



**The Environmental Protection Agency's
Flawed Cost-Benefit Analysis Methodology**

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Chairman Rounds, Ranking Member Markey, Distinguished Members of the Subcommittee, thank you for the opportunity to testify today. I am a senior fellow at the Manhattan Institute, where I direct the Institute's economics portal, Economics21. I am a former chief economist of the U.S. Department of Labor under Secretary Elaine L. Chao, and a former chief of staff of the Council of Economic Advisers in the White House under President George W. Bush.

I am especially honored to testify today because regulatory oversight is an important function of Congress. With the annual U.S. economic costs of federal regulation having been conservatively estimated at \$1.9 trillion,¹ the need for a more responsible approach to regulation has never been more critical. Unfortunately, the cost-benefit analysis in the Environmental Protection Agency's latest rules on carbon, ozone, and mercury do not live up to reasonable economic standards of cost-benefit analysis in the private sector.

Congress needs to ensure that government agencies live up to the highest standards of cost-benefit analysis. If the cost of doing business in America rises as a result of burdensome regulations, all Americans suffer. EPA's regulations will disproportionately affect Americans living in energy-producing states, and the Committee should be particularly careful about these geographic effects.

Cost-benefit analysis performed by government agencies is especially important because the government is imposing regulations on the public, and the public has nowhere else to go. If a private company errs in its cost-benefit calculations, it may make an investment that turns out to be unprofitable. The company may even go out of business, with management, employees, and shareholders suffering financial and job losses. But if a government agency makes mistakes in cost-benefit analysis, the entire country potentially loses, and no government employees lose their jobs.

¹ Clyde Wayne Crews (2015). "Ten Thousand Commandments 2015." *Competitive Enterprise Institute*. <https://cei.org/10kc2015>

Everyone wants cleaner air, but most people also want the security of employment that comes from economic activity. Most would agree on the need to strike the right balance between the economy and the environment. The question is: What is that balance?

Under current federal regulations, the air is getting cleaner every year, as old equipment is replaced by new. Greenhouse-gas emissions from power plants have declined by 15 percent from 2005 to 2013, according to the Energy Information Administration.² Do the benefits associated with yet more federal regulations justify their costs?

Over the past two years EPA has issued proposed or final regulations on emissions of mercury, ozone, and carbon. I will first discuss the problems with calculation of the benefits, then the problems with the costs, and finally with the discount rate. The final section addresses why Americans should care about such an esoteric issue.

Problems with Calculations of Benefits

1. Co-Benefits of Other Substances

The carbon rule's putative benefits exceed its claimed costs not from reductions in carbon dioxide, but from reductions in other substances, such as particulate matter, sulfur oxides (SO_x) and nitrogen oxides (NO_x). Without the alleged positive health effects of these other substances, the rule would fail EPA's cost-benefit test.

As can be seen in the table below, the benefits listed for the Clean Power Plan in EPA's Regulatory Impact Analysis are about \$15 billion in 2025, but those benefits shrink to \$3.6 billion if the health benefits of other substances are removed.³ In the mercury rule, benefits shrink from about \$61 billion to less than \$100 million when co-benefits from reductions in particulate matter, SO_x, and

² Energy Information Administration (2014). "U.S. Energy-Related Carbon Dioxide Emissions, 2013." <http://www.eia.gov/environment/emissions/carbon/>

³ U.S. Environmental Protection Agency (2015). "Regulatory Impact Analysis for the Clean Power Plan Final Rule." <http://www.epa.gov/airquality/cpp/cpp-final-rule-ria.pdf>

NO_x are removed.⁴ For the ozone rule, benefits shrink from about \$29 billion to \$8.7 billion even with EPA’s analysis when benefits of other particulates are omitted.⁵

Cost-Benefit Analysis for Three EPA Rules, With and Without Health Benefits from Particulate Matter, SO₂, and NO_x Reductions (billions of 2011 dollars)

	Carbon Rule	Mercury Rule	Ozone Rule
Costs	\$3.0	\$10.4	\$15
Benefits	\$10-\$19	\$36-\$88	\$19-\$38
Benefits w/o other reductions	\$3.6	<\$0.1	\$6.4-\$11
Net Benefits	\$7-\$16	\$26-\$78	\$4.0-\$23
Net Benefits w/o other reductions	\$0.6	(\$10.4)	(\$4.0)-(\$8.6)

Notes: 7% discount rate used.

