IER INSTITUTE FOR ENERGY RESEARCH

Comment On Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generation

Docket ID EPA-HQ-OAR-2013-0602

Institute for Energy Research*

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* The Institute for Energy Research (IER) is a not-for-profit organization that conducts

Introduction

EPA's proposed guidelines for carbon dioxide (CO_2) emissions from existing stationary sources are fatally flawed. The rule violates the language of the Clean Air Act; it arbitrarily and capriciously imposes emission reduction goals with no analysis from EPA on the actual warming impacts; it is not supported by the American people nor Congress; it will drive up electricity prices; and it will threaten the stability of the electricity grid. EPA fails to note that in exchange for higher electricity rates, the benefit of this rule is that the world is expected to be 0.018 degrees Celsius cooler than otherwise by 2100.[1] In sum, this rule is all cost and little benefit. It is an illegal attempt to usurp the power of the individual states and assert federal bureaucratic control over state electricity issues.

I. The Rule is Contrary to the Plain Language of the Clean Air Act

This rule is contrary to the plain language of the Clean Air Act (CAA). Section 111(d) of the CAA requires cost-effective, technology-based emissions standards for existing facilities in the affected source category of fossil fuel-fired electric generating units. Section 111(d) itself states that EPA is to set "standards of performance for any existing source for any air pollutant." The problem with EPA's proposed rule regulating greenhouse gas (GHG) emissions from power plants is that EPA goes far beyond any reading of the term "standard of performance."

In this regulation, EPA establishes four "building blocks" for states to comply with the regulation. Only one of these building blocks, however, could be called a "standard of performance" as is required by §111(d).

[1] Paul. C. Knappenberger & Patrick J. Michaels, *0.02°C Temperature Rise Averted: The Vital Number Missing from the EPA's "By the Numbers" Fact Sheet*, Cato Institute, Jun. 11, 2014, http://www.cato.org/blog/002degc-temperature-rise-averted-vital-number-missing-epas-numbers-fact-sheet.

EPA's four building blocks are: (1) greater efficiency for power plants; (2) displacing coal with existing natural gas; (3) increasing the use of renewables or nuclear; and (4) decreasing electricity consumption through end-user efficiency.[2] Building blocks 2, 3, and 4 are not "standards of performance." In all three cases, the standard of performance is not using coal. These are not "standards of performance" for coal technology, but rather a prohibition on coal technology altogether. A prohibition is not a "standard of performance." A "standard of performance" assumes at least some "performance," whereas a prohibition is no "performance." Therefore, only building block 1 can be allowed by the structure of the CAA.

There are other problems with EPA's proposed rule under §111(d). By extending its regulatory reach far beyond "standards of performance," EPA proposes to violate the cooperative federalism principles on which the CAA is based, as well as the state sovereignty principles protected by the 10th Amendment.

Also, EPA is proposing to regulate emissions from producing electricity on a sector-wide basis by requiring state-wide reductions outside of the actual source (i.e., "outside the fenceline"). This is not allowed by §111(d). Section 111(d) only allows "standards of performance."

With building blocks 2, 3, and 4, EPA is also proposing power resource planning and approval, as well as retail electricity regulation. EPA does not have this authority. The individual states have this authority, not EPA. The Federal Energy Regulatory Commission (FERC), to which Congress granted wide authority over wholesale electricity markets, was recently denied jurisdiction in retail, end-use electricity markets by the U.S. Court of Appeals.[3] Certainly EPA does not have authority over electricity markets where FERC lacks it.

Also, §111(d) prohibits EPA from establishing standards "for any existing source for any air pollutant … emitted from a source category which is regulated under [§ 112]." The Supreme Court confirmed that "EPA may not employ [§111(d)] if existing stationary sources of the pollutant in question are regulated under" § 112.[4]

Lastly, EPA has failed to follow CAA requirements for addressing international air pollution. Section 115 of the CAA requires EPA to formally notify governors of states with emissions that impact public health and welfare in foreign countries to develop plans under Section 110 of the CAA, and only if the foreign country is preventing air pollution to the same degree it is being prevented in the U.S.

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[2] 79 FR 34851

[3] http://instituteforenergyresearch.org/analysis/fercs-overreach-demand-response/

[4] *See* AEP v. Connecticut, 131 S. Ct. 2527, 2537 n.7 (2011).

Section 111(d) cannot support EPA's interpretation, with the possible exception of heat rate limits on existing coal-fired power plants. But even in this case, §111(d)'s prohibition on regulating pollutants already regulated under §112 and §115's requirements for international air pollutants also preclude these regulations by EPA.

II. EPA's Carbon Dioxide Emissions Goals are Arbitrary and Capricious Because EPA Failed to Follow its Previous Precedent and Analyze the Impact of the Rule on Temperature and Sea Level Rise

In this rule, EPA argues that climate change causes various public health impacts, such as increasing temperatures "which are associated with increased deaths and illnesses" among other impacts[5] and public welfare impacts such as "rising sea level" and other impacts.[6] Despite highlighting these harms, EPA fails to explain how this rule would reduce these specific harms. By failing to explain how this rule would impact these harms, specifically how the rule would impact temperature and sea level rise, EPA deviated from its previous practice.

In EPA's regulation of GHG emissions from light-duty vehicles for model years 2010–2016[7] and 2017 and later[8] EPA indeed made such an assessment in previous regulation of carbon dioxide,[9] but not in this rule. In those rules, EPA examined the impact of the rules on temperature and sea level rise. EPA examined these impacts because these types of "actual" and "imminent" harms are what concerned the Supreme Court when the Court reviewed EPA's authority to regulate greenhouse gas emissions in *Massachusetts v. EPA*.

In *Massachusetts v. EPA*, the Court was particularly concerned about sea level and temperature rise. As the Court explains, "the rise in sea levels associated with global warming has already harmed and will continue to harm Massachusetts. The risk of

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[5] Environmental Protection Agency, *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, 79 Fed. Reg. 34,830, 34,841 (2014), http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.

[6] *See id.* at 34,842.

[7] Environmental Protection Agency, *Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule*, 75 Fed. Reg. 25,324 (2010), http://www.gpo.gov/fdsys/pkg/FR-2010-05-07/pdf/2010-8159.pdf

[8] Environmental Protection Agency, *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 77 Fed. Reg. 62,624 (2012), http://www.gpo.gov/fdsys/pkg/FR-2012-10-15/pdf/2012-21972.pdf

[9] *See id.* and Environmental Protection Agency, *Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule*, 75 Fed. Reg. 25,324 (2010), http://www.gpo.gov/fdsys/pkg/FR-2010-05-07/pdf/2010-8159.pdf.

catastrophic harm, though remote, is nevertheless real. That risk would be reduced to some extent if petitioners received the relief they seek."[10]

As a result of *Massachusetts v. EPA*, the agency regulated greenhouse gases from light duty vehicles. As noted above, in the GHG rules for vehicles, EPA followed the Supreme Court's lead and examined the impact of the rules on the harms outlined in *Massachusetts v. EPA.* By analyzing the impact of the rules on temperature and sea level rise, this moored EPA to the actual harm the Supreme Court was concerned about. But in the instant proposed rule, EPA has drifted away from discussing actual harms and into the realm of hypothetical and non-imminent harms.

Instead of analyzing temperature and sea level rise, EPA estimated the "social cost of carbon." The problems with using the social costs of carbon for policy analysis are legion,[11] but two important points are that 1) the vast majority of the harms in the social cost of carbon are not "actual" and "imminent" harms, but are uncertain global harms 100 years or more in the future and 2) the estimates of the social cost of carbon are, in the words of respected MIT economist Robert Pindyck, "close to useless." They tell us "very little" and "create a perception of knowledge and precision, but that perception is illusory and misleading."[12]

As we explain later, there are many problems with using the social cost of carbon for policy questions, but suffice it to say that Professor Pindyck is correct when he calls the estimates "close to useless."

In this rule, by omitting any analysis of the impact of the rule on global warming or sea level rise, EPA is forced to make an arbitrary and capricious decision of the level regarding emissions reductions. For example, what is the difference with regard to climate change between this rule, which "would achieve CO_2 emission reductions from the power sector of approximately 30 percent from CO_2 emission levels in 2005,"[13] and a rule that reduced CO_2 emissions by 20 percent or 5 percent or even 1 percent? EPA does not explain.

