. If you're lucky.

Mr. WEBER. If we're lucky. Okay. So if it's that hard on us and the EPA is making it harder and harder and harder, and it's billions of dollars, does it surprise you that some of those investors that have that kind of money to invest actually send that money overseas? Does that surprise you?

Mr. EISENBERG. It doesn't at all. Streamlining that process is a priority.

Mr. WEBER. Dr. Paulson, does that surprise you?

Dr. PAULSON. Again, that's beyond my expertise, sir.

Mr. WEBER. It's above your pay level, pay grade?

Dr. PAULSON. I don't use that terminology but it's beyond my expertise.

Mr. WEBER. Mr. Kovacs, does that surprise you?

Mr. KOVACS. No.

Mr. WEBER. Mr. Kerr?

Mr. KERR. I'll say this is—the energy policy is outside my purview.

Mr. WEBER. Okay. You know, when I was a state rep I was on the environmental reg committee in Texas and I came up here to Congress—D.C.—in March of 2010 to an Energy and Environment Committee Meeting, National Conference of State Legislators, NCSL. I heard with my own ears an Under Secretary for the EPA back then say that they wanted to permit farms because of global warming, greenhouse gases, average farm permit $26,500 per farm. Now, they had done the math, and Doctor, I trust you can do math. Okay, good. You didn't seem to want to weigh in on most of the other questions. They had calculated the income stream—now, this is their words, not mine—a revenue stream of $600 million. It turns, you know, that the streams on farms and ranches aren't the only streams the EPA is interested in, okay? Six hundred million dollars. Now, is the EPA really only interested in science when they say they want to permit farms and it produces a revenue stream of $600 million? Does that sound like they're interested in more than science, Mr. Eisenberg?

Mr. EISENBERG. So I don't know that I can effectively answer that one but I mean, they need to find a balance.

Mr. WEBER. They do. They're going to kill our energy supply if we're not careful, and Dr. Paulson, we're going to wind up, poor kids are going to all be broke. They're going to be healthy but we're all going to be broke. That's the danger of losing jobs and sending our energy overseas because China and Mexico and India are not going to follow suit.

So I'm going to stop there. That's my editorial, Mr. Chairman. I appreciate you letting me go over. I yield back.

Chairman SMITH. Thank you, Mr. Weber, and the gentleman from Alabama, Mr. Palmer, is recognized.

Mr. PALMER. Thank you, Mr. Chairman.

I want to start out by addressing air quality, and I have here the air quality section from a report done by the Alabama Policy Institute that shows that since 1980, our GDP has increased by 467 percent, vehicle miles traveled up 94 percent. The population's grown by 38 percent. Energy consumption is up 22 percent. But emissions are down 50 percent. When you look at the air quality index and the percentage of days per year that the air quality index exceeded the standards, we went from about 24 percent in 1980 to about two percent. So there's no question that we have done an excellent job of improving air quality yet the asthma rate has gone up. I think that's been mentioned several times.

I'd also like to point out that there might be other factors that cause asthma rates to have gone up, and for instance, here's a report from UCLA, University of California, Los Angeles, in case anyone wonders what the acronym is. It says asthma disproportionately affects low-income populations, and the percentages are astonishing, frankly, that it would have such a higher prevalence among low-income families when I think—and I'll ask my colleague from California, Mr. Knight, I believe that higher-income families breathe the same air as the low-income families. So, Mr. Chairman, I'd like to enter into the record the article and the section from the report on air quality, and I'll also point out——

Chairman SMITH. Without objection.

[The information appears Appendix II]

Mr. PALMER. Thank you.

As well that there is an estimate on what the ozone—new ozone regulations will cost. I find it interesting, Mr. Kerr, that the EPA seems to think that there's not going to be an impact. Is it possible in your mind just rationally thinking this through that the additional regulations that are being imposed on businesses that are going to result in substantial job losses, that's going to result in less disposable household income, that will result in lower incomes could have a more negative effect on health and well-being of people than any positive effect that additional regulations would impose, considering the improvements that we've made already?

Mr. KERR. I'll have to concede to the others because I don't do air quality consulting.

Mr. PALMER. My question is, do the people who work for the businesses of the United States and earn income do better in terms of health and well-being than people who have no income and no job?

Mr. KERR. Yes, sir, they do.

Mr. PALMER. That's part of what I would consider commonsense policy.

In May of—in a May 29, 2015, interview with PBS News Hour, EPA Administrator Gina McCarthy stated the following: that farmers will know very clearly here we are clearly explaining that irrigation ditches are not included. We have clearly said in the rule beyond this rule adds absolutely no regulatory or permitting issue to agriculture whatsoever. Do you agree with that statement?

Mr. KERR. No, I don't. If I could get a chance to elaborate at some point, I'd like to give you time to ask more questions.

Mr. PALMER. Okay. We'll come back to that as the last opportunity for you to speak.

Mr. Kerr, former EPA Office of Water Deputy Administrator Nancy Stoner previously stated that the rule will not have a negative effect on small businesses. She said the Agency sought early and wide input from small businesses while developing the proposed rule including meetings as far back as 2011. Do you agree with this statement, that the rule will not have a negative impact on small businesses?

Mr. KERR. I disagree with the statement. I've talked to small homebuilders. You know, regulatory creep is already having an effect.

Mr. PALMER. Well, that conclusion is consistent with what the National Federation of Independent Business concluded. They had a Small Business Optimism Index and found that small business owners attributed regulations as the single-most important problem facing businesses today.

So you said that you'd like to elaborate on something. You may do so.

Mr. KERR. Thank you. Well, two parts. When a farmer in Chesapeake is looking to sell his land and needs a wetland delineation done so that the prospective purchaser can determine where they can build, we're walking out into soybean fields and looking at areas that show up as moist signatures on aerial photographs and

looking to see if there might be some wetland plants or stunted vegetation in a crop field, and the Corps of Engineers before this rule are regulating those areas as wetlands. Now, if they're isolated, then the Corps—the federal government does not take jurisdiction; the Commonwealth of Virginia would. If they're adjacent to a ditch that's adjacent to a wetland, all of a sudden they are regulating it. Now, that—that has already crept into the procedure, and I've argued consistently that it shouldn't because Congress went to the Corps back in 1990 and said create what's called a PC cropland, prior converted cropland. They had—there was a regulatory guidance letter the Corps put out, 90–7, that spelled out the procedures for that that exempted agricultural fields as long as they didn't pond or flood for 7 to 14 days. Any portions that did would be considered a farmed wetland and be regulated.

In 1993, the EPA and the Corps put out a rule that said we're codifying regulatory guidance letter 90–7, and you would think, I thought—I'm a consultant. I know 90–7. They said they codified it, which would have perpetuated this exemption for most farm fields that were farmed prior to 1985, don't pond or flood for very long duration and have never been abandoned for more than five years.

With that rule in place, they're now telling me that what that actually means is that they don't recognize the prior converted cropland rule created by the NRCS under the Food Subsidy Act and that the Corps doesn't recognize 90–7 anymore at all anywhere at any time, and I've repeatedly asked the question, and the rule that's just been passed, they simply said we're not changing that because we weren't—that's not part of our charge. They changed adjacency definition and that wasn't part of their charge. I would love to see Congress—to me, there's no confusion. In fact, there's a court in Florida that's already decided this case, which I brought to the Corps' attention, which didn't get any traction, and that judge said you can have two different rules that use the same phrase and they mean two different things because they fall under two federal laws. That's not occurring, and we have farm ditches and farmland being regulated today and it'll continue.

Mr. PALMER. Mr. Chairman, just one last point. I want to point out that Dr. Phillip Lloyd, former U.N. International Panel on Climate Change lead author, found that global temperature change over the last 100 years is well within the natural variability of the last 8,000 years. Standard deviation over the last 8,000 years is .98 degrees Celsius. I want to emphasis point 98——

Chairman SMITH. Thank you——

Mr. PALMER. Over the last years it's been .85 degrees Celsius.

Chairman SMITH. Thank you, Mr. Palmer, and if you would give us a document to put into the record as well.

Mr. Moolenaar, the gentleman from Michigan, is recognized.

Mr. MOOLENAAR. Thank you, Mr. Chairman.

Mr. Kerr, I'd just like to continue following up with you and then also talk to Mr. Kovacs and Mr. Eisenberg on some of the Waters of the United States issues. What in your judgment—there were some court cases. There's the Clean Air Act and there was an effort by the EPA to clarify its jurisdiction. Is that really how we've gotten to this point?

Mr. KERR. Yes. There were a few Supreme Court decisions, SWANCC being one, Rapanos being one of the other two or three major ones. That's correct.

Mr. MOOLENAAR. And so in your judgment, were they trying to solve a policy problem that existed out there where people throughout the country were saying, you know, there's not enough water or—what problem other than the legal issues were they trying to solve?

Mr. KERR. Two real problems. One is the legal question, and there was some ambiguity because of multiple Supreme Court decisions that had to be looked at in the field, and then it became the practical problem of how do you provide guidance to regulatory staff and consultants that's clear, easily understandable and could be consistently applied, not only in an area but across the entire country. So that was the challenge, and they tried to take in science, and in the preamble of the rule, they said those are the three compelling issues they have to deal with—science, policy and law—and they said that science in fact falls short in certain areas, and they've got to reach a policy decision that's consistent with the law.

Mr. MOOLENAAR. And in your judgment, it's gotten actually more complicated. Some of these new definitions, rather than giving clarity, have really expanded their jurisdiction and raised a number of new questions.

Mr. KERR. Yeah, they've kind of moved items around, and so things that were previously one thing like possibly an isolated water that wasn't regulated can become an adjacent water. The other thing is, they did create a bright line but the bright line—and I'm speaking specifically to rule A8, wetlands that show a significant nexus to traditionally navigable waters, allows that to be applied to any feature within 4,000 feet of an ordinary high-water mark or a tributary.

Now, we're not talking about rivers, we're not talking about streams, we're not talking about creeks. Where I come from, there were creaks, then there were smaller ones that were cricks. We're not talking about those. We're way up into the headwaters of ephemeral and intermittent streams and then going 4,000 feet out to determine a significant nexus.

My point is that that includes virtually the entire watershed of virtually every place that I've looked. So they created a bright line but it includes everything.

Mr. MOOLENAAR. So in your judgment, and I wanted to hear from Mr. Kovacs and Mr. Eisenberg, do you view this as a significant expansion of their jurisdiction, of their authority? I mean, is that your conclusion?

Mr. KERR. Yeah, and they've—it's not any clearer. They've expanded jurisdiction into areas that heretofore may not have been regulated or weren't regulated, and the procedures aren't any clearer. They provided some bright lines, and some of those are commendable but others are just—they kind of grab all kinds of things and don't create the simplicity that anyone was looking for.

Mr. MOOLENAAR. Mr. Kovacs, do you view this as a significant expansion of their jurisdiction or authority?

Mr. KOVACS. Well, it certainly is significant expansion of their authority. I think what troubles me the most in this whole argument is not once in all the hundreds of pages that they have did they ever say that the states weren't doing a good job on state waters, which is really remarkable. Second, that they never said that the water quality that was administered by the states was in any way impaired. That's quite remarkable. Under unfunded mandates, they make it very clear that they are imposing no mandates on state and local governments, and in terms of small business they say there's absolutely no impact even though they're greatly enhancing jurisdiction.

This is a shell game, and this is what the whole regulatory process has become, and that's why I keep on pleading, Congress really needs to take more action and get back in the game.

Mr. MOOLENAAR. Let me go to Mr. Eisenberg.

Mr. EISENBERG. So we just finished our annual fly-in. We had 500 manufacturers coming to town. I had dinner two nights ago with about 25 of them to talk specifically about water issues, water scarcity, waters of the United States, things like this, and at the end of the meal I said look, is this—are you guys in a better place because of this regulation, and every single one of them said no. It is still causing them headaches. All we wanted was clarity. Had we gotten clarity, my testimony would have been a lot different today. We didn't get it.

Mr. MOOLENAAR. Thank you, Mr. Chairman.

Chairman SMITH. Thank you, Mr. Moolenaar.

Before we conclude, Dr. Paulson, I was going to mention to you that we contacted the Assistant Director of the Capital Power Plant, and he confirmed that whether it burns natural gas or coal, the smoke is still white, and while I certainly have sympathy for any child who's gotten asthma, you might want to check with the doctor about his statement that whenever the smoke turned black, the asthma became worse. I'm not sure that there's a basis for that. But I look forward to hearing more information about it as well.

Thank you—the gentlewoman from Texas.

Ms. JOHNSON OF TEXAS. Thank you, Mr. Chairman. Let me thank all the witnesses. I want to ask unanimous consent to put an article from the Scientific magazine in the record that speaks to the role of science and rulemaking process.

Chairman SMITH. Without objection.

[The information appears Appendix II]

Chairman SMITH. We thank you all for your testimony today, very helpful, very informative, and we stand adjourned.

[Whereupon, at 11:09 a.m., the Committee was adjourned.]

Appendix I

Answers to Post-Hearing Questions

ANSWERS TO POST-HEARING QUESTIONS

Responses by Mr. Bill Kovacs

QUESTIONS FOR THE RECORD
The Honorable Jim Bridenstine (R-OK)
U.S. House Committee on Science, Space, and Technology

EPA Regulatory Overreach: Impacts on American Competitiveness

Friday, June 19, 2015

Questions for Mr. Bill Kovacs

1. **The GAO released a report on EPA's need to improve procedures to process Congressional requests for scientific advice. Do you think the EPA should immediately ask the Clean Air Scientific Advisory Committee (CASAC) to provide advice on adverse social, economic, or energy effects related to the proposed ozone National Ambient Air Quality Standards (NAAQS), and wait for its findings, before issuing any recommendations to tighten existing standards?**

Yes. Ideally, EPA should ask CASAC to evaluate the adverse social, economic, and energy effects associated with a more stringent ozone NAAQS standard ***before*** any final action is taken by EPA to tighten the standard. EPA should put itself in a better position to evaluate the anticipated adverse impacts of a tightened standard—including threats to electricity grid reliability and economic impacts to smaller communities—before it issues a tougher standard.

EPA certainly needs to ask CASAC for this information before taking any action to classify attainment/nonattainment areas across the country based on a revised standard or implement a revised standard. EPA needs to ensure that a CASAC panel with appropriate expertise reviews social, economic, and energy impact issues before requiring implementation action. The CASAC panel should consider whether the more stringent standard is achievable and feasible, whether individual areas can actually come into attainment, and the magnitude of background levels of ozone from non-anthropogenic and overseas sources.

2. **Do you think that CASAC should be looking at the health impacts of unemployment from job loss resulting from EPA regulations? Isn't this an important public health issue that should be addressed?**

Yes, absolutely. There are numerous U.S. and international studies describing the health impacts from unemployment, including depression, alcoholism/drug abuse, spousal/child abuse and neglect, and suicide. CASAC should evaluate these studies and compare their findings to observed demographic trends in regions that have experienced large, rapid increases in unemployment in recent years (e.g., rural areas in the Pacific Northwest, areas in Eastern Kentucky and West Virginia). In some areas, CASAC is likely to find that adverse health

impacts from job losses far outweigh any presumed health benefits from more stringent air quality requirements.

3. **In your testimony, you discuss how EPA has failed to utilize the Information Quality Act (IQA). This is especially troubling, since EPA regulations are so costly to the average American. According to a NERA study, the ozone proposed rule could be the costliest rule ever. Regarding this proposed ozone rule, did the EPA properly utilize the IQA and have they been selective in their interpretation of IQA? Please explain.**

As I stated in my testimony, the IQA mandates transparency, full disclosure of all data and reports used to justify or formulate an agency's position on a given topic, and full disclosure of all uncertainties or error sources so that a member of the public may evaluate and reproduce the results of an agency analysis or study. The IQA requires agencies to use the best available, peer-reviewed science, studies developed through objective scientific practices, and data collected by accepted methods or best available methods. Agencies must also have a procedure to allow affected persons to "seek and obtain" correction or disclosure of information that fails to meet the Office of Management and Budget's information quality requirements.

In the case of the proposed ozone NAAQS revision, critical information quality issues remain unresolved, which EPA has failed to address. First and foremost, by EPA's own estimates, about **65%** of the costs of attaining a 65 ppb ozone standard are based on wholly **unknown** control technologies. Beyond the question of the quality of EPA's data about control technologies is the much larger problem that the technologies themselves are unknown. How can the public understand and meaningfully comment on critical components of a rulemaking for which there is no data whatsoever?

Beyond this threshold issue, other relevant data quality issues that were raised by stakeholders during the abandoned 2010-2011 effort to tighten the 2008 ozone NAAQS standard have not been resolved. These data quality issues include concerns about the way that health effects studies were selected or discarded, lack of impartiality on the part of researchers, the role of confounding variables, assertions of causation supported only by inadequate data showing weak associations, and monetized health benefit estimates based on wholly subjective factors. All of these issues remain, and EPA has not corrected poor quality data brought to its attention through the IQA petition process.

4. **In your testimony, you discuss how EPA has failed to utilize the Information Quality Act (IQA). This is especially troubling, since EPA regulations are so costly to the average American. According to a NERA study, the ozone proposed rule could be the costliest rule ever. Regarding this proposed ozone rule, did the EPA properly utilize the IQA and have they been selective in their interpretation of IQA? Please explain.**

See answer to Question 3 above.

5. **In your testimony, you describe the lack of EPA's continuous evaluation of employment impacts of its regulations as prescribed by the Clean Air Act. EPA's disregard for Congressional mandated review is particularly troubling in the face of these expensive regulations.**
   a. **Do you believe that EPA is purposefully disregarding its duty to conduct this review?**

While the Chamber does not know EPA's intent, we know that the Senate put the Administrator of the EPA on clear notice of the agency's congressional mandate to implement Section 321(a). Congress in 1977 mandated in every major environmental statute that EPA "continuously evaluate potential loss or shifts in employment" from its regulations in order to gauge the real regulatory impact on individuals and communities. With good intentions, Congress passed broad and remedial environmental laws such as the Clean Air Act. Congress acknowledged that in exchange for allowing environmental standards to be set without regard to cost impacts, the agency must continuously evaluate the overall impact of the growing body of environmental requirements on loss or shifts in employment due to its regulations . In *Whitman v. American Trucking Association*, Justice Scalia, writing for a near-unanimous opinion, observed:[1]

> In particular, the economic cost of implementing a very stringent standard might produce health losses sufficient to offset the health gains achieved in cleaning the air—for example, by closing down whole industries and thereby impoverishing the workers and consumers dependent upon those industries. This is unquestionably true and Congress was unquestionably aware of it.

As part of the 1977 Clean Air Act amendments, Congress enacted Section 321(a) of the Clean Air Act, which mandates EPA to conduct a continuous evaluation of potential job loss and shifts in employment from the agency's air quality rules.[2] EPA has ignored its statutory duty to conduct these employment analyses since 1977. For years, members of Congress and the Chamber have put EPA on notice of its duty to comply with Section 321(a), yet the agency continues to ignore its statutory mandate to conduct employment reviews.

On October 13, 2009, six U.S. Senators wrote to EPA requesting the results of its continuing Section 321(a) evaluation of potential loss or shifts of employment which may result from the suite of regulations addressing greenhouse gases EPA had proposed or finalized.[3] On October 26, 2009, then-EPA Assistant Administrator for Air, Gina McCarthy, responded to the

[1] *Whitman v. Am. Trucking Ass'ns*, 531, U.S. 457, 466 (2001).
[2] Section 321(a) of the Clean Air Act; 42 U.S.C. § 7621
[3] Letter from Senators Vitter, Risch, Johanns, Inhofe, Ensign and Hatch to EPA Administrator Lisa Jackson, October 13, 2009.

six Senators stating "EPA has not interpreted CAA section 321 to require EPA to conduct employment investigations in taking regulatory actions."[4]

In 2013, McCarthy, responding to questions for the record related to her nomination to become Administrator of the EPA, once again echoed her 2009 letter stating:[5]

> CAA section 321 authorizes the Administrator to investigate, report and make recommendations regarding employer or employee allegations that requirements under the Clean Air Act will adversely affect employment. In keeping with Congressional intent, EPA has not interpreted this provision to require EPA to conduct employment investigations in taking regulatory actions. Section 321 was instead intended to protect employees in individual companies by providing a mechanism for EPA to investigate allegations that specific requirements, including enforcement actions, as applied to those individual companies, would result in lay-offs. EPA has found no records indicating that any Administration since 1977 has interpreted section 321 to require job impacts analysis for rulemaking actions....

EPA Administrator McCarthy's interpretation of the supposed Congressional intent that Section 321(a) is merely a discretionary duty is not in line with the House Interstate and Foreign Committee's report which made clear[6]:

> Under [Section 321(a)], the Administrator *is mandated to undertake an ongoing* evaluation of job losses and employment shifts due to requirements of the act. This *is to include* investigations of threatened plant closures or reductions in employment which are alleged to have occurred because of such requirements.

The Chamber has also worked vigorously to hold the EPA accountable to its Section 321(a) mandate. On September 14, 2012, the Chamber issued a FOIA request to EPA requesting all draft, interim final, and final reports as well as evaluations prepared by the agency or its contractors pursuant to Section 321(a).[7] It took EPA nine months to respond that it could not locate any such documents.[8]

A debate that started four decades ago when Congress directly mandated a study of the employment effects of regulations so as to determine the truth of conflicting allegations about whether regulations adversely impact jobs is still unresolved due to the refusal of the agency to conduct such an evaluation. Despite being placed on notice of its statutory mandate to conduct employment reviews under Section 321(a) by members of Congress, EPA continues to promulgate sweeping and costly major rules such as the CPP and stricter ozone standards while

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[4] Letter from EPA Assistant Administrator for Air Gina McCarthy to Senator Inhofe (Oct. 26, 2009) at 2.
[5] *Senator David Vitter, Questions for the Record, Gina McCarthy Confirmation Hearing, Environment and Public Works Committee*, 113th Cong. 17-18 (2013).
[6] H.R. Rep. No. 95-317 (1977). (emphasis added).
[7] Letter from William Kovacs to EPA (Sept. 14, 2012).
[8] Letter from EPA to William Kovacs (June 14, 2013).

denying Congress the vital employment impact information the legislative branch needs to make policy assessments related to the Clean Air Act.

b. What can be done to get EPA to provide us as Congress with this information?

Private parties have engaged in litigation to hold EPA accountable for failing to conduct Section 321(a) reviews. For example, Murray Energy Company has brought suit in federal court seeking declaratory and injunctive relief for EPA's failure to conduct an employment effects review pursuant to Section 321(a) in the context of regulations which are negatively impacting the coal industry. In rejecting the EPA's motion to dismiss the case, the U.S. District Court for the Northern District of West Virginia found that the requirement to perform the "continuing evaluations" was not a discretionary provision that EPA could freely ignore.[9] The court's decision to allow the 321(a) employment impacts case to continue is a critical next step in forcing EPA to own up to the real impacts its regulations have on industries like coal, power generation, brickmakers, foundries, forest products manufacturers, and many others.

6. EPA Administration Gina McCarthy wrote an op-ed stating that the Agency's air standards "attract new business, new investment and new jobs." Do you agree with this statement? This might sound like a good political statement, but is it a correct economic statement?

The Chamber's members do not consider new regulations to be a job creation mechanism. On the contrary, while regulatory compliance may create some new jobs, the jobs lost due to regulation, when fully measured by whole economy modeling, will almost always outweigh those gained. In 2013 the Chamber released a study on regulatory job loss analysis conducted by the EPA.[10] First, it is important to note that EPA rarely performs a comprehensive type of analysis using a whole economy model of jobs impacts in its rulemakings, doing so on only 2 out of 56 cases examined (see chart on page 7). In all other cases EPA performed job loss analysis using only a limited model and a job creation formula clearly inappropriate for most of the rules where EPA used it. Congress tasked the agency to perform ongoing analyses of job displacement in Section 321(a) of the Clean Air Act (CAA) and provide that information to Congress. To date, the agency has never performed its duties under Section 321(a).

Secondly, the Chamber study of job impact analyses, using EPA data, demonstrated exactly why EPA's claims that regulations create jobs are incorrect. In performing job impact analyses the few times it did, EPA used an inappropriate modeling framework, looking only at a

[9] Murray Energy Corp. v. McCarthy, No. 5: 14-CV-39, 2014 U.S. Dist. LEXIS 129196 (N.D. W. Va. Sept. 16, 2014).

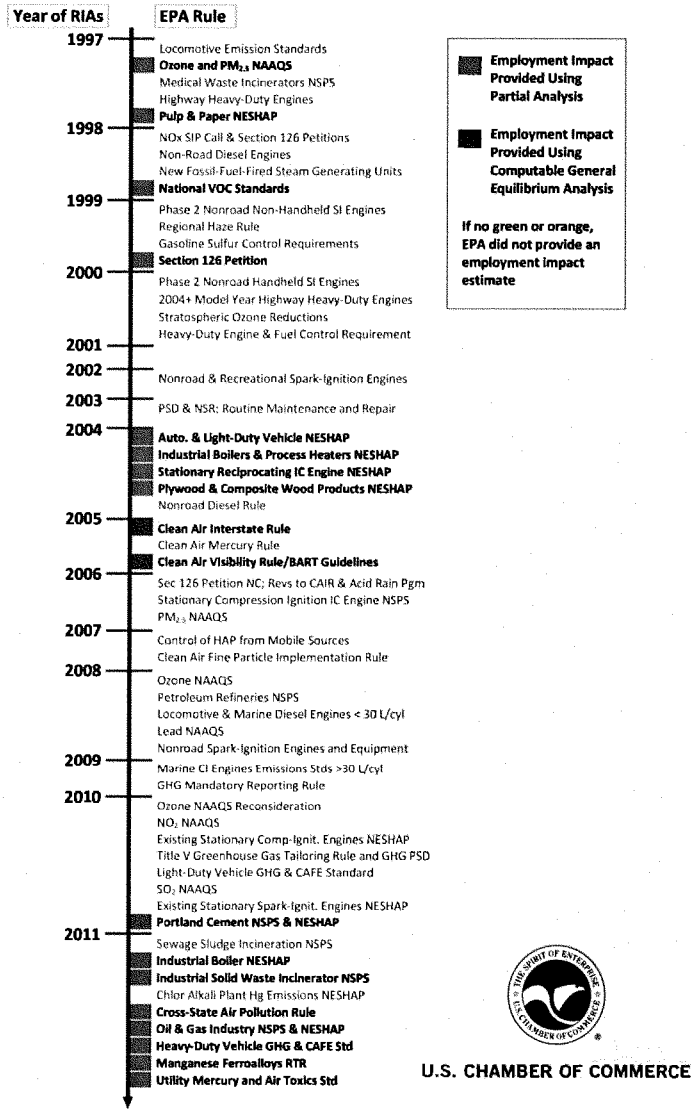
[10] U.S. Chamber of Commerce, *Impacts of Regulations on Employment: Examining EPA's Oft-Repeated Claims that Regulations Create Jobs*, 2013. *See* https://www.uschamber.com/report/impacts-regulations-employment-examining-epa-s-oft-repeated-claims-regulations-create-jobs.

limited sample of impacts and ignoring impacts on other sectors of the economy. This type of model is referred to as a "partial economy model," in contrast with a whole economy model, which attempts to model the entire economy and account for impacts across all industries, such as electric power utilities, the mining of fuel for electricity generation, manufacturing, transportation, and retail and wholesale sales. The benchmark case that the report uses to demonstrate how different the job impact results can be when a more comprehensive and appropriate whole economy model is used estimates job losses from the Mercury and Air Toxics Standard (MATS). EPA estimated that the costly, $10 billion per year rule would create a net 8,000 jobs in 2015, while estimation using a whole economy model that examines all of the impacts of the regulation showed that compliance with the rule would cause 180,000 job losses in 2015.[11]

In light of the vast differences in estimates of regulatory impacts based on which type of model is used, it becomes even more imperative that agency regulatory analysis be held to high standards. All data used in analyses of costs and benefits should be made available to the public for review so that if need be the quality of the data and analysis can be challenged under the provisions of the Information Quality Act.

[11] *Id.* at 29.

Timeline of Air Regulatory Impact Analyses Found to Contain Employment Impact Estimates



7. **How much of the negative impact of environmental policies on economic growth is related to delays in permit approvals and construction versus higher production and manufacturing costs?**

    a. **A recent US Chamber study, Project No Project, found that permit delays can result in hundreds of billions of dollars in lost income. Why is delay so costly?**

Delay is costly because major projects require significant financing, which is typically only available for a limited amount of time. If a project cannot secure its permits, the project's financing usually goes elsewhere, to productive uses. No one has calculated exactly what the costs of delay are to the businesses whose projects languish year after year, tying up valuable capital resources, while producing no returns. The U.S. Chamber of Commerce's 2011 study *Project No Project* found that a sample of 351 energy generation and transmission projects with stalled permits would generate $577 billion in direct investment, add $1.1 trillion to GDP, and create about 1.9 million jobs over the seven year construction timetable typical of these projects. After completion, these projects would add $145 billion to GDP annually and generate 791,000 jobs.[12] Interestingly, nearly half of the stalled projects were renewable energy projects, mostly wind. The EPA's Clean Power Plan (CPP) regulation, designed to retire coal-powered electric generation and replace it with gas and renewable sources, relies on numerous new generation projects being undertaken in the coming years. In the current permitting environment, this would be nearly impossible and add significant costs to each of these projects.

    b. **How do environmental regulations, such as MATS, WOTUS and ozone cause delays?**

When federal regulatory agencies like the EPA estimate the cost of a new regulation, they are estimating the compliance cost of achieving exactly, and only, what the rule prescribes as necessary actions to mitigate pollution emissions. These costs include the higher production and manufacturing costs brought about by the need to install new equipment or change manufacturing processes, but not the permitting costs or the delays caused by the permitting process. When businesses choose to undertake large investment projects, such as a new electric power generation facility, they must budget the cost of that expansion into their plans. Once the decision is made to move forward with a project, the capital flows required to finance it are tied up and cannot be used for other projects. Thus, because project delays due to the permitting process effectively freeze the project development process, each stalled project represents capital that has been taken out of the economy and left on the sidelines. If the project was allowed to go forward, the investment expenditure of the project would be counted in GDP, and jobs would be

[12] U.S. Chamber of Commerce, *Project No Project Progress Denied: A Study on the Potential Economic Impact of Permitting Challenges Facing Proposed Energy Projects*, 2011.

created that paid workers who would also increase their expenditures and contribute to GDP. Project delays are the equivalent of a penalty box for investment capital, taken out of circulation rather than contributing to the economy.

c. What effect can uncertainty have on the capital investment necessary to expand the economy?