Carbon Rule: 2025 estimates for mass-based reductions. Source: “Regulatory Impact Analysis for the Clean Power Plan Final Rule,” Environmental Protection Agency, August 2015 (Tables ES-1 & ES-4).

Mercury Rule: 2016 estimates. Source: “Regulatory Impact Analysis for Final Mercury and Air Toxics Standards,” Environmental Protection Agency, December 2011 (Tables ES-5 & ES-8).

Ozone Rule: 2025 estimates. Source: “Regulatory Impact Analysis of the Proposed Reductions to the National Ambient Air Quality Standards for Ground-Level Ozone,” Environmental Protection Agency, November 2014 (Tables ES-6 & 5-1).

Many states and localities are already in compliance with established national ambient air quality standards (NAAQS) for NO_x, SO_x and particulate matter. By claiming benefits from further reducing these below the established safe level, EPA is, in effect, lowering the established standard without going through the legal requirements of a rulemaking focused on the relevant standard. EPA is adopting a regulation for carbon, mercury, or ozone that does not yield enough benefits to justify the cost. Instead, the agency is using supposed benefits from reduction of NO_x, SO_x, or PM to justify the cost. In so doing, EPA is taxing localities that are already in compliance with the established NAAQS and forcing on these communities further reductions not justified by independent safety and health considerations.

⁴ U.S. Environmental Protection Agency (2011). “Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards.”

<http://www.epa.gov/ttnecas1/regdata/RIAs/matsriafinal.pdf>

⁵ U.S. Environmental Protection Agency (2014). “Regulatory Impact Analysis of the Proposed Revisions to the National Ambient Air Quality Standards for Ground-Level Ozone.”

<http://www.epa.gov/ttnecas1/regdata/RIAs/20141125ria.pdf>

Particulate matter, SO_x, and NO_x, are already regulated under their own sets of rules. If EPA believes that levels of these substances should be lower, it should propose rules to lower them, and it should follow federal administrative law by providing public notice and incorporating public comment on their cost-benefit analyses.

2. Double-Counting of Health Benefits from Particulates

It is not clear that EPA is accurately accounting for all of its claims of particulate matter reduction benefits across its many rulemakings that rely on PM co-benefits. The national PM inventory published by EPA is finite, and EPA needs to account for how much of that inventory has been prospectively eliminated by each of its rulemakings. Without better EPA bookkeeping, we have no assurance that they are not double counting reductions.

For instance, even if reductions in particulates can be counted as one of the health benefits of reducing mercury, the first of three major rules put in place by EPA, the agency cannot then count these same reductions as a benefit from subsequently reducing carbon dioxide and ozone. The benefits will already have accrued, and so cannot be counted as a benefit from reducing the other substances. Yet EPA seems to be using the same set of benefits to justify multiple rules.

Excess PM (above the NAAQS) is present only in certain places and at certain times, and EPA has not established that the PM reductions they are counting as co-benefits correspond to the appropriate places and times. Reducing PM somewhere that it is already low is not much of a benefit if the excessive PM elsewhere is unaffected. EPA seems to be taking a scatter-shot approach to a problem where careful targeting would be more economically efficient and appropriate

3. Assumption that All Particulates Are Equally Harmful

EPA makes oversimplifying assumptions with regard to particulates which inflate the benefits of the Clean Power Plan. Namely, the agency assumes that all particulates are equally harmful. The Regulatory Impact Analysis for the Clean Power Plan states: “[W]e assume that all fine particles, regardless of their

chemical composition, are equally potent in causing premature mortality.” That is because “the scientific evidence is not yet sufficient to allow differentiation of effect estimates by particle type.” If the scientific evidence is inconclusive on particulates, why put in place costly regulations that raise energy costs?