EPA's arbitrary omission of the benefits of this rule is all the more obvious when we consider EPA's statement in the 2012 regulation of GHG emissions from light-duty vehicles. In the final rule, EPA defended the regulation even though it resulted in a tiny reduction in temperature. EPA stated:

> While this rule does not singlehandedly eliminate climate change, it is an important contribution to reducing the rate of change, and this reduction in

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[10] *Massachusetts v. EPA*, 549 U.S. 497, 526 (2007).
[11] For a more detailed explanation of the problems with using the social cost of carbon for policy, *see* Institute for Energy Research, *Comment on Technical Support Document: Technical Update of The Social Cost of Carbon For Regulatory Impact Analysis Under Executive Order No. 12866,* http://instituteforenergyresearch.org/wp-content/uploads/2014/02/IER-Comment-on-SCC.pdf.
[12] *See e.g.*, Robert P. Murphy, *Scathing MIT Paper Blasts Obama's Climate Models*, Institute for Energy Research, Aug. 12, 2013, http://instituteforenergyresearch.org/analysis/scathing-mit-paper-blasts-obamas-climate-models/
[13] EPA, *Carbon Pollution Emission Guidelines* at 34,832.

> rate is global and long-lived. EPA appropriately placed the benefits of reductions in context in the rule, by calculating the likely reductions in temperature and comparing them to total projected changes in temperature over the same time period.[14]

By not placing the reductions in context, as EPA previously did, and by not making a comparison to the total projected changes over time, EPA's emission reduction goals are arbitrary because EPA provides no basis for a 30 percent reduction, a 100 percent reduction, or a 1 percent reduction.

III. Americans Oppose the Rule

Generally, comments to federal agencies focus narrowly on legal and regulatory issues, but given the scope and breadth of this rule as well as the fact that it will fundamentally alter the U.S. electric grid, it is it is also important to consider the public's opinion of the rule generally.

The American people have demonstrated through their responses to opinion polling, through the results of the mid-term elections, and through the actions of their representatives in Congress that they oppose the EPA's rule imposing mandates on CO_2 emissions from existing power plants. Americans see the rule as an executive overreach that is likely to have significant downsides for their families and businesses.

A. Public Opinion Polling

Public opinion polls reveal two things: (1) when Americans are informed about the consequences of the rule, they oppose it, and (2) when Americans do favor CO_2 limits, they want them to be enacted by Congress rather than by the EPA. In short, people oppose the rule once they understand how much it will cost and the executive overreach involved.

Gallup, after conducting its own poll on CO_2 emissions standards for power plants, noted:

> The argument against new emissions standards is that they would ultimately require the American public to pay more for energy, that they would cost American jobs, and that they would have relatively little impact on global warming. These alternatives are not addressed directly in the trend questions

[14] EPA, *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 77 Fed. Reg. at 62,898.

> reviewed here, and it is possible that when presented with specific tradeoff costs of setting higher carbon pollution standards, support would be lower.[15]

Gallup did not ask further questions presenting respondents with specific tradeoff costs, but the American Energy Alliance conducted polls that did. AEA's polls presented respondents with statements regarding the effects of the proposed rule. AEA first asked respondents what they thought about the proposed rulemaking in a vacuum, with no context provided. Then, the survey asked respondents again what they thought about the rule after providing them with information about the economic costs and climate benefits of the rule. Support dropped below 44 percent in every state once respondents were presented with this information.

Voters also clarified that the top priority for this administration should be the economy and job creation, and they ranked environmental issues toward the bottom of their list.[16] A September 2014 Pew poll also reveals that respondents rank the economy as their highest priority while ranking the environment as the 8th priority out of 11.[17] A separate Rasmussen poll conducted in 2013 indicates that 47 percent of respondents would be unwilling to pay more for climate-related goals, while only 41 percent would be willing to pay more.[18] Along similar lines, an IER study on voluntary "Green Pricing Programs" noted that fewer than 2.1 percent of utility customers chose to opt into these programs.[19]

Although EPA argues that the proposed rule saves Americans money, Americans do not agree. A June 2014 Rasmussen poll reveals that only 21 percent of respondents believe that EPA actions generally help the economy.[20] In fact, a 2013 Rasmussen poll finds that 58 percent of respondents believe that the President Obama's proposed regulations for the EPA to enact would raise energy costs for American households.[21]

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[15] Gallup, "Smaller Majorities in U.S. Favor Gov't Pollution Controls," June 4, 2014, http://www.gallup.com/poll/170885/smaller-majorities-favor-gov-pollution-controls.aspx

[16] American Energy Alliance, "Survey Summary," July 25, 2014, http://americanenergyalliance.org/wp-content/uploads/2014/07/EPA-Message-summary.pdf

[17] Pew Research Center, "Wide Partisan Differences Over the Issues That Matter in 2014," September 12, 2014, http://www.people-press.org/2014/09/12/wide-partisan-differences-over-the-issues-that-matter-in-2014/

[18] Rasmussen, "41% Willing to Pay More to Fight Global Warming, 47% Are Not," June 11, 2013, http://www.rasmussenreports.com/public_content/archive/environment_energy_update_archive/41_willing_to_pay_more_to_fight_global_warming_47_are_not

[19] IER, "Evaluating Voluntary Consumer Adoption of Green Pricing Programs," June 2013, http://instituteforenergyresearch.org/wp-content/uploads/2013/06/Green-Pricing-White-Paper.pdf

[20] Rasmussen, "21% Think EPA Actions Help Economy," June 6, 2014, http://www.rasmussenreports.com/public_content/archive/environment_energy_update_archive/21_think_epa_actions_help_the_economy

[21] Rasmussen, "58% Expect Obama's New EPA Regulations to Increase Energy Costs," June 28, 2013, http://www.rasmussenreports.com/public_content/politics/current_events/environment_energy/58_expect_obama_s_new_epa_regulations_to_increase_energy_costs

Public opinion polls also reveal that, even when Americans do want limits on CO_2 emissions, they would prefer that those regulations come about through their democratically-elected representatives in Congress rather than EPA or the Executive branch operating of their own accord. A June 2014 Rasmussen survey indicates that respondents, even when they approve of the proposed rulemaking, do not believe that the EPA should be allowed to move ahead without the approval of Congress.[22] A separate Rasmussen poll from 2013 also indicates that 51 percent of people believe that all EPA regulations should require Congressional approval.[23]

B. Mid-Term Election Results

Elections are another way for policymakers to gauge the opinions of the American public. President Obama said, "I am not on the ballot this fall...But make no mistake: These policies are on the ballot. Every single one of them."[24] If this is the case, the American people loudly rejected the proposed ESPS rule by overwhelmingly voting for Republicans in the Senate, House, Governors' mansions, and state legislatures.[25]

Ignoring the will of the American people and attempting to finalize the current rule is problematic, since EPA is relying on states to do the heavy lifting of implementing the rule. As early as August, 12 of the hardest hit states joined together to sue the Agency.[26] Pushback from the states is likely to be more intense now that the American people have overwhelmingly voted for representatives to protect their local economies, and fight the Administration's climate plan, including this rule.

In addition to lawsuits, some state utility boards, such as those in Michigan[27] and in Virginia[28] have already pushed back on specifics of the rule. This includes rising costs,

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[22] Rasmussen, "Most Like New EPA Emissions Controls But Say Congress Needs to OK First," June 10, 2014, http://www.rasmussenreports.com/public_content/politics/general_politics/june_2014/most_like_new_epa_emissions_controls_but_say_congress_needs_to_ok_first

[23] Rasmussen, "51% Think All EPA Regulations Need Congressional Approval," July 2, 2013, http://www.rasmussenreports.com/public_content/politics/current_events/environment_energy/51_think_all_epa_regulations_need_congressional_approval

[24] Steven Dennis, "Obama: My Policies Are on the Ballot", Roll Call, October 2, 2014, http://blogs.rollcall.com/white-house/obama-ballot-unemployment-extension/?dcz=.

[25] Philip Bump, *It's all but official: This* wil*l be the most dominant Republican Congress since 1929,* Washington Post, November 5, 2014, http://www.washingtonpost.com/blogs/the-fix/wp/2014/11/05/its-all-but-official-this-will-be-the-most-dominant-republican-congress-since-1929/.