The costs of project delays are missing from the cost-benefit calculations of regulations, and as such they are one source of business complaints that cost-benefit analyses consistently underestimate the true costs of regulations. Agencies like the EPA maintain that the permitting process is separate from the regulations being promulgated, and as such the costs of permits should not be considered as regulatory burdens in a rule's cost-benefit analysis. However, this is incorrect. The WOTUS rule, for instance, increases the number of permits that will be required under the CWA dramatically. This increases the number of project delays caused by the new necessary permits. In its economic analysis, EPA estimated the costs of the WOTUS rule simply by looking at the paperwork burden of the permitting process and considering some project mitigation costs. It is likely that the cost to businesses of project delays, many of which drag on for years, will be far greater than the cost of obtaining additional permits. The same is true of the Ozone NAAQS rule, which will make it significantly harder for businesses to obtain permits in ozone non-attainment areas, which will expand dramatically when EPA lowers the standard.

8. Some of the studies cited by EPA in claiming minimal impacts on employment assume workers from one industry can simply relocate and almost instantaneously acquire the necessary skills for another industry. What are they so-called frictions on the movement of labor in the economy that undermine these claims of no-effect on employment?

EPA routinely assumes that regulations create jobs, and that workers displaced by its costly regulations can easily adjust. However, adjustment is seldom easy for displaced workers. When, for instance, a manufacturing plant shuts down, the workers who relied on those jobs are often out of work for extended periods of time, and seldom ever regain employment at the compensation they enjoyed in manufacturing. This happens for two reasons. First, often these manufacturing jobs are located in small communities that, once a plant shuts down, have no equivalent jobs to replace those lost.

Second, there is a significant mismatch of needed skills between the manufacturing workers and those in the industries EPA trumpets as sources of regulatory job creation. Most of the newly-created jobs are in regulatory compliance industries, such as environmental engineers and attorneys, in industries that build or install pollution control equipment, or in industries that rely on heavy government subsidies to operate. Either way, the skills required are in most cases significantly different than those needed by a factory worker.

As a consequence, older manufacturing workers who lose their jobs typically have a difficult time finding employment with equivalent salary ranges and benefits. For instance, according to the Bureau of Labor Statistics' Displaced Worker Survey, as of January 2012, workers aged 60 or more that were displaced from employment between 2009 and 2011 and were able to find new jobs earned more than 20% less than they did in their previous job.[13]

In 2013, in testimony before the Joint Economic Committee, Michael Greenstone, formerly on President Obama's Council of Economic Advisors, summarized the results of his academic work on the topic of job loss due to regulation. "Some of my recent research finds that an important set of Clean Air Act rules has raised polluting industries' costs of production by roughly 2.6%," he said. "This has reduced firms' profits and led to higher prices for consumers. Further, it has caused regulated firms to scale back their operations, which led to employment losses at those firms."[14] Additionally, Reed Walker studied the impact of the Clean Air Act on unemployment.[15] Workers in newly regulated plants experienced more than $9 billion in foregone earnings for the years after the change in policy. Most of these impacts are driven by non-employment and lower earnings in future employment, while the compensation of workers who remain with their firm did not change. Clearly, the data shows that regulations destroy jobs, not create them, and that workers who lose their job due to regulation suffer from that loss for the remainder of their working lives.

[13] U.S. Chamber of Commerce, *Impacts of Regulations on Employment: Examining EPA's Oft-Repeated Claims that Regulations Create Jobs*, 2013. *See* https://www.uschamber.com/report/impacts-regulations-employment-examining-epa-s-oft-repeated-claims-regulations-create-jobs.

[14] Michael Greenstone. June 26, 2013. Hearing: Eliminating Unnecessary Red Tape through Smarter Regulation. Joint Economic Committee. U.S. Congress.

[15] Reed Walker. 2012. The Transitional Costs of Sectoral Reallocation: Evidence from the Clean Air Act and the Workforce. US Census Bureau Center for Economic Studies Paper No. CES-WP- 12-02. Available at SSRN: http://ssrn.com/abstract=2000069 or http://dx.doi.org/10.2139/ssrn.2000069

QUESTIONS FOR THE RECORD
The Honorable Brian Babin (R-TX)
U.S. House Committee on Science, Space, and Technology

EPA Regulatory Overreach: Impacts on American Competitiveness

Friday, June 19, 2015

Questions for Mr. Bill Kovacs

1. **EPA estimates, rather conservatively, that is proposed ozone rule will impose an annual cost of between $4.7 and $16.6 billion in 2025. However, in producing these estimates, EPA excludes the cost of meeting the current 2008 standard. Isn't it true that many areas are still struggling to meet the 2008 standards, and that the expected cost of meeting this standard is likely to be billions?**

It is in fact true that there are still several areas in the country that are trying to meet the 2008 ozone National Ambient Air Quality Standard (NAAQS), and some are still working to attain the 1997 ozone standard. With respect to the 2008 ozone NAAQS, the EPA only issued the final implementation guidelines for the standard in February of this year. Additionally, the EPA delayed making designations for the 2008 ozone NAAQS until 2012, while it made a failed attempt in 2010 to reconsider the 2008 standard.

All of these delays mean that many states are still trying to implement the 2008 ozone NAAQS – an important reason why the EPA should retain the current standard and hold off on making any revisions to lower the standard. For what still needs to be done to meet the 2008 ozone NAAQS, there almost certainly will be a significant amount of costs for states, businesses, consumers, etc. Most, if not all, of the "low-hanging fruit" controls – which typically are less expensive – have been implemented already, so what is left will be particularly costly, disruptive, burdensome and in some instances the applicable technologies are unknown.

   a. **Would you agree that the true unrealized cost of meeting EPA's proposed ozone standards is actually much higher that the estimate EPA provides?**

Yes, it is important to note that the EPA's annual cost estimate for the proposed ozone rule – between $4.7 and $16.6 billion in 2025 – does not capture the reality of the costs of tightening the standard. Specifically, it only looks at the costs in 2025, failing to capture the costs that will be incurred in the next decade. That number also excludes any of the costs of other regulations, such as the Clean Power Plan, the Utility MACT rule, and fuel efficiency standards for mobile sources – all of which the EPA is counting on being implemented and reducing emissions in order to limit the number of counties that will be in nonattainment in 2025.

Additionally, in terms of a compliance path for the proposed 65 ppb ozone standard, the EPA has been able to identify only 35% of the control technologies needed to meet the standard. That means that nearly 65% of the technologies that will be needed to meet a 65 ppb ozone standard do not currently exist, or are "unknown controls." In looking at costs, the EPA assigned a flat value of $15,000 per ton for these unknown controls, and applied that amount across the board. This approach is unrealistic for a couple of reasons. First, many of the "known controls" for ozone do not cost much less than $15,000 per ton in terms of emissions reductions, so it only makes sense that technologies that do not currently exist are going to exceed $15,000 per ton. Second, control technologies typically get more expensive as more reductions are required so the EPA's assumption of a flat per ton value for unknown controls is improbable and unworkable.

2. **By estimating annual costs in only one year, 2025, EPA also appears to be underestimating the true costs cities and states will feel in the first ten years of the program. For instance, instead of just nine counties projected to be out of attainment in 2025, EPA acknowledges that close to 350 counties will fail to meet at 70 ppb standard based on current air quality data. What will happen to most of these counties when the new standard is issued?**
    a. **Won't many of these counties likely be classified as nonattainment in 2017 or 2018 and forced to install controls?**
    b. **Wouldn't you expect the annual costs in these earlier years to be much higher than EPA estimates for 2025?**

When the new standard is issued, EPA will use emissions monitoring data for ozone to determine which counties are not in attainment. This non-attainment determination may happen as early as 2017, but will certainly happen during the 2017-2025 time period for virtually all counties. This means that any counties that are able to come into attainment between 2017 and 2025 will have costs that were never estimated by EPA. It is therefore likely that the costs in the earlier years, 2017-2025, will be higher than those EPA estimates in 2025.

However, the early attainment counties are most likely not the most significant error in EPA's estimate of the costs of the proposed Ozone NAAQS rule. The counties that are able to come into attainment over the 2017-2025 period are likely to be the marginal cases that will have an easier time reaching the new standard, and therefore will likely have lower costs. The more difficult cases involve counties that are not yet even in compliance with the 2008 standard. EPA did not actually estimate the costs of controlling the emissions of the pollutants that contribute to ozone for many of the counties farthest from attainment because it did not know how they would achieve attainment. These "unknown controls" account for as much as 65% of the total costs of the ozone standard, and EPA estimated these costs by assuming that they would be more or less the same as the costs for the controls that they did know would be needed and that they could model.

However, this is almost certainly incorrect, as the unknown controls are very likely to be significantly more costly. NERA economic consulting estimated that at a standard of 65 ppb, the Ozone NAAQS would reduce GDP by about $140 billion each year from 2017 through 2040, and cost about 1.4 million jobs.[16] Much of the reason NERA's estimate is significantly higher than EPA's is because they attempted to model the "unknown controls" and discovered that they are vastly more costly than the known controls.

3. **One research study (Greenstone 2002) found job losses of 590,000 in nonattainment areas due to the NAAQS program from 1972 to 1987. While many of these jobs may have migrated over time to attainment areas, the large number of new nonattainment designations expected at 70 and 65 ppb suggests that more jobs may go overseas. Do you agree?**

The Chamber agrees that the proposed Ozone NAAQS rule, which drops the standard from 75 ppb to a range of 65 to 70 ppb, will cost jobs and prevent new investment in areas designated as being in non-attainment. The study by Greenstone singles out the Ozone NAAQS regulations as being especially costly in the area of job losses. However, the study estimating 590,000 lost jobs from 1972 to 1987 surely underestimates the magnitude of the problem. Since the end date of the study period, the ozone standard has been dropped twice, with the proposed rule marking the third time the standard was lowered. It is more than likely that as the standard drops further and further, the number of jobs lost from each new rule is even greater than those previous standard reductions, as the new standards vastly expand the number of non-attainment areas. Each area newly classified in non-attainment with the more stringent ozone standard will have a far more difficult time attracting or retaining industries, permitting existing businesses to modify and expand, and finding ways to further reduce the individual air pollutants that combine in the atmosphere to form ozone when they react to sunlight.

NERA Economic Consulting estimates that if EPA sets the new standard at 65ppb, the U.S. economy would have 1.4 million fewer jobs each year from 2017 through 2040 than if the standard were kept at the current 75 ppb, set in 2008.

[16] NERA Economic Consulting, *Economic Impacts of a 65 ppb National Ambient Air Quality Standard for Ozone*, Feb. 2015.

QUESTIONS FOR THE RECORD
The Honorable Gary Palmer (R-AL)
U.S. House Committee on Science, Space, and Technology

EPA Regulatory Overreach: Impacts on American Competitiveness

Friday, June 19, 2015

Questions for Bill Kovacs

1. **The second building block of EPA's proposed CPP rule assumes that the power from coal plants can be re-dispatched to existing and/or new gas-fired power plants. However, EPA's proposed ozone standards may make it harder for new gas plants to be built (or existing plants to be modified) in both attainment and nonattainment areas. Can you explain why?**
    a. **Won't new gas plants in attainment areas have to show that the plant's emissions will not contribute to a NAAQS violation – something that may become very hard to show as EPA lowers the existing standard to near background levels?**
    b. **As far as you know, did EPA consider this fact in developing the CPP or did the Agency just assume that all of these gas plants would magically appear when needed?**

Yes, it is likely that the Ozone NAAQS revised standards will increase the difficulty of compliance with the CPP. Because the designation of attainment and non-attainment areas must be done using current emissions monitoring data, EPA will be forced to designate areas' emissions reduction requirements based on emissions data that is virtually certain to change significantly in the very near future. In writing the Ozone NAAQS standard, EPA chose to include in its cost estimate the overall reductions in emissions that would result from the CPP. However, it did not estimate how the massive coal plant retirements (EPA predicts 49,000 megawatts of coal-fired generation will be retired due to the CPP) and subsequent necessary construction of natural gas and renewable plants would affect the map of criteria pollutant emissions.

This reshuffling will make it extremely difficult for states to properly model their ozone reduction efforts. The Ozone NAAQS standard will also make the job of obtaining preconstruction permits for new power plants under Section 165 of the Clean Air Act much more difficult and costly, because more areas will either be classified in non-attainment—thus requiring costly offsets (if they are available)—or the area will be much closer to non-attainment. More extensive modeling and air monitoring will be required to show that a new project made necessary by the CPP can be built, adding significantly to the cost and delays for each project.

In actuality, EPA's lack of accounting for potential emissions reshuffling under the combination of the CPP and Ozone NAAQS highlights a major problem with EPA's overall strategy. When the WOTUS rule, which will also affect permitting for new electric power generation project construction under the CPP, is added into the mix, EPA is concurrently undertaking three major rulemakings that will almost certainly conflict with one another and make compliance in many cases exceedingly difficult. E.O. 12,866 requires agencies to consider impacts from conflicts with other regulations, and EPA ignored this requirement in all three of its rulemakings.

2. **In estimating the total cost of the lower ozone standard, EPA assumed that the CPP would be fully implemented despite the many significant legal issues that have been raised with this rule. If the CPP is overturned in the Courts, what impact will this have on the costs of EPA's proposed ozone standard?**

The costs would massively increase if the CPP is overturned in the courts. EPA's Regulatory Impact Analysis (RIA) for the Ozone NAAQS establishes a baseline for estimating the incremental costs of the rule that includes reductions in coal-fired electric power generation from both the Mercury and Air Toxics Standard (MATS) rule and the CPP rule. For instance, when EPA proposed and ultimately withdrew ozone standards of 65 to 70 ppb in 2011, it estimated compliance costs for the 65 ppb standard at $33 to $45.4 billion annually.[17] In the 2014 proposal EPA had reduced the cost to $15 billion annually for the 65 ppb standard. The difference between the two estimates represents the reduction in costs due to the assumption that both MATS and CPP will be fully implemented, and that the reduction in coal-fired electric power generation mandated by those two rules will cut the costs of ozone compliance by more than fifty percent. If the CPP is struck down by the courts, and the 49,000 megawatts of coal-fired generation that rule seeks to retire is kept online, the costs of the ozone NAAQS will increase significantly.

[17] These figures are presented in 2011 dollars in order to facilitate comparison to the estimates in the 2014 Ozone NAAQS proposal, also presented in 2011 dollars. The original 2006 dollars estimates in the 2011 ozone NAAQS proposal were $32 to $44 billion for the 65 ppb standard.

QUESTIONS FOR THE RECORD
The Honorable Bruce Westerman (R-AR)
U.S. House Committee on Science, Space, and Technology

EPA Regulatory Overreach: Impacts on American Competitiveness

Friday, June 19, 2015

Questions for Mr. Bill Kovacs

1. **Last week, the Commerce Department announced that the US economy contracted by 0.7 percent in the first quarter of this year, suggesting that the economy is faltering, despite a $300 billion stimulus from the recent fall in energy prices. Do you think excessive regulation is one reason for this faltering growth?**

    a. **Broadly speaking, what are the general reasons regulations can slow economic growth and capital investment?**

Regulations are one reason why economic growth can be slowed. Generally, regulations raise the cost of investing capital in new projects. Major high-impact regulations increase the cost of new projects because they require costly capital investments that produce no returns. Additionally, costly delays due to lengthy environmental permitting also make businesses less likely to invest in new projects. The Chamber study *Project No Project* found that a sample of 351 energy generation and transmission projects with stalled permits would generate $577 billion in direct investment, add $1.1 trillion to GDP, and create about 1.9 million jobs over the typical seven year construction period typical of these projects. After completion, these projects would add $145 billion to GDP annually and generate 791,000 jobs.[18]

    b. **How important are EPA regulations in slowing potential economic growth?**

EPA regulations are the most significant driver of overall regulatory costs from federal regulatory agencies. The reason is that high-cost, high-impact rules are the main driver of regulatory burden, and the EPA leads the field in enacting these regulations. In our study entitled *Charting Federal Costs and Benefits*, we found that between 2000 and 2013 executive branch regulatory agencies produced 30 regulations that each cost over $1 billion annually. EPA produced 17 of the 30 rules, and its rules accounted for 82.5% of the total $109.4 billion in annual costs these 30 rules imposed on the U.S. economy. That's over $100 billion in lost investment each and every year that could have grown the economy and created jobs.

[18] U.S. Chamber of Commerce, *Project No Project Progress Denied: A Study on the Potential Economic Impact of Permitting Challenges Facing Proposed Energy Projects*, 2011.

2. **Researchers have also found that environmental policies can negatively affect wages and employment (NERA studies of MATS, Boiler MACT, and RFF). As you know, the US has been suffering from wage stagnation, particularly for middle and low income wage earners. Do you agree environmental policies are contributing to this wage stagnation? Can you explain why?**

It is unclear what part regulations might play in wage stagnation at the national level. However, we do know that environmental regulations have a deleterious effect on the incomes of those workers who lose their job due to EPA regulations. Michael Greenstone, a former Obama administration appointee, investigated the impact of the Clean Air Act on employment.[19] From 1972 to 1987, counties located in nonattainment areas lost nearly 590,000 jobs compared to counties located in attainment areas. Affected companies reduced output by some $105 billion and invested less, resulting in a loss of capital stock of roughly $52 billion.

Using detailed production data from nearly 1.2 million plant observations drawn from the 1972-1993 Annual Survey of Manufactures, Greenstone, John List, and Chad Syverson estimated the effects of air quality regulations on the productivity of the manufacturing sector.[20] They concluded that regulations governing ozone have particularly large negative effects on productivity, though effects are also evident among emitters of particulates and sulfur dioxide. They estimated a decline in total factor productivity (TFP) for regulated facilities, which corresponded to an annual economic cost of roughly $21 billion, which represented **nearly nine percent** of manufacturing sector profits during this period.

The impact of the Clean Air Act extends to other countries as well, suggesting that multinational firms escape some US regulation by shifting production to other countries where regulation is less costly. Rema Hanna estimated that US-based multinational firms increased their foreign production by 9% and their foreign assets by 5% in response to tougher regulation under the Clean Air Act Amendments of 1990.[21]

Last year, in testimony before the Joint Economic Committee, Greenstone summarized the results of his academic work on this topic. "Some of my recent research finds that an important set of Clean Air Act rules has raised polluting industries' costs of production by roughly 2.6%," he said. "This has reduced firms' profits and led to higher prices for consumers.

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[19] Michael Greenstone. 2002. The impacts of environmental regulations on industrial activity: evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures. *Journal of Political Economy*. 110(6): 1175–219.

[20] Michael Greenstone, John A. List, and Chad Syverson. 2012. The effects of environmental regulation on the competitiveness of U.S. manufacturing. NBER Working Paper 18392. MIT Department of Economics Working Paper No. 12-24.

[21] R. Hanna. 2010. US environmental regulation and FDI: evidence from a panel of US-based multinational firms. *American Economic Journal: Applied Economics*, 2(3): 158-189.

Further, it has caused regulated firms to scale back their operations, which led to employment losses at those firms." [22]

This last point, about the devastating effect regulatory-induced unemployment has on workers, has also been the subject of economic research. For example, Reed Walker studied the impact of the Clean Air Act on unemployment.[23] Workers in newly regulated plants experienced more than $9 billion in foregone earnings for the years after the change in policy. Most of these impacts are driven by non-employment and lower earnings in future employment, while the compensation of workers who remain with their firm did not change.

In another study, Walker followed displaced workers over time using confidential data from the Longitudinal Employer Household Dynamics (LEHD) data set from the U.S. Census Bureau.[24] He found that following a non-attainment designation, "the average worker in a newly regulated plant experiences a present discounted **earnings loss of 20% compared to their pre-regulatory earnings**. In the aggregate, this equates to almost $5.4 billion in forgone earnings."

[22] Michael Greenstone. June 26, 2013. Hearing: Eliminating Unnecessary Red Tape through Smarter Regulation. Joint Economic Committee. U.S. Congress.

[23] Reed Walker. 2012. The Transitional Costs of Sectoral Reallocation: Evidence from the Clean Air Act and the Workforce. US Census Bureau Center for Economic Studies Paper No. CES-WP- 12-02. Available at SSRN: http://ssrn.com/abstract=2000069 or http://dx.doi.org/10.2139/ssrn.2000069

[24] W. R. Walker. The transitional costs of sectoral reallocation: evidence from the Clean Air Act and the workforce, *The Quarterly Journal of Economics*, 1787-1835. Available at: http://faculty.haas.berkeley.edu/rwalker/research/walker_transitional_costs_CAA.pdf.

Responses by Dr. Jerome A. Paulson

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

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July 1, 2015

The Honorable Lamar Smith
Chairman
U.S. House Committee on
Science, Space, and Technology
2321 Rayburn House Office Building
Washington, DC 20515

The Honorable Eddie Bernice Johnson
Ranking Member
U.S. House Committee on
Science, Space, and Technology
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Smith and Ranking Member Johnson:

On behalf of the American Academy of Pediatrics (AAP), a non-profit professional organization of 64,000 primary care pediatricians, pediatric medical sub-specialists, and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents, and young adults, I am writing to provide responses to your Questions for the Record from the June 4 hearing *EPA Regulatory Overreach: Impacts on American Competitiveness.*

Questions for the Record to Dr. Jerome Paulson, Chair, American Academy of Pediatrics
Council on Environmental Health Executive Committee
Questions submitted by Ranking Member Eddie Bernice Johnson

1.Asthma is a complex disease that impacts millions of people across a diverse socio-economic spectrum. During the hearing, one of my colleagues referenced the World Health Organization and its description of the causes of asthma. Contrary to what was said in the hearing, the WHO does not rank the factors that contribute to asthma, but instead states, "The strongest risk factors for developing asthma are a combination of genetic predisposition with environmental exposure to inhaled substances and particles that may provoke allergic reactions or irritate the airways." Furthermore, indoor and outdoor allergens, tobacco smoke, chemical irritants, and air pollution, are listed as examples, among other triggers.

A: Please clarify the role air pollution plays iu causing or exacerbating asthma in children.

Outdoor air pollution is linked to respiratory problems in children, including decreased lung function, coughing, wheezing, more frequent respiratory illness, and asthma exacerbation.[1] Children bear the burden of negative health outcomes resulting from exposure to pollutants across their lifespan. For example, some of the increases in the prevalence of chronic obstructive lung disease in adults who live in more polluted areas could be the result of exposures that occurred during

childhood. Particulate pollution has also been linked to low-birth weight, preterm birth, and infant mortality in children, and increased cardiovascular diseases in adults.[ii] Such effects compound over time, contributing significant negative economic effects in the lives of children and their families, as well as to the national economy.

1B: How does air pollution relate to other factors that cause or exacerbate asthma in children?

All aspects of the environment have especially profound effects on children's health. Children have more exposure to air pollution than adults; they breathe at a faster rate than adults, have higher levels of physical activity, and spend more time outdoors[iii]. Children's lungs also continue to grow until they reach their adult height. This increased exposure and ongoing lung development mean that children have different outcomes from these exposures than adults, with lifelong effects[iv].

Outdoor air pollution is one of many significant factors that can cause or exacerbate asthma in children, including genetics, allergens, indoor air pollutants, smoke, and infections. Outdoor air pollution is a major contributory factor, and the work of the EPA is essential to protecting children from pollutants and ensuring that children have an optimal environment in which to live, learn, and play. For these reasons, the AAP is a strong supporter of the Clean Air Act and the EPA's work under it to protect children from the negative health effects of carbon and ozone pollution.

2. There is evidence that seems to suggest that lower-income and minority populations are disproportionately impacted by poor air quality. Other vulnerable populations, such as children and the elderly, are also at risk of developing chronic illnesses as a result of a changing climate and poor air quality.

A: Do carbon and ozone pollution disproportionately impact minority and poor children? If so, how?

According to the World Health Organization, over 80 percent of the current health burden from the changing climate is on children younger than five years old[v]. These outcomes include injury and death from natural disasters, increases in climate-sensitive infectious diseases, increases in air-pollution related illness and more heat-related, potentially fatal, illness. Additionally, global climate change will contribute to reductions in food availability as land and ocean food productivity patterns shift and species diversity declines[vi]. Water availability will also change, with increases in some regions that could result in flooding and decreases in others that could result in drought[vii].

On high ozone days, many affected children are forced to stay home or to see their pediatrician, missing school or other recreational activities. Their parents are also forced to miss work, which puts a significant economic strain on low- and middle-income families and on the economy as a whole. In their research, Drs. Trasande and Liu concluded that the best estimate of childhood asthma costs in 2008 that could be associated with environmental factors was $2.2 billion (sensitivity analysis: $728 million– $2.5 billion).[viii] Minority and low-income children bear a disproportionate burden from both carbon and ozone pollution in a variety of ways, including differential exposure, pre-existing health disparities, and barriers to accessing health services to address the health effects of these pollutants.[ix]

2B: Can you elaborate on studies that have shown that children's health has improved when ozone levels have come down, or how their health is harmed when ozone levels go up?

With long-term exposure to ozone pollution, children can experience permanent scarring of their lungs. For children who already have asthma, the health consequences of ozone pollution are even more pronounced than in children without asthma, often requiring trips to the emergency room or intensive care unit for treatment. Simply put, continuing to pollute the air as we are now is not without costs to American families, in the form of diminished health, lost productivity for parents, and lost education time for children. By preventing worse air pollution in the future, we will reap dividends in our children's future.

The current review of the ozone standard is the first to consider new scientific evidence since 2006. Since 2006, much more evidence has accumulated that ozone exposures in the range of 60 to 75 ppb have adverse physiologic effects across the entire age spectrum---from infants to older adults. Highlights of this new body of evidence include a study of emergency department visits among children aged 0 to 4 in Atlanta, which found that each 30 ppb increase in the 3-day average of ozone was associated with an 8% higher risk of pneumonia and a 4% higher risk for upper respiratory infection.[x] Several studies have demonstrated dose-response relationships between ozone exposure and childhood asthma admissions at exposure levels in the 60 to 80 ppb range.[xi,xii,xiii,xiv]

3. As you know, the Clean Air Scientific Advisory Committee has recommended to the EPA that they set the ozone standard within the range of 70 to 60 parts per billion. The EPA is currently proposing a standard between 70 to 65 parts per billion which falls into the recommended range. However, the Clean Air Scientific Advisory Committee has expressed concern based on the available scientific evidence that a level of 70 parts per billion may not meet the statutory requirement of protecting public health within an adequate margin of safety.

A: Why do you believe that a 60 parts per billion ozone standard is necessary to protect the public health?

In 2007, 2010, and now again in 2015, the medical community has recommended that the EPA adopt an 8-hour ozone NAAQS of 60 ppb in order to adequately protect public health[xv,xvi]. While the recommended standard endorsed by the physician community has not changed during this time, the scientific evidence supporting this recommendation has only gotten stronger. The scientific evidence available eight years ago justifying this recommendation has been supplemented by an even greater understanding of health effects of ozone exposures, including infant respiratory problems, worse childhood asthma control, reduced lung function, and increased mortality in adults.

Thank you again for the opportunity to testify on the important child health benefits of EPA's public health regulatory work. If the AAP can be of any further assistance, please do not hesitate to contact Ami Gadhia in our Washington, D.C. office at 202/347-8600 or agadhia@aap.org.

Sincerely,

Jerome A. Paulson, MD, FAAP
JAP/zml

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Responses by Mr. Ross Eisenberg

RESPONSES TO QUESTIONS FOR THE RECORD

ROSS EISENBERG, NATIONAL ASSOCIATION OF MANUFACTURERS

SENATE COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY
HEARING ON EPA REGULATORY OVERREACH: IMPACTS ON AMERICAN COMPETITIVENESS

JULY 6, 2015

Questions from Rep. Jim Bridenstine (R-OK)

1. **EPA Administrator Gina McCarthy wrote an op-ed stating that the Agency's air standards "attract new business, new investment and new jobs." Do you agree with this statement? This might sound like a good political statement, but is it a correct economic statement?**

This statement focuses only on the small number of jobs created, not net jobs, which, in the case of ozone, are negative. Certainly any new regulation that mandates new controls will create a small number of jobs in the development and installation of those controls. However, those jobs must be weighed against the jobs lost from implementation of the regulation as well. In the case of the upcoming ozone standards, our analysis did look at the *net* jobs—i.e., jobs created weighed against jobs lost—and still came out resoundingly negative. The NAM/NERA study's estimates of what a 65 parts per billion (ppb) ozone standard would cost ($140 billion, 1.4 less job-equivalents annually) include the jobs and economic activity created by the new standards, which are dwarfed by the rule's negative economic impacts.

2. **The upcoming ozone rule and the CPP will have their greatest impact on emission producing industries. However, many economists argue that other industries will also suffer as the higher cost of capital and materials ripples through the economy. Do you agree?**

    a. **Can you explain why so called "clean" as well as "emitting" sectors of the economy are often negatively impacted?**

This question highlights one of the longtime challenges with the way the EPA performs its economic analysis: the Agency routinely declines to examine the macroeconomic impact of its regulations. This is particularly important for regulations like ozone and greenhouse gases, which are essentially regulations on energy. When the price of energy goes up, the price of everything else goes up too. However, the EPA does not measure this impact.