4. Assumption that Reductions in Particulates Have Equal Value Independent of Base Level

EPA is supposed to set standards at the levels most protective of human health, including a margin for safety. When EPA set the PM 2.5 annual average standard at 15 micrograms per cubic meter, the implication is that levels below that are safe. If EPA claims health co-benefits for reductions in areas where the starting level was already below 15, it seems to be saying that the real standard should be lower than 15. If that is so, EPA should initiate a rulemaking proceeding to lower the PM standard with public notice and comment.

Instead, EPA in these new rules is implicitly saying that the current PM standard, the result of public notice and comment, is wrong. Yet nowhere in the new rules does EPA explain why the standard of 15 is wrong, much less what the new standard should be. By setting no threshold and counting reductions in PM no matter the initial level, EPA implicitly is saying the standard should be zero – which is of course unattainable. EPA also has no evidence or rule to justify this level. Does EPA mean that we should live our lives in plastic bubbles because free air is unsafe to breathe?

EPA assumes that reductions in particulates have the same effect in polluted areas as clean ones. EPA appears to say that the same health benefits are achieved by reducing particulates by a given percentage starting from a high level of emissions as starting from a low level of emissions. This leads to the conclusion that a reduction in particulates in upstate New York, which has few emissions, is equal to those in New York City, which has greater emissions.

5. Reliance on Benefits from Reductions in Asthma

The benefits, calculated at \$36 billion to \$88 billion each year⁶ from the mercury rule, \$19 billion to \$38 billion from ozone, and \$10 billion to \$19 billion from

⁶ These figures are in 2011 dollars for consistency with the other EPA estimates.

carbon, supposedly come from improvements in Americans' health, mostly from decreases in asthma. But these projected benefits are "guesstimates," gains that are hard to specify given that other factors, such as obesity and lack of exercise, are in play.

These vast projected savings from asthma constitute the bulk of benefits from EPA's new rules. However, America's air has been gradually getting cleaner since 1980, as EPA's own data show, but the number of children with asthma has risen. According to the Centers for Disease Control, 3.6 percent of children had asthma in 1980, and more than twice that percentage, 7.5 percent, in 1995. In 2009, using a slightly different measure, 10 percent of children had asthma. CDC acknowledges that "the causes of asthma remain unclear and the current research paints a complex picture."⁷ Yet EPA forecasts 130,000 fewer asthma cases from its new mercury rule, 320,000 from ozone, and 48,000 from carbon, mostly from fewer particulates.

Many studies suggest that obesity increases the prevalence of asthma.⁸ If recent trends in obesity and lack of exercise continue, then further improvements in air quality might not have an effect in reducing asthma.

Problems with Costs

EPA understates the costs of the Clean Power Plan. In its Regulatory Impact Analysis, EPA distinguishes between social costs, which are "the total economic burden of a regulatory action," and compliance costs, which are the costs that companies have to spend conforming to the Clean Power Plan. The only costs included are compliance costs. EPA states: "The social costs of a regulatory action will not necessarily be equivalent to the expenditures associated with compliance. Nonetheless, here we use compliance costs as a proxy for social costs."

1. Future Increases in Electricity Prices Not Fully Accounted For

⁷ Lara Akinbani (2006). "The State of Childhood Asthma, United States, 1980-2005." *Centers for Disease Control*. <http://www.cdc.gov/nchs/data/ad/ad381.pdf>

⁸ J Delgado et al. (2008). "Obesity and Asthma." *U.S. National Library of Medicine*. <http://www.ncbi.nlm.nih.gov/pubmed/19123432>

A major economic cost of the rule is energy-price increases caused by shifting from cheaper forms of energy, such as coal and natural gas, to more expensive sources, such as wind and solar power. Although EPA admits that “energy-efficiency expenditures may be borne by end-users through direct participant expenditures or electricity-rate increases, or by producers through reductions in their profits,” those costs are not counted in the cost-benefit analysis.⁹

Moreover, higher energy costs translate into a smaller American economy with lower economic growth and fewer American jobs. EPA does not discuss, much less calculate, the broader economic costs of higher energy prices.