[26] Neela Banerjee, "12 states sue the EPA over proposed power plant regulations", Los Angeles Times, August 4, 2014, http://www.latimes.com/business/la-fi-epa-lawsuit-20140805-story.html.

[27] Public Sector Consultants, "Electric Reliability in Michigan: The Challenge Ahead," November 19, 2014, http://www.pscinc.com/LinkClick.aspx?fileticket=CuGsO5sdBOs%3D&tabid=75

[28] Commonwealth of Virginia, State Corporation Commission, "Comments of the Staff of the Virginia State Corporation Commission on the Proposed Clean Power Plan", October 14, 2014,

reliability concerns, and the ability for states to comply within a state-by-state framework, when electric grids are based on a regional infrastructure.

C. Congressional Action

Congress, acting as the representative body of the American people, has rejected many legislative proposals for federal regulation of greenhouse-gas emissions, most notably the Waxman-Markey cap-and-trade bill in 2009, which failed on a bipartisan basis and quickly became a bipartisan political liability.[29] It should be noted that President Obama could not convince his own party, which controlled the Senate at the time, to even vote on the bill.

Like EPA's proposed rule, the Waxman-Markey legislation claimed "to create clean energy jobs, promote energy independence, reduce global warming pollution, and transition to a clean energy economy."[30] The American people and their representatives, however, recognized that this bill was simply an attempt to increase the price of energy for the lower and middle class[31] and that it would have a negligible impact on the environment.[32]

Legislation which makes energy more expensive is politically unpopular. This is why no action has been taken on the Climate Protection Act of 2013, despite co-sponsorship from Sen. Barbara Boxer, who is the Chairman of the Environment and Public Works Committee and who therefore controls the committee agenda. The bill was introduced on February 14, 2013 by Sen. Bernie Sanders (I-VT). Like the Waxman-Markey bill and the EPA's proposed power plant rule, this bill seeks "to address climate disruptions, reduce carbon pollution, [and] enhance the use of clean energy."[33] It does this by requiring EPA to impose a CO_2 emission fee on any manufacturer, producer, or importer of a carbon polluting substance, and a carbon equivalency fee on imports of carbon pollution-intensive goods.[34] This bill, however, did not move forward.

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https://gallery.mailchimp.com/a8970db37d2569f1a2b65e59d/files/Virginia_SCC_Staff_Comments_on_Clean_Power_Plan.pdf.

[29] Stephen Power, *Senate Halts Effort to Cap* CO_2 *Emissions,* Wall Street Journal, July 23, 2010, http://online.wsj.com/articles/SB10001424052748703467304575383373600358634.

[30] Clean Energy Jobs and American Power Act, S.1733, 111th Congress, 9-30 (2009), http://thomas.loc.gov/cgi-bin/query/F?c111:2:./temp/~c111597BxM:e0:.

[31] Institute for Energy Research, "Who Benefits, Who Pays, For Cap-and-Trade in Waxman Markey?", http://instituteforenergyresearch.org/media/pdf/Chamberlain_Study_Fact_Sheet.pdf

[32] Thomas Pyle, "Cap-and-Trade Is Bad: A Stealth Tax on Energy", Institute for Energy Research, January/February 2009, http://instituteforenergyresearch.org/wp-content/uploads/2009/03/Legal_Cap_Trade.pdf.

[33] Climate Protection Act of 2013, S. 332, 113th Congress, 2-14 (2013), https://www.congress.gov/bill/113th-congress/senate-bill/332/text?q=%7B%22search%22%3A%5B%22carbon%22%5D%7D.

[34] *Id.*

IV. The Rule Threatens the Reliability of the U.S. Electric Grid

It is vital to the security of America's electric power supply that EPA re-examine the grid reliability impacts of the proposed rule, particularly in conjunction with other EPA rules that are also closing our most dependable sources of electricity. EPA has not done enough to ensure that the power grid remain reliable during the very aggressive implementation period it has proposed. In the face of an unprecedented number of power plant closures, the EPA has consistently shrugged off potential reliability problems. In the rule, EPA sums up its position by simply stating, "the proposed rule will not raise significant concerns over regional resource adequacy or raise the potential for interregional grid problems." [35]

Meanwhile, feedback from grid operators reveals that EPA is out of step with the people who actually keep the lights on. The organizations, utilities, and regulatory bodies that have the most direct interest in grid reliability are warning EPA that the rule most certainly *does* raise significant concerns. For example, the Electric Reliability Council of Texas (ERCOT) issued a report criticizing the impacts of the proposed plan.[36] The Southwest Power Pool (SPP) similarly concluded in its own report on the rule that the impacts would be significant and problematic.[37] The North American Electric Reliability Corporation (NERC), the organization tasked with developing mandatory grid reliability standards after the 2003 blackout, also issued a report in November that was very critical of the EPA rule and its effects on the grid.[38]

The contrast is alarming—grid experts are expressing grave concern over reliability, and EPA is expressing none. EPA should listen to the advice of grid operators and pledge to resolve all reliability issues to the satisfaction of the grid operators before moving forward with this rule. At the very least, EPA should hold off on finalizing the proposed rule until: 1) NERC assesses the potential reliability impacts of the final rule in depth and finds no unresolved reliability issues under EPA's assumptions, and 2) EPA adjusts the compliance timeline consistent with comments from NERC, the Federal Energy Regulatory Commission (FERC), states, utilities, and grid operators.

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[35] EPA, 79 FR 34900

[36] Electric Reliability Council of Texas, "ERCOT Analysis of the Impacts of the Clean Power Plan", November 17, 2014, http://www.ercot.com/content/news/presentations/2014/ERCOTAnalysis-ImpactsCleanPowerPlan.pdf

[37] Southwest Power Pool, "SPP's Reliability Impact Assessment of the EPA's Proposed Clean Power Plant Plan", October 8, 2014, http://www.spp.org/publications/CPP%20Reliability%20Analysis%20Results%20Final%20Version.pdf

[38] North American Electric Reliability Corporation, "Potential Reliability Impacts from EPA's Proposed Clean Power Plan, Initial Reliability Review", November 2014.

A. Unprecedented Power Plant Closures

The proposed rulemaking will cause more power plants to close in a short time frame than ever before. IER studies have pointed out that a significant amount of current capacity will likely go offline as a result of this rule, and NERC's analysis shows the same. EPA's own analysis also indicates that power plant closures will be substantial, although EPA's estimates are shockingly low compared to NERC's and IER's estimates. The unavoidable result of these existing plants closing will be increasing strain on grid reliability.

1. EPA's Low Estimates of Generation Capacity Closures

EPA's estimates of how much power is going offline because of this rule are dangerously low. If the agency cannot accurately estimate how much capacity will be lost as a result of its rule, it cannot successfully prepare for the closures or tailor the rule to avoid critical closures. Further, if EPA does not base its rule on a proper consideration of circumstances, the rule is arbitrary and capricious by the standards of the U.S. Court of Appeals.

The agency estimates that the U.S. will lose about 46 to 50 GW of coal-fired generation by 2030:[39]

> Under Option 1[the average goal EPA wants to meet between 2020 and 2029], the EPA projects 46 to 50 GW of additional coal-fired generation may be uneconomic to maintain and may be removed from operation by 2030. The EPA projects that under Option 2, 30 to 33 GW of additional coal-fired generation may be uneconomic to maintain and may be removed from operation by 2025.

EPA also estimates that coal-fired electricity generation will drop by about 16 to 22 percent by 2020.[40] These are lower than estimates from NERC, IER, and regional grid operators, and they do not reflect a proper consideration of circumstances. EPA's estimates are therefore arbitrary and capricious and must be revised.