If a manufacturer does not have a boiler but instead obtains its electricity from the grid—thereby making it more "clean" than a manufacturer with direct emissions—the EPA's analysis generally would not consider the impacts on that manufacturer (because it is not directly regulated). However, the manufacturer's costs would absolutely go up if the local power plant is forced to increase its rates, or if the chemicals, plastics, iron or steel it uses increase in price because of the regulations on the manufacture of those products. The NAM believes the EPA can and should use whole economy modeling to cure some of the defects that have eroded the regulated community's trust in its ability to conduct credible benefit-cost analysis.

Questions from Rep. Brian Babin (R-TX)

1. **Although EPA estimates that only nine counties outside of California will fail to meet a 70 ppb standard in 2025, the Agency also shows that an extensive program will be necessary to help bring these nine programs into attainment. For instance, EPA's RIA shows that to help these nine counties reach attainment, controls are required in close to 500 counties. Can you explain why so many counties may be required to install controls just to help nine counties reach attainment?**

By lowering the ozone standard now, the EPA would accelerate what is required of states, manufacturers and other businesses in order to meet stricter targets sooner. That means real additional costs and permitting challenges that are incurred almost immediately, and certainly well before 2025. When EPA finalizes the standard this fall, manufacturers will be required from that day forward to show attainment with the tighter limits in order to get permits for new construction or major modifications to their facilities. If they cannot build, that's a real problem manufacturers will face now, not ten years from now. Similarly, under the current schedule, county-level attainment designations would be made for the new standard in 2017, sending far more than nine counties into nonattainment. Strict new transportation conformity requirements will make it difficult for states to plan and budget for new roads—a major problem state Departments of Transportation have raised with EPA. Taken together, states will feel real economic harm in the years leading up to 2025. These pre-2025 costs are not included in EPA's analysis, which instead focuses on a singular year, a decade away from today.

   a. **What does it tell us about the stringency of EPA's proposed standard?**

The EPA's analysis and manufacturers' own experience with ozone NAAQS has shown that challenges with a tighter ozone standard extend well beyond counties designated as nonattainment. While often the most severe and costly impacts are felt in nonattainment areas, the loss of flexibility, additional regulatory requirements and general increase in operating costs attributable to a tighter ozone standard will be felt by manufacturers in attainment counties and nonattainment counties alike. The NERA Economic Consulting February 2015 ozone report referenced in my testimony, and indeed EPA's own analysis, show that the traditional strategies for lowering ozone levels simply do not exist at lower standards in many parts of the country. Thus, to meet a significantly lower standard, industries that emit small amounts of ozone precursors and states and counties with low ozone levels will likely be targeted for additional regulations and emission reductions.

   b. **Does it suggest that EPA is getting close to background ozone levels due to the fact that EPA must apply controls in close to 500 counties to help just nine counties?**

There is no question that we are approaching background levels in many parts of the country with EPA's proposed tighter ozone standards. As highlighted recently by 16 Members of the U.S. House of Representatives from districts in western states, EPA acknowledged in its regulatory impact analysis (RIA) for the new ozone rule that 70 to 80 percent of the total seasonal mean ozone in locations within the intermountain western U.S. and along the U.S. border is attributable to background ozone.

2. **If EPA lowers the ozone standard to 65 ppb, the number of counties potentially forced to install new controls rises exponentially. Instead of just 500 counties, EPA estimates that over two thousand counties will be forced to install controls at**

65 ppb – a number that is close to 60 percent or more of all US counties. Why is such an extensive control program needed at 65 ppb?

The vast expansion of nonattainment areas at 65 ppb is a confluence of several factors. First off, the vast majority of existing ozone concentrations come from sources the county cannot control: naturally-occurring background ozone; ozone that migrates from other states; and long-range transport ozone from other countries and continents. Therefore, even in remote locations with little man-made ozone precursor emissions, ozone is currently being measured at or above 65 ppb.

Secondly, as my testimony discussed, attainment of 65 ppb will require removal of several additional tons of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) beyond what can currently be removed through known controls. The last million tons in particular will have to come from mostly small and/or mobile sources—a very expensive, challenging set of sources to apply controls to. This is partly why the evidence-based cost curve NERA developed for unknown controls is so steep, and why a 65 ppb ozone regulation would be so expensive.

a. What percent of the total US population is likely to be impacted at 65 ppb?

The entire U.S. population is likely to impacted in a material way if the EPA sets the ozone standard at 65 ppb. The study performed by NERA Economic Consulting concluded that the average household will spend $830 per year to comply with the regulations that it would otherwise spend on food, clothing and other items. Because a 65 ppb standard would be so expensive across all sectors, increased costs to produce energy and virtually every manufactured good would be passed through, at least in part, to consumers.

b. How many cities have the technical tools to even begin implementing the many requirements of this program?

A handful of large metropolitan areas that have dealt with ozone nonattainment for years or decades, such as Houston and Los Angeles, have emissions trading programs, offset markets and other technical tools to help manufacturers comply with new standards. However, the vast majority of the areas that would be placed into nonattainment under a new standard have never dealt with ozone nonattainment before. They would have to start from scratch—a very difficult proposition when concepts like emissions offsets are required for preconstruction permits. Moreover, many of the regulators who would be burdened with processing these new requirements will also be diverting resources toward implementation of the Clean Power Plan, Waters of the U.S. and other new regulations.

Question from Rep. Barbara Comstock (R-VA)

1. **According to the National Association of Manufacturers the new regulations by the Environmental Protection Agency (EPA) could be the most expensive ever issued on the American public, costing the State of Virginia a $69 billion dollar Gross State Product loss from the years 2017 to 2040. This regulation will make it harder to get the necessary permits to manufacture goods and build critical infrastructure like roads and highways in Virginia, while increasing the cost of energy for every business and household in the state. How much of an increase can my constituents expect to the cost of their energy/utility bills? And how much of an increase can we expect in the construction and repair in our transportation and infrastructure system?**

A 65 ppb ozone standard would force the closure of about 20 percent of Virginia's coal-fired electric generating capacity, costing the electricity sector about $130 million over the full compliance period, likely resulting in a single-digit rise in electricity and delivered natural gas prices for industrial, commercial and residential consumers. Unfortunately, this comes on the heels of an 11 percent electricity rate increase resulting from compliance with the Clean Power Plan.[1]

The transportation/infrastructure impacts are potentially very significant for Virginia. When a tighter new ozone standard is issued, state transportation officials must obtain a conformity designation, a form of state implementation plan tailored to transportation projects. Without conformity, federal highway funds do not become available. The associations representing the nation's state highway and transportation officials, the American Association of State Transportation and Highway Officials (AASHTO) and the Association of Metropolitan Planning Organizations (AMPO), warned that hundreds of new conformity designations could impose administrative burdens that choke the system and hold federal transportation and infrastructure dollars hostage during a prolonged administrative process.[2] AASHTO and AMPO wrote:

> In short, the proposed change in the ozone NAAQS would trigger the designation of hundreds of additional counties across the country as non-attainment areas, which in turn would require compliance with transportation conformity requirements. The transportation conformity process will impose a difficult - if not impossible - task in places where background levels are so high that there is little that can be done through transportation planning to reduce ambient ozone. And in many other counties, transportation conformity will impose burdens without corresponding benefits, because the areas would meet the new standards without any additional action being taken. EPA should carefully consider these practical implications when exercising its policy discretion to determine the appropriate level for the NAAQS.

As detailed in maps provided by AASHTO and AMPO, Northern Virginia and the I-95 corridor from Washington, DC to Richmond, VA would fall into ozone nonattainment at or below 70 ppb, triggering conformity requirements.

Questions from Rep. Gary Palmer (R-AL)

1. **Running gas plants at close to 70 percent capacity, as called for in the CPP, may increase the likelihood that these gas plants could cause new exceedances of the lower ozone standard. Did EPA evaluate this potential impact of the lower ozone standard on the CPP?**

To our knowledge, the EPA did not evaluate the conflict between implementation of the CPP and implementation of a new ozone standard. The EPA did measure the ozone *benefits* derived from implementation of the CPP (commonly referred to as co-benefits), and it did factor the reductions in ozone concentrations from implementation of the proposed CPP into the

[1] *See* http://americaspower.org/sites/default/files/NERA_CPP%20Report_Final_Oct%202014.pdf.
[2] *See* http://www.ampo.org/wp-content/uploads/2013/02/AASHTO-AMPO-Joint-Comment-Letter-on-2015-EPA-Ozone-NAAQS.pdf.

baseline for its ozone cost estimates—a highly unusual thing to do, given that the CPP is only a proposed rule and likely to change at least somewhat before implementation.

What the EPA did not do, and what the NAM would like to better understand, is measure how new infrastructure, such as new power plants, will be constructed in areas that will now be in nonattainment for ozone. How will these plants navigate the Nonattainment New Source Review (NNSR) process, which requires installation of the Lowest Achievable Emission Rate (LAER), which is essentially a requirement for the strictest controls regardless of cost. How will the increase in natural gas demand from the CPP be met when many of those shale formations fall in nonattainment areas and new wells cannot be drilled without first shutting down another well? How will vehicle engines be able to further reduce NO_x while also increasing fuel economy when the technology to reduce NO_x actually *decreases* fuel economy? These are all questions the EPA has not adequately answered.

Appendix II

Additional Material for the Record

DOCUMENTS SUBMITTED BY CHAIRMAN LAMAR S. SMITH

Statement for the record by
Karen Kerrigan, President and CEO
Small Business & Entrepreneurship Council

Committee on Science, Space, and Technology
U.S. House of Representatives

Hearing on "EPA Regulatory Overreach: Impacts on American Competitiveness"
June 4, 2015

The Small Business and Entrepreneurship Council (SBE Council) commends House Science Committee Chairman Lamar Smith (R-TX) and the committee's members for convening today's hearing on Environmental Protection Agency (EPA) overreach and its impacts on American competitiveness. SBE Council, and through its project, the Center for Regulatory Solutions, is a strong advocate for transforming the regulatory process to ensure greater accountability, transparency, and scientific integrity. Regulatory reform is essential to spurring stronger economic growth, new business creation, quality job creation, innovation, robust investment and enabling small businesses to compete more effectively in the global marketplace.

Since the Obama Administration assumed office, the federal regulatory burden has increased dramatically. According to the latest survey by the Competitive Enterprise Institute, "federal regulation and intervention cost American consumers and businesses an estimated **$1.88 trillion in 2014** in lost economic productivity and higher prices." In many cases, these rulemakings have produced all costs and no meaningful benefits for small businesses. In a survey conducted by the Center for Regulatory Solutions last year, nearly two-thirds of respondents said regulations "mostly hurt" America's competitiveness in the world.

The costs of increased regulation have been devastating, taking the form of mountains of red tape, confusing and irrational compliance mandates, and excessive litigation—all of which have slowed the pace of innovation, small

business expansion, and new business creation. Without question, these costs have fallen disproportionately on small businesses. According to SBE Council Chief Economist Ray Keating, basic indicators of entrepreneurship — namely, unincorporated and incorporated self-employed — have performed poorly since the 2006-2008 period. In fact, performance over the last year has arguably been the worst since the early 1970s. The bottom line is that new business creation and entrepreneurship in the U.S. has fallen significantly, which is one key reason why the economic recovery has been so weak, and will impact economic conditions for years to come.

With several major billion-dollar rulemakings on the horizon, the situation only stands to worsen.

SBE Council's members applaud you and the committee for highlighting three of the most egregious examples of EPA overreach: the Clean Power Plan to regulate carbon dioxide from existing coal-fired power plants; a tighter national ambient air quality standard (NAAQS) for ozone; and the "Waters of the US" rule governing federal jurisdiction over water bodies. With these rulemakings, small business owners will incur higher electricity bills and suffer costly delays in obtaining necessary federal permits for their operations. This is a recipe for continued sluggish job creation, faltering entrepreneurship, and investment in small business expansion.

SBE Council stands ready to work with the committee on highlighting the negative impacts of these rules. More importantly, we look forward to working with you and committee members on common-sense solutions to the regulatory challenges small businesses face every day. This will ensure America's regulatory system can both protect human health and the environment and at the same time enable small businesses to compete, innovate and invest in the future with confidence.

Statement of the American Chemistry Council on House Committee on Science, Space and Technology Hearing on "EPA Regulatory Overreach: Impacts on American Competiveness Hearing" June 4, 2015

The American Chemistry Council (ACC) is pleased to offer this statement for the record of the hearing focusing on the impact of recent EPA regulations on American manufacturing. ACC[1] represents the leading companies engaged in the business of chemistry. We apply the science of chemistry to create innovative products and services that make people's lives better, healthier, and safer. The U.S. chemical industry is a key element of the economy, providing 793,000 skilled, good-paying jobs across the country. We are among the nation's largest exporters and investors in research and development. Our advanced materials and technologies include many that help save energy and reduce greenhouse gas emissions.

The shale gas revolution is driving a historic expansion in American chemistry. More than $142 billion in new chemical industry investment is planned or underway, thanks to plentiful and affordable supplies of natural gas and natural gas liquids. Fully 60 percent is foreign direct investment. The 231 projects – new plants, expansions, and factory restarts – could create and support over 650,000 jobs by 2023. They will also generate increased GDP, tax revenue, and access to innovative new products.

However, the chemical industry's expansion is threatened by new EPA regulations. In the course of just four months, EPA will have finalized the Clean Water Rule, the Clean Power Plan, and completed its review of the Ozone National Ambient Air Quality Standard (NAAQS). Individually, each of these rules will result in large impacts to the manufacturing industry. Collectively, the result may be overwhelming, with a significant impact on U.S. manufacturing in general, and the chemical industry in particular. It is critical that EPA take a hard look at its regulatory efforts and the cumulative impact it creates for the regulated community.

[1] *ACC members apply the science of chemistry to make innovative products and services that make people's lives better, healthier and safer. ACC is committed to improved environmental, health and safety performance through Responsible Care®, common sense advocacy designed to address major public policy issues, and health and environmental research and product testing. The business of chemistry is an $812 billion enterprise and a key element of the nation's economy. It is the nation's largest exporter, accounting for twelve percent of all U.S. exports. Chemistry companies are among the largest investors in research and development. Safety and security have always been primary concerns of ACC members, and they have intensified their efforts, working closely with government agencies to improve security and to defend against any threat to the nation's critical infrastructure.*

Clean Water Rule

On May 27, 2015, EPA released the final Clean Water Rule (previously referred to as the "Waters of the U.S." rule), which attempts to clarify which bodies of water are covered under the Clean Water Act. Instead of providing the desired clarity, the final rule still leaves a substantial amount of uncertainty regarding federal authority in the permitting process and what may or may not be covered by the rule's newly created Clean Water Act jurisdiction. One of the most problematic sources of this ambiguity is the rule's per se jurisdictional determinations for "tributaries," which, as defined in the final rule, could be overly broad and assert jurisdiction over waterbodies with a very limited intermittent flow. This problem is compounded by the use of the "significant nexus" connectivity test, which lacks a strong foundation in sound science and could create connection determinations based on minimal and remote environmental factors.

Further concerns exist for facilities needing to obtain water permits in the future. Under the final rule, approved jurisdictional determinations associated with issued water permits and authorizations are valid until the expiration date. However, actions of EPA and the Army Corps of Engineers are governed by the rule in effect as of the date the agency issues a jurisdictional determination or permit authorization, not by the date of a permit application. The end result is that facilities that need to obtain a new determination or permit, or are nearing the expiration date of an existing permit, are now faced with a myriad of questions on how to proceed with little guidance from the agencies. There is little doubt that the permitting process will drastically slow down as additional work is needed before moving forward with new permits.

Clean Power Plan

EPA's proposed Clean Power Plan (CPP) is an attempt to regulate the entire economy through the energy market. EPA has never before issued an air regulation with such an unprecedented scope, and there is much concern over the potential impacts of the final rule.

The chemical industry is a major energy consumer, and is distinctive in that it uses energy inputs as both a fuel and a feedstock for the products we make. Chemistry is the nation's top export industry, and energy cost and reliability is critical to our ability to compete in the global economy. EPA's CPP, as proposed, could undermine the reliability of the U.S. electric grid and increase energy costs. The final CPP must be designed and implemented in a way that sustains competitively priced U.S. energy markets.

Ozone NAAQS

On November 26, 2014, EPA proposed a more stringent ozone standard of between 0.065 and 0.070 ppm. Much of the U.S. will be unable to meet a lower NAAQS. Manufacturing growth could slow or stop in states that find themselves in non-compliance, since facilities located in "nonattainment" areas face burdensome and extensive regulatory requirements. These rules make investment projects far more costly and complex. To safeguard the significant planned investment in chemical manufacturing in the United States, and to ensure that the industry can create the jobs and products that foster economic growth, we need regulatory policies that do not impose unnecessary barriers to growth in our sector.

Currently, 222 counties covering a population of over 120 million people are classified in nonattainment with the current 0.075 ppm standard. If EPA revises the standard to the lower end of the proposed range, we estimate that more than 2000 counties – urban and rural – would be in nonattainment, based on the 2011-2013 design values and modeling.

Communities designated "nonattainment" have a difficult time attracting and retaining industry and sustaining economic activity and growth. Industry located in a nonattainment area face increased operating costs, permitting delays, and restrictions on building or expanding facilities. These challenges increase the "time to market" for innovative new products.

New facilities and expansions in nonattainment areas cannot proceed until emissions are offset. Offsets are not always readily available, and increase in price as they become scarce. For example, offset prices in the Houston-Galveston-Brazoria nonattainment area are more than $200,000/ton for NOx and $300,000/ton for VOC. Offset prices in southern California nonattainment areas are approaching $125,000/ton of NOx.

Even facilities that are not expanding can experience the burdens of operating in a nonattainment area. For example, in the Houston area, which is in nonattainment with the current standard, existing facilities are subject to additional controls under the Highly Reactive VOC (HRVOC) rule. Combustion units, such as boilers and ethylene crackers, must install costly SCRs and low-NOx burners. These controls require firms to make additional capital investments. Nonattainment areas may also lose federal highway and transit funding, as federal projects must conform with State Implementation Plans (SIPs) in order to proceed. Furthermore, facilities located in counties designated as in "severe" or "extreme" nonattainment will face significant Clean Air Act Section 185 fees for emissions in their area, even though many of these facilities have already spent many millions of dollars to reduce emissions.

ACC believes the scientific evidence does not support a lower ozone NAAQS EPA's existing ozone standard of 0.075 ppm, through a series of significant emission control programs, will

continue to provide ample protection of public health. Moreover, there are numerous questions about the science being used to justify a lower standard: Some recent health studies contain inconsistent or conflicting findings, while others are re-analyses of previous studies that rely on outdated information.

Rather than revise the ozone NAAQS at this point in time, EPA should be looking at the progress that has been made to date in cleaning the air and look to build on that. The nation's air quality has significantly improved and continues to improve with new voluntary and regulatory programs already in place or being implemented. According to EPA, total emissions of the six principal criteria air pollutants fell by 62 percent between 1980 and 2013, with ozone concentrations falling by 33 percent over the same time frame.

Voluntary and regulatory emission reduction programs will continue to yield benefits for decades to come. Over the next twenty years, cleaner fuel rules and utility regulations are expected to produce large air quality improvements. Current emission reduction programs will continue to reduce ozone concentrations through 2030.

The current ozone standard of 0.075 ppm is the most stringent ever and has not been fully implemented across the United States. EPA and states should focus on fully implementing and attaining the existing standard before contemplating a lower standard – an approach that will continue to provide necessary health protection. As the science develops further, EPA will have the opportunity to determine whether any additional actions might be warranted in the future.

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The New York Times http://nyti.ms/1dgroVO

U.S.

Critics Hear E.P.A.'s Voice in 'Public Comments'

By ERIC LIPTON and CORAL DAVENPORT MAY 18, 2015

WASHINGTON — When the Environmental Protection Agency proposed a major new rule intended to protect the nation's drinking water last year, regulators solicited opinions from the public. The purpose of the "public comment" period was to objectively gauge Americans' sentiment before changing a policy that could profoundly affect their lives.

Gina McCarthy, the agency's administrator, told a Senate committee in March that the agency had received more than one million comments, and nearly 90 percent favored the agency's proposal. Ms. McCarthy is expected to cite those comments to justify the final rule, which the agency plans to unveil this week.

But critics say there is a reason for the overwhelming result: The E.P.A. had a hand in manufacturing it.

In a campaign that tests the limits of federal lobbying law, the agency orchestrated a drive to counter political opposition from Republicans and enlist public support in concert with liberal environmental groups and a grass-roots organization aligned with President Obama.

The Obama administration is the first to give the E.P.A. a mandate to

create broad public outreach campaigns, using the tactics of elections, in support of federal environmental regulations before they are final.

The E.P.A.'s campaign highlights the tension between exploiting emerging technologies while trying to abide by laws written for another age.

Federal law permits the president and political appointees, like the E.P.A. administrator, to promote government policy, or to support or oppose pending legislation.

But the Justice Department, in a series of legal opinions going back nearly three decades, has told federal agencies that they should not engage in substantial "grass-roots" lobbying, defined as "communications by executive officials directed to members of the public at large, or particular segments of the general public, intended to persuade them in turn to communicate with their elected representatives on some issue of concern to the executive."

Late last year, the E.P.A. sponsored a drive on Facebook and Twitter to promote its proposed clean water rule in conjunction with the Sierra Club. At the same time, Organizing for Action, a grass-roots group with deep ties to Mr. Obama, was also pushing the rule. They urged the public to flood the agency with positive comments to counter opposition from farming and industry groups.

The results were then offered as proof that the proposal was popular.

"We have received over one million comments, and 87.1 percent of those comments we have counted so far — we are only missing 4,000 — are supportive of this rule," Ms. McCarthy told the Senate Environment and Public Works Committee in March. "Let me repeat: 87.1 percent of those one-plus million are supportive of this rule."

But critics said environmental groups had inappropriately influenced the campaign — just as environmentalists complained that the energy industry

improperly drove policy during the George W. Bush administration.

At minimum, the actions of the agency are highly unusual. "The agency is supposed to be more of an honest broker, not a partisan advocate in this process," said Jeffrey W. Lubbers, a professor of practice in administrative law at the American University Washington College of Law and the author of the book "A Guide to Federal Agency Rulemaking."

"I have not seen before from a federal agency this stark of an effort to generate endorsements of a proposal during the open comment period," he said.

Senator James M. Inhofe, Republican of Oklahoma and chairman of the environment committee, is holding a hearing on Tuesday to examine the proposed rule. "There is clear collusion between extreme environmental groups and the Obama administration in both developing and promoting a host of new regulations," he said.

The most contentious part of the E.P.A.'s campaign was deploying Thunderclap, a social media tool that spread the agency's message to hundreds of thousands of people — a "virtual flash mob," in the words of Travis Loop, the head of communications for E.P.A.'s water division.

The architect of the E.P.A.'s new public outreach strategy is Thomas Reynolds, a former Obama campaign aide who was appointed in 2013 as an associate administrator. "We are just borrowing new methods that have proven themselves as being effective," he said.

But industry critics said the agency's actions might be violating federal lobbying laws.

The proposed rule tries to ensure the safety of drinking water by expanding or at least clarifying the federal government's jurisdiction to prevent the pollution of wetlands and streams that feed water sources.

The E.P.A.'s tactics in supporting the rule are clearly designed to move public opinion, at a time when Congress was considering legislation to block the agency from putting the rule into effect.

"The agency has relentlessly campaigned for the rule with tweets and blogs, not informing the public about the rule but influencing the public to advocate for the rule," said Ellen Steen, general counsel at the American Farm Bureau Federation. "That is exactly what the Anti-Lobbying Act is meant to prevent."

The strategy to build public support for the clean water rule builds on the agency's promotion of its climate change policy. The White House hired Mr. Reynolds, a seasoned political operative, to run the climate change outreach effort after he directed regional media operations for the president's 2012 re-election.

He set off what he called a "flood-the-zone approach" to push back against opponents of the E.P.A.'s climate rule in the Republican Party and the coal industry, injecting the digital savvy of Mr. Obama's presidential campaigns into the agency's effort. "There is a huge premium on social media," Mr. Reynolds said. "Facebook, YouTube, Twitter, Instagram, Vine, Pinterest."

Jeffrey R. Holmstead, an energy industry lobbyist and an E.P.A. deputy in the Bush administration, said the E.P.A. was "using campaign and advocacy strategies to promote a regulatory action." But he and other experts said the agency's actions did not appear to cross a legal line.

Obama administration officials insist they had to counter industry opponents to the climate change and water rules who were engaged in their own campaign to undermine them.

"The fact that there's a very well-funded campaign means we needed a strong and sustained communications effort," said Heather Zichal, Mr. Obama's former senior climate adviser.

In March last year, when the E.P.A. proposed the clean water regulation, opponents hit back fast. The American Farm Bureau kicked off a public relations effort summarized by its Twitter nickname: Ditch the Rule.

The Farm Bureau was supported by home builders, the fertilizer and pesticide industries, oil and gas producers and a national association of golf course owners who collectively called for the E.P.A. to revamp or withdraw its proposal. That demand was echoed by more than 230 members of the House.

As the opposition mounted, leaders of major environmental groups held closed-door meetings with senior E.P.A. officials as the rule was being written, participants in these meetings said.

Mr. Reynolds doubled down on a social media campaign to defend the water rule.

The agency created its own Twitter hashtag, #DitchtheMyth, which Ms. McCarthy publicized, backed up with YouTube videos and Facebook postings that countered the criticism. But the campaign also specifically urged support for the effort — directing the public to the E.P.A. website, where the rule was explained and a prominent tab invited readers to leave a comment. Mr. Reynolds insisted that the agency specifically did not urge the public to contact Congress.

Organizing for Action also urged members to get involved, a message that the E.P.A. reinforced. Major environmental groups, including the Sierra Club and the Natural Resources Defense Council, became "thunderous supporters" of the effort.

The Thunderclap effort was promoted in advance with the E.P.A. issuing a news release and other promotional material, including a photograph of a young boy drinking a glass of water.

"Clean water is important to me," the message said. "I want E.P.A. to

protect it for my health, my family and my community."

In the end, the message was sent to an estimated 1.8 million people, Thunderclap said.

In a separate appeal, Mr. Loop, of the E.P.A., wrote a blog post on the agency's website with pictures of himself, his two children and his dog swimming in waters near his Maryland home, and ending with a pitch.

He urged anyone reading the post to "spread the word about how much it matters to you and your family and friends."

"Here is an easy way to do that," he wrote. "Take a photo holding this #CleanWaterRules sign. Post it to Facebook, Twitter or Instagram with #CleanWaterRules and give your reason. Encourage family and friends to do the same."

Those efforts to prompt people to support the rule are now being cited as evidence that the E.P.A. has illegally engaged in so-called grass-roots lobbying.

"E.P.A. Office of Water's Twitter account has essentially become a lobbyist for the proposal," wrote Kevin P. Kelly, chairman of the National Association of Home Builders, in a letter to the E.P.A. protesting the role the agency has played in advocating its clean water proposal.

Gov. Dennis M. Daugaard of South Dakota and some members of Congress have filed protests using almost exactly the same language, suggesting that the industry players are coordinating their response.

In its previous opinions to federal agencies, the Justice Department has indicated that "grass-roots" efforts are most clearly prohibited if they are related to legislation pending in Congress and are "substantial," which it defined as costing about $100,000 in today's dollars — a price tag that the E.P.A.'s efforts on the clean water rule almost certainly did not reach if the salaries of the agency staff members involved are not counted.

Officials at the E.P.A. strongly defend their work — insisting that they did not violate the Anti-Lobbying Law because they never explicitly urged the public to lobby Congress, just to express their support for the plan in a public way.

"We are well within our authority to educate the American people about the importance of what E.P.A. is doing to act on climate change and protect public health," Mr. Reynolds said. "There is a very clear line, and we never, ever cross it."

Correction: May 18, 2015

Because of an editing error, an earlier version of this article misstated the stance of the coal industry on a clean water rule. It did not oppose the rule.

A version of this article appears in print on May 19, 2015, on page A1 of the New York edition with the headline: Critics Hear E.P.A.'s Voice in 'Public Comments' .

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Friday, May 29th 2015

Dear Excellencies,

Climate change is a critical challenge for our world. As major companies from the oil & gas sector, we recognize both the importance of the climate challenge and the importance of energy to human life and well-being. We acknowledge that the current trend of greenhouse gas emissions is in excess of what the Intergovernmental Panel on Climate Change (IPCC) says is needed to limit the temperature rise to no more than 2 degrees above pre-industrial levels. The challenge is how to meet greater energy demand with less CO_2. We stand ready to play our part.

Our companies are already taking a number of actions to help limit emissions, such as growing the share of gas in our production, making energy efficiency improvements in our operations and products, providing renewable energy, investing in carbon capture and storage, and exploring new low-carbon technologies and business models. These actions are a key part of our mission to provide the greatest number of people with access to sustainable and secure energy.

For us to do more, we need governments across the world to provide us with clear, stable, long-term, ambitious policy frameworks. This would reduce uncertainty and help stimulate investments in the right low carbon technologies and the right resources at the right pace.

We believe that a price on carbon should be a key element of these frameworks. If governments act to price carbon, this discourages high carbon options and encourages the most efficient ways of reducing emissions widely, including reduced demand for the most carbon intensive fossil fuels, greater energy efficiency, the use of natural gas in place of coal, increased investment in carbon capture and storage, renewable energy, smart buildings and grids, off-grid access to energy, cleaner cars and new mobility business models and behaviors.

Our companies are already exposed to a price on carbon emissions by participating in existing carbon markets and applying 'shadow' carbon prices in our own businesses to test whether investments will be viable in a world where carbon has a higher price.

Yet, whatever we do to implement carbon pricing ourselves will not be sufficient or commercially sustainable unless national governments introduce carbon pricing even-handedly and eventually enable global linkage between national systems. Some economies have not yet taken this step, and this could create uncertainty about investment and disparities in the impact of policy on businesses.