2. Neglect of Effects on Small Business

EPA’s analysis also shows misleading effects on small businesses. Since EPA does not count the increase in electricity prices and the consequent lower economic growth and reduction in jobs as costs, EPA Administrator Gina McCarthy erroneously states in the Clean Power Plan final rule that “I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA [Regulatory Flexibility Act]. This action will not impose any requirements on small entities.”¹⁰

But small entities will be affected in many ways under the new rules. For instance, as electricity prices rise, all businesses, including small businesses, will face higher costs and thus reduced activities. Reduced business activity means fewer businesses, and fewer employees for those businesses, including small businesses, that remain open. Fewer new businesses, including small businesses, will be formed. Some companies dependent on energy might relocate offshore.

The indirect effects from higher electricity prices are also substantial. With fewer employed workers in the economy, there will be less demand for even non-energy-intensive services such restaurants and entertainment.

⁹ U.S. Environmental Protection Agency (2015). “Carbon Pollution Emission Guidelines for Existing Stationary Sources.” <http://www2.epa.gov/sites/production/files/2015-08/documents/cpp-final-rule.pdf>

¹⁰ U.S. Environmental Protection Agency (2015). “Carbon Pollution Emission Guidelines for Existing Stationary Sources.” <http://www2.epa.gov/sites/production/files/2015-08/documents/cpp-final-rule.pdf>

3. Use of Maximum Achievable Control Technology

Maximum Achievable Control Technology means that plants and boilers have to use the most stringent methods possible to get the heavy metals out of the air, even if these methods cost billions of dollars and the benefits are worth far less — as is the case with the new utility rule. MACT, as it is known, does not have to account for costs and benefits. That’s why many productive plants will have to close.

Mercury and arsenic are well-known to the public as toxic, and in certain doses can be lethal. But the new EPA mercury rules would push emissions caps unnecessarily low, driving up generating costs and the price of power to industry and households, and forcing some boilers and plants to shut down.

Susan Dudley, director of the Regulatory Studies Center at George Washington University, writing about the proposed mercury rule, said, “If the enormous public benefits EPA predicts from these mercury standards were real, they would justify the cost to Americans of almost \$11 billion per year. Unfortunately, they are not.”¹¹

4. Omits Costs of Energy-Intensive Industry Going Offshore

EPA’s object in reducing amounts of greenhouse gasses emitted by the United States is to counteract climate change. The benefits in EPA analysis assume that all of these emissions disappear from the globe and that the certain sources of energy for electricity production and manufacturing, such as coal, will be replaced by renewables such as solar and wind energy.

It is far more likely that a large amount of manufacturing will leave the United States than use more-costly renewables. Activity will shift offshore, to countries with fewer emissions controls, such as China, India, and Latin America. Some of these countries, such as China, not only have fewer emissions regulations but dirtier coal, with more lignite. The United States has benefitted from an influx of energy-intensive manufacturing from Germany — this activity can easily move again. Capital is mobile in a global economy.

¹¹ Susan Dudley (2011). “EPA Misrepresents Mercury Rule Benefits.” *National Journal*. <http://energy.nationaljournal.com/2011/12/sizing-up-epas-mercury-rules.php#2138722>

Should this occur, greenhouse gas emissions not only would not decline, but might actually increase. This should be included in EPA's calculations.

Problems with Discount Rate

When investments are made over a multi-year period, investors evaluate the project by "discounting" the future costs and benefits to the present. This is because a dollar is not worth the same to an investor in the future as it is in the present. You would not spend a dollar today to get a dollar's worth of benefits in 2025, because a dollar invested today in the stock market could grow to \$2.59 in 2025.¹² Most businesses use a discount rate that primarily reflects their cost of capital. For example, the cost of capital for Apple, one of the largest corporations in America, was 9.85 percent on October 19, 2015.¹³ Although businesses have different costs of capital and different discount rates, smaller and privately-held firms would tend to have higher discount rates than larger, publicly held companies such as Apple. Some firms use higher rates, and some use lower rates, but none would undertake long-term investments at artificially low discount rates based on dubious long-term projections.