2. NERC's Estimates

NERC recently released a report sounding the alarm on the EPA proposal and its impact on America's electricity supply. NERC has no partisan or ideological affiliations. Rather, it is a group of grid experts and engineers tasked with maintaining a reliable power

[39] EPA, paragraph 79 FR 34935
[40] EPA, paragraph 79 FR 34948

system across North America. For this reason alone, EPA should take its analysis seriously. NERC's new report suggests that the group is concerned that EPA is downplaying the risks involved in the implementation of the rule and that it will continue to evaluate reliability impacts as EPA finalizes the rule.[41]

Although the power industry has been able to successfully comply with past "mass-based emission cap and trade programs" without significant reductions in reliability, NERC estimates that "the CPP introduces potential reliability concerns that are more impactful than prior environmental compliance programs due to the extensive impact to fossil-fired generation."[42]

NERC's figures for electric generation capacity that will go out of service exceed those of the EPA. The report states:

> [A]ccording to the EPA's reliability assessment included in the proposed rule, these existing generation rules would result in **between 108 and 134 GW of generation retirements by 2020** (depending on state or regional implementations of Option 1 or 2).[43] [Emphasis added]

Significantly, these estimates are between double and quadruple the closures expected by EPA. The agency should resolve this wide disparity before moving forward with the final rule.

NERC also estimates that the proposed rule could cause nearly one-fifth of coal plants to become uneconomical and could have even greater effects when compounded on the earlier Mercury and Air Toxics Standards (MATS) rule. The report explains:

> The EPA's supporting documents estimate that up to 19 percent of the nation's coal plants will become "uneconomical" as a result of the proposed CPP. Although the CPP may not become enforceable until 2020, its effect may overshadow and change large retrofit capital decisions needed to comply with earlier EPA regulations—primarily MATS.[44]

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[41] NERC.
[42] North American Electric Reliability Corporation, "Potential Reliability Impacts from EPA's Proposed Clean Power Plan, Initial Reliability Review", November 2014, p. 17, http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/Potential_Reliability_Impacts_of_EPA_Proposed_CPP_Final.pdf.
[43] NERC, p. 5.
[44] NERC, p. 18.

The EPA's prior MATS rule already threatens to shut down significant coal-fired capacity. The proposed rulemaking would cause additional sources of generation to shut down on top of the existing sources which are set to retire.

3. IER's Estimates

A recent IER analysis supports NERC's estimate and indicates that EPA vastly underestimated power plant closures due to its regulations. We found that the combined impact of the MATS rule along with that of the Cross State Air Pollution Rule (with some early influence of this GHG rule) would shutter more than 72 gigawatts (GW) of reliable electricity generation. To put this figure in perspective, 72 GW is enough to power every home in every state west of the Mississippi River, excluding Texas.[45] In the map below from the IER report, the red dots show power plant retirements that occurred between the years 2000 and 2014, while the yellow dots indicate power plants that are projected to close in the future:

In June, IER released a separate report highlighting the challenges of relying on natural gas as a baseload power supply. The case of the Polar Vortex of January 2014 was a glimpse into a less coal-intensive future for the power grid, and it was a nightmare. Spot prices for both electricity and natural gas skyrocketed, several pipeline companies had to restrict delivery, and no interruptible service was available during the worst days of the weather event.[46]

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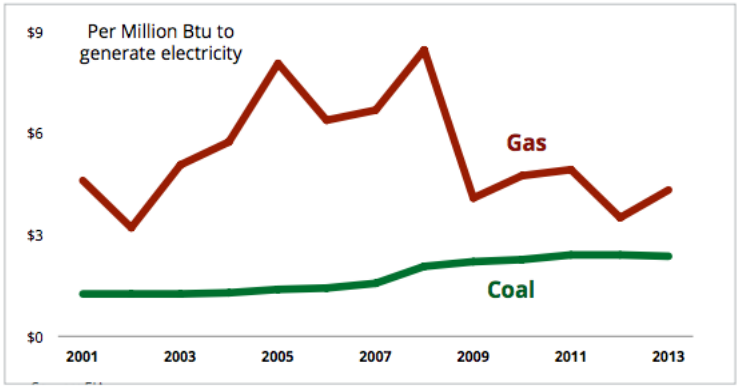
[45] Institute for Energy Research, *Power Plant Closures*, http://instituteforenergyresearch.org/topics/policy/power-plant-closures/

[46] Roger Bezdek and Frank Clemente, *Protect the American People: Moratorium On Coal Plant Closures Essential*, Institute for Energy Research, June 2014, http://instituteforenergyresearch.org/wp-content/uploads/2014/06/Protect-the-American-People.-Moratorium-on-Coal-Plant-Closures-Essential.pdf.

Natural gas prices also tend to be more volatile than coal prices, putting remaining baseload electricity at risk once coal plants have closed. Although new supplies and infrastructure will help, price volatility will remain a challenge because of how many sectors of the economy use natural gas for various purposes. Government policies that create more demand for natural gas will likely only worsen the problem. The following graph from IER's report illustrates the price volatility of natural gas compared to that of coal:[47]

Figure IV-5: Volatility of Natural Gas Prices Compared to Coal Prices



Source: U.S. Energy Information Administration.

As the graph reveals, natural gas prices tend to fluctuate across a wider range than coal prices. Relying almost entirely on natural gas for baseload power while shuttering coal is thus unwise.

4. NERA's Estimates

NERA Economic Consulting conducted a separate study of the impacts of the proposed rule on the electric grid.[48] NERA's analysis tested two separate scenarios for compliance—one "unconstrained" scenario in which states had all four building blocks as viable options and one "constrained" scenario in which states were limited by available resources to only two building blocks. In the constrained scenario, **over 200 GW** of coal-fired power would be set to retire by 2029, while in the unconstrained scenario, **almost 100 GW** would retire. This chart from NERA's report illustrates the capacity projections for coal plants:

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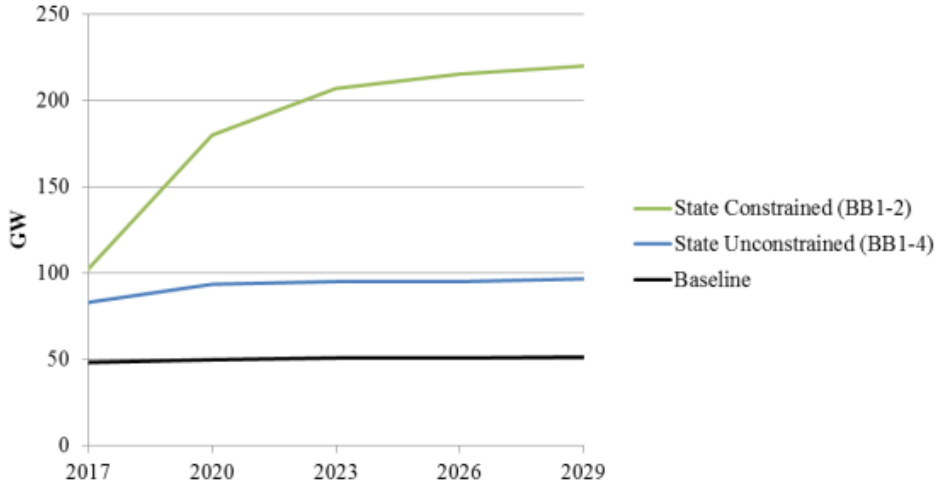
[47] Bezdek and Clemente, page 35.

[48] NERA Economic Consulting, *Potential Energy Impacts of the EPA Proposed Clean Power Plan*, October 2014, http://americaspower.org/sites/default/files/NERA_CPP%20Report_Final_Oct%202014.pdf

Figure 6: Coal Unit Retirement Impacts of State Compliance Scenarios



Source: NERA calculations as explained in text.

NERA's report also estimates that between 18 and 68 percent of coal capacity could by retired across the U.S. by 2031. This table reveals the breakdown of retirements by region:

Figure 12: Coal Unit Retirement Impacts by Region Through 2031

	Baseline	State Unconstrained (BB1-4)		State Constrained (BB1-2)	
		Change	% Change	Change	% Change
U.S.	*51*	*+45*	*+18%*	*+168*	*+68%*
Northeast	2	+0.3	+16%	+2	+100%
East Central	13	+3	+9%	+30	+80%
Southeast	13	+14	+24%	+43	+73%
North Central	11	+11	+14%	+36	+47%
South Central	6	+11	+24%	+42	+94%
West	5	+5	+20%	+15	+58%
AK & HI	0	+0.01	+4%	+0.2	+99%

Note: Coal retirements are cumulative from 2014. Percentage change in coal retirements is relative to total baseline 2031 coal capacity.
Source: NERA calculations as explained in text.

As the chart demonstrates, the Southeast, the South Central, and the Northeast regions stand to lose the greatest percentage of coal-fired capacity by 2031.