Therefore, we call on governments, including at the UNFCCC negotiations in Paris and beyond – to:

- introduce carbon pricing systems where they do not yet exist at the national or regional levels
- create an international framework that could eventually connect national systems.

To support progress towards these outcomes, our companies would like to open direct dialogue with the UN and willing governments. We have important areas of interest in and contributions to make to creating and implementing a workable approach to carbon pricing, including:

1. **Experience.** For more than a century we have provided energy to the world. We are global in reach, closely familiar with managing major projects and risks of many kinds, and well-versed in trading and logistics. As we are already users of carbon pricing systems across the world, exchange of information at international scale could help to identify the best solutions.

2. **Motivation.** We want to be a part of the solution and deliver energy to society sustainably for many decades to come. Like our counterparts in other industry sectors we will play a key role in implementing the measures and deploying the technologies that will lead to a lower carbon future. Low carbon business models and solutions are fragile until they reach critical size, but with linked carbon pricing systems worldwide, uncertainty would be reduced and such solutions will start to create value for business more rapidly.

3. **Pragmatism.** We believe our presence at the table could be helpful in designing an approach to carbon pricing that would be both practical and deliverable, as well as ambitious, efficient and effective.

4. **A forum for discussion.** Our companies and others have come together under the auspices of the World Economic Forum to form the Oil & Gas Climate Initiative, or are members of the International Emissions Trading Association, the World Bank or the UN Global Compact Carbon Pricing initiatives. We believe these forums may offer an appropriate ground for public-private dialogue on how to price carbon into energy.

Practically, we and our senior staff will seek to engage and share our companies' perspectives on the role of carbon pricing in several important settings:

- in our meetings with Ministers and Government representatives.
- as we attend and address conferences
- as we hold engagements with our investors
- as we conduct meetings with other stakeholders including partners, suppliers, academics and researchers
- as we hold meetings for management and staff within our businesses.

Pricing carbon obviously adds a cost to our production and our products – but carbon pricing policy frameworks will contribute to provide our businesses and their many stakeholders with a clear roadmap for future investment, a level playing field for all energy sources across geographies and a clear role in securing a more sustainable future.

We acknowledge the long-term challenge and appreciate that this will be transformative across the energy sector. Over many decades, our industry has been innovative and has been at the forefront of change. We are confident that we can build on our trajectory of innovation to meet the challenges of the future.

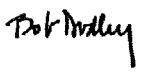
Each of us will copy this letter personally to key contacts among investors, governments, civil society and our staff.

Yours sincerely

Signatories:

BG Group plc
Mr. Helge Lund

BP plc
Mr. Bob Dudley



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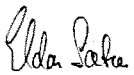

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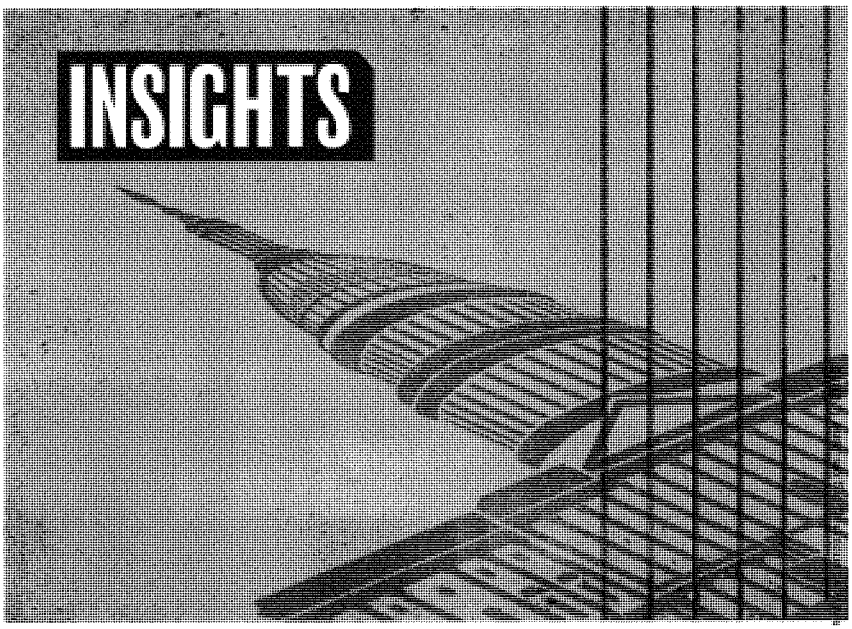
Mr. Patrick Pouyanné



PERSPECTIVES

SCIENCE AND REGULATION

Congress's attacks on science-based rules

Proposed laws based on false premises could undermine science for the public interest

By **A. A. Rosenberg,[1*†] L. M. Branscomb,[2*] V. Eady,[3*] P. C. Frumhoff,[4*] G. T. Goldman,[1] M. Halpern,[1] K. Kimmell,[5] Y. Kothari,[1] L. D. Kramer,[5*] N. F. Lane,[6*] J. J. McCarthy,[7*] P. Phartiyal,[1] K. Rest,[4] R. Sims,[*] C. Wexler[1]**

There is a growing and troubling assault on using credible scientific knowledge in U.S. government regulation that will put science and democracy at risk if unchecked. We present five examples, and the false premises on which they are based, of current attempts in the U.S. Congress in the supposed pursuit of transparency and accountability but at the expense of the role of science in policy-making.

Over the past century, the federal government has striven to protect public health, safety, and the environment. Many statutory mandates require administrative agencies to craft regulations informed by credible, legitimate, and salient scientific assessments (*1*, *2*) that prescribe actions and obligations of government entities, private sector enterprises, and individuals to protect the public interest. The federal laws that create these science-based mandates—such as the Clean Air Act, the Occupational Safety and Health Act, and the Consumer Product Safety Act—are perceived as inconvenient and expensive by some corporate actors. Consequently, congressional leaders are pressured to render these long-standing and well-regarded laws ineffective by undermining their scientific foundations (*3*).

POLICY

This should raise alarm among all scientists. Each year, thousands of experts from academia, industry, and government serve on agency advisory panels and boards, peer-review panels, and National Academies' study committees. Many more conduct research relevant to important public policy decisions. The regulations that result from these scientific inputs have led to profound improvements in air and water quality, protections for workers and the public, and environmental safeguards (*3*).

Regrettably, five major bills have recently advanced in the U.S. Congress that would transform the scientific advisory process. Four passed the House of Representatives

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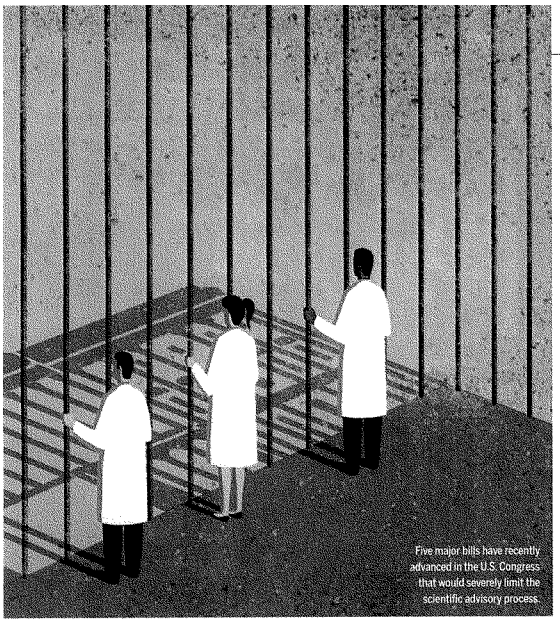

Five major bills have recently advanced in the U.S. Congress that would severely limit the scientific advisory process.

last year but failed to advance in the Senate. Four of the five bills were reintroduced and three passed the House this year; with the fourth likely to pass soon. All have Senate sponsors. Although effective advocacy by scientists has helped stymie their progress thus far, any of these bills could be attached to must-pass legislation, and some presidential candidates are already embracing them as necessary reforms.

The bills employ insidious, albeit creative, approaches to weaken the ability of science to inform federal rule-making. One approach is to shift regulatory decisions from career employees in federal agencies working with experts to politicians in Congress vulnerable to special-interest influence. The Regulations from the Executive in Need of Scrutiny (REINS) Act, which backers say will make regulatory agencies more accountable and reduce undue burdens on businesses, requires joint congressional approval within 70 legislative days for any new or updated major rule with an annual economic impact of $100 million or more. If either chamber fails to act, the agency cannot move forward with the rule until the next Congress convenes and jointly approves the rule. The act suggests no criteria for Congress in evaluating a rule. Agencies, on the other hand, must adhere to specific statutory requirements—including basing decisions on science in many cases—and must defend their decisions in court. Given the current gridlock on Capitol Hill, few regulatory protections would survive both houses of Congress. Rather than increasing accountability—which of course is a worthwhile goal—the proposed mechanism for approval would, in effect, prevent science-based rules from ever being implemented.

A second approach is to tie up federal agencies in additional and redundant bureaucracy, even as their budgets decrease. This will make efficient rule-making even more difficult if not impossible. The Regulatory Accountability Act, with a stated goal of reducing costs to business, passed the House in February, and imposes more than 70 new requirements on development, analysis, and public engagement processes that agencies must follow in updating or creating new rules (*4*). This includes additional formal administrative hearings that would give regulated industry and others the opportunity to directly challenge and cross-examine the agency on the science underlying its cost-benefit analysis. The act makes the least costly approach the default option for new public health and safety regulations even if it is less protective, a change from current laws which typically prioritize public health protection over cost. The act also gives the White House Office of Management and Budget the power to override independent scientific advice on the costs, benefits, and risks of proposed regulations, enabling implementation of regulations that might not reflect the best available science as required by statute.

Or take the Sound Science Act. Introduced in the House last year and likely to resurface in the current Congress, the legislation is ostensibly designed to improve the scientific basis for regulations. The bill requires agencies to hold additional public comment periods specifically on all scientific findings throughout the process and each time a new finding is considered. Furthermore, agencies must give "greatest weight to information that is based on experimental, empirical, quantifiable, and reproducible data." But, as scientists know well, and as AAAS (American Association for the Advancement of Science, which publishes *Science*) has noted (*5*), some good science cannot be easily subjected to reproducible experiments. Should modeling studies be excluded? Is qualitative information not to be considered? The decision about how to weigh different types of information should be a scientific decision, not a political mandate. Although, in many cases, such weighting may be appropriate, this decision should be left to technical experts who understand how to interpret the data. Otherwise, decisions might not be based on the best understanding of the scientific evidence.

A third approach is to limit the information that regulators can use. The Secret Science Reform Act, passed by the House in February 2015, mandates that the Environmental Protection Agency (EPA) may only put forward a regulation if all of the data, models, methods, and other information in the science studies used in its development are publicly available, accessible, and reproducible. Supposedly, the data are required so that the "public" can analyze the data for themselves, although, in practice, it is likely that special interest groups will hire scientists to reanalyze the data to cast doubt on results that are not to their liking in order to delay the regulatory process. Although

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scrutiny of the science used in rule-making is important, this act would drain time and resources from rule-making processes that already include expert peer review, the release of summarized data, and ample opportunities for public and stakeholder input.

Although greater access to data can be a laudable goal, confidential health records, confidential business information, or protected intellectual property should not be disclosed. And although the bill carefully states that it does not require the release of confidential information, the EPA is prohibited from moving forward with a regulation unless all data are public. So although EPA is charged with protecting public health, say with regard to ozone or mercury emissions from power plants, it may not utilize any studies that analyze confidential public health data as a basis for action. This restriction applies to any actions the agency might take from rule-making to guidance, standard-setting, or scientific assessment of toxic substances. In other words, the EPA may not act on the basis of data it is legally restricted from releasing; therefore, it may not act.

A fourth approach is to change the composition and operation of the science advisory process itself. The EPA Science Advisory Board Reform Act, passed by the House this year, would set a quota for state, local, and tribal government officials and clarify that industry experts with ties to a regulated industry are not barred from advisory board membership, while barring independent scientists from serving if they have received an EPA grant within the last 3 years (and preventing their acceptance of an EPA grant for 3 years after they serve). Concurrently, the legislation makes it difficult for board members to discuss their scientific views that are not already published. Procedurally, the board is required to solicit and respond in writing to public comments on the state of the science and may not place time limits on that process. In reporting back to the EPA, the board must ensure that the views of the public are reflected and encourage dissenting members to report their views. Taken together, these changes give political and legal operatives greater influence over the advisory board while marginalizing independent scientists, as well as greater opportunity for frivolous and resource-consuming challenges to the board's findings.

Procedurally and monetarily, any of these proposals, if enacted, will delay and complicate an already complex regulatory process. The Congressional Budget Office estimated that the Secret Science Reform Act alone could cost EPA $250 million annually at a time when its mandate has increased and its budget has been cut (*6*).

The bills described above are based on three false premises. The first premise is that regulations put forward by federal agencies reflect agency and executive branch "overreach." In reality, the rule-making process provides many opportunities to check such overreach, including by the judiciary.

The second premise is that corporations need more opportunity to influence the scientific information used in rule-making. But many industries already support technically proficient scientists and skilled advocates in every step of the process to argue their perspectives (*7*). By comparison, community groups and many civil society organizations can never match corporate resources for influencing government.

The third premise is that regulations only impose costs on industry, and public benefits are negligible. Yet just 10 rules proposed in the last 5 years are estimated to result in saving more than 10,000 lives and preventing 300,000 cases of disease, illness, or injury annually (*8*). Nine of the 10 rules—including actions on protecting workers from silica exposure, controlling mercury pollution, and preventing salmonella contamination in eggs—are estimated to have monetized social benefits that substantially exceeded monetized compliance costs even though many benefits cannot be monetized (*9*). Further, it is important to recognize that risk-mitigation costs not borne by industry will not evaporate but will become a public burden.

"The bills use insidious... approaches to weaken the ability of science to inform federal rule-making."

Attacks on the science advisory process as the foundation of regulatory action have a profound, chilling effect on the willingness of scientists to contribute to the process of advancing critical health, safety, and environmental protections. Restrictions on expert participation, requirements for multiple rounds of public comments, and procedural hurdles will subject the advisory process to greater industry and political influence and discourage independent scientists from participating in advisory activities. Many scientists are honored to serve the public as independent experts to inform the policy process, and most do so without compensation. As barriers for participation rise, their willingness to engage will plummet. The end result may be that mostly experts paid by special interests will serve.

The scientific community needs to push back. Elected officials respond to constituents, and there are scientists in every congressional district. With leadership from professional societies and scientific organizations, scientists across the country should tell their members of Congress how much they value the opportunity to engage in informing policy and how important it is that these attacks on the process are defeated.

The present system is far from perfect, but there are better solutions to ensure that science advice remains reflective of the evidence and resistant to special interest manipulation. To that end, with leadership from professional societies, science-based organizations, and academic institutions, better pathways must be created for independent scientists to share their expertise. This includes providing greater training for early career scientists on the advisory process and creating career-based incentives and time for them to participate. It also includes institutionalizing professional recognition for work and activity that informs policy-making. Public service should be a central component of what it means to be a scientist.

Further, public trust in science increases when we all have access to the same base of evidence. To that end, we must improve and fully implement conflict of interest and disclosure standards and strengthen peer review while increasing the public accessibility of scientific information. The stakes are high, as our collective well-being and the strength of our democracy depend on our success. ■

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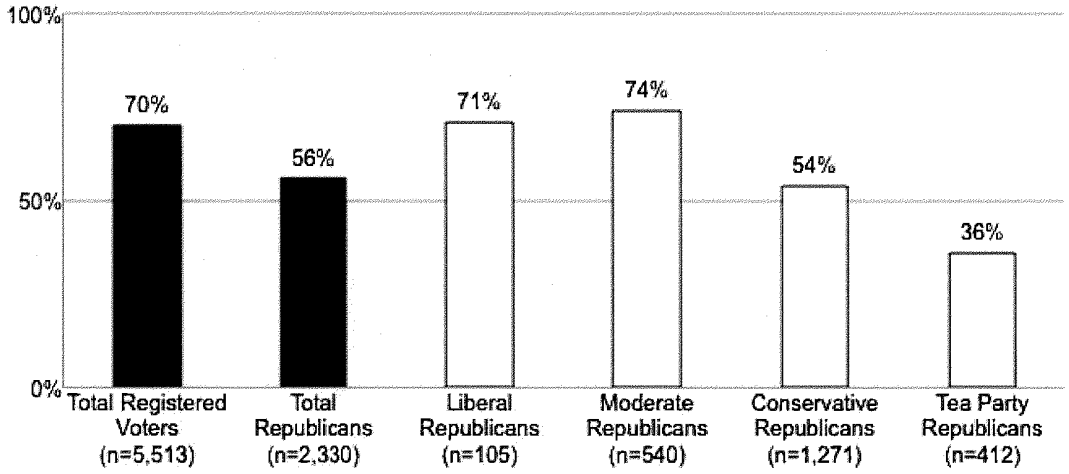
Majority of Republicans Support Regulation of Carbon Dioxide as a Pollutant

- % strongly/somewhat support the policy -



Question: How much do you support or oppose the following policies - Regulate carbon dioxide (the primary greenhouse gas) as a pollutant?

Base: Americans 18+ who are registered to vote.
Data collected from six tracking studies conducted from March 2012 to October 2014.

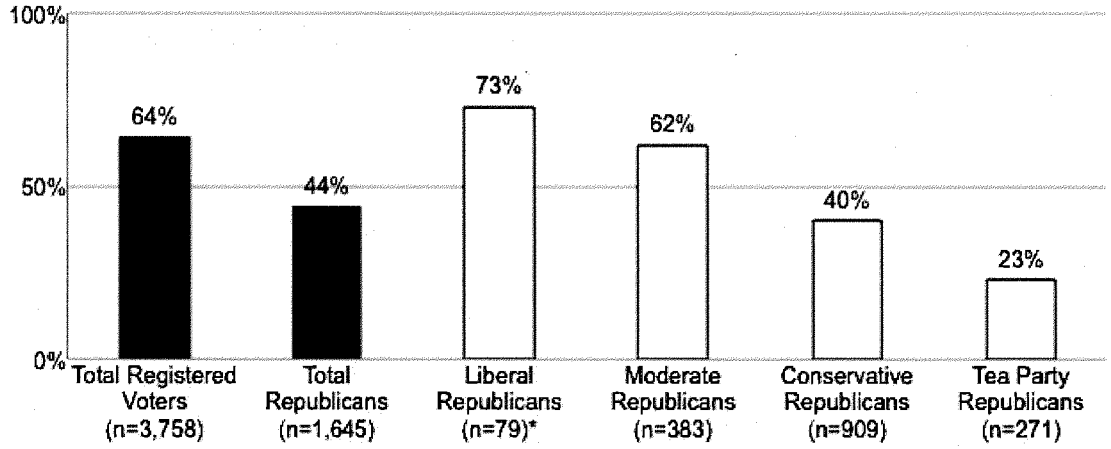
CLIMATE CHANGE COMMUNICATION

4C

George Mason University
Center for Climate Change Communication

Majority of Moderate Republicans Support Setting Strict CO_2 Emission Limits on Existing Coal-Fired Power Plants

- % strongly/somewhat support the policy -



Question: How much do you support or oppose the following policies - Set strict carbon dioxide emission limits on existing coal-fired power plants to reduce global warming and improve public health. Power plants would have to reduce their emissions and/or invest in renewable energy and energy efficiency.

Base: Americans 18+ who are registered to vote. Data collected from four tracking studies conducted from March 2012 to October 2014.

*Caution: Small base.

George Mason University
Center for Climate Change Communication

HART RESEARCH ASSOCIATES

TO: **League of Conservation Voters**

FROM: **Geoff Garin**

DATE: **May 18, 2015**

RE: **Voters Favor the Clean Water Rule by a Wide Margin**

From May 4 to 7, 2015, Hart Research Associates conducted a survey among a representative national cross section of 800 registered voters to gauge the level of support for the Clean Water Rule proposed by the US Environmental Protection Agency and the US Army Corps of Engineers. The interviews were conducted by telephone, and respondents were reached on landlines, cell phones, and VOIP connections. The statistical margin of error associated with a sample of this size is ±3.5 percentage points.

(1) Voters support the Clean Water Rule by an overwhelming margin after hearing a short description of it, and support for the rule crosses party lines.

Respondents were read the following description of the rule:

The Clean Water Rule proposed by the EPA and Army Corps of Engineers clarifies which waters are and are not protected under the Clean Water Act. Specifically, the rule would restore pollution protections that used to exist for streams and wetlands that feed into bigger lakes and rivers and ultimately end up in our drinking water supply.

Overall, 80% say they favor the rule, with half of voters saying they strongly favor it. Only 14% of voters say they oppose the rule.

Support for the rule cuts across party lines, with large majorities of Democrats, independents, and Republicans in favor.

	Total Support	Strong Support
	%	%
All voters	**80**	**50**
Democrats	94	65
Independents	75	49
Republicans	68	34

(2) Support for the Clean Water Rule is rooted in the priority that voters place on water pollution and the personal concern that many have about this issue. The potential impact that the rule would have on the nation's drinking water supply and on future generations are the considerations they deem most important in deciding the merits of the rule.

More than four in five (84%) voters say that water pollution is a very or fairly important priority, and three in five (61%) describe it as a very or fairly big concern for them personally. Large majorities across party lines feel that water pollution is a very or fairly important priority. Variations by party affiliation are more pronounced when it comes to water pollution being a personal concern than an important priority, but nearly half of Republicans say the issue of water pollution is a big concern for them personally.

Priority Placed on Water Pollution and Concern about It Personally

	All Voters	Democrats	Independents	Republicans
	%	%	%	%
Water pollution is a very or fairly important priority	84	92	83	75
The issue of water pollution is a big concern for me personally	61	69	68	48

Respondents heard six considerations that might impact their thinking about the Clean Water Rule, and they were asked to choose the two that they think should be the most important in deciding whether it should be implemented. By a wide margin, they rank the impact on our drinking water supply (54%) and the impact on our children and grandchildren (52%) as their top considerations. Less important considerations include its impact on wildlife and natural habitats (26%), agriculture and farming (24%), jobs and the economy (15%), and landowners' property rights (15%).

(3) A large majority of voters think that the federal government should be doing *more* to protect the nation's waters from pollution.

More than three in five voters think that the federal government should be doing more to protect the drinking water supply (61%), lakes and rivers (62%), or streams and wetlands that feed into larger water sources (61%) from pollution. Democrats are among those most supportive of the federal government doing more to protect each of these water sources, with at least three in four who think the government should do more to protect each of the three sources. More than three in five independents are supportive of the government doing more to protect each one. Even among Republicans, more than two in five think the federal government should be doing more to protect each source.

(4) Voters express notably more trust in the EPA and US Army Corps of Engineers than in Congress to make the right decision on protecting the nation's smaller waterways. They have a low level of trust in Congress to take the right approach.

Fully 72% of voters trust the US Army Corps a lot or some to make the right decision on how best to protect our nation's streams and wetlands from pollution, and nearly as many (62%) trust the EPA a lot or some. Just 25% of the electorate have the same level of trust in Congress in this area.

When specifically asked who they trust more to have the right approach to best protect our nation's smaller waterways from pollution, voters are much more likely to trust the federal agencies. Whether it is the EPA and Army Corps vs. Congress or just the EPA vs. Congress, nearly four in five side with the government agencies.

Who to Trust More to Take the Right Approach to Protect Smaller Waterways from Pollution?	%
The EPA and US Army Corps of Engineers	78
or	
Congress	7
The EPA	77
or	
Congress	9

(5) By a wide margin, voters do <u>not</u> want Congress to block the Clean Water Rule, and a large majority say they would feel <u>less</u> favorable toward a senator who voted against the rule.

Nearly four in five (79%) voters would prefer that Congress allow the rule to move forward and closely monitor its implementation. A mere 12% of the electorate would like Congress to block implementation of the rule. Support for Congress allowing the rule to move forward cuts across party lines, with large majorities of Democrats, independents, and Republicans in support of allowing its implementation.

	Allow Rule to Go Forward	Block Rule and Prevent Implementation
	%	%
All voters	**79**	**12**
Democrats	94	3
Independents	78	12
Republicans	66	21

Additionally, 69% of voters say they would feel *less* favorable toward their US senator if he or she voted to block the rule's implementation, including 38% who would feel much less favorable. Just 17% of voters say they would feel more favorable if their senator voted this way. Large majorities of Democrats (81%) and independents (71%) say they would feel less favorable toward their senator if he/she voted to block the rule, and a 55% majority of Republicans say they would feel this way.

A fact sheet from THE PEW CHARITABLE TRUSTS | May 2015

Government Regulation: Costs Lower, Benefits Greater Than Industry Estimates

Overview

Regulatory requirements to protect the environment, workers, and consumers often lead to innovation, increased productivity, and new businesses and jobs. Although an argument is sometimes made that the cost of complying with regulations is too high, that the societal benefits do not justify the investment, or that job losses will result, a review of past regulations reveals just the opposite. Historically, compliance costs have been less and benefits greater than industry predictions, and regulation typically poses little challenge to economic competitiveness.

Recent rule-making, including regulations that curb carbon emissions and foster clean energy investments, are facing opposition from utilities. As public comments on these proposed rules are reviewed, it is instructive to look back at industry projections and compare them to the documented impacts and benefits of previous regulatory measures. The following table and case studies demonstrate a clear pattern among corporate and trade association opponents of overestimating the costs of regulation in their economic data.[1]

The Pattern of Overestimating the Costs of Regulation

Pre- and post-regulation cost estimates for reducing pollutant emissions

Pollutant	Pre-regulation cost estimate	Post-regulation cost or revised estimate
Asbestos	$150 million (total for manufacturing and insulation sectors)	$75 million
Benzene	$350,000 per plant	Approximately zero dollars per plant
CFCs in car air conditioners	$650 to $1,200 per new car	$40 to $400 per new car
Coke oven emissions, 1970s (OSHA regulation)	$200 million to $1 billion	$160 million
Coke oven emissions, 1980s (EPA regulation)	$4 billion	$250 million to $400 million
Cotton dust	$700 million a year	$205 million a year
Halons	1989: phaseout not possible	1993: phaseout considered technologically and economically feasible
Landfill leachate	Mid-1980s: $14.8 billion	1990: $5.7 billion
Surface mining	$6 to $12 per ton of coal	50 cents to $1 per ton of coal
Vinyl chloride	$109 million a year	$20 million a year

Source: Economic Policy Institute, "Falling Prices: Cost of Complying With Environmental Regulations Almost Always Less Than Advertised" (1997), 4, http://www.epi.org/publication/bp69.

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Acid rain

When the 1990 amendments to the Clean Air Act gave the U.S. Environmental Protection Agency responsibility for regulating sulfur dioxide under the Acid Rain Program, the utility industry said the program would increase costs for ratepayers, jeopardize reliability, and thwart development of clean coal technologies. In testimony before the U.S. House Subcommittee on Energy and Power, Southern Co. President Edward Addison cited a study from the Edison Electric Institute suggesting that the proposed law would initially cost ratepayers $5.5 billion annually, increasing to $7.1 billion a year in 2000.[2]

In 2003, the Office of Management and Budget re-evaluated the cost of the program from its inception (including the acid rain permits, administration of the allowance system, emissions monitoring, and appeals fees) and found that consumers paid $1.1 billion to $1.8 billion a year.[3] The agency's report also examined the impacts of all clean air regulations (including the Acid Rain Program) over the previous 10 years. It measured benefits by fewer hospital and emergency room visits, a lower rate of premature deaths, and a reduction in workdays lost to illness and valued these at between $118 billion and $177 billion annually, compared with costs of $18 billion to $21 billion to retrofit power plants to comply with the new clean air regulations.[4]

Seat belts

Some automakers began installing seat belts in their vehicles as early as the 1930s, but two laws passed in 1966—the Highway Safety Act and the National Traffic and Motor Vehicle Safety Act—set the stage for mandatory seat belts in all U.S. cars. Automakers objected, asserting that manufacturing costs would rise, adding seat belts would give consumers the impression that vehicles are dangerous, and safety was not a selling point with customers.[5] However, the regulation led to numerous studies and public safety campaigns that touted the benefits of seat belts. According to the National Highway Traffic Safety Administration, these restraints saved more than 226,000 lives between 1975 and 2006 and usage increased from 69 percent in 1998 to 88 percent in 2009.[6] Additionally, the agency estimated that if the national usage rate were to increase to 90 percent, more than 1,600 additional lives would be saved and 22,000 more injuries would be prevented annually.[7]

Air bags

Before 1984, automakers preferred installing automatic seatbelts rather than competing products, such as air bags. That changed, however, following the 1984 congressional mandate that car companies install automatic passive restraints for drivers, and air bags became the most popular compliance tool. Carmakers initially estimated that air bags would cost approximately $800 per vehicle and questioned their effectiveness. In fact, the figure was closer to $300 per vehicle and additional savings were realized by consumers as medical costs and insurance premiums decreased for those who bought cars equipped with air bags.[8] Furthermore, reports of air bags saving lives increased consumer demand for cars with the devices. According to the National Highway Traffic Safety Administration, air bags saved 25,782 lives from 1987 to 2008.[9]

Catalytic converters

The automotive emissions reductions mandated by the 1970 Clean Air Act caused an outcry from carmakers, particularly General Motors Corp. and Ford Motor Co., who contended that the requirements were excessive and the time they had to comply was too short. Initial industry estimates for the costs of adding catalytic converters were $860 per vehicle. But a 1972 report by the National Academy of Sciences priced them at $288 per vehicle.[10]

GM and Ford filed lawsuits against the EPA to delay the 1975 implementation deadline and used the extra time to boost research-and-development funding to study how to make catalytic converters more efficient.[11] Automakers never doubted the converter's ability to reduce emissions, but the mandate from Congress pushed them to take action, which resulted in improved fuel efficiency for consumers. The implementation of catalytic converters was so successful that the EPA revised its initial requirement of a 90 percent reduction in emissions and set new standards that compelled manufacturers to install catalytic converters in even more new cars by 1975. Owing to the widespread use of more efficient converters, hydrocarbon emissions fell from 3.08 grams per mile in 1974 to 1.32 in 1975, and carbon emissions dropped from 35.9 grams per mile to 22.9 over the same period.[12] The reductions more than offset the 21 percent increase in vehicle miles traveled between 1970 and 1980.[13]

Chlorofluorocarbons

The United States began phasing out chlorofluorocarbons (CFCs) in 1978 because of their destructive effects on the ozone layer. Industries that used CFCs said that it would take eight or nine years and be too costly to identify and deploy substitutes. However, cheaper and more environmentally acceptable alternatives emerged in less than two years.[14] Northern Telecom (now Nortel) phased out CFCs in just three years by investing $1 million in new hardware. In return, it saved $4 million in chemical waste-disposal costs and CFC purchases.[15] The World Resources Institute estimated that switching to CFC substitutes saved U.S. businesses and consumers more than $1.25 billion from 1974 to 1983.[16]

Recycling the CFCs used in automobile air conditioners also proved beneficial. One study called it a "win-win-win situation for industry, consumers, and the environment" that yielded increased equipment sales, a procedure that eliminated the need for consumers to refresh the CFCs in their cars, and protection for the ozone layer from further depletion.[17]

Considerations for future rule-makings

Opposition persists, based on anticipated costs, to new regulations intended to reduce pollution emissions, save money, and increase the country's energy security. History shows, however, that these cost-based assumptions focus on and overstate adverse economic impacts while devaluing societal benefits. Policymakers should account for any environmental and human health benefits as well as opportunities for economic growth presented by new or proposed regulations. Research shows that regulation routinely fosters innovation and promotes economic competitiveness.