The Office of Management and Budget allows EPA to make two changes to standard business procedures. First, OMB allows the use of two low nominal rates, 7 percent and 3 percent. Few firms would use such low rates, particularly the 3 percent rate.

Second, OMB allows EPA to present its cost-benefit analysis with the costs discounted, but not the benefits. This is an extraordinary error, one that a college freshman in an economics class would not make. The result is not only wrong, but it makes the rules appear less damaging than they are.

1. Discount rates are below standard business rates

Consider first the low rates. With a discount rate of 3 percent, a \$100 million cost today would have costs of \$134 million in 2025, 10 years hence. With a discount

¹² This calculation is based on a 10-year average return over the past 50 years.

¹³ See [gurufocus.com](http://www.gurufocus.com), accessed October 19, 2015, at <http://www.gurufocus.com/term/wacc/AAPL/Weighted%252BAverage%252BCost%252BOf%252BCapital%252B%2528WACC%252529/Apple%2BInc>.

rate of 7 percent, the \$100 million cost today would be \$197 million in 2025. However, if a more accurate rate is 10 percent, the project has higher costs in the future and would have to yield \$259 million in benefits to be worthwhile. The lower the discount rate, the better the EPA rules look on paper.

2. Benefits are discounted at different rates

EPA discounts climate benefits and health co-benefits at different rates. While health benefits are estimated at discount rates of 3 percent and 7 percent, as recommended by the Office of Management and Budget, EPA does not apply any discount rate higher than 5 percent to the climate benefits.

This is critical because, by EPA's own admission, the so-called "social cost of carbon" used to quantify climate benefits is highly sensitive to the discount rate used. For example, a metric ton of carbon will impose \$51 in economic costs in 2025 using a 3 percent discount rate, but only \$16 using a 5 percent rate.¹⁴ Using a higher discount rate would reduce estimated benefits substantially.

EPA justifies this by admitting that climate benefits are sensitive to discount rates, and also claiming that "no consensus exists on the appropriate rate to use in an intergenerational context."¹⁵ The Office of Management and Budget, which issues guidelines to regulatory agencies on how to perform cost-benefits analysis, admits this but still recommends that regulatory agencies estimate costs and benefits using both 3 percent and 7 percent discount rates.¹⁶ With regard to climate benefits, however, EPA neglects this second recommendation.

According to Kevin Dayaratana of the Heritage Foundation, using the OMB-recommended 7 percent discount rate for the social cost of carbon would reduce the estimated benefits of carbon reduction to less than \$10 per metric ton.¹⁷

¹⁴ U.S. Environmental Protection Agency (2015). "Social Cost of Carbon."

<http://www3.epa.gov/climatechange/Downloads/EPAactivities/social-cost-carbon.pdf>

¹⁵ U.S. Environmental Protection Agency (2015). "Regulatory Impact Analysis for the Clean Power Plan Final Rule." <http://www.epa.gov/airquality/cpp/cpp-final-rule-ria.pdf>

¹⁶ U.S. Office of Management and Budget (2011). "Regulatory Impact Analysis: A Primer." https://www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf

¹⁷ Kevin Dayaratana (2015). "An Analysis of the Obama Administration's Social Cost of Carbon." *Testimony before Committee on Natural Resources, United States House of Representatives.* <http://naturalresources.house.gov/uploadedfiles/dayaratnatestimony.pdf>

Under a reasonable set of changes to assumptions, the social cost of carbon becomes negative, suggesting that there are benefits to carbon dioxide emissions. This underscores the high unreliability of social cost of carbon estimates and calls into question whether such estimates should be incorporated into cost-benefit analysis at all.