5. The Grid Will Not Support EPA's Assumptions

EPA makes assumptions about the electric grid that do not comport with reality. Many of the proposed building blocks for compliance are incompatible simultaneously, and some of the building blocks may actually increase CO_2 emissions.

Building blocks 1 and 2 are incompatible. NERC points out that building block 2 will cause coal units to cycle more often, making the heat rate improvements in building block 1 less likely:

> Lower-capacity factors will cause an increase in heat rates, particularly if the lower-capacity factors are due to the cycling of the coal units. **As a result of Building Block 2, coal units will cycle more often; therefore, assumed heat rate improvements across the entire coal fleet are unlikely.** While recognizing capacity effects in the regression analysis, the EPA did not evaluate the effects of lower-capacity factors resulting from the dispatching of natural gas generation before coal generation.[49] [Emphasis added]

Building blocks 2 and 3 also run counter to each other. Because wind and solar power are intermittent, they require a backup source of power for when the wind isn't blowing and the sun isn't shining. The EPA seems to envision natural gas as being that backup source of power. Building block 2, however, requires natural gas to run at 70 percent capacity factor. Natural gas plants cannot simultaneously run at 70 percent and also serve as a constantly available source of backup power which can quickly ramp up and down to match demand. NERC again points out the problems with EPA's assumptions, noting that building blocks 2 and 3 together harm the fuel diversity of baseload sources.[50]

Building block 3 is inconsistent with itself—it essentially requires states to impose renewable portfolio standards. The problem is that nuclear power is a CO_2-free source of reliable baseload electricity, but forcing too much wind and solar energy onto the grid can harm it. Energy and climate expert James Hansen points out the "nuclear-killing" effect that renewables can have:

> The asymmetry finally hit me over the head when a renewable energy advocate told me that the main purpose of renewable portfolio standards (RPS) was to "kill nuclear". I had naively thought that the purpose was simply to kick-start renewables. Instead, I was told, because utilities were required to accept intermittent renewable energies, nuclear power would become less economic, because it works best if it runs flat out. What to do when the wind is not blowing? The answer was: have a gas plant ready as back-up. In other words, replace carbon-free nuclear power with a dual system, renewables plus gas. With this

[49] NERC, page 8.
[50] NERC, page 9.

> approach CO_2 emissions will increase and it is certain that fracking will continue and expand into larger regions.[51]

With building block 3, EPA claims to promote an expansion of intermittent wind and solar generation while simultaneously guaranteeing that these sources will not "cannibalize"[52] nuclear power. To reduce the negative effects on nuclear power, EPA essentially proposes a nuclear power bailout subsidy to repair the cannibal energy problem it creates with building block 3.[53]

Building block 4 could also, ironically, increase CO_2 emissions. Energy expert Robert Michaels has noted that energy efficiency programs can often cause a "rebound effect" that actually raises overall energy use. When people see their appliances or lights as more efficient and less expensive, they tend to use them more often as a result. Michaels explains:

> Much of today's energy policy assumes that regulations mandating greater energy efficiency will reduce energy use. That isn't always the case and energy efficiency improvements are seldom as large as promised by engineering calculations because of "rebounds." For example, people who install lighting that is 50 percent more efficient frequently leave the lights on longer, negating some of the energy savings from greater efficiency. This is called an energy efficiency rebound. Sometimes these mechanisms even bring about net increases in energy use known as 'backfires.'[54]

This "rebound effect" is extensively documented. Michaels notes that "more than 200 studies exist on the subject" and that "most research on direct rebounds...has generally verified their existence."[55]

EPA thus not only needs to seriously consider its assumptions for each building block in a vacuum, but also how each block interacts with the others.

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[51] James E. Hansen, "Renewable Energy, Nuclear Power and Galileo: Do Scientists Have a Duty to Expose Popular Misconceptions?," February 21, 2014, http://www.columbia.edu/~jeh1/mailings/2014/20140221_DraftOpinion.pdf.
[52] Matthew Wald, "New Energy Struggles on Its Way to Markets," http://www.nytimes.com/2013/12/28/us/new-energy-struggles-on-its-way-to-markets.html
[53] Environmental Protection Agency, 79 Fed. Reg. 117 (proposed June 18, 2014) (to be codified 40 CFR pt. 60), https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating#p-668.
[54] Robert J. Michaels, "Energy Efficiency and Climate Policy: The Rebound Dilemma," Institute for Energy Research, 2012, http://instituteforenergyresearch.org/wp-content/uploads/2012/07/NJI_IER_MichaelsStudy_WEB_20120706_v5.pdf
[55] Michaels, iii.

B. Grid Experts are Concerned About Replacement Generation and New Transmission

1. NERC Report: EPA Rule is a Reliability Risk

NERC concludes that coal retirement is problematic. The report notes:

> The number of estimated retirements identified in the EPA's proposed rule may be conservative if the assumptions prove to be unachievable. Developing suitable replacement generation resources to maintain adequate reserve margin levels may represent a significant reliability challenge, given the constrained time period for implementation...New reliability challenges may arise with the integration of generation resources that have different ERS characteristics than the units that are projected to retire.[56]

NERC is concerned that developing replacement generation sources during EPA's constrained implementation time period will be difficult, and it calls into the question EPA's assumptions. Given that, the agency should be prepared for a scenario in which more capacity is lost than it previously anticipated.

New energy infrastructure also requires additional capital investments, takes time to construct, and will be required to integrate more renewables into the power grid. NERC explains:

> New transmission lines will be required to transport the amount of renewable generation coming online, particularly in remote areas...There are a few critical areas that likely will need additional capital investments...The proposed CPP timelines would provide little time to add required pipeline or related resource capacity by 2020.[57]

As NERC points out, it is unclear how transmission lines to deliver renewable energy from remote areas with greater wind and solar resources to areas without those resources will be built on the timeline that the EPA proposes. EPA has failed to properly analyze the impact of this rule on the need for new generation and transmission.

2. FERC Commissioner Warns of a "Wild Ride"

[56] NERC, page 2.
[57] NERC, page 10.

FERC has issued warnings similar to those of IER's report. The agency's analysis is particularly important because FERC officials are the government's experts on grid reliability. FERC Commissioner Philip Moeller, for example, warned:

> We are really in for a wild ride for five to six years because of the amount of coal shutting down in such a short amount of time and the transformation toward more gas being used to generate electricity...Prices will definitely rise. The question is how much.[58]

Moeller also spoke about new EPA regulations and issues of grid reliability at a meeting of California ISO stakeholders in Sacramento. Although he recognized the importance of environmental concerns, he reinforced cost to ratepayers as the primary issue, saying, "You have to keep in mind the affordability of electricity."[59]

He testified as well before the Senate Committee on Energy and Natural Resources on April 10, 2014 and again affirmed the importance of grid reliability over anything else. Moeller expressed skepticism about the proposed rule, saying that he feared that EPA had "greatly underestimated the amount of power production that would be retired due to these rules."[60] EPA should thus seriously reconsider its estimates of how much power would go offline as a result of its rule.

3. Regional Risks

Regional grid operators across the country warn of the reliability risks associated with the sweeping retirements of coal-fired generation that would result from the combination of EPA power plant rules, including the proposed rulemaking.