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For further information, please visit:

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The Surprising Facts About the Clean Power Plan: Most States Are Already On Track to Meet 2020 Benchmarks for Reducing Carbon Emissions[1]

June 3, 2015

A new analysis[2] released today by UCS shows that most states are **already making progress toward cutting carbon emissions from power plants** by shifting from coal-fired power to cleaner generation sources like renewable energy, energy efficiency, and natural gas. As a result of recent decisions and state laws that **predate the proposed Clean Power Plan**, 31 states have already made commitments that would put them more than halfway toward meeting the 2020 benchmarks set out by the EPA, and 14 of those states are already on track to meet or exceed them, including some unlikely suspects.

Key findings

Our analysis shows that, through decisions already made such as the **retirement of uneconomic coal plants**, and **compliance with existing renewable electricity standards and energy efficiency resource standards**, many states all across the country are **well positioned to reliably and affordably achieve the 2020 emissions**

reduction benchmarks set forth in the EPA's proposed Clean Power Plan. Additional actions, especially further ramping up of cost-effective renewable energy and energy efficiency, can get them all the way toward compliance at modest costs or net savings to consumers.

Links to a slide deck and tables summarizing our findings are at the bottom of this post.

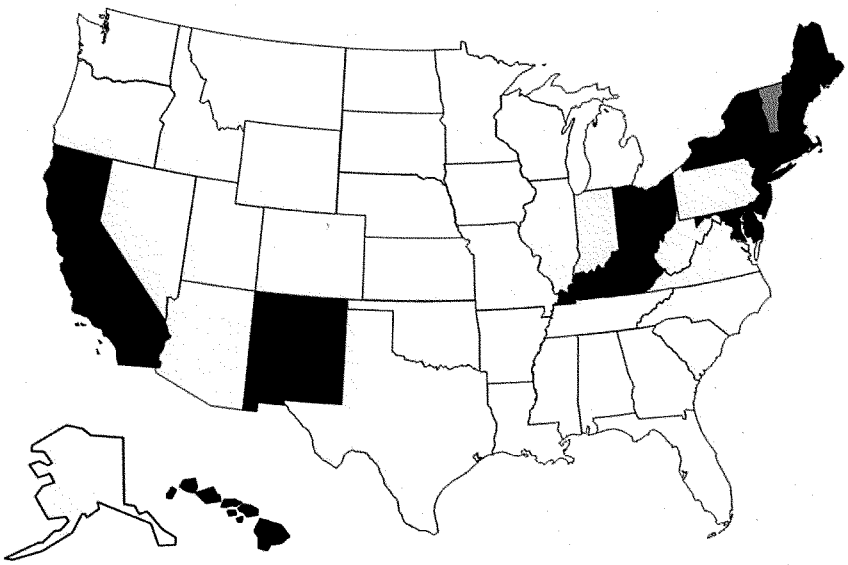
Key Finding #1: **All but 4 states** have already made decisions that will help cut their power plant emission rates **before 2020.**

States have already made legal and regulatory decisions that when fully implemented will collectively take the country **approximately two-thirds of the way** toward the combined state 2020 emissions benchmarks.

Key Finding #2: Current carbon-cutting decisions and actions are sufficient to **put 14 states ahead of the emission rate reduction trajectory** that the Clean Power Plan sets for them beginning in 2020 (see Figure 1). Collectively, these 14 states represent 34 percent of the U.S. population and 36 percent of U.S. Gross Domestic Product (GDP). Notably, the list includes

- States that have become **national leaders in their commitments to renewable energy** and energy efficiency, such as **Hawaii, California, Massachusetts, and Maryland**;
- Three of the nation's most coal power dependent states **—Kentucky[3], Ohio, and New Mexico**—primarily due to their recent decisions to retire uneconomic coal plants and replace them with cleaner, cheaper alternatives;
- States like **Delaware, New York, and New Hampshire** that are able to meet their benchmarks through collective action with the nine

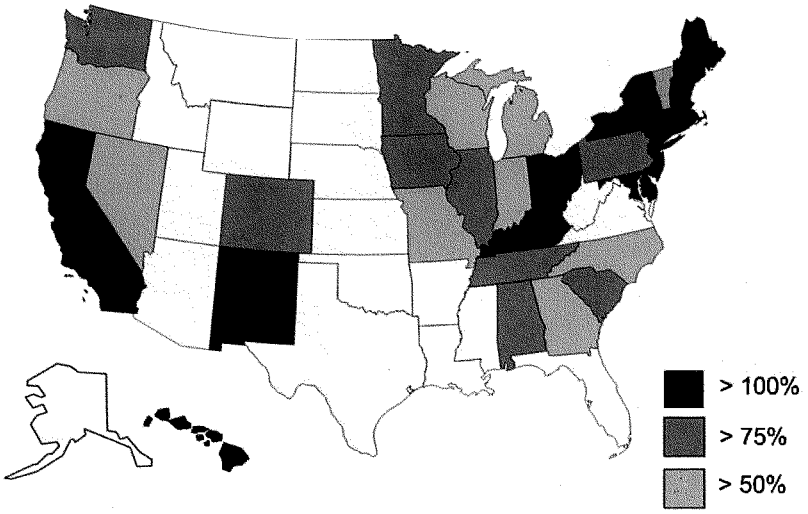
states that are part of the Regional Greenhouse Gas Initiative (RGGI)—a multi-state effort to collectively cap carbon emissions from power plants.



[4]

The 14 states that will have met the EPA's 2020 benchmarks for emissions reductions based solely on prior actions and decisions.

Key Finding #3: Fully **31 states** will be **at least halfway** towards the 2020 benchmark in the EPA's emission rate reduction trajectory, 23 of which will be 75 percent of the way there (Figure 2). Combined, these 31 states account for 71 percent of the U.S. population and 73 percent of U.S. GDP. Strikingly, nine of these states rank in the **top third of coal generating states** nationwide, illustrating that **even the most coal-dependent states are already initiating the transition to lower carbon power sources.**



[5]

Fully 31 states will be more than halfway toward meeting the EPA's 2020 benchmarks for emissions reductions, representing 73 percent of U.S. GDP.

What does it mean to meet a 2020 benchmark, anyway?

Once the Clean Power Plan is finalized this summer, states will have 1-2 years to develop compliance plans and up to 3 years for multi-state plans. Those plans must show how the state will meet an average annual carbon emission rate between 2020 and 2029 (called an interim target) and a final 2030 emission rate goal.

To help meet the interim target, the EPA suggested an emission rate reduction trajectory (or glide path) for each state starting in 2020 and continuing through 2029. **Efforts to reduce power plant carbon emissions between 2012 and 2020 are eligible** to help put states on their proposed emissions reduction pathway. In other words, **states**

don't need to wait to take action. And a vast majority of them are moving ahead.

Our analysis examines specific types of actions states have taken or will take between 2012 and 2020 that can help them cut emissions by 2020: **retiring coal plants**; deploying additional **renewable energy** to meet mandatory state renewable electricity standards (RES); and ramping up **energy efficiency** to meet mandatory state energy efficiency resource standards (EERS).

We analyze how far these planned actions will take states toward achieving the 2020 emission rate proposed in the EPA's 2020-2029 glide path. While the rule does not require states to meet this 2020 emission rate, it is a **helpful benchmark** against which to measure a state's progress toward meeting the interim and final targets of the CPP.

What exactly is considered a planned action?

In our analysis, we looked at specific actions that states have already taken or will take between 2012 and 2020 that reduce carbon emissions. Our aim was to construct a **conservative estimate** of states' progress toward their benchmark emission rates in 2020.

- **Coal Retirements**: For coal plant retirements, we conservatively assume that all of that retired generation will be made up by natural gas combined cycle (NGCC) power plants, which could come from ramping up existing NGCC plants, building new NGCC plants, or converting existing coal plants to natural gas. We used data, primarily from SNL Energy, on all announced coal plant retirements scheduled to take place between 2012 and 2020. The dataset reflects any announcements as of May 2015.
- **Renewable Energy**: We only included renewable energy that would

be brought on line between 2012 and 2020 to meet mandatory state RESs, based on projections from Lawrence Berkeley National Lab. We conservatively did not include voluntary state RES goals in this analysis, nor do we include additional renewable energy investments—beyond mandatory requirements—that are being deployed in many states like Texas and Iowa simply because it is cost-effective to do so.

- **Energy Efficiency**: We made similarly conservative estimates for energy efficiency improvements from mandatory EERS, based on data from the EPA[6]. We did not include voluntary energy efficiency or conservation goals, or other complementary state policies focused on energy efficiency.
- **Nuclear energy**: In keeping with the EPA's draft proposal, we included under construction nuclear plants that are scheduled to come on line by 2020 as committed actions by states that would help them meet their 2020 emissions benchmarks.
- **Carbon caps**: The nine states that participate in RGGI plus California all have mandatory carbon caps in place that will cut their emissions sufficiently so that they can meet the 2020 benchmarks.

Emission rates calculations[7] are all adjusted according to the EPA's proposed building blocks formula to take account of under construction natural gas and nuclear power capacity, as well as 6 percent of the generation from EPA's estimate of existing "at-risk" nuclear plants.

The path forward

In short, states in **every region** of the country are **demonstrating that they can cost-effectively and reliably transition to low-carbon power sources.** This conservative look at state progress toward carbon

emission reductions by 2020 suggests that states are well on their way toward meeting the EPA's targets. States can and should **continue to invest heavily in renewables and efficiency** to further their progress to a clean energy economy.

Download additional materials on our analysis:

Overview of Analysis and Results[8]

Table of State Level Results[9]

View a slide show of our analysis:

Posted in: Energy[10] Tags: clean energy[11], Clean Power Plan[12], energy efficiency resource standard[13], EPA[14], renewable electricity standards[15], Renewable energy[16]

About the author: Jeremy Richardson is a senior energy analyst in the Climate and Energy program, conducting analytical work on the Environmental Protection Agency's carbon regulations. Prior to this position, Dr. Richardson was a Kendall Science Fellow and researched the fundamental cultural and economic drivers of coal production in West Virginia. He has a Ph.D. and M.S. in physics from the University of Colorado at Boulder as well as a B.S. in Physics from West Virginia University. Subscribe to Jeremy's posts[17]

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1. http://blog.ucsusa.org/facts-about-the-clean-power-2020-benchmarks-for-reducing-carbon-emissions-751
2. http://www.ucsusa.org/sites/default/files/attach/2015/06/states-of-progress-analysis-slide-deck.pdf
3. http://blog.ucsusa.org/states-sue-epa-over-clean-power-plan-disprove-their-own-argument-with-existing-efforts-to-reduce-carbon-emissions-752
4. http://blog.ucsusa.org/wp-content/uploads/States-Exceeding-Benchmark.png
5. http://blog.ucsusa.org/wp-content/uploads/States-More-Than-Halfway.png
6. http://epa.gov/statelocalclimate/state/statepolicies.html
7. http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-goal-computation.pdf
8. http://www.ucsusa.org/sites/default/files/attach/2015/06/states-of-progress-analysis-slide-deck.pdf
9. http://www.ucsusa.org/sites/default/files/attach/2015/06/state-progress-clean-power-plan-2020-benchmarks.pdf
10. http://blog.ucsusa.org/category/energy

11. http://blog.ucsusa.org/tag/clean-energy
12. http://blog.ucsusa.org/tag/clean-power-plan
13. http://blog.ucsusa.org/tag/energy-efficiency-resource-standard
14. http://blog.ucsusa.org/tag/epa
15. http://blog.ucsusa.org/tag/renewable-electricity-standards
16. http://blog.ucsusa.org/tag/renewable-energy
17. http://feeds.feedburner.com/TheEquationJeremyRichardson
18. http://action.ucsusa.org/site/Donation2?df_id=3460&3460.donation=form1

States of Progress:
Existing Commitments to Clean Energy Put Most States on Track to Meet Clean Power Plan's 2020 Benchmarks
Jeremy Richardson, Jeff Deyette, Rachel Cleetus, and Steve Clemmer
June 3, 2015
Union of Concerned Scientists

Key Takeaways
• The EPA's proposed Clean Power Plan (CPP) and its timeline and trajectory for emission cuts are achievable
• 31 states are already more than halfway toward meeting their 2020 benchmarks, thanks to existing commitments to clean energy
• 14 states are already on track to surpass their 2020 CPP benchmarks, including the 9 RGGI states collectively, 3 states suing the EPA over the CPP, and 2 of the nation's most coal-dependent states
• By prioritizing renewable energy and energy efficiency, and collaborating with their neighbors, states can reliably and cost-effectively meet their emission reduction goals
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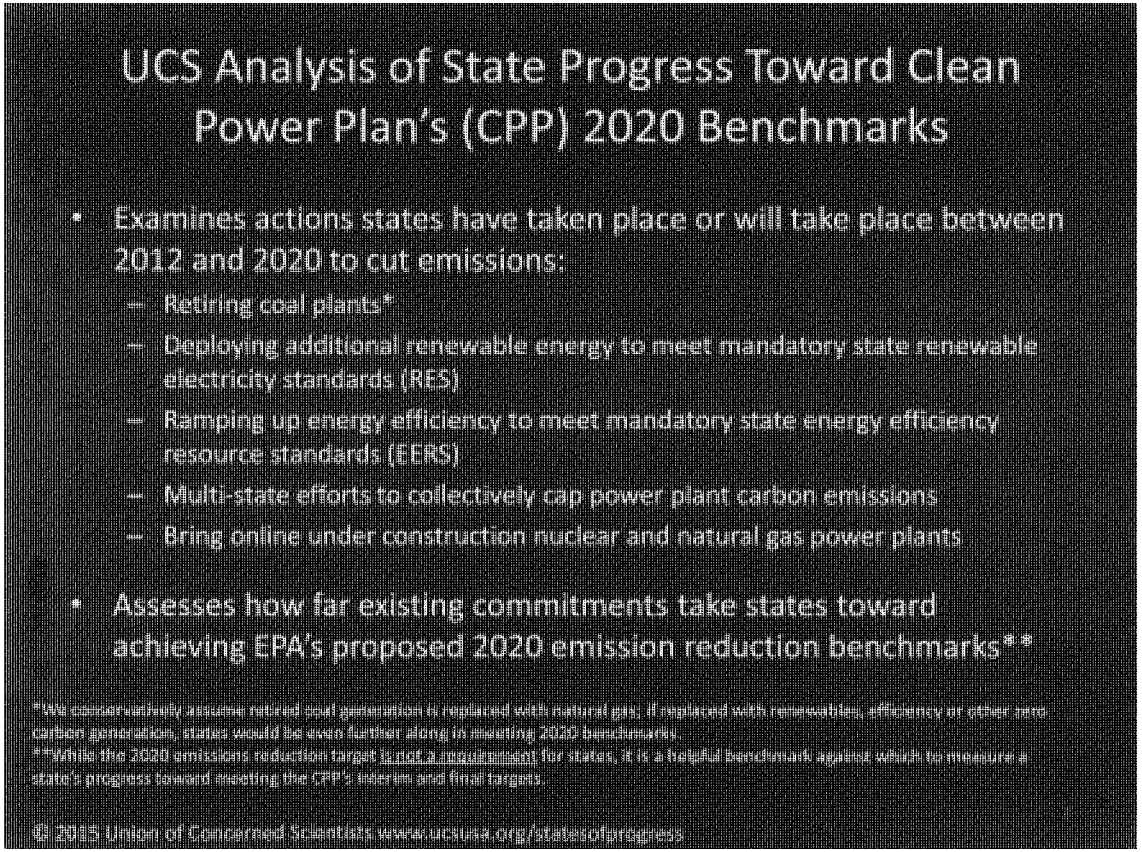
UCS Analysis of State Progress Toward Clean Power Plan's (CPP) 2020 Benchmarks
• Examines actions states have taken place or will take place between 2012 and 2020 to cut emissions:
– Retiring coal plants*
– Deploying additional renewable energy to meet mandatory state renewable electricity standards (RES)
– Ramping up energy efficiency to meet mandatory state energy efficiency resource standards (EERS)
– Multi-state efforts to collectively cap power plant carbon emissions
– Bring online under construction nuclear and natural gas power plants
• Assesses how far existing commitments take states toward achieving EPA's proposed 2020 emission reduction benchmarks**
*We conservatively assume retired coal generation is replaced with natural gas. If replaced with renewables, efficiency or other zero carbon generation, states would be even farther along in meeting 2020 benchmarks.
**While the 2020 emissions reduction target is not a requirement for states, it is a helpful benchmark against which to measure a state's progress toward meeting the CPP's interim and final targets.
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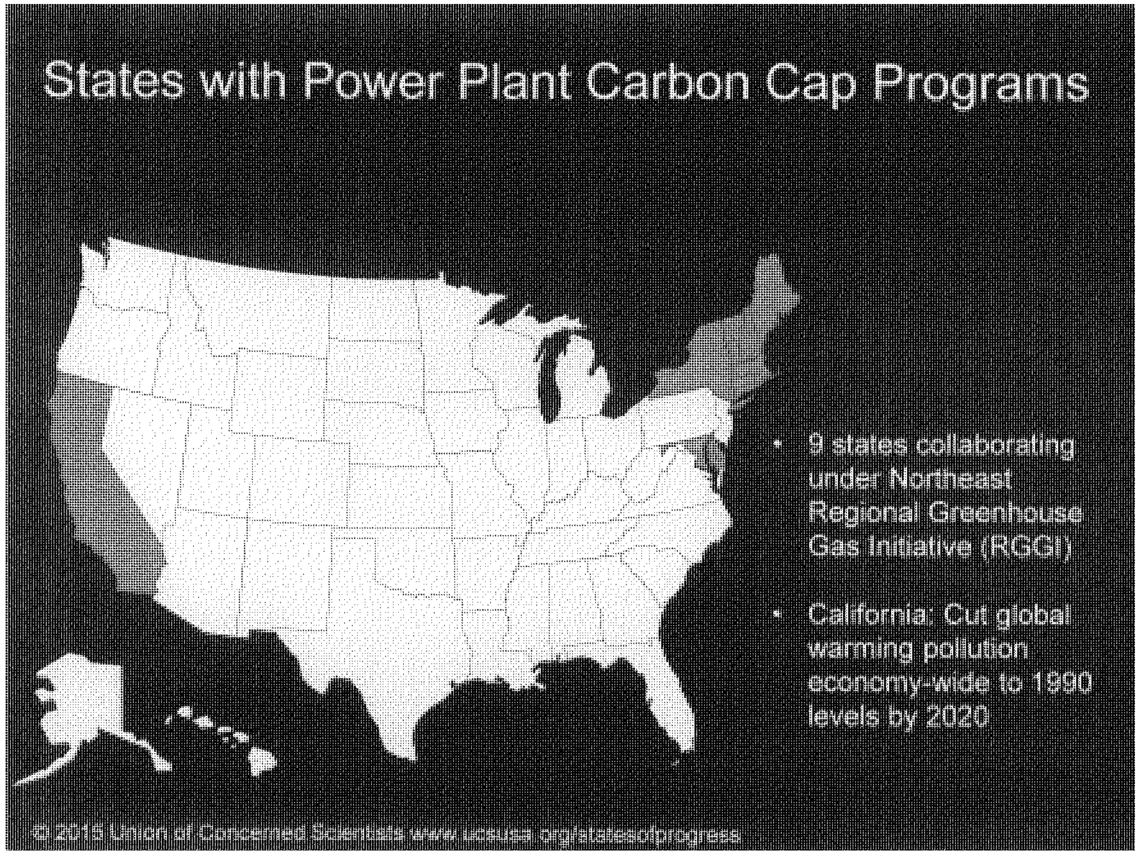
State-level Carbon Cutting
Commitments


States with Power Plant Carbon Cap Programs
• 9 states collaborating under Northeast Regional Greenhouse Gas Initiative (RGGI)
• California: Cut global warming pollution economy-wide to 1990 levels by 2020
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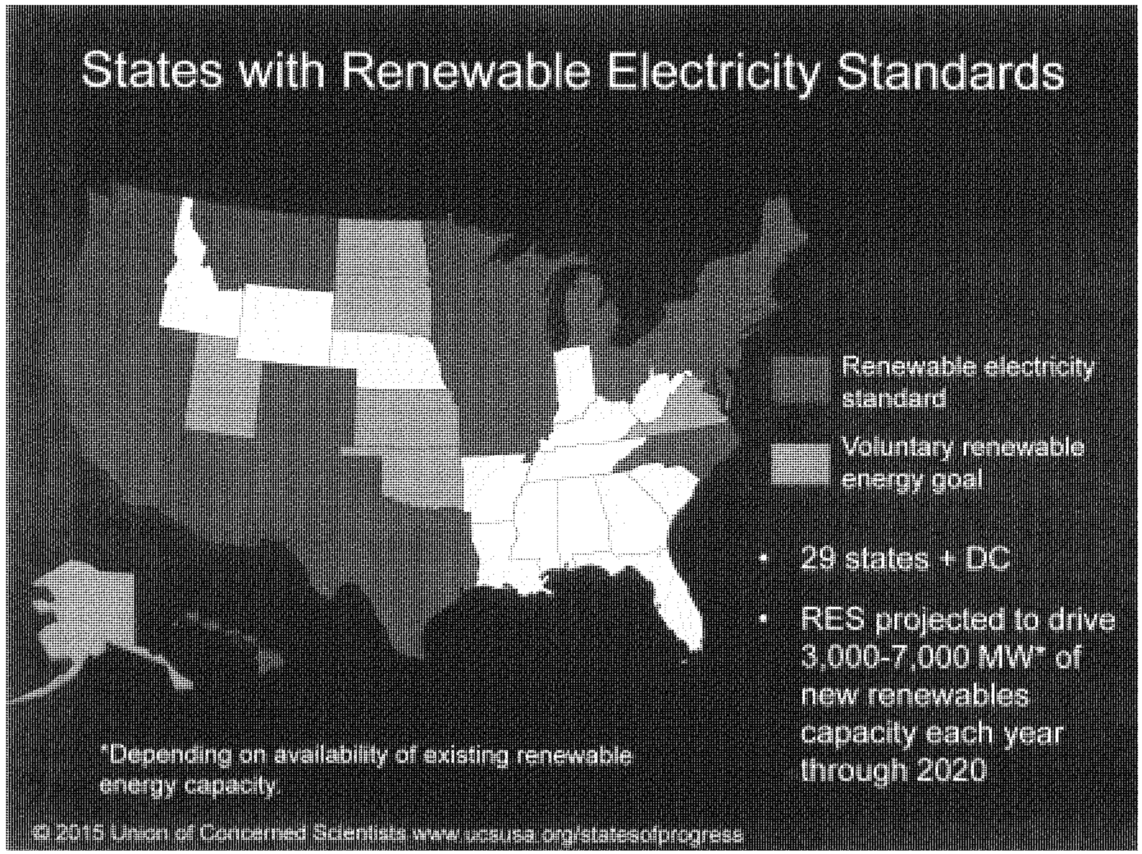
States with Renewable Electricity Standards
Renewable electricity standard
Voluntary renewable energy goal
• 29 states + DC
• RES projected to drive 3,000-7,000 MW* of new renewables capacity each year through 2020
*Depending on availability of existing renewable energy capacity.
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States with Energy Efficiency Resource Standards
• 24 states