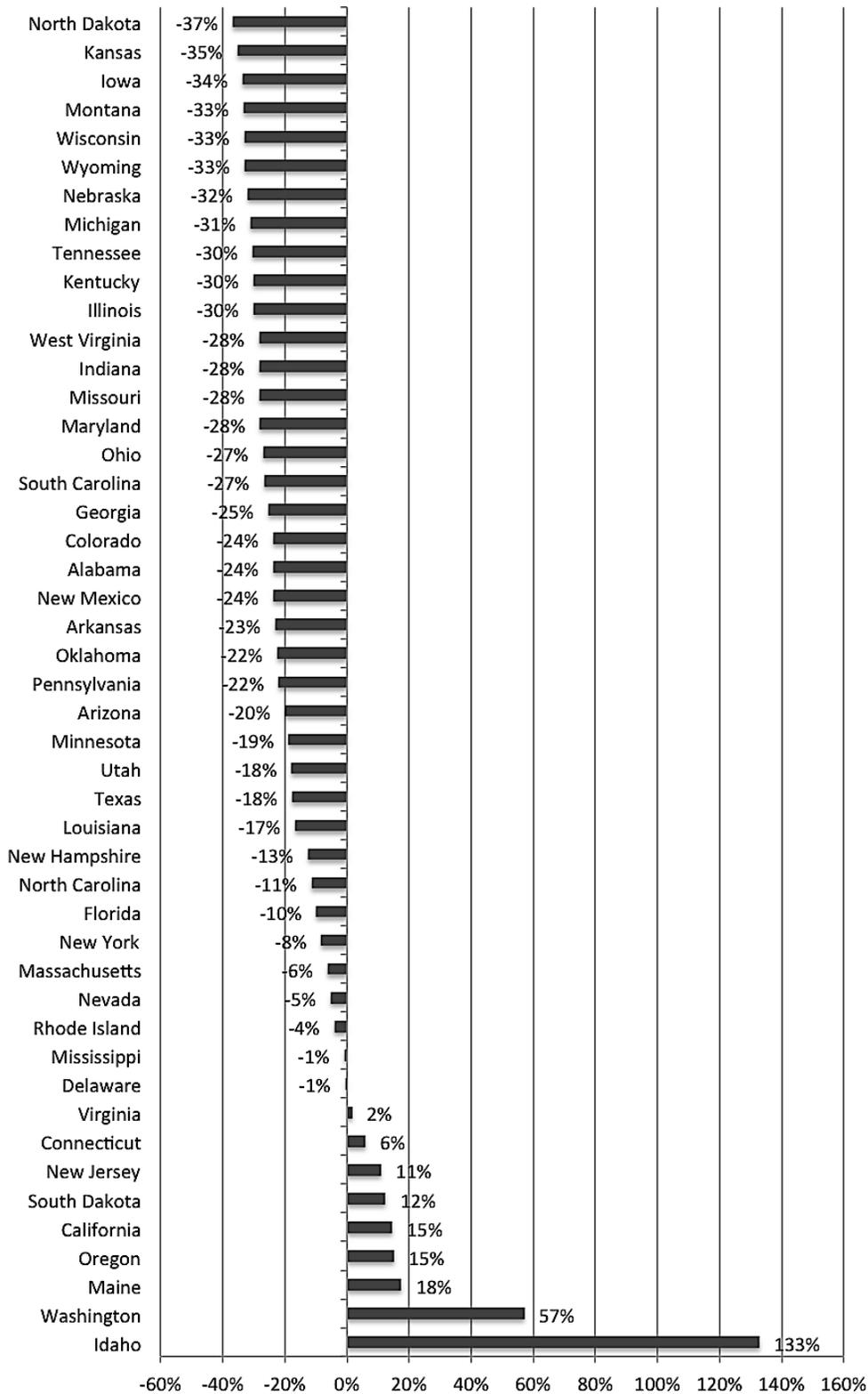
Why Cost-Benefit Analysis Matters

Cost-benefit analysis may appear to be some arcane methodology practiced by economists, but its results have real consequences. EPA's flawed cost-benefit analysis has the effect that costly rules are imposed on the public without sufficient understanding of the consequences. These consequences include a decline in economic activity and, as a result, employment. President Obama has frequently voiced his opposition to offshoring jobs, and threatened to punish companies for doing so, but EPA's new rules will give firms a new incentive to take energy-intensive manufacturing offshore.