The Midcontinent Independent System Operator (MISO) conducted an analysis which suggests that the proposal would put an additional 14,000 MW of coal-fired power at risk of retirement, on top of the 12,600 MW already slated to retire by 2016 because of the

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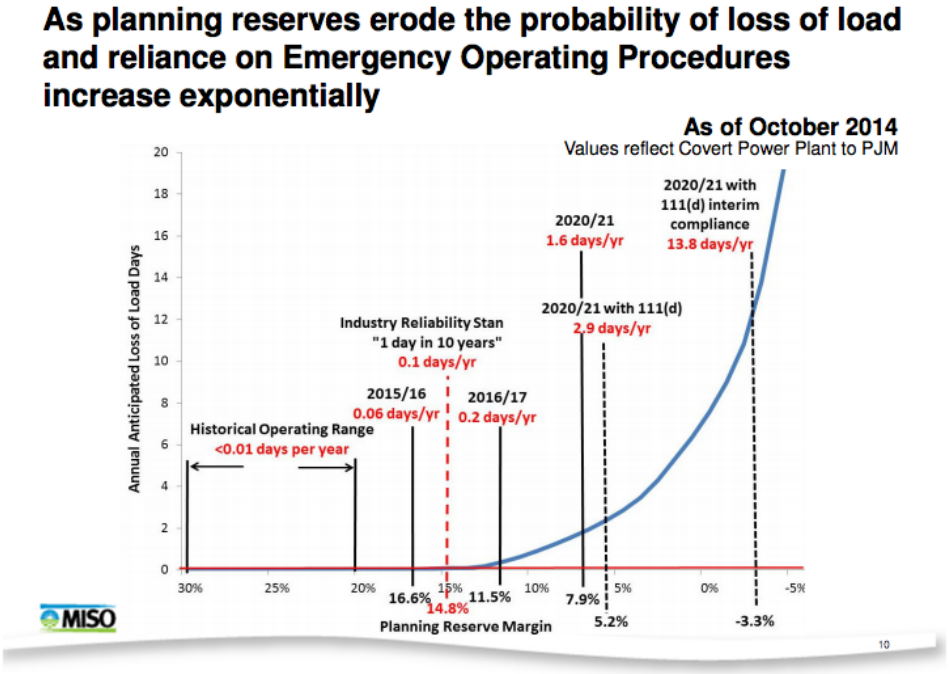
[58] Naureen S. Malik and Harry R. Weber, "Breathing Cleaner Air to Cost Americans on Utility Bills," Bloomberg, October 29, 2014, http://www.bloomberg.com/news/2014-10-29/breathing-cleaner-air-to-cost-americans-on-utility-bills.html

[59] Christine Cordner, "FERC's Moeller urges California to 'face the facts,' be bold on transforming power sector," SNL, October 24, 2014, https://www.snl.com/InteractiveX/article.aspx?CDID=A-29584887-11296&KPLT=4

[60] Philip D. Moeller, Testimony before the Senate Committee on Energy & Natural Resources, Hearing on "Keeping the Lights On- Are We Doing Enough to Ensure the Reliability and Security of the U.S. Electric Grid?," April 10, 2014, http://www.ferc.gov/CalendarFiles/20140410095934-Moeller-testimony-04-10-14.pdf.

MATS rule.[61] A graphic from a MISO presentation illustrates how the risk of emergency grid situations will increase as a result of the proposed rule:[62]



The rule may increase the likelihood of a loss of load and an emergency situation. EPA's analysis in the proposed rule is inadequate, and we urge the agency to seriously consider and address these issues.

Michigan's two largest utilities are also concerned that the proposed rule will result in insufficient electricity generation to maintain reliability starting in 2016. Consumer Energy and DTE Energy Co. are mounting a major public relations campaign following the release of a report by Lansing-based Public Sector Consultants, Inc.[63] The report points out that 66 million consumers in the state will be affected by energy shortfalls and that "as soon as 2016, the retirement of aging coal plants (driven by federal environmental

[61] NERC.
[62] MISO, "Long-Term Resource Adequacy Update," MISO Board of Directors, System Planning Committee, October 22, 2014, https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/BOD/System%20Planning%20Committee/2014/20141022/20141022%20System%20Planning%20Committee%20of%20the%20BOD%20Item%2004%20Long%20Term%20Resource%20Adequacy%20Assessment.pdf
[63] Jay Greene, "Utilities' report warns of energy shortage: Consumers, DTE urge building new power plants," November 30, 2014, http://www.crainsdetroit.com/article/20141130/NEWS/311309995/utilities-report-warns-of-energy-shortage-consumers-dte-urge

regulations and high costs) will cause Michigan's electric reserve margins to dip below target levels."[64]

The SPP also faces widespread reliability challenges as a result of the proposed rule. NERC explains:

> The initial study indicated that compliance with the carbon regulations, if implemented as modeled by the EPA, will not be possible without significant investment in new generation and associated major improvements to both the electric transmission and natural gas infrastructure to accommodate new generation. The results indicate that by 2020, SPP's anticipated reserve margin would be 5 percent, representing a capacity margin deficit of approximately 4,500 MW. By 2024, 10,000 MW beyond current plans would be needed to maintain their reserve margin. Given the 8- to 10-year timeline needed to plan for and construct these additional resources, **SPP has concluded that there is not sufficient time to achieve compliance with the EPA's interim goals, and that widespread reliability impacts are likely.** [emphasis added]

NERC's statement is mild and judicious. The reliability impact on the SPP footprint is more clearly stated by SPP itself:

> As a result of the assumed EPA retirements with no resource additions, the SPP network was **so severely stressed** by large reactive deficiencies that the software used in the analysis was unable to produce meaningful results, which is **generally indicative of voltage collapse and blackout conditions**.[65] [emphasis added]

SPP, like MISO, is concerned about the region's ability to build new generation and transmission infrastructure to replace the foregone capacity in the timeline which the EPA has set for compliance.

ERCOT is also concerned with the impact of the proposed rule on its regional grid system. The council explains:

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[64] Public Sector Consultants, "Electric Reliability in Michigan: The Challenge Ahead," November 19, 2014, http://www.pscinc.com/LinkClick.aspx?fileticket=CuGsO5sdBOs%3D&tabid=75

[65] SPP Report, page 4. http://www.spp.org/publications/CPP%20Reliability%20Analysis%20Results%20Final%20Version.pdf

> ERCOT's primary concern with the Clean Power Plan is that, given the ERCOT region's market design and existing transmission infrastructure, the timing and scale of the expected changes needed to reach the CO_2 emission goals could have a harmful impact on reliability. **Specifically, implementation of the Clean Power Plan in the ERCOT region, particularly to meet the Plan's interim goal, is likely to lead to reduced grid reliability for certain periods and an increase in localized grid challenges.**[66] [emphasis added]

ERCOT echoes MISO and SPP's concerns about the costs and time required to build new transmission infrastructure in time to comply with the proposed rulemaking. The operators also worry about the impacts of retiring coal-fired generation on reliable baseload power.[67] EPA's analysis of these impacts is inadequate.

4. EPA's Response to Grid Experts Does Not Address Their Concerns

EPA has been summarily dismissive of concerns to grid reliability. For example, administrator Gina McCarthy gave a speech arguing that "for decades, power plants have met pollution limits without risking reliability."[68] McCarthy, however, ignores large differences between past regulations and the proposed rulemaking. The proposed rule, as we have already noted in this section, will likely cause an unprecedented number of power plants to close without reliable sources of replacement generation.

McCarthy also fails to address the reliability effects of integrating renewables into the electric grid, arguing, "If anything, what threatens reliability and causes blackouts is devastating extreme weather fueled by climate change."[69] Her statement, however, stands in opposition to the Intergovernmental Panel on Climate Change (IPCC)'s latest report. This Fifth Assessment Report notes that "there is limited evidence of changes in extremes associated with other climate variables since the mid-20th century."[70] The IPCC's opinion matters because it is frequently cited as the leading expert source on climate change assessments. McCarthy's statement also creates a chicken-and-egg

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[66] ERCOT, "ERCOT Analysis of the Impacts of the Clean Power Plan," November 17, 2014, http://www.ercot.com/content/news/presentations/2014/ERCOTAnalysis-ImpactsCleanPowerPlan.pdf

[67] ERCOT, page 2.

[68] EPA, *Administrator Gina McCarthy, Remarks Announcing Clean Power Plan, As Prepared*, June 2, 2014, http://yosemite.epa.gov/opa/admpress.nsf/8d49f7ad4bbcf4ef852573590040b7f6/c45baade030b640785257ceb003f3ac3!opendocument

[69] Id.

[70] Intergovernmental Panel on Climate Change, *Climate Change 2013: The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, March 24, 2014, page 219.

problem. Even if extreme weather events do occur, Americans will be unable to cope with them without reliable power to keep their homes and offices lit and warm.

EPA responded to NERC's concerns by arguing that "there have been no instances in which 'the Clean Air Act standards have caused the lights to go out and the Clean Power Plan reflects the EPA's continued commitment to ensuring reliability as standards and programs move forward.'"[71]

Although EPA compares the proposed rulemaking to other rules promulgated under the Clean Air Act, it provides no basis for claiming that this rule will have the exact same effects as prior rules. Arguing that, because other rules did not cause blackouts or brownouts, the proposed rulemaking will also have no negative impacts on the grid, requires far more substantive evidence specific to the proposed rule.