States with Coal Generator Retirements
(2012-2020)
• At least 295 coal generating units in 33 states have either retired or are scheduled to close through 2020
• Represents more than 46,600 MW of coal power capacity, equivalent to 10.4% of total U.S. coal generation in 2012
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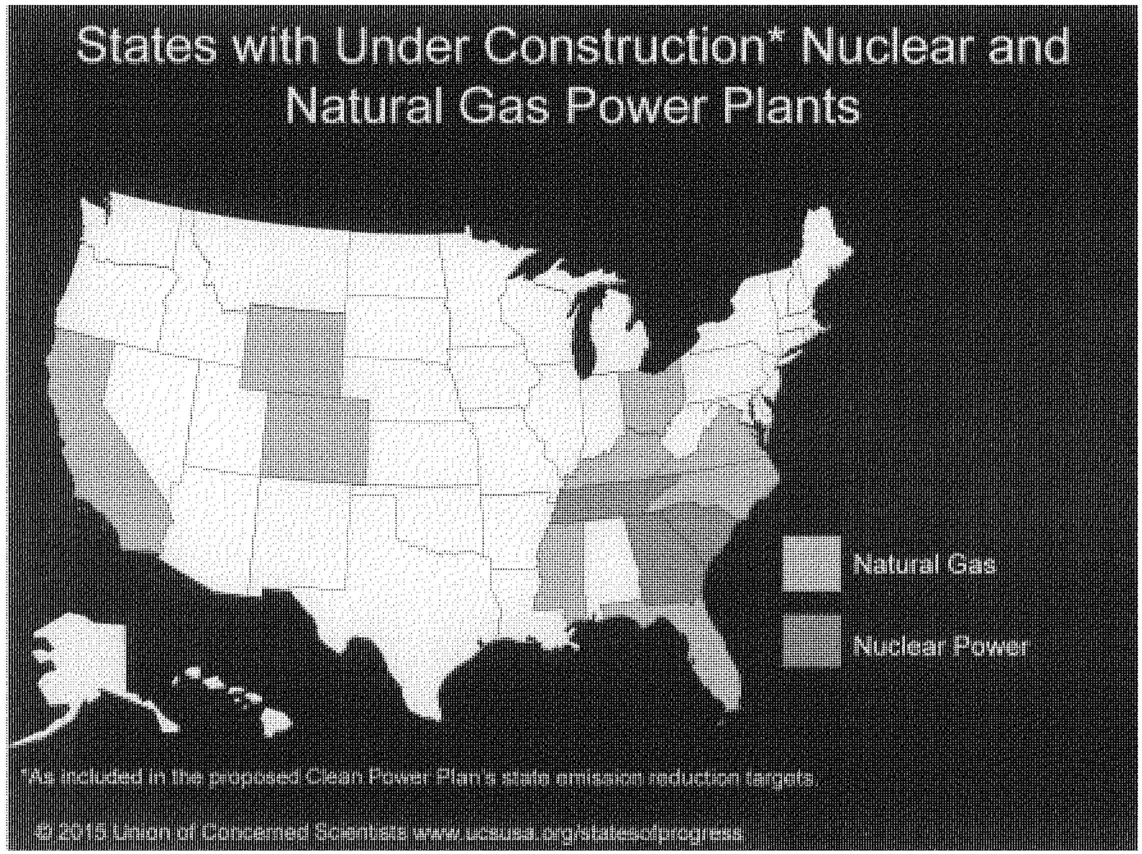
States with Under Construction* Nuclear and Natural Gas Power Plants
Natural Gas
Nuclear Power
*As included in the proposed Clean Power Plan's state emission reduction targets.
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Number of Existing Policies and Decisions to Reduce
Power Plant Carbon Emissions
Carbon Cap, RES, EERS,
Coal Retirement, and/or
Under Construction
Nuclear/Natural Gas
1
2
3
4
All 5
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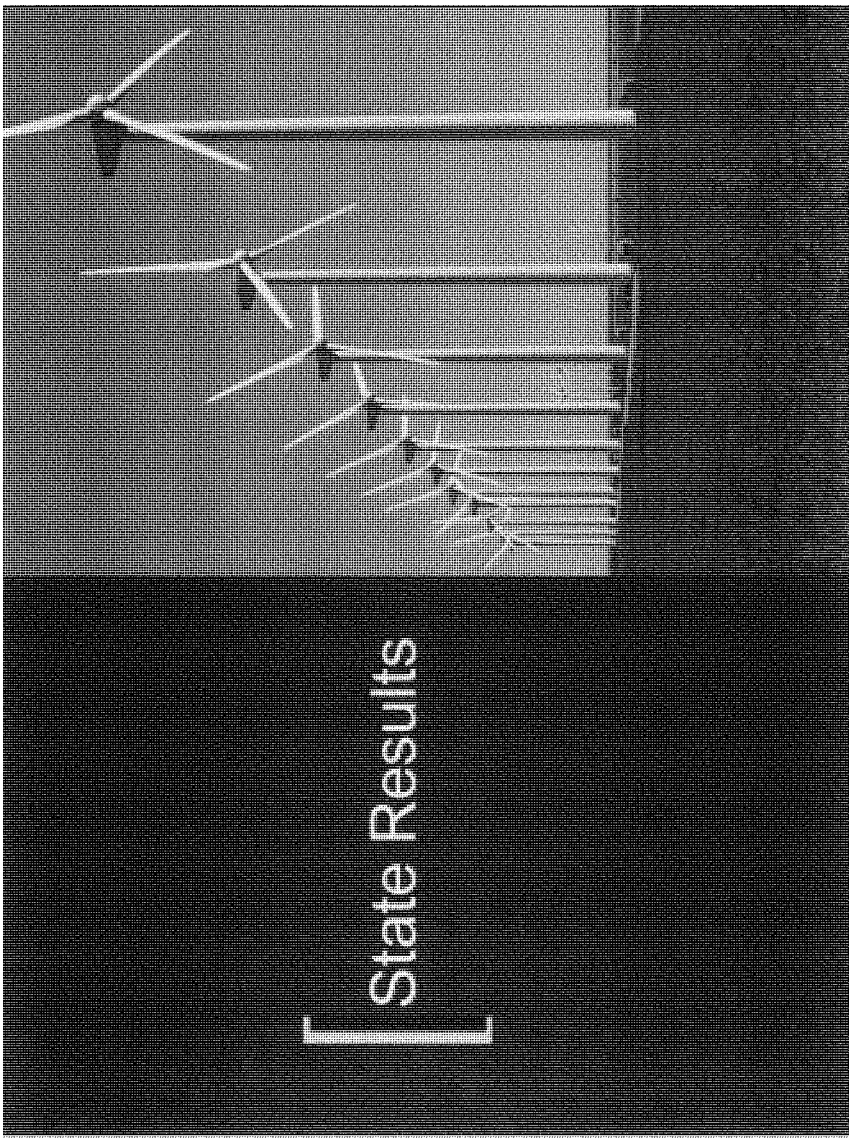
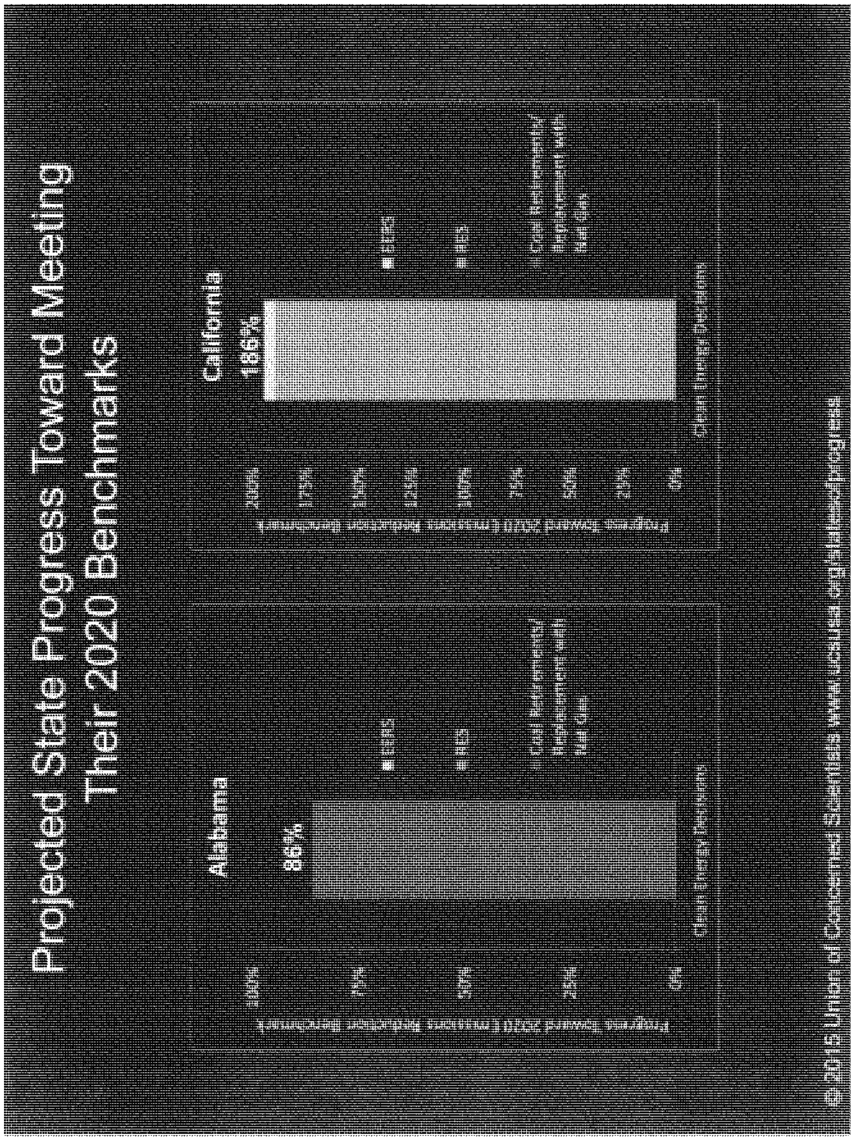
National Results

14 States are Already on Track to Surpass Their 2020
Clean Power Plan Benchmarks
Represents 34% of the
U.S. population and
38% of U.S. GDP

31 States Will Be More Than Halfway Toward Meeting
Their 2020 Benchmarks
• Represents 71% of
the U.S. population
and 72% of U.S. GDP
≥ 100%
≥ 75%
≥ 50%
© 2018 Lumina Foundation

Even States that are Suing the EPA are Making
Progress Toward Their 2020 Benchmarks
Collectively will be more than 40% of the way toward their 2020 benchmarks
≥ 100%
≥ 75%
≥ 50%
< 50%


State Results


Projected State Progress Toward Meeting Their 2020 Benchmarks
Alabama
86%
California
186%
Clean Energy Decisions
Clean Energy Decisions
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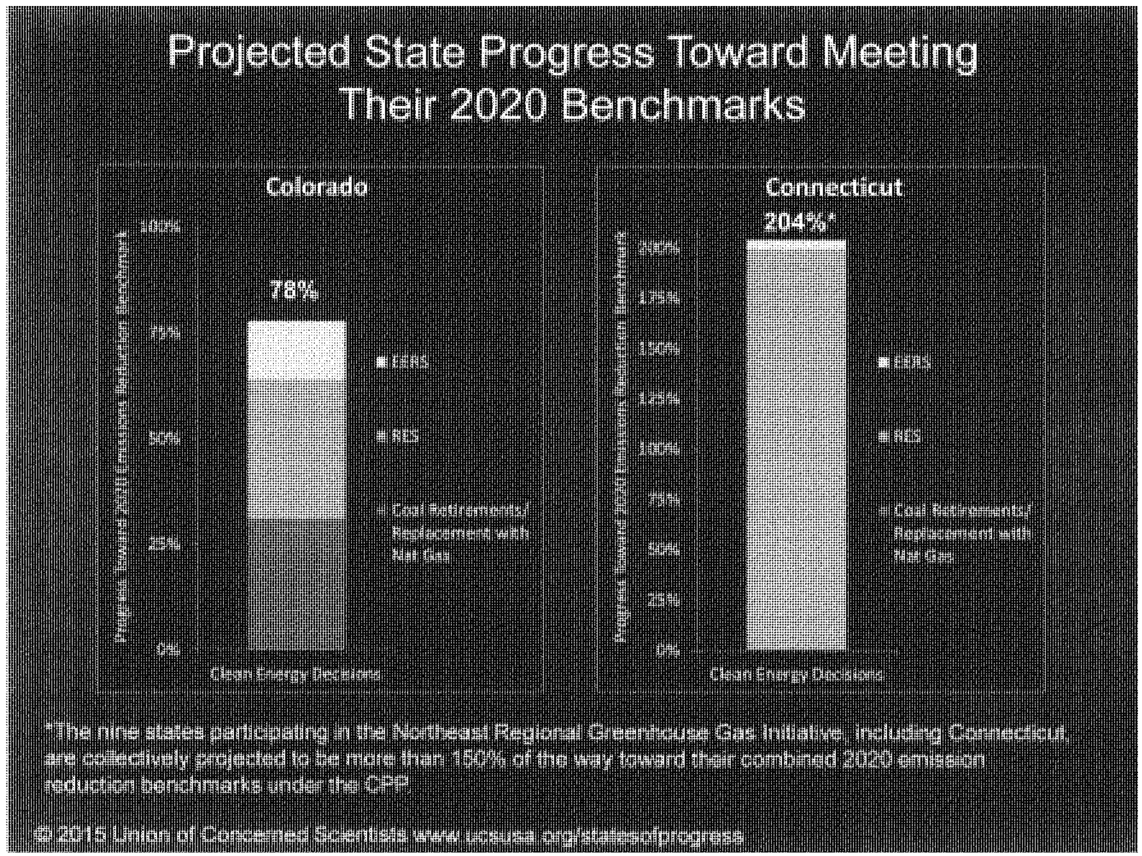
Projected State Progress Toward Meeting Their 2020 Benchmarks
Colorado
78%
100%
75%
50%
25%
0%
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
Connecticut
204%*
200%
175%
150%
125%
100%
75%
50%
25%
0%
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
*The nine states participating in the Northeast Regional Greenhouse Gas Initiative, including Connecticut, are collectively projected to be more than 150% of the way toward their combined 2020 emission reduction benchmarks under the CPP.
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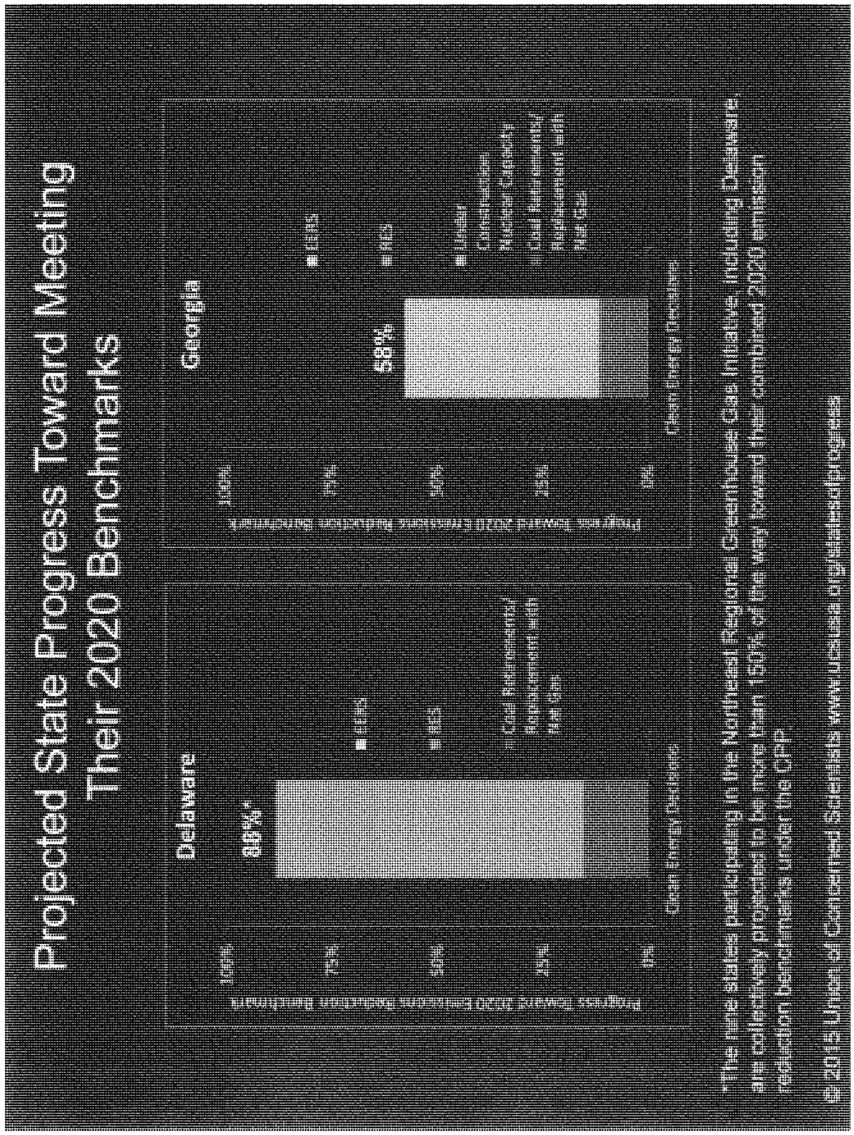
Projected State Progress Toward Meeting
Their 2020 Benchmarks
Delaware
88%*
100%
75%
50%
25%
0%
Progress Toward 2020 Emissions Reduction Benchmark
Clean Energy Decisions
EERS
RES
Coal Retirements/
Replacement with
Nat Gas
Georgia
58%
100%
75%
50%
25%
0%
Progress Toward 2020 Emissions Reduction Benchmark
Clean Energy Decisions
EERS
RES
Under
Construction
Nuclear Capacity
Coal Retirements/
Replacement with
Nat Gas
*The nine states participating in the Northeast Regional Greenhouse Gas Initiative, including Delaware, are collectively projected to be more than 150% of the way toward their combined 2020 emission reduction benchmarks under the CPP.
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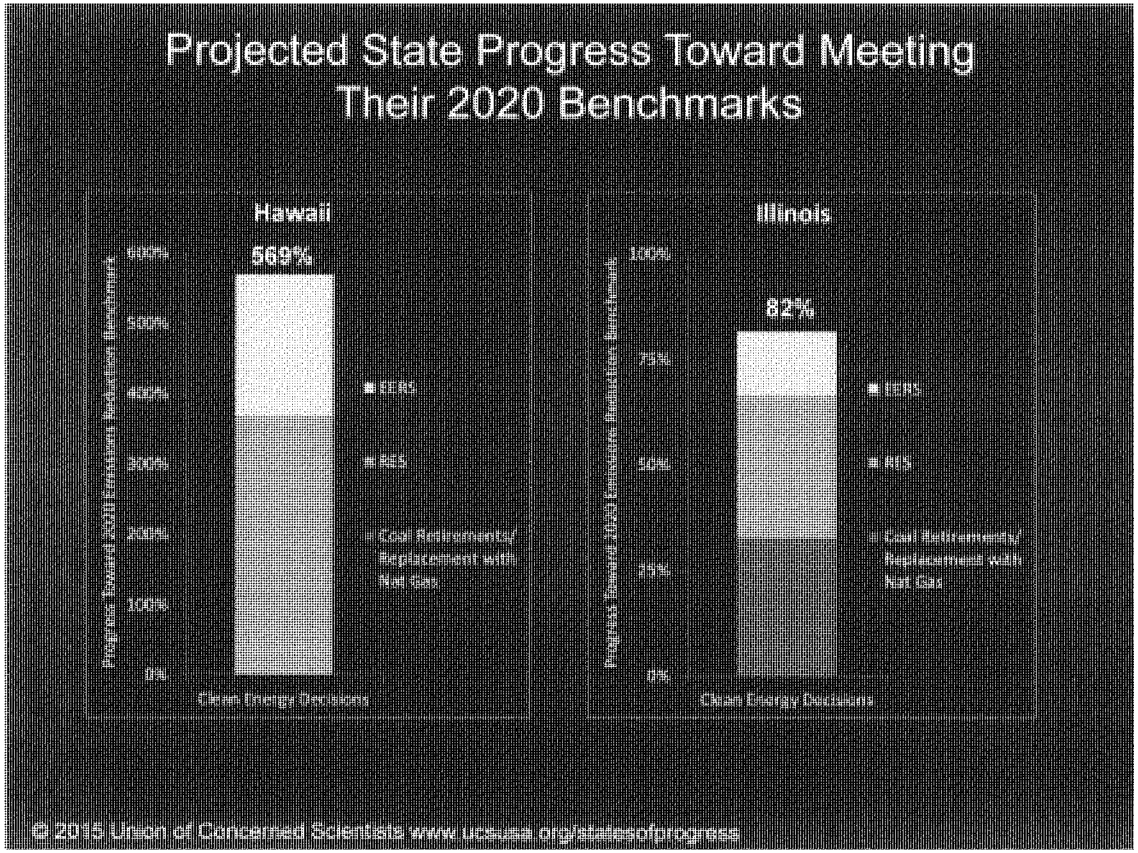
Projected State Progress Toward Meeting
Their 2020 Benchmarks
Hawaii
569%
600%
500%
400%
300%
200%
100%
0%
Progress Toward 2020 Emissions Reduction Benchmark
Clean Energy Decisions
EERS
RES
Coal Retirements/
Replacement with
Nat Gas
Illinois
82%
100%
75%
50%
25%
0%
Progress Toward 2020 Emissions Reduction Benchmark
Clean Energy Decisions
EERS
RES
Coal Retirements/
Replacement with
Nat Gas
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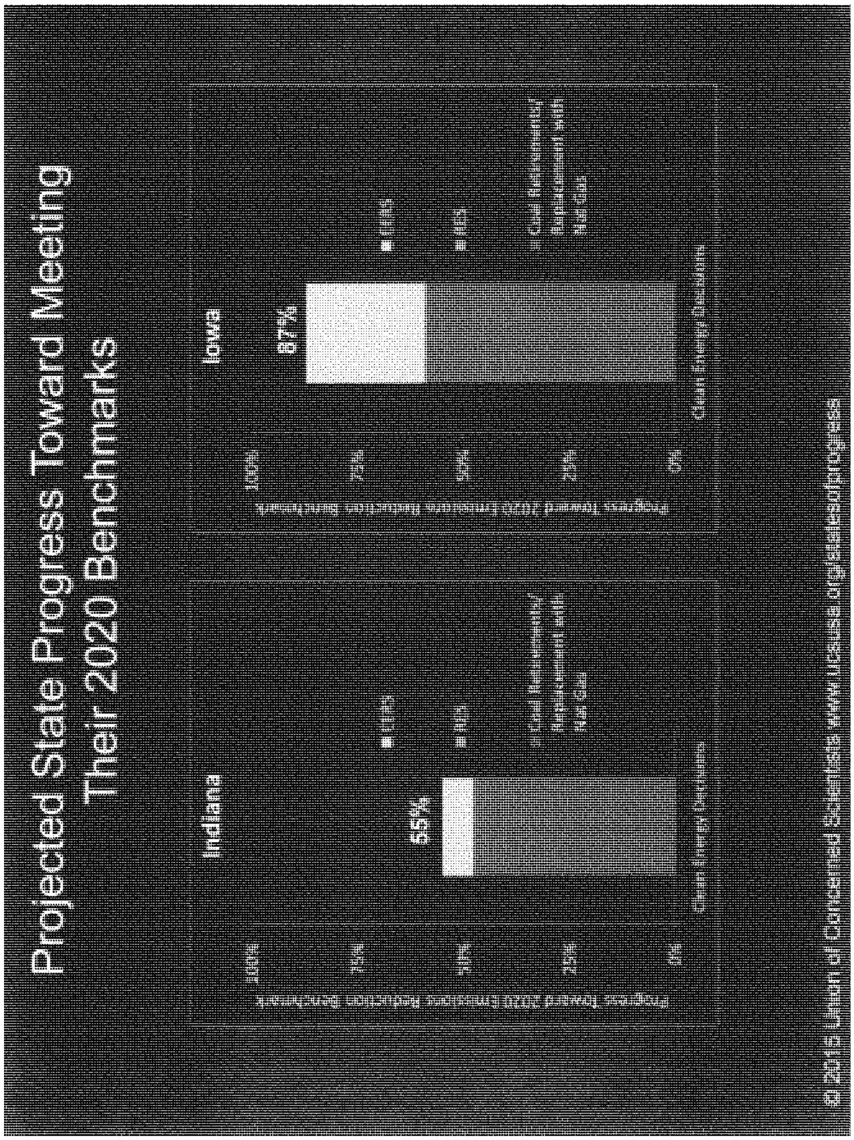
Projected State Progress Toward Meeting Their 2020 Benchmarks
Indiana
55%
Iowa
87%
Progress Toward 2020 Emissions Reduction Benchmark
100%
75%
50%
25%
0%
Clean Energy Decisions
EERS
RES
Coal Retirements/ Replacement with Nat Gas
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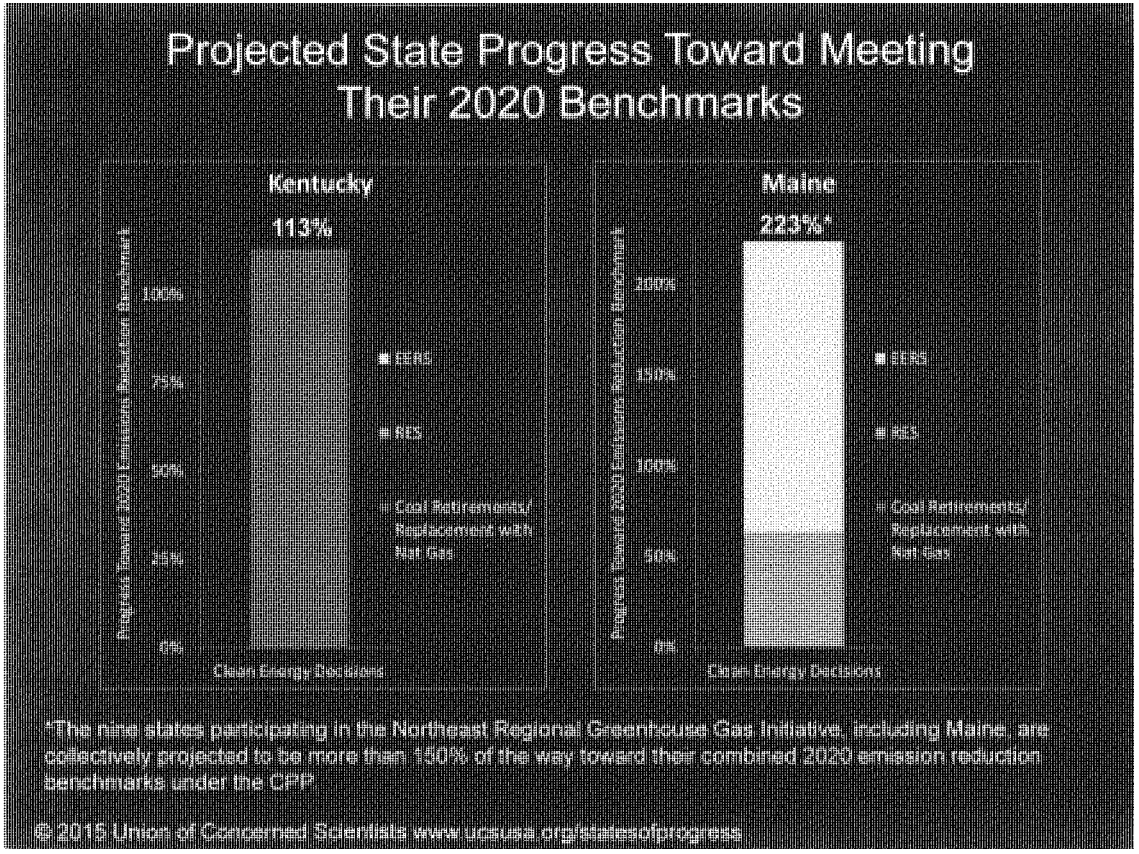
Projected State Progress Toward Meeting Their 2020 Benchmarks
Kentucky
113%
Maine
223%*
Progress Toward 2020 Emissions Reduction Benchmark
100%
75%
50%
25%
0%
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
*The nine states participating in the Northeast Regional Greenhouse Gas Initiative, including Maine, are collectively projected to be more than 150% of the way toward their combined 2020 emission reduction benchmarks under the CPP
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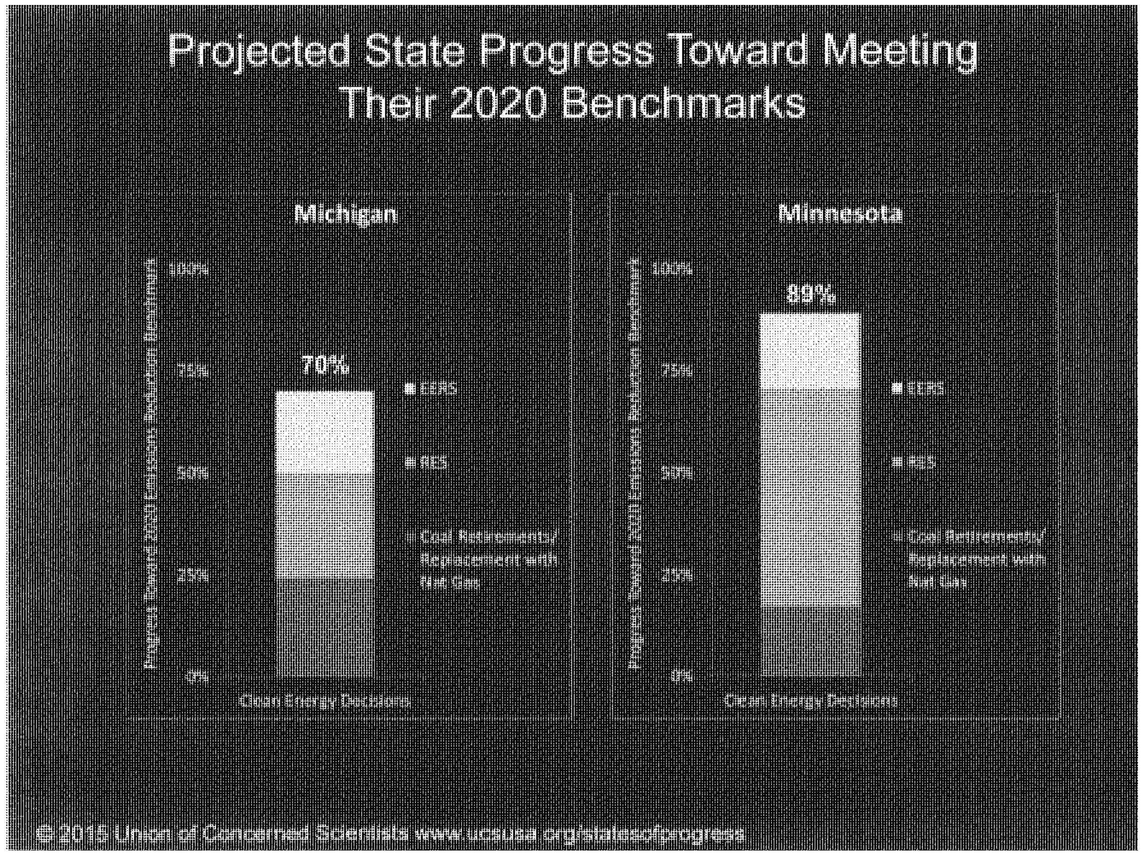
Projected State Progress Toward Meeting
Their 2020 Benchmarks
Maryland
285%*
Progress Toward 2020 Emissions Reductions Benchmark
Massachusetts
218%*
Progress Toward 2020 Emissions Reductions Benchmark