This decline in economic activity is measurable, and is not uniform across states. According to EPA's own calculations, Midwestern states will be required to reduce emissions by up to 37 percent from 2005 levels from the carbon rule alone, while coastal states such as Washington and California will be allowed to increase emissions.¹⁸ Republican states have to reduce emissions the most, and Democratic states will have to reduce them the least. This can be seen in the table below.

¹⁸ Preston Cooper (2015). "The Disparate Effect of Clean Power Plan Goals." *Economics21*. <http://economics21.org/commentary/disparate-effect-clean-power-plan-goals>

Change in CO2 Emissions Under Clean Power Plan, 2012-2030



Of the 38 states that will be forced to reduce emissions, reductions vary from 37 percent in North Dakota to 1 percent in Delaware and Mississippi. Nine states, such as Idaho, Washington, Maine, Oregon, and California will be able to increase their CO₂ emissions. Hawaii and Alaska are exempt from the program.

Of the 10 states which will have to reduce emissions the most, 7 voted for Romney in 2012, and the others all voted for Obama by a margin of less than 10 percent. Of the 10 states which will have to reduce the least (or have leeway to increase emissions), 8 voted for Obama in 2012.

This is important because employment in these Republican states will decline, and employment in Democratic states will increase. This means fewer voters in Republican states and more voters in Democratic states.

The decline in employment would occur for the following reason. EPA gives states choice of a “rate-based approach,” where states reduce emissions from their power plants, or a “mass-based approach,” where other sources of carbon, such as from manufacturing, can be lowered to count towards the reductions needed for power plants. States can combine in regions for the “mass-based approach” and it is less expensive to follow. States can meet the targets by reducing consumer demand or investing in more costly renewable energy such as wind and solar power. These impose real costs on the economy, such as fewer factories, trips, and jobs. Electricity made from solar power costs twice as much as electricity made from natural gas.

Coal-fired electricity generation accounted for 39 percent of total U.S. electricity generation in 2013, according to the Energy Information Administration.¹⁹ It expects the role of coal to decline only slightly in the years ahead, to 34 percent in 2035. To meet the rules, new coal plants would have to incorporate carbon capture and sequestration technology, at a cost of billions of dollars a year for consumers. Many would close. Raising the cost of energy would be particularly tough on Midwestern states’ residents, who get much of their electricity from coal.

¹⁹ Energy Information Administration (2015). “Annual Energy Outlook 2015.” [http://www.eia.gov/forecasts/aeo/pdf/0383\(2015\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2015).pdf)

Such job declines were forecast five years ago by the Congressional Budget Office when Congress was debating the cap-and-trade plans proposed by Senators John Kerry and Joe Lieberman and Representatives Ed Markey (now a Senator, and ranking Member on this Committee) and Henry Waxman. These bills did not pass even in a Democratic Congress with a Democratic president who supported them. Now EPA has instituted the essence of the cap-and-trade bills through regulation.

In May 2010, CBO issued a report entitled *How Policies to Reduce Greenhouse Gas Emissions Could Affect Employment*.²⁰ It concluded that “job losses in the industries that shrink would lower employment more than job gains in other industries would increase employment, thereby raising the overall unemployment rate.”

The CBO report shows that emissions reduction programs would cause job losses in coal mining, oil and gas extraction, gas utilities, and petroleum refining. In addition, workers’ wages adjusted for inflation would be lower than otherwise because of the increase in prices due to a cap and trade program. CBO concludes that some workers, therefore, would leave the labor market, because at the new lower wages they would prefer to stay home.

According to CBO, “While the economy was adjusting to the emission-reduction program, a number of people would lose their job, and some of those people would face prolonged hardship.” Workers laid off in declining industries would find it hard to get new jobs. This is not in the interests of many Americans, especially when the labor market is weak and air quality is continuing to improve.