V. The Economic Costs of the Rule Outweigh the Benefits

A. Costs of the Rule

1. Electricity Prices

Electricity rates will rise under this rule for the simple fact that existing sources of electricity generate are less expensive than building new sources. For example, according to a forthcoming report to be released by the Institute for Energy Research, the average cost of electricity from existing coal plants is only $36.4 per mWh compared to new natural gas costing $66.3 per mWh, new wind costing $80 per mWh, and new solar costing $80.3 per mWh:

[71] Esther Whieldon, *EPA, Others Defend CO2 Rule, Claim NERC's Reliability Concerns Unfounded*, ohioenergygroup.com, November 10, 2014, http://ohioenergygroup.com/wp-content/uploads/2014/11/SNL-Article-re-EPAothers-defend-CO2-rule-claim.pdf

Plant type	2014 EIA Capacity factor (%)	2019 EIA total system LCOE	Existing sourcse capacity factor (%) (FERC Form 1)	Existing sources total system LCOE (FERC Form 1)
Dispatchable Technologies				
Conventional Coal	85	95.6	66	36.4
Natural Gas-fired				
Conventional Combined Cycle	87	66.3	49	57.6
Conventional Combustion Turbine	30	128.4	5	156.1
Advanced Nuclear	90	96.1	90	30.5
Non-Dispatchable Technologies				
Wind	35	80.3	31	81.3
Solar PV	25	130.0	18	266.4
Hydro	53	84.5	49	14.7

When this regulation causes existing power plants to close, these data show why the cost of electricity will rise. Additional modeling supports this view. A November 2014 study by Energy Ventures Analysis,[72] for example, explains that power and natural gas costs for customers would likely increase by 60 percent in 2020 compared to 2012—a cost hike of $284 billion.[73]

The NERA study also concludes that the rule would raise electricity costs. NERA estimates that, even in the best case scenario in which all four of the building blocks are options for the states, electricity prices would increase by 12 percent on average between 2017 and 2031. In the more realistic scenario in which many states' options are

[72] Energy Ventures Analysis, "Energy Market Impacts of Recent Federal Regulations on the Electric Power Sector," November 2014, http://evainc.com/wp-content/uploads/2014/10/Nov-2014.-EVA-Energy-Market-Impacts-of-Recent-Federal-Regulations-on-the-Electric-Power-Sector.pdf

[73] These numbers represent costs in nominal terms -- in real terms, the increase is 37 percent at a rise of $173 billion.

limited by their resources, electricity prices would rise by as much as 17 percent.[74] This chart from NERA's study illustrates the impacts of the rule on prices:[75]

Figure 16: Ratepayer Class Delivered Electricity Price Impacts of State Scenarios (Annual Average, 2017-2031, 2013 cents per kWh)

	Residential	Commercial	Industrial	All Sectors
Baseline	12.7 ¢	11.0 ¢	7.8 ¢	10.8 ¢
State Unconstrained (BB1-4)	14.3 ¢	12.6 ¢	8.3 ¢	12.0 ¢
Change from Baseline	+1.7 ¢	+1.5 ¢	+0.5 ¢	+1.3 ¢
% Change from Baseline	+13%	+14%	+6%	+12%
State Constrained (BB1-2)	14.6 ¢	12.9 ¢	9.5 ¢	12.6 ¢
Change from Baseline	+2.0 ¢	+1.9 ¢	+1.7 ¢	+1.9 ¢
% Change from Baseline	+15%	+17%	+22%	+17%

Source: NERA calculations as explained in text.

Even EPA's proposed rule acknowledges that electricity prices will rise. EPA states, "Under Option 1, average nationwide retail electricity prices are projected to increase by roughly 6 to 7 percent in 2020 relative to the base case, and by roughly 3 percent in 2030 (contiguous U.S.)."[76]

When EPA *does* attempt to argue that consumers' electric bills will decline, it does so because of demand-side arguments that undercut the agency and free choice of American consumers. EPA, for example, claims:

> Average monthly electricity bills are anticipated to increase by roughly 3 percent in 2020, but decline by approximately 9 percent by 2030. This is a result of the increasing penetration of demand-side programs that more than offset increased prices to end users by their expected savings from reduced electricity use.[77]

EPA would thus functionally mandate that Americans use less electricity. This policy direction presumes that agency officials know better than people do how much electricity they should be using. It is analogous to arguing that people would benefit from lower grocery bills if the government mandated that they could only eat two meals a day.

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[74] NERA.
[75] NERA, page 25.
[76] Environmental Protection Agency, "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units," 79 Fed. Reg. 34830, 34924, June 18, 2014, https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating.
[77] EPA, 79 Fed. Reg. at 34934.

Furthermore, while EPA cites consumer groups claiming that energy efficiency measures will lower electricity costs,[78] these measures may actually make power *less* affordable. NERA notes:

> Energy efficiency programs tend to increase delivered prices for two reasons. First, as noted, the upfront utility costs of energy efficiency programs are recovered through delivered prices on remaining generation in the year they are incurred. Second, fixed transmission and distribution costs are spread over fewer electricity sales (because energy efficiency reduces end-use electricity sales). These increases can be offset somewhat by decreases in wholesale and capacity prices due to reduced electricity demand.[79]

NERA also estimates that, when the consumer share of energy efficiency costs is included, the total costs related to electricity rise. In the hopeful scenario in which states can use all four building blocks, electricity-related costs are projected to rise by about $34 billion per year between 2017 and 2031. In the more realistic scenario in which states are limited by their resources, that figure shoots up to $48 billion per year.[80] This chart, also from the NERA study, illustrates American's electricity-related costs per year:[81]

Figure 19: Consumer Electricity-Related Cost Impacts of State Scenarios (Annual Average, 2017-2031, billion 2013 dollars)

	Residential	Commercial	Industrial	All Sectors
Baseline	$192	$161	$85	$439
State Unconstrained (BB1-4)				
Electricity Bills	$195	$164	$84	$443
Consumer Energy Efficiency Costs	$13	$13	$4	$29
Total Consumer Electricity-Related Costs	$207	$177	$88	$472
Change from Baseline	+$15	+$15	+$3	+$34
% Change from Baseline	+8%	+9%	+3%	+8%
State Constrained (BB1-2)				
Electricity Bills	$210	$179	$98	$487
Consumer Energy Efficiency Costs	$0	$0	$0	$0
Total Consumer Electricity-Related Costs	$210	$179	$98	$487
Change from Baseline	+$18	+$18	+$13	+$48
% Change from Baseline	+9%	+11%	+15%	+11%

Source: NERA calculations as explained in text.

Americans' electricity bills could rise by as much as $210 annually because of the proposed rulemaking, and we urge the EPA to seriously consider these impacts.

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[78] EPA, 79 Fed. Reg. at 34847.
[79] NERA, pages 23-24.
[80] NERA, page 26.
[81] NERA, page 27.

Furthermore, some of the entitites likely to be the hardest hit by rising electricity costs are municipal governments. A new report by the Policy Navigation Group outlines three effects that the proposed rulemaking will have on local governments: (1) Local governments will have to spend more money buying electricity to power schools, water treatment plants, municipal buildings, and other local government-provided services, (2) Municipal governments' fee revenues will likely decrease, as consumers spend more on electricity and less on goods and services in the local area and therefore do not pay as much in local government fees, and (3) Local governments' tax revenues will decline, as consumers spend more on electricity and less money on taxable goods and services.[82] If EPA is concerned about the ability of municipal governments to gain enough revenue to function, it should seriously consider the electricity price impacts of the proposed rulemaking.

The staff of the Virginia State Corporation Commission (SCC), which is charged with regulating utilities in the State, also expressed concerns about the increased costs EPA's proposed rule will impose on ratepayers. Contrary to EPA's argument that electric rates will go up, but that electric bills will decrease due to increased efficiency, SCC staff say, "The Proposed Regulation, if approved, is likely to raise substantially both the electric rates and bills Virginians pay in several different ways."[83]

SCC staff cites several reasons that costs will surely rise if the proposed rule is finalized. First, compliance costs will rise for utilities. The SCC staff estimate that costs for Dominion Virginia Power "would likely be between $5.5 billion and $6.0 billion on a net present value basis."[84] Second, several billions of dollars of investments in existing coal facilities that were made to satisfy existing rules would be placed at risk. Finally, there will be higher wholesale energy prices purchased by Virginia utilities. It is concerning that costs for compliance and investment will be so high in only Virginia and hard to imagine what the total costs will be when all states have to implement the rule, if finalized.