Projected State Progress Toward Meeting Their 2020 Benchmarks
Michigan
Minnesota
Progress Toward 2020 Emissions Reduction Benchmark
100%
75%
50%
25%
0%
70%
89%
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
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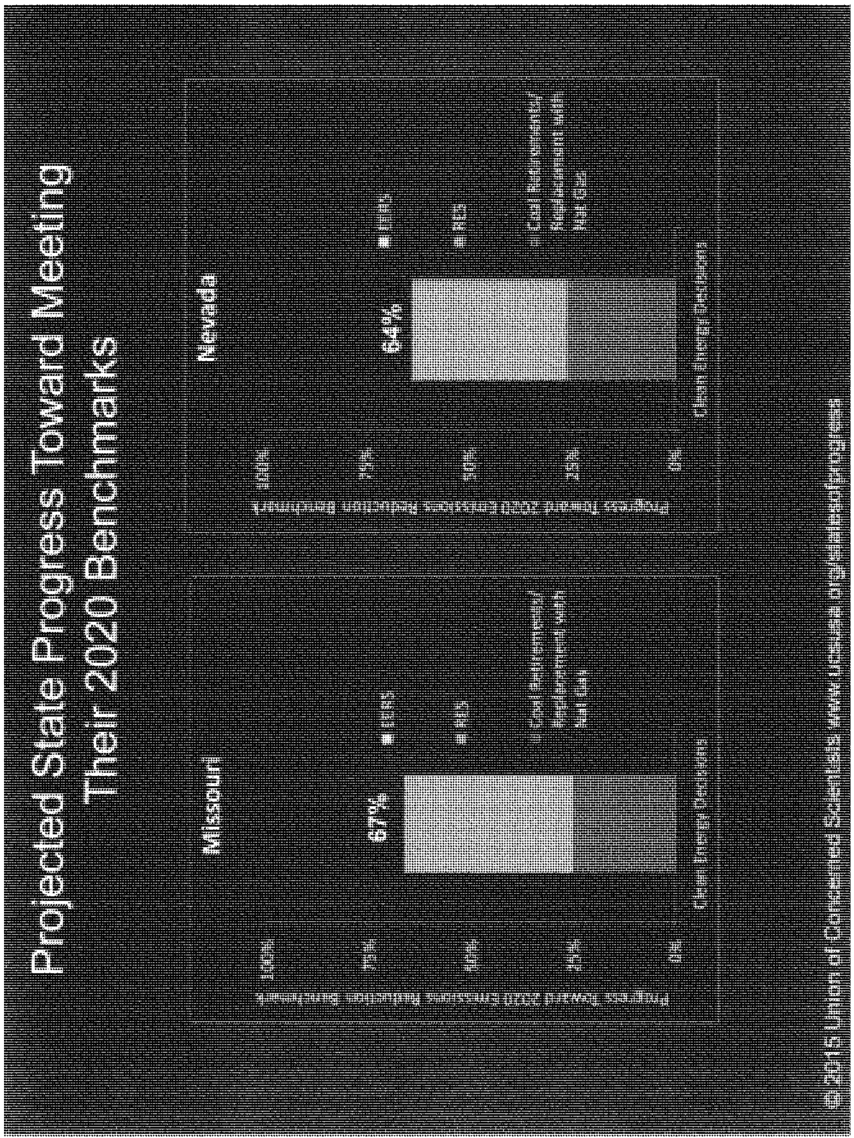
Projected State Progress Toward Meeting Their 2020 Benchmarks
Missouri
67%
Nevada
64%
Progress Toward 2020 Emissions Reduction Benchmark
100%
75%
50%
25%
0%
Clean Energy Decisions
EERS
RES
Coal Retirements/ Replacement with Nat Gas
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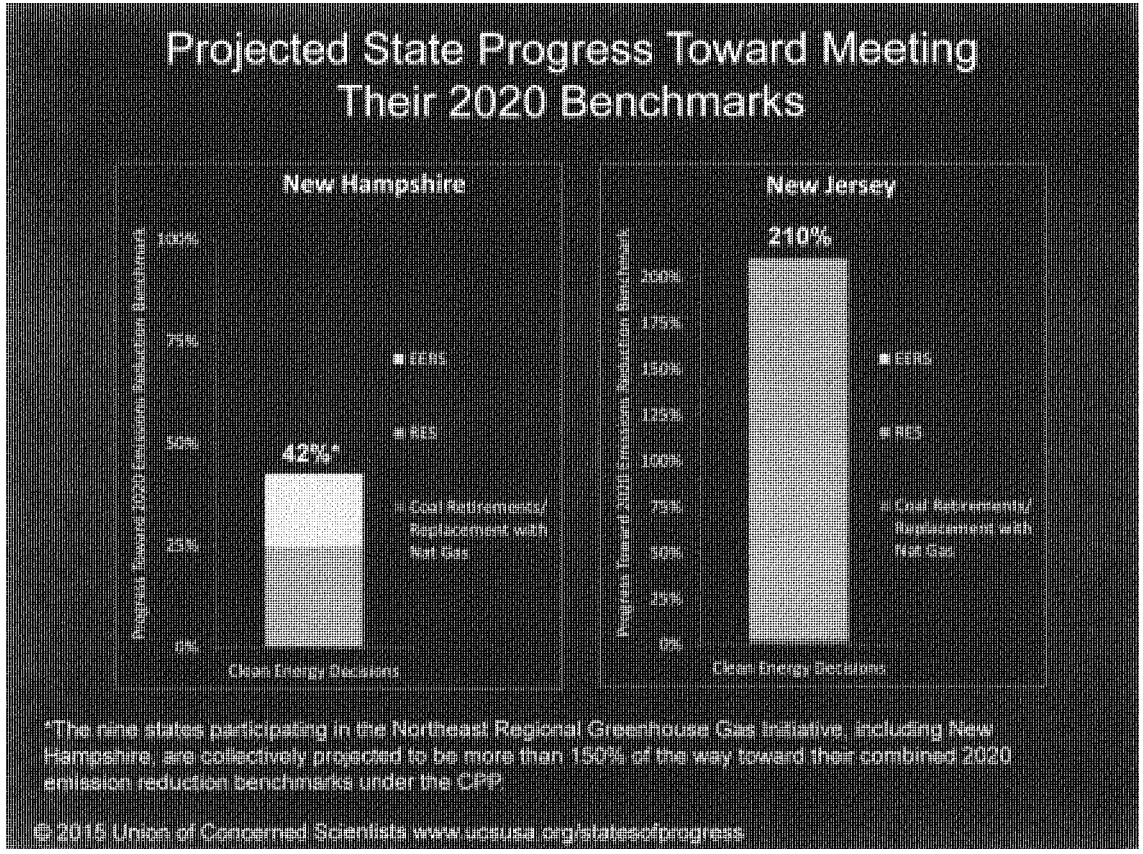
Projected State Progress Toward Meeting Their 2020 Benchmarks
New Hampshire
New Jersey
Progress Toward 2020 Emissions Reduction Benchmark
100%
75%
50%
25%
0%
42%*
210%
200%
175%
150%
125%
100%
75%
50%
25%
0%
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
*The nine states participating in the Northeast Regional Greenhouse Gas Initiative, including New Hampshire, are collectively projected to be more than 150% of the way toward their combined 2020 emission reduction benchmarks under the CPP.
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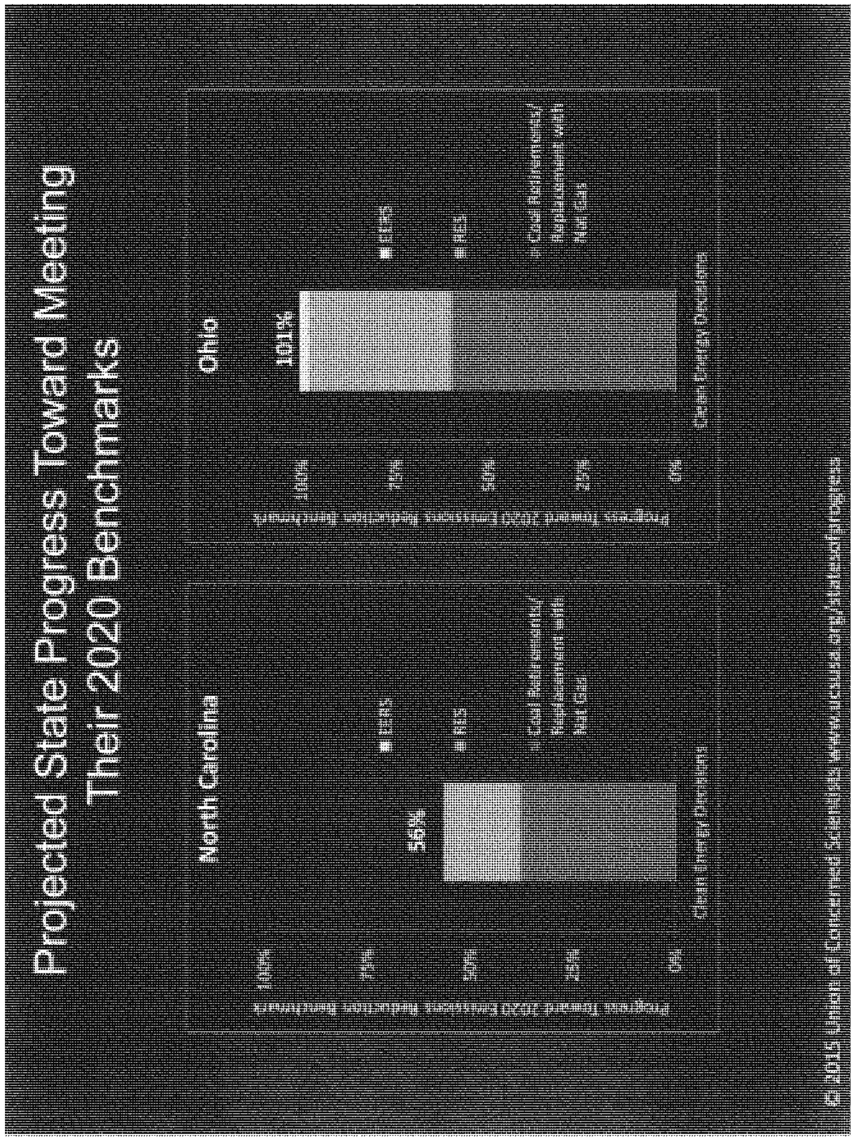
Projected State Progress Toward Meeting
Their 2020 Benchmarks
New Mexico
New York


Projected State Progress Toward Meeting Their 2020 Benchmarks
North Carolina
56%
Ohio
101%
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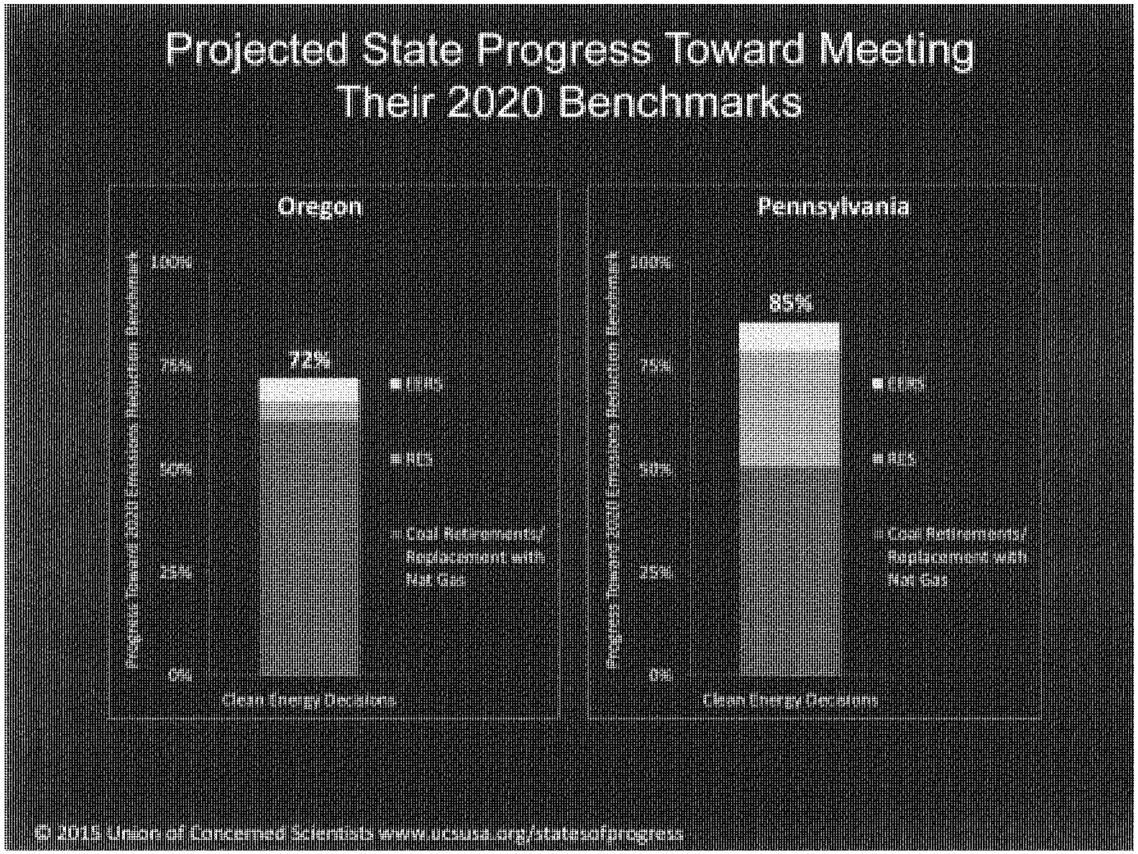
Projected State Progress Toward Meeting
Their 2020 Benchmarks
Oregon
Progress Toward 2020 Emissions Reduction Benchmark
100%
75%
50%
25%
0%
72%
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
Pennsylvania
Progress Toward 2020 Emissions Reduction Benchmark
100%
75%
50%
25%
0%
85%
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
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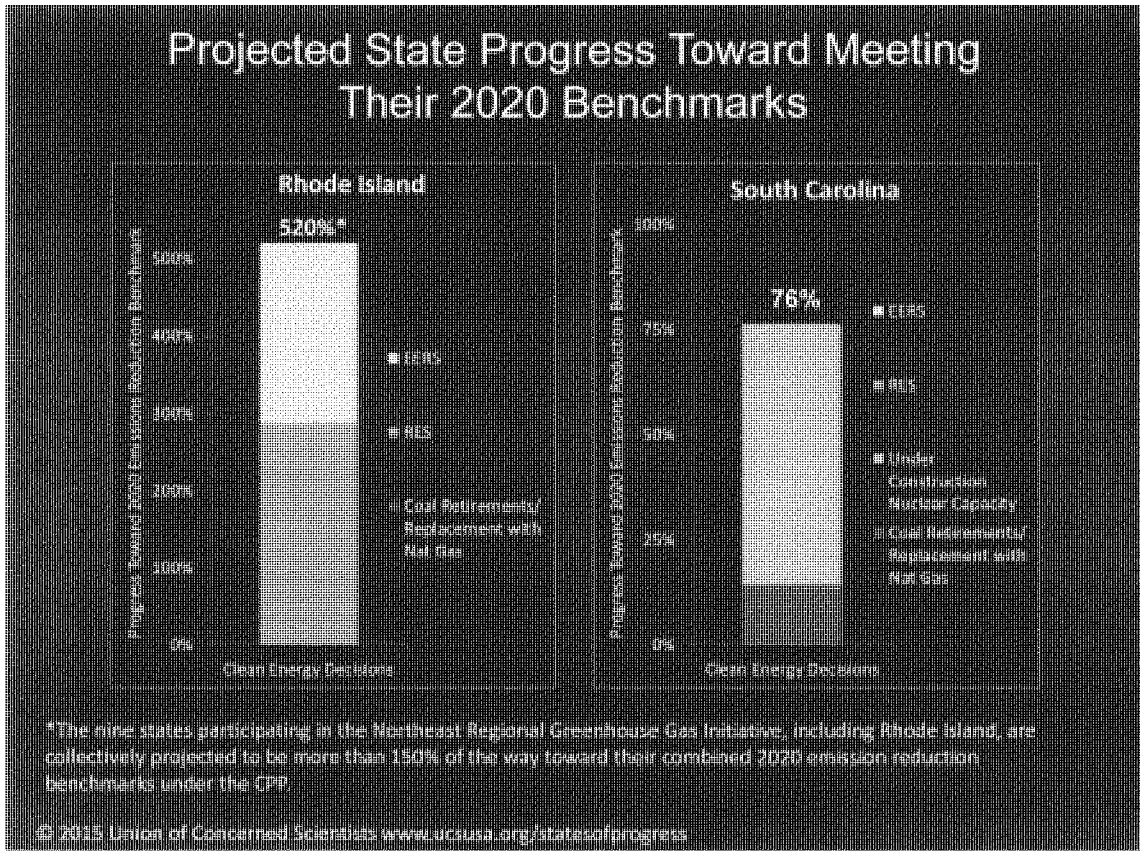
Projected State Progress Toward Meeting Their 2020 Benchmarks
Rhode Island
520%*
500%
400%
300%
200%
100%
0%
Progress Toward 2020 Emissions Reduction Benchmark
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
South Carolina
76%
100%
75%
50%
25%
0%
Progress Toward 2020 Emissions Reduction Benchmark
EERS
RES
Under Construction Nuclear Capacity
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
*The nine states participating in the Northeast Regional Greenhouse Gas Initiative, including Rhode Island, are collectively projected to be more than 150% of the way toward their combined 2020 emission reduction benchmarks under the CPP.
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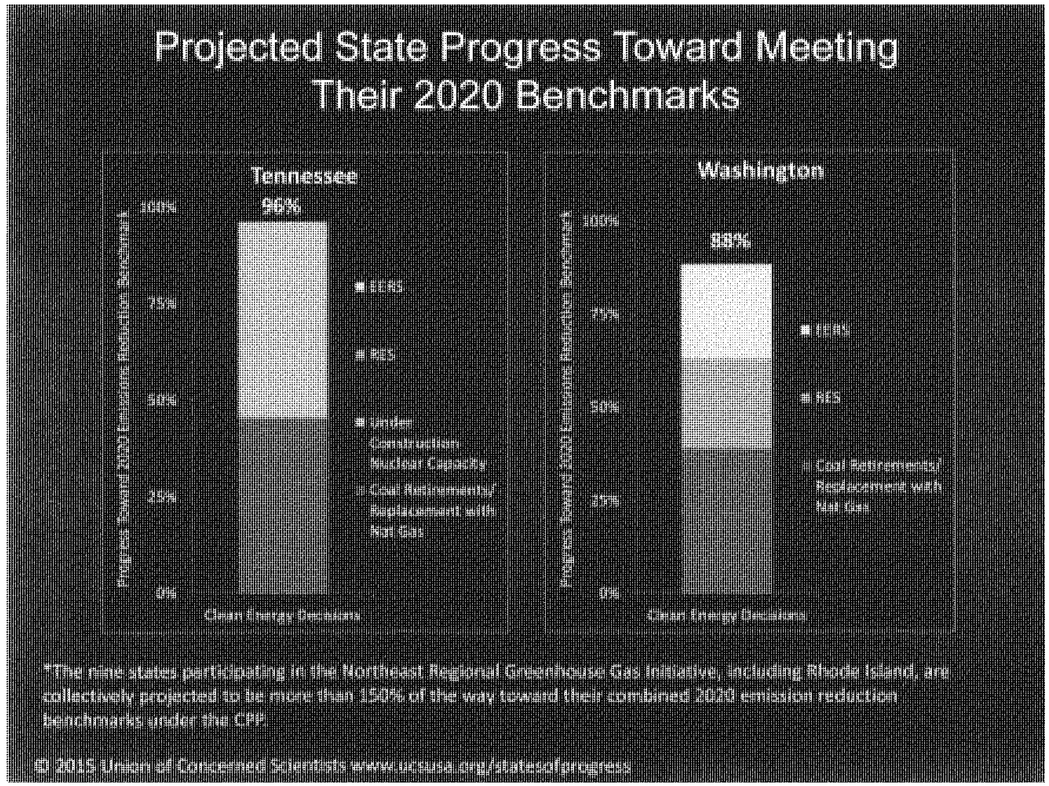
Projected State Progress Toward Meeting Their 2020 Benchmarks
Tennessee
96%
100%
75%
50%
25%
0%
Progress Toward 2020 Emissions Reduction Benchmark
EERS
RES
Under Construction Nuclear Capacity
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
Washington
88%
100%
75%
50%
25%
0%
Progress Toward 2020 Emissions Reduction Benchmark
EERS
RES
Coal Retirements/ Replacement with Nat Gas
Clean Energy Decisions
*The nine states participating in the Northeast Regional Greenhouse Gas Initiative, including Rhode Island, are collectively projected to be more than 150% of the way toward their combined 2020 emission reduction benchmarks under the CPP.
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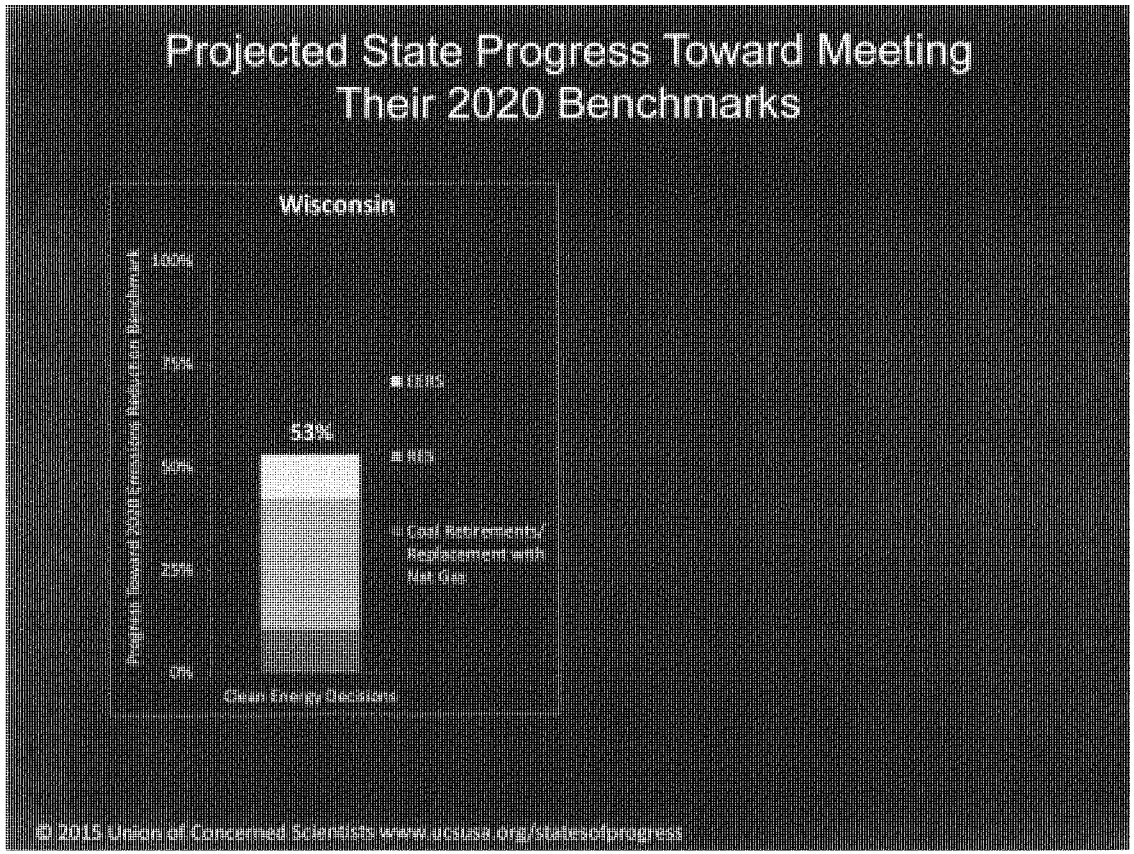
Projected State Progress Toward Meeting
Their 2020 Benchmarks
Wisconsin
100%
75%
53%
50%
25%
0%
Clean Energy Decisions
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Recommendations
• EPA should strengthen and effectively implement the Clean Power Plan
• States and federal government should strengthen and enact strong clean energy policies
• States should prioritize renewable energy and energy efficiency in CPP compliance plans
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For more information,
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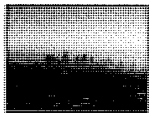
Bloomberg BNA Daily Environment Report™

Source: Daily Environment Report: News Archive > 2015 > February > 02/27/2015 > News > Air Pollution: Industry Report Identifies Higher Costs For Ozone Proposal Than EPA Estimates

39 DEN A-14

Air Pollution

Industry Report Identifies Higher Costs For Ozone Proposal Than EPA Estimates



By Patrick Ambrosio

Feb. 26 — A report commissioned by the National Association of Manufacturers found that the costs of more stringent national ozone standards would be much higher than Environmental Protection Agency estimates.

The report, prepared by NERA Economic Consulting and released Feb. 26, estimated that ozone standards of 65 parts per billion could impose about $1.1 trillion in compliance costs on industry from 2017 through 2040, with the industry projected to spend more than $100 billion in some years. The EPA has estimated that the annual cost of a 65 ppb standard would be around $16.6 billion.

The EPA has proposed (RIN 2060-AP38) to revise the current national ambient air quality standards of 75 ppb to somewhere in the range of 65 ppb to 70 ppb. The agency is under a court-ordered deadline of Oct. 1 to finalize its decision on whether to revise or retain the existing standards.

Aric Newhouse, senior vice president for policy and government relations for the National Association of Manufacturers, told reporters during a Feb. 26 media call that the report illustrates that a 65 ppb ozone standard would be "the most expensive regulation of all time."

Representatives of the Natural Resources Defense Council and the Institute for Policy Integrity both criticized the study, telling Bloomberg BNA that NERA assumed the pollution controls needed to attain a 65 ppb standard would be unrealistically expensive, resulting in an overestimated regulatory cost.

The EPA, in a Feb. 26 e-mail to Bloomberg BNA, said that industry claims "consistently ignore" the benefits of reducing emissions of pollutants that contribute to ground-level ozone, also known as smog. The agency has estimated that a 65 ppb standard could result in benefits of up to $38 billion annually from reduced incidents of asthma, premature death and other health problems.

The NERA report is an update of a July 2014 study that concluded an ozone standard of 60 ppb could cost the U.S. economy up to $270 billion per year and force the closure of up to one-third of the nation's coal-fired power plants (148 DEN A-13, 8/1/14).

Difference in Unknown Control Estimates

Anne Smith, senior vice president and co-chair of the environmental practice at NERA, told reporters that the report's cost estimates are higher than EPA's "almost entirely" due to a different method for calculating the cost of unknown controls, which would be needed to meet a more stringent standard.

Smith said the EPA took a "very simplistic" approach to estimating the cost of unknown controls, which would be needed to achieve the type of emissions reductions needed to attain a 65 ppb standard. The agency's regulatory impact analysis of its proposal estimated that unknown controls would cost $15,000 per ton of emissions reduction, according to Smith.

NERA staff developed an approach that identified the likely nature of unknown controls that would be used, then estimated the cost of those controls based on existing data. Those unknown controls would include the closure of coal-fired power plants and the turnover of older motor vehicles to less-emitting models.

Effect on GDP, Workers

In addition to compliance costs, the NERA report estimates a 65 ppb standard would reduce the gross domestic product of the U.S. by about $140 billion annually and eliminate 1.4 million job equivalents.

The report doesn't include an assessment of the EPA's estimated benefits of a 65 ppb standard, but Smith of NERA said that benefits associated with reductions in ground-level ozone are less than even EPA's lower cost estimates.

The EPA's regulatory impact analysis also includes co-benefits of reducing particulate matter and other pollutants that would be reduced under a more stringent ozone standard.

Ross Eisenberg, vice president of energy and resources policy at the National Association of Manufacturers, told reporters that the association sent a copy of the report to the EPA and offered to brief agency staff on the report's findings.

The EPA said in its e-mail that it welcomes review of the agency's economic analysis and is looking forward to reviewing all comments on the proposal. The agency is taking public comments on its proposal until March 17.

Cost Model Criticized

While the report touts NERA's approach to unknown controls as "more evidence-based" than the EPA's estimates, John Walke of the Natural Resources Defense Council said the consulting firm took a flawed approach that resulted in "ludicrously exaggerated compliance costs" of $500,000 per ton.

Walke, NRDC's clean air director, told Bloomberg BNA that NERA's analysis based its cost estimates on an economic stimulus program that has "nothing to do" with ozone control efforts.

While the updated NERA report refers to a "vehicle scrappage" program to phase out older motor vehicles that don't meet the EPA's Tier 2 emissions standards, the July 2014 version of the study clearly used the Car Allowance Rebate System, an economic stimulus program commonly known as "Cash for Clunkers," to estimate the cost of unknown pollution controls.

Smith of NERA told reporters that the revised report used the same method as the July 2014 report to estimate the cost of unknown controls.

Walke said economic experts called the use of Cash for Clunkers "insane" and "unmoored from economic reality" after the release of the July 2014 report.

When asked to explain how NERA chose its methodology, Smith said they looked at the known cost of scrapping older cars and replacing them, then developed a cost curve based on the price per ton of emissions reduction.

State Flexibility Cited

Michael Livermore, a senior advisor with the Institute for Policy Integrity, agreed that the NERA report overestimates compliance costs by making "unrealistic" assumptions, including the assumption that shutting down coal-fired power plants would be needed to meet a revised ozone standard.

In response to NERA's claim that the EPA's approach is simplistic, he said "a convoluted model isn't necessarily better than a simple one."

Livermore told Bloomberg BNA in a Feb. 26 e-mail that states have a "great deal of flexibility" in determining how to meet emissions reductions goals and can balance costs against other considerations. The history of environmental regulations shows that states and industry find reasonable ways to achieve needed reductions, according to Livermore.

"New, lower-cost controls are constantly being developed," he said. "The assumption that 'shutting everything down' will be the cheapest way to improve air quality is as silly today as it was in the 1970s, when industry predicted that the Clean Air Act would destroy the economy."

Areas Could Rely on Established Controls

Walke noted that despite the NERA report's focus on the cost of unknown controls, most areas that would be in nonattainment of a 65 ppb standard would be "moderate nonattainment" areas and would be able to rely on known, established pollution control methods.

Unknown controls would be needed in areas like California that will need to find greater reductions, but those areas would have a much longer period of time, up to two decades, to attain the standards, Walke said.

During that time, those areas will "certainly take advantage" of technology developments to further reduce pollution, according to Walke.

Both the EPA and Walke pointed out that despite industry's focus on costs, the agency isn't allowed to consider cost in deciding whether to revise or retain national ambient air quality standards.

Supreme Court Ruled Against Cost Considerations

The Supreme Court in 2001 ruled that the Clean Air Act prohibits the EPA from considering the cost of compliance when setting national ambient air quality standards (*Whitman v. American Trucking Ass'ns*, 531 U.S. 457, 51 ERC 2089 (U.S. 2001); 40 DEN AA-1, 2/28/01).

The agency said that its proposal on ozone is "about setting a health standard and determining that level," though a cost-benefit analysis was prepared to inform the public. The EPA noted that its estimates are intended to be illustrative and that ultimately the costs of meeting a revised standard will be determined by how states implement the standards in the future.

Sen. Jim Inhofe (R-Okla.), chairman of the Senate Environment and Public Works Committee, said in a Feb. 26 statement that the NERA report shows a revised standard would cause economic growth to "come to a grinding halt."

"I am committed to working with my colleges in Congress to put a halt on this misguided agenda at the EPA," Inhofe said.

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For More Information

The NERA report, "Economic Impacts of a 65 ppb National Ambient Air Quality Standard for Ozone," is available at http://bit.ly/1LL2GXb.

Contact us at http://www.bna.com/contact/index.html or call 1-800-372-1033

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DOCUMENTS SUBMITTED BY REPRESENTATIVE PAUL TONKO

Review of Crain and Crain: "The Cost of Federal Regulation to the US Economy, Manufacturing and Small Business" (report dated November 21, 2014)[1]

The subject report asks a very clear question: what are the aggregate costs of regulation in the US economy. As the authors point out, this is the same question the Office of Management and Budget (OMB) has been asking for a number of years. Unfortunately, the clear question is not easy to answer and in particular is not answered by the Crain and Crain (C&C) study.

Despite an attempt to appear academic, the C&C study reads as an advocacy document. The authors focus only on the costs of regulation, ignoring the benefits. Presumably benefits would outweigh costs—as OMB's analysis consistently finds—but C&C instead only estimate costs, and try too hard to inflate them.