Then, in December 2013, another CBO report stated, “Imposing an economy-wide carbon tax or cap-and-trade program would put the U.S. firms most affected – those that are emission-intensive – at a competitive disadvantage relative to their competitors in other countries unless those countries implemented similar policies.”²¹

²⁰ Congressional Budget Office (2010). “How Policies to Reduce Greenhouse Gas Emissions Could Affect Employment.” <http://www.cbo.gov/publication/41257>

²¹ Congressional Budget Office (2013). “Border Adjustments for Economywide Policies That Impose a Price on Greenhouse Gas Emissions.” <http://www.cbo.gov/sites/default/files/cbofiles/attachments/44971-GHGandTrade.pdf>

CBO explained, “Such a policy would impose costs on domestic firms, allowing foreign producers from countries with less stringent policies, or no policy at all, to charge less for their goods than U.S. producers.”

EPA’s Stationary Sources report for the carbon rule spells out some job losses. According to the report, “EPA recognizes as more efficiency is built into the US power system over time, lower fuel requirements may lead to fewer jobs in the coal and natural gas extraction sectors...”²²

EPA estimates that the rule could result in a net decrease of approximately 31,000 full-time jobs in 2030 for the final guidelines under the rate-based illustrative plan approach and approximately 34,000 full-time jobs under the mass-based approach. In addition, 52,000 to 83,000 jobs would be lost in 2030 due to lower demand from the higher electricity prices.²³

These job-loss projections are likely to be a substantial underestimate. The economic consulting firm NERA estimated that EPA’s carbon rule alone would cause delivered electricity prices to rise by an average of 17 percent. Over a fifteen-year period, this would increase consumer energy costs by a cumulative \$479 billion.²⁴ Reducing ozone and mercury would increase the costs still further. Rather than continuing the trend of manufacturing returning to America, EPA’s rules would reverse it by discouraging energy-intensive manufacturing.

Some might say that the factors I have discussed above are unimportant. But with EPA’s goal of reducing carbon emissions from the utility sector by 32 percent from 2005 levels by 2030,²⁵ reducing atmospheric concentration of ozone

²² U.S. Environmental Protection Agency (2015). “Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units.” <http://www.epa.gov/airquality/cpp/cpp-final-rule.pdf>

²³ U.S. Environmental Protection Agency (2015). “Regulatory Impact Analysis for the Clean Power Plan Final Rule.” <http://www.epa.gov/airquality/cpp/cpp-final-rule-ria.pdf>

²⁴ David Harrison Jr. et al. (2014). “Potential Energy Impacts of EPA Proposed Clean Power Plan.” *NERA Economic Consulting*. http://www.nera.com/content/dam/nera/publications/2014/NERA_ACCCE_CPP_Final_10.17.2014.pdf

²⁵ U.S. Environmental Protection Agency (2015). “Overview of the Clean Power Plan.” <http://www.epa.gov/airquality/cpp/fs-cpp-overview.pdf>

to 70 ppb,²⁶ and preventing 90 percent of the mercury stored in coal from being emitted into the air,²⁷ it is vital to have an accurate evaluation of the benefits and costs. If emissions exceed EPA's requirements, a state or group of states would be required to shut down power plants or other energy-intensive manufacturing.

Although greenhouse-gas emissions from power plants declined 15 percent from 2005 to 2013, EPA is using flawed cost-benefit analysis to make further changes seem worthwhile. The carbon intensity of the economy – a measure of carbon emissions per dollar of GDP – has fallen by 23 percent since 2005, continuing a long decline since the end of the Second World War.²⁸ Absent heavy regulatory intervention, the United States is already making great strides towards a cleaner economy.

EPA uses faulty methodology to justify its rules. It claims that the rule is justified, but its regulatory impact analysis minimizes the costs and exaggerates the benefits. Congress should act to control the costs of regulation.

Thank you for allowing me to testify today.

²⁶ U.S. Environmental Protection Agency (2015). "National Ambient Air Quality Standards for Ozone." <http://www3.epa.gov/ozonepollution/pdfs/20151001fr.pdf>

²⁷ U.S. Environmental Protection Agency (2015). "Mercury and Air Toxics Standards for Power Plants." <http://www3.epa.gov/mats/pdfs/20111221MATSummaryfs.pdf>

²⁸ Energy Information Administration (2014). "U.S. Energy-Related Carbon Dioxide Emissions, 2013." <http://www.eia.gov/environment/emissions/carbon/>