The most glaring example of bias is repeated claims that if the cost of regulation were reduced, firms might use that extra money for lots of socially desirable ends—such as paying workers more, investing more, increasing sales, reducing debt and just possibly increasing profits. But any economist knows that a cost savings will either go to increasing profits, or get bid away by competition. Querying a company about what they might do with the extra cash is useless and in fact doesn't matter. It just reinforces the impression that the study authors want to find a particular result.

The report divides the task into two parts. In the first part, the authors assemble a bottom up calculation of the costs of regulation to manufacturing firms, based on a survey of manufacturers conducted by the National Association of Manufacturers. The second part of the report seeks a top-down statistical computation of regulatory costs, trying to show that countries with more regulatory burden have lower GDPs, all else equal.

The first part of the paper (the bottom up calculation) reaches a conclusion not dissimilar to OMB's regarding costs. The authors cite the results of the OMB calculation, suggesting that regulations cost $74 to $110 billion (they don't mention OMB's corresponding benefit figures of $290 to $1,140 billion). The big surprise is that this bottom-up cost estimate doesn't differ much from OMB's, coming in slightly above the top end of OMB's range, at $139 billion. That said, Crain & Crain's bottom-up methodology is much more questionable than OMB's. Rather than rely upon engineering cost estimates like OMB, of actual compliance technologies (e.g. the cost of machines that capture pollutants before they can be released into the air or water), Crain & Crain use subjective qualitative responses to survey questions (for the most part), along with heroic assumptions to compute costs. Further, the authors provide no information on their methods for collecting the data (sample or population survey), no information on the response rate, no analysis of the non-

[1] Review by Prof. Charles Kolstad, Stanford University (4 Nov 2014).

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response rate, and no information on wording of key questions in the survey. The authors also don't follow the standard in academic practice of discussing uncertainties in their analysis—and their results are highly uncertain. All of these factors make it difficult to determine the quality of the responses and lead to the conclusions that their results are unreliable

The largest component of costs estimated from the survey is computed from respondents' reported personnel devoted to implementing regulations. Firms reported the number of FTE ("full-time employment equivalents") in different skill categories devoted to regulatory compliance. The authors then (somehow) converted these FTE to costs. It is unclear if the costs are reported in the survey or if the authors do some sort of calculation (using, for example, the average cost of an attorney).

The bottom line is that the NAM survey is a flawed and nontransparent basis for computing regulatory costs.

The second half of the report takes a totally different tack, essentially using a statistical methodology ("regression" analysis) to explain GDP per capita as determined by a number of variables, including a measure of regulatory stringency Crain & Crain develop from OECD survey data. This top-down regression is the source of the claimed overall impact of regulation on the US economy of $1.4 trillion above firms' compliance costs. The goal is to show how regulatory stringency influences GDP per capita at a macroeconomic level, with the assumption being that more strict regulations will reduce GDP per capita.

The regression is presented as a "time series," which in theory could help one examine whether changes in regulatory burden over time also suggest changes in GDP per capita over time. However, the time series is so short (2006-2013) that it is effectively a cross-section—i.e. one point in time. Institutions did not change much in that period (though attitudes may have). Furthermore, the great recession took place over most of that period, making interpretation of the results very difficult. Previous analyses by C&C used a similar approach and were roundly criticized by a number of observers.[2]

This approach, with the possible criticisms, is reminiscent of the Kuznets curve debates on the effect of per capita income on pollution levels. Apart from the fact that the authors basically use a cross-section (i.e. one point in time) to estimate changes over time, there are many problems with this approach. One problem is that GDP per capita can also affect regulatory stringency, making it impossible to determine which variable is affecting which, i.e. the two variables are endogenous. For example, as an economy grows and GDP per capita increases, additional regulations are likely to be needed to govern new markets and respond to citizen

[2] The study and its predecessors have been largely ignored by the academic community, though there have been critiques published by other groups, such as by the Economic Policy Institute.

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demand. In the opposite direction, powerful lobbying interests emerge that sometimes persuade lawmakers to pass anti-competitive regulations, which can hurt growth. C&C make no effort to control for these issues.

Another problem with this approach is that the key variable – regulatory stringency – is not something that is measured objectively, but rather a subjective variable generated from an NGO opinion survey (by the OECD). It probably reflects differences in attitudes more than anything – attitudes of executives in the US towards regulation vs. attitudes of executives in places like Scandinavia (which do well for this index), where society is more accepting of governmental intervention. Furthermore, it includes a measure of securities regulation, which is unlikely to matter much for the manufacturing sector. Crain & Crain's approach thus leads to all sorts of statistical problems inherent in the methodology they employed.

Finally, regulations (ideally) are pro-efficiency, in the sense that they are instituted to correct a market failure or have a social purpose of some sort, and thus should enhance efficiency (i.e., there are costs but benefits should exceed them). In fact, this is what the OMB finds in their analysis of regulations, discussed earlier. Why would a regulatory burden depress GDP in the regressions? Something else is going on which the authors do not develop or explain.

But the authors are not content with the highly uncertain and suspect computation of $1.4 trillion of regulatory costs. They find it necessary to separately compute extra costs associated with environmental regulations, health and safety and tax compliance, adding up to over a half trillion dollars. This seems quite clearly to be double counting. Furthermore, there is very little discussion of how these numbers are generated.

In summary, the first half of the paper uses a flawed methodology to generate numbers that are quite similar to the OMB figures on regulatory costs. The second half of the paper is too flawed to be used for anything. The question asked is still a good one. It is the answer and how it was generated that is flawed in this report.

Grade: C-

GRADE: C-

RESEARCH AND PRACTICE

Association Between Socioeconomic Status and the Development of Asthma: Analyses of Income Trajectories

Anita L. Kozyrskyj, PhD, Garth E. Kendall, PhD, Peter Jacoby, MSc, Peter D. Sly, MD, DSc, and Stephen R. Zubrick, PhD

Objectives. Using data on 2868 children born in the Western Australian Pregnancy Cohort (Raine) Study, we examined the association between changes in family socioeconomic status and childhood asthma.

Methods. We determined the likelihood (odds ratio) of a child having asthma at ages 6 and 14 years for 4 family-income trajectories (chronic low, increasing, decreasing, and never low) over the child's lifetime. The trajectories were created from longitudinal latent-class models.

Results. We found a 2-fold increased risk of asthma at age 14 years among children who had lived in a low-income family since birth, especially for girls. Asthma was less likely to occur in children born to single parents; income rose over time in many of these families. Compared with children in chronic low-income families, children in households with increasing incomes had a 60% lower risk of asthma. Single-point measures of low income were not found to be associated with asthma.

Conclusions. Chronic exposure to a low-income environment from birth was associated with the development of persistent asthma. There was also a protective effect against asthma among those children whose families had moved out of poverty. (*Am J Public Health.* 2010;100:540–546. doi:10.2105/AJPH.2008.150771)

Asthma disproportionately burdens children living in economically disadvantaged urban communities. Some of this disparity can be attributed to the observation that once asthma is established, lower utilization of prophylactic medications and higher rates of hospitalization are more common among low-income children than among high-income children.[1,2] Evidence for the link between socioeconomic status (SES) and the development of asthma is less strong—and is, in fact, contradictory.[1,3] Many studies report asthma to be more prevalent among low-SES children, even in countries with universal health care insurance.[4–7] However, no association with SES was reported in 1 study,[8] and another study documented lower rates of asthma among low-SES children.[9] The latter finding is congruent with the lower prevalence of atopic disease in developing countries[10] and with the "hygiene" hypothesis, which proposes that exposure to infections and endotoxin is protective against atopic asthma.[11] Low-income children have higher infection rates, although endotoxin levels are not always elevated in low-income households.[12]

Despite this level of uncertainty, it is common for household SES to be treated as a confounding factor and to be used to statistically adjust models testing the association between early life exposures and the development of childhood asthma. As low-income mothers are more likely to smoke and less likely to breastfeed,[13,14] SES acts as a proxy measure for these exposures in the absence of available data. However, there is a lack of recognition that contradictory findings on the association of SES with childhood asthma may be a function of the validity of the SES measure. Low-income variables are fraught with measurement error, and there may be considerable fluctuation in household income over the course of a child's life from birth to adolescence.[15] Measures of cumulative income, such as the frequency of low-income episodes over time, have shown stronger associations with poor health than have single-point measures.[16] Other SES trajectories, such as downward or upward social mobility, have been reported to increase and decrease risk of cardiovascular disease, respectively.[17] Fluctuations in family income also affect family functioning and maternal mental health.[18]

The effects of chronic poverty on child functioning and health have long been recognized.[19,20] However, few studies have evaluated childhood asthma in relation to cumulative household income or income trajectories from the time of birth.[21] Low-income households and neighborhoods are characterized by high levels of chronic stress,[1,22] but no longitudinal studies have investigated the relationship between chronic poverty, chronic stress, and asthma development. To fill this gap in the literature, we studied the relationship between family SES trajectories starting from birth of the child and asthma development in early school age and adolescence. We used maximum-likelihood longitudinal latent-class modeling techniques to identify SES trajectories over time.[15,23]

METHODS

We conducted a longitudinal evaluation of 2868 children in the Western Australian Pregnancy Cohort (Raine) Study, born from 1989 to 1991 to mothers enrolled at gestational ages of 16 to 20 weeks at antenatal clinics at the main tertiary maternal hospital or nearby practices in Perth, Western Australia.[24] Children were followed up at ages 1, 2, 3, 6, 8, 10, and 14 years. We then determined the likelihood of a child having asthma at ages 6 and 14 years according to the child's family-income trajectory over the child's lifetime.

Study measures were obtained from parent surveys administered during the Raine study. Some children were lost to follow-up or were missing data on asthma status, leaving sample totals of 2151 (75% of the Raine study sample) children at age 6 years and 1796 (63% of the

study sample) children at age 14 years. Mothers of excluded children were more likely to be single parents, to have less education, and to experience life stress. However, because the Raine study recruited predominantly from a tertiary care hospital that serviced high-risk pregnancies, it overrepresented single parents at first recruitment (14.2%) compared with the general population of Western Australia (10.8%). Subsequent to loss to follow-up at age 14 years, the percentage of children living in single-parent families at age 1 year decreased to 11.6%, closer to the percentage of the general population of Western Australia. In comparison with children who remained in the study, single-parented children at age 1 year who were lost to follow-up at age 14 years did not differ from other children at age 6 years with regard to asthma prevalence or asthma risk factors, such as maternal asthma.

Family-Income Trajectories

We sought to identify trajectories of children with similar childhood experiences of economic disadvantage over time, using maximum-likelihood longitudinal latent-class modeling techniques[15,25] rather than predetermined categories. The resultant longitudinal models classified children based on their family's movements in and out of low income over the child's lifetime. This group-based modeling strategy determined the probability of children's low income over time and simultaneously considered timing, duration, and sequencing of family low income. This analytic tool also incorporated the maximum-likelihood missing-data routine, which made maximal use of information on children with 1 or more years of missing data.

Families were first categorized by the dichotomous variable, low income, for each follow-up year. Low income was defined as reported household income of AU$27 000 per year or less (the cutoff value varied according to the income categories specified in each iteration of survey administration) until age 6 years. Because our research interest focused on relative poverty, low income after age 6 years was defined as reported income of $30 000 or less to reflect the increase in disposable income over the 1990s (per the Australian Bureau of Statistics).[26] The cutoff values for low income captured the 2 lowest income quintiles of household income in the 1990s and included single-parent and 2-parent households that derived the majority of their income from government assistance.[27]

Once a family was classified as either low income or not, we used the SAS version 9.2 (SAS Institute Inc, Cary, NC) PROC TRAJ procedure to create income trajectories for the child's family from the time of the child's birth until the child reached age 6 years (first assessment of asthma status) and age 14 years (second assessment of asthma status). We used Bayes's theorem with PROC TRAJ to assign children to the income trajectory group to which they had the highest probability of belonging.[15] A.L.K. specified the desired number of trajectories before running each model. Then, starting with 1 trajectory, PROC TRAJ was repeated until models were created for a full range of trajectories (1, 2, 3 … k trajectories).[15] Following each iteration, trajectories were graphically represented and descriptive labels were assigned for the pattern of low income over time (e.g., stable, increasing, decreasing) to each trajectory.

Figure 1 depicts a 4-trajectory model and the estimated probability of a child's membership in each trajectory. Trajectory 4 was labeled as chronic low income (7.4% of children), trajectory 3 was labeled as decreasing income (19%), trajectory 2 was labeled as increasing income (11.8%), and trajectory 1 was labeled as not ever low income (61.8%). Approximately 40% of children in the increasing-income trajectory lived in a low-income household before age 3 years; by age 6 years, this proportion had declined to 15% or less. By contrast, from 40% to 90% of children in the chronic-low-income trajectory had lived in a low-income family since birth.

The Bayesian Information Criterion (BIC) and a sample size–adjusted BIC were used to select the final number of trajectories, with the goal of identifying the fewest number of trajectories that best fit the data.[15] The final number of trajectories was established when sequential comparisons of the BIC and adjusted BIC between models with k and k+1 trajectories yielded no further substantial reductions in the BIC score with the k+1 model. At age 6 years, the 2-trajectory model fit the data better than the 1-trajectory model; the BIC was reduced by 401 points, and the sample size–adjusted BIC was reduced by 404 points. There was no further improvement with the 3-trajectory model; BIC

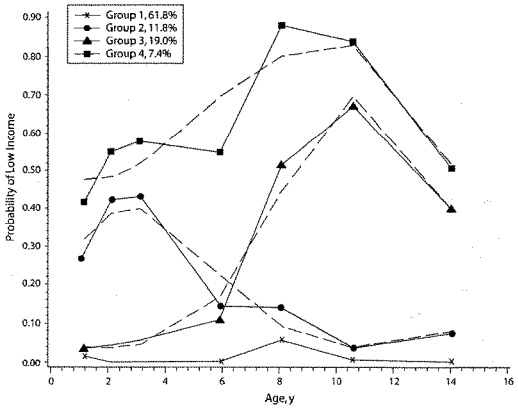

FIGURE 1—Probability of a child's membership in 4 low-income trajectories from birth until age 14 years: Western Australia Pregnancy Cohort (Raine) Study, Perth, Australia, 1989–2005.

increased by 2, and the adjusted BIC decreased by 2. At age 14 years, the 4-trajectory model had an improved fit over the 3-trajectory model; BIC was reduced by 49 points, and the sample size–adjusted BIC was reduced by 53 points. The 5-trajectory model was associated with a minimal drop in the BIC and adjusted BIC (7 and 14 points, respectively).

Ultimately, a 2-category income measure (chronic low income vs not) was selected for the analyses at age 6 years, and a 4-category income measure (chronic low, increasing income, decreasing income, not ever low income; Figure 1) was selected for the analyses at age 14 years. These categories were then entered as predictors into the logistic regression model for asthma.

Asthma Outcome Measures

Current asthma at ages 6 years and 14 years was defined as ever having been diagnosed with asthma by a physician and wheeze or nocturnal cough and receipt of asthma medications (controller and reliever drugs) in the previous 12 months. Previous research has shown that children in the Raine cohort who met this definition of current asthma exhibited significant deficits in lung function and greater sensitivity to the methacholine challenge test for bronchial hyperreactivity.[28,29] Risk and protective factors for asthma, derived from parent survey responses, were gender, household income, single-parent status at age 1 year, total number of siblings at birth, maternal history of asthma (recorded during pregnancy), maternal smoking during pregnancy, maternal smoking during the first year, preterm birth (<37 weeks), low birth weight (<2500 grams), elective cesarean delivery, maternal age younger than 20 years, maternal education less than high school, pregnancy and family stress indicator (composite score of more than 3 stressful life events from the Tennant and Andrews validated life-events instrument[30]), duration of exclusive breastfeeding, and pet ownership during the first year of life. The stress indicator was ascertained for the mother during pregnancy, at child age 1 year, and from birth of the child to age 6 or 14 years; the latter was labeled the chronic family stress measure.

Crude odds ratios (ORs) for asthma at ages 6 and 14 years were determined first, followed by ORs adjusted for the aforementioned confounding factors. We calculated ORs with multiple logistic regression analysis, using SAS software. Variables were retained in models at the 95% level of confidence. Separate models were tested for male and female children.

RESULTS

At any given time during the 14-year follow-up period, 8% to 21% of children were living in a low-income household (Table 1). Fourteen percent of children were experiencing chronic low income at age 6 years. This percentage decreased to 7% at age 14 years, when children in decreasing-income and increasing-income households were removed to create separate categories (Table 1 and Figure 1). Twelve percent of children were in increasing-income families at age 14 years. Decreasing-income households accounted for 19% of children at age 14 years. Children who had never lived in low-income households accounted for 86% of children at age 6 years; by age 14 years, this proportion had decreased to 62%.

Chronic-low-income households were predominantly headed by females and by women who had not completed high school (Table 2). These families experienced the greatest number of stressful life events, as indicated by the life-events instrument. Almost half of the households with increasing income were also headed by females, the majority of whom had not completed high school. Multiple stressful events were also more common in these families. Family stress during pregnancy and the postpartum period was also associated with current asthma at age 6 years; maternal history of asthma and young age were seen more often in chronic-low-income households and with child asthma at age 6 years (data not shown). There were no asthma risk factors in common across income categories and current asthma at age 14 years.

When defined as a dichotomous variable, low family income at age 1 year was not associated with asthma at age 6 years (unadjusted OR=0.95; 95% confidence interval [CI]=0.63, 1.42; adjusted OR [AOR]=0.91; 95% CI=0.60, 1.37). Similarly, there were no associations between low income at age 1 year and asthma at age 14 years (OR=1.10; 95% CI=0.62, 1.97; AOR=0.97; 95% CI=0.54, 1.75). No statistical associations were evident between low household income (defined as a dichotomous variable) at any age and asthma at ages 6 or 14 years.

Twenty-two percent of children living in chronic low-income families had asthma at age 6 years, compared with 18% of children not in this income group. Following adjustment for gender, preterm birth, maternal history of asthma, and dog ownership, the risk of asthma was higher among children in chronic low-income households, although it achieved marginal significance (OR=1.30; 95% CI=0.92, 1.83; Table 3). Further adjustment for pregnancy stress and for family stress at age 1 year

TABLE 1—Percentage of Children in Household Income Categories, by Child's Age: Western Australia Pregnancy Cohort (Raine) Study, Perth, Australia, 1989–2005

	Age 1 Year	Age 2 Years	Age 3 Years	Age 6 Years	Age 8 Years	Age 10 Years	Age 14 Years
Low income, % (low-income cutoff)	8.2 (<$24 000)	10.0 (<$27 000)	10.5 (<$26 000)	8.1 (<$26 000)	21.4 (<$30 000)	19.8 (<$30 000)	12.1 (<$30 000)
No. of trajectories identified	...	...	...	2	3	4	4
Chronic low income, %	...	...	...	13.6	13.2	5.2	7.4
Increasing income, %	...	...	...	...	...	10.1	11.8
Decreasing income, %	...	...	...	...	18.9	19	19
Not ever low income, %	...	...	...	86.4	67.9	64.7	61.8

TABLE 2—Maternal and Family Characteristics of Each Income Trajectory, by Child's Age: Western Australia Pregnancy Cohort (Raine) Study, Perth, Australia, 1989–2005

	Single-Parent Status at Age 1 Year		Mother Did Not Complete High School		Family Stress at Age 1 Year	
	Child Aged 6 Years, %	Child Aged 14 Years, %	Child Aged 6 Years, %	Child Aged 14 Years, %	Child Aged 6 Years, %	Child Aged 14 Years, %
Chronic low income	62.3	61.1	57.7	58.3	42.2	44.1
Increasing income	...	44.0	...	56.8	...	38.0
Decreasing income	...	9.6	...	58.7	...	26.3
Not low income	8.4	5.3	45.3	40.6	20.1	16.4
Total population	12.6	11.6	55.1	53.4	20.7	20.2

or persistent family stress from ages 1 to 6 years diminished the low-income association with asthma to nonsignificance. Single-parent status was positively (but not significantly) associated with asthma at age 6 years (OR=1.26; 95% CI=0.91, 1.74) and the inclusion of this variable in the model also lessened the effect of chronic low income (data not shown).

The risk of asthma at age 6 years was significantly greater among male children exposed to chronic low income (OR=1.64; 95% CI=1.04, 2.57; AOR=1.62; 95% CI=1.02, 2.56). Among female children, this association was not seen (OR=1.11; 95% CI=0.68, 1.81; AOR=1.01; 95% CI=0.60, 1.69).

At age 14 years, current asthma was distributed by income trajectory as follows: 14% of the chronic low-income trajectory, 11% of the decreasing-income trajectory, and 9% of the never low-income trajectory. At 7%, children in the increasing-income group had the lowest prevalence of asthma. Following adjustment for gender, single-parent status, maternal history of asthma, and cat ownership, a statistically significant increased risk of asthma was observed in the chronic low-income group (OR=2.30; 95% CI=1.23, 4.31). The increased risk for chronic low income was minimally diminished following further adjustment for family stress at age 1 year or for persistent family stress from ages 1 to 14 years. In all models, single-parent status at age 1 year was associated with a lessened risk of asthma. There were no associations between asthma and the other income trajectories, although the OR for increasing income was consistently less than 1. When we implemented a contrast statement comparing the increasing-income trajectory to the chronic low-income group, the OR adjusted for single-parent status and other confounding factors was statistically significant at a value of 0.37 (95% CI=0.16, 0.89).

The risk of asthma at age 14 years was 3-fold greater among female children exposed to chronic low income (AOR=2.95; 95% CI=1.22, 7.11). No associations were observed

TABLE 3—Likelihood of Having Asthma at Ages 6 Years (n=2151) and 14 Years (n=1796), by Income Trajectory: Western Australia Pregnancy Cohort (Raine) Study, Perth, Australia, 1989–2005

	Asthma at Age 6 Years, OR (95% CI)	Asthma at Age 14 Years, OR (95% CI)
Unadjusted model		
Chronic low income	1.30 (0.94, 1.81)	1.67 (0.97, 2.86)
Increasing income	...	0.79 (0.40, 1.55)
Decreasing income	...	1.26 (0.87, 1.83)
Model adjusted for asthma risk factors[a]		
Chronic low income	1.30 (0.92, 1.83)	2.30 (1.23, 4.31)
Increasing income	...	0.89 (0.43, 1.87)
Decreasing income	...	1.31 (0.89, 1.93)
Single parent family at age 1 y	not in model	0.49 (0.26, 0.94)
Model adjusted for asthma risk factors[a] and stress at age 1 y		
Chronic low income	1.14 (0.74, 1.75)	2.34 (1.22, 4.48)
Increasing income	...	0.92 (0.44, 1.92)
Decreasing income	...	1.29 (0.86, 1.94)
Single parent family at age 1 y	not in model	0.40 (0.20, 0.80)
Pregnancy stress	1.69 (1.15, 2.48)	0.99 (0.54, 1.80)
Family stress at age 1 y	1.42 (1.06, 1.90)	1.25 (0.81, 1.91)
Model adjusted for asthma risk factors[a] and chronic family stress		
Chronic low income	1.17 (0.82, 1.65)	2.21 (1.17, 4.17)
Increasing income	...	0.83 (0.39, 1.74)
Decreasing income	...	1.25 (0.84, 1.85)
Single parent family at age 1 y	not in model	0.45 (0.24, 0.87)
Pregnancy stress	1.48 (1.05, 2.08)	1.04 (0.59, 1.82)
Chronic family stress	1.82 (1.16, 2.85)	2.25 (1.28, 3.97)

Note. OR = odds ratio; CI = confidence interval. Ellipses indicate not applicable. Reference category is never low income.
[a]Asthma risk factors at age 6 years: gender, preterm birth, maternal asthma, and dog ownership in first year. Asthma risk factors at age 14 years: gender, maternal history of asthma, and cat ownership in first year.

with the increasing-income and decreasing-income trajectories. The increased risk for chronic low income was not diminished following further adjustment for family stress at age 1 year or for persistent family stress from ages 1 to 14 years. Among male children, asthma at age 14 years was not significantly associated with any of the income trajectories (for chronic low income, AOR=1.27; 95% CI=0.59, 2.73; for increasing income, AOR=0.87; 95% CI=0.36, 2.12; for decreasing income, AOR=1.15; 95% CI=0.69, 1.91).

DISCUSSION

In a general cohort of 2000 children born in Western Australia in the early 1990s, we observed that children who had lived in a low-income household since birth had a 2-fold increased risk of having asthma at age 14 years. This finding confirms previous associations found between chronic poverty and asthma.[20,21] We extended those findings in 2 important ways. First, we reported an association with asthma in adolescence. Second, we implemented measures of family-income trajectories created from statistical models. The trajectory method characterized sequential changes in family economic circumstances over time, such as increasing and decreasing income, and enabled us to parcel out the effects of chronic low income.

There were 4 other findings of note: (1) the association with chronic low income was stronger at age 14 years than at age 6 years, (2) the strength of the association was diminished after accounting for measures of family stress, (3) single-parent status and increasing income were associated with a decreased risk of asthma at age 14 years, and (4) the associations were gender specific. The plausibility and potential biological significance of each of these observations will he explored in detail.

Our definition of asthma had heen validated previously.[28,29] Further, use of longitudinal data over 14 years allowed us to study the association between children's SES trajectories and 2 asthma phenotypes (asthma at early school age and asthma at adolescence). We found that chronic low income had a stronger association with asthma at age 14 years than at age 6 years. It is well-documented that asthma persists into adolescence in up to one third of children with early-onset wheeze; in addition, persistent asthma has greater heritability and is more likely to be atopic.[31] Our findings suggest that chronic low income may have a role to play in the development of persistent asthma.

In our study, family stress was twice as common in low-income households, and was more prevalent when poverty persisted. Pregnancy, early life stress, and chronic family stress were independently associated with asthma at age 6 years. These variables diminished the association between SES and asthma at age 6 years, suggesting that they play a role in the pathway between SES and child asthma. There is a growing body of literature on the association between child exposure to stress in early life and the development of asthma.[32–34] Caregiver stress in early life has been associated with increased levels of TNF-α in infants, a proinflammatory cytokine in asthma.[33] Scirica et al. reported that infants born into low-income households were more likely to have an atopic profile at birth, suggesting an influence of SES on the developing fetus.[35] Their findings were more pronounced among male infants, consistent with our finding that chronic low income was associated with asthma at age 6 years among boys but not girls. Similarly, others have linked parental stress to asthma among boys but not girls at age 6 years.[36]

By age 14 years, chronic life stress was associated with a 2-fold increase in asthma, whereas pregnancy and early life stress were not. Others have also reported that low-income adolescents were more likely to be exposed to chronic stress over their lifetime and to have asthma.[37,38] Family conflict has been known to precipitate elevated cortisol levels in children. Furthermore, heightened production of atopic cytokines, IL-5, and IL-13 has been reported in children with asthma experiencing higher stress levels, as have higher eosinophil counts.[7,39] Children with asthma who simultaneously experience acute and chronic stress exhibit a reduction in expression of the glucocorticoid receptor, which can increase the airway inflammatory response to allergens.[40] Finally, we found that chronic low income was strongly associated with asthma at age 14 years among girls but not boys. Although females with asthma are more likely to live in low-income environments, these findings are new to the literature.[31]

Our finding of an inverse association between having a single parent and having asthma at age 14 years suggests that children born to single parents live in a family SES environment that protects against asthma development. The single-parent effect appears to be related to the phenomenon of "moving out of poverty." Single parents accounted for 44% of households in the increasing-income category. When single-parent status was added to models, it diminished the inverse association between increasing income and asthma. Moreover, when we compared the increasing-income trajectory to the chronic low-income trajectory, the risk of asthma was reduced by more than 60%.

Our results are akin to those of Chen et al., who showed that asthma likelihood was lower among children whose families had moved up in income than among children who continued to live in a low-income family.[21] Children in low-income households experience higher rates of exposure to endotoxin and infections, which may protect against asthma development.[41] These exposures may disappear once household income improves,[42] but by then they would have had their effect in shaping the developing immune system during infancy.[43] On the other hand, persistence of these exposures may increase risk for asthma. Celedon et al reported that endotoxin exposure in early life protected against the development of atopy, but exposure in later life increased the risk of atopy.[44] It is also conceivable that stress levels in these families were lessened as they moved out of poverty; recent literature indicates that persistent stress has the greatest association with asthma.[32]

Although our findings have biological plausibility, they may be attributed to features of study design and execution. Reverse causation might explain the association between chronic low income and asthma because families caring for children with asthma report fewer hours of employment.[45] Reverse causation would not account for the inverse association between single parenthood and asthma, however. Loss to follow-up was also not a likely explanation for this inverse association because single-parented children lost to follow-up did not have higher asthma rates at age 6 years than did children remaining in the study. Our definition of asthma, which specifies treatment with asthma medications, could have resulted in the misclassification

of asthma status among children in single-parent families; children in single-parent households are less likely to receive controller asthma medications.[46] However, the same would hold true for children in chronic low-income families,[2] for which an inverse association was not observed.

In sum, we found an association between chronic exposure to a low-income environment from birth and the development of persistent asthma. In addition, we observed a protective effect against asthma among those children whose families had moved out of poverty. We propose family stress and endotoxin exposure in low-income households as explanations for these findings. Our findings give credence to the notion that SES "gets under the skin" to cause disease, but further study is required to elucidate specific pathways in asthma. However, our research does show that household SES has limited explanatory power as a static exposure measure and may hide valuable evidence for its role in asthma development.

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Contributors

A.L. Kozyrskyj conceptualized the study, designed and completed the analysis, and led the writing. G.E. Kendall, P.D. Sly, and S.R. Zubrick coordinated aspects of the Raine cohort data collection. P. Jacoby assisted with the statistical analysis. All authors helped to conceptualize ideas, interpret findings, and review drafts of the article.

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Human Participant Protection

This study was approved by the institutional ethics committee of the Princess Margaret Hospital for Children.

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