2. Jobs

This proposed rule will not create jobs on net, despite claims by EPA that this proposal will create jobs in the energy efficiency sector. Although it is true that some new jobs will be created by the artificial demand which the rule spurs, other jobs will be lost in other

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[82] Policy Navigation Group, "Impact of EPA's Proposed Clean Power Plan Rule on Selected Municipality Finances," November 25, 2014.
[83] Commonwealth of Virginia, State Corporation Commission, "Comments of the Staff of the Virginia State Corporation Commission on the Proposed Clean Power Plan", October 14, 2014, https://gallery.mailchimp.com/a8970db37d2569f1a2b65e59d/files/Virginia_SCC_Staff_Comments_on_Clean_Power_Plan.pdf.
[84] Id.

sectors. Basic economic analysis suggests that there is no situation in which an artificial rise in the price of electricity will result in more jobs, since every industry will face an increase in costs.

EPA's own projections show job losses of 72,000 to 77,900 from 2021 to 2025 in plant construction and mining, and EPA claims that these losses will be offset by 76,200 to 112,000 new jobs created in 2025.[85] However, other analyses predict that there will be substantially more losses than EPA estimates. For example, the United Mine Workers of America predicts that there will be 75,000 direct coal generation jobs lost by 2020 and 152,000 by 2030.[86] This study does not include other indirect job losses that would result from such a large segment of the coal industry shutting down.

The President of the International Brotherhood of Electrical Workers also weighed in on the job losses that will occur if the proposed ESPS rule is finalized. Specifically he said:

> When gauged by accepted industry metrics, the agency's plans also would result in the loss of some 52,000 permanent direct jobs in utilities, mining and rail and at least another 100,000 jobs in related industries. High-skill, middle-class jobs would be lost, falling heavily in rural communities that have few comparable employment opportunities.[87]

In addition to the Electrical Workers, the International Brotherhood of Boilermakers also echoed these numbers and voiced their concerns.[88]

Furthermore, a study by the research and analytics firm IHS and released by the Chamber of Commerce completed a more comprehensive overview and projected even larger job losses. According to the Chamber, there will be 224,000 jobs lost on average each year through 2030, and the rule will result in a loss of $50 billion in GDP on average.[89] This report has been criticized because it modeled a 40 percent reduction in

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[85] Environmental Protection Agency, "Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emissions Standards for Modified and Reconstructed Power Plants", June 2014, http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf.

[86] Cecil E. Roberts, "EPA existing source emissions rule puts American jobs at risk, does nothing to address climate change", United Mine Workers of America, June 2014, http://www.umwa.org/?q=news/epa-existing-source-emissions-rule-puts-american-jobs-risk-does-nothing-address-climate-change.

[87] Edwin D. Hill, "Electrical Workers vs. the EPA", Wall Street Journal, August 14, 2014, http://online.wsj.com/articles/edwin-hill-the-electrical-workers-union-vs-the-epa-1408057784.

[88] United Mine Workers of America, "EPA existing source emissions rule puts American jobs at risk, does nothing to address climate change", June 2, 2014, http://www.umwa.org/?q=news/epa-existing-source-emissions-rule-puts-american-jobs-risk-does-nothing-address-climate-change.

[89] Chamber of Commerce, "Assessing the Impact of Proposed New Carbon Regulations in the United States", May 2014, http://www.energyxxi.org/epa-regs-report.

power plant CO_2 emissions from 2005 levels to 2020 instead of EPA's supposed 30 percent reduction. However, the 2005 baseline included in EPA's analysis is not actual CO_2 emissions, but a calculation of what emissions would have been in 2005 if states had taken measures to reduce CO_2 approved by EPA.[90] This calculation is misleading and shows that, if finalized as is, this proposal will result in reductions above 30 percent. At the very least, EPA should be more transparent about its reduction goals.

Finally, when other countries have pursued similar policies, they have not experienced a net gain in jobs, but significant losses along with increases in energy prices. For example, a paper by Dr. Gabriel Calzada Álvarez, which examined the impact of renewable energy policies in Spain, found that 2.2 jobs were lost for every one job created.[91]

B. Purported Benefits

1. Climate-Related Benefits are Miniscule

Although the proposed rulemaking is intended to address climate change, EPA does not acknowledge how miniscule an impact on the climate the rule would actually have. In a 654-page rule, the agency failed to devote a single sentence to explaining the reductions in global temperatures that would result from the rule. This omission is glaring because EPA has previously calculated the impacts of its rules on global temperatures using its own MAGICC model. It is arbitrary and capricious for EPA to fail to calculate the impact on climate of this proposed regulation, especially because it is contrary to past EPA practice.

To remedy EPA's omission, the Cato Institute ran the MAGICC model on the proposed rulemaking and calculated the temperature reduction to only be 0.018 degrees Centigrade by 2100.[92] In exchange for Americans paying billions in extra energy costs, according to EPA's model the benefit for the rule is a temperature decrease of only 0.018 degrees.

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[90] Institute for Energy Research, "EPA's Power Plant Rule: All Economic Costs; No Climate Benefits", June 17, 2014, http://instituteforenergyresearch.org/analysis/epas-power-plant-rule-economic-costs-climate-benefits/.

[91] Gabriel Calzada Alvarez, "Study on the effects on employment of public aid to renewable energy resources", http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf.

[92] Cato Institute, "0.020C Temperature Rise Averted: The Vital Number Missing from the EPA's "By the Numbers" Fact Sheet, June 11, 2014,http://www.cato.org/blog/002degc-temperature-rise-averted-vital-number-missing-epas-numbers-fact-sheet

EPA also draws on the Intergovernmental Panel on Climate Change (IPCC)'s Fifth Assessment Report (AR5) in order to make its case for this rule[93]—data from the report, however, can be used to prove that the *costs* of aggressive government action outweigh the *benefits*. IER economist Robert Murphy explains:

> ...3.4 percent [of global GDP] in the year 2050 and by 4.8 percent in the year 2100...are the IPCC's latest estimates of the economic costs of meeting the climate objective...using the "worst case" scenario that the Working Group I report explored, and coupled with the list of published estimates of climate change damages from the Working Group II report, we showed that the total damages from climate change by 2050 were at most 2.5 percent of GDP, and by 2100 there was only one estimate (for the warming levels in question) and this was 4.6 percent of GDP. Thus even using the worst case IPCC concentration pathway, and using the biggest damages from the IPCC's table of published estimates of the amount of global warming in question, we saw that both in 2050 and 2100, **the IPCC's own estimate of the economic cost of compliance with the policy goal was greater than the estimate of the climate change damages from "doing nothing."[94]** [Emphasis added]

The IPCC's own estimates of the loss in global GDP that would result from worldwide climate policy adoption are greater than the economic damages that would result from status quo policy. This reality does not comport with EPA's cost-benefit analysis, which says that the benefits of CO_2 reduction would outweigh the costs.

Furthermore, while EPA only assesses costs of the rule domestically, it assesses the benefits of the rule globally. A study by Brookings researchers Kip Viscusi and Ted Gayer points out:

> More recently, the EPA proposed regulations to limit CO_2 from existing power plants. For this rule, EPA estimated climate benefits amounting to $30 billion in 2030 using a 3 percent discount rate. However, assessing these benefits in a manner that is consistent with the methodology developed by the Working Group, only 7 to 23 percent of these benefits would be domestic benefits. As a result, the domestic benefits amount is only $2.1 billion-$6.9 billion, which is less than the estimated compliance costs for the rule of $7.3 billion.[95]

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[93] EPA, paragraph 79 FR 34842

[94] Robert P. Murphy, "Using IPCC to Defeat UN Climate Agenda," Institute for Energy Research, September 23, 2014, http://instituteforenergyresearch.org/analysis/using-ipcc-defeat-un-climate-agenda/

[95] Ted Gayer and Kip Viscusi, "Determining the Proper Scope of Climate Change Benefits," Brookings Institute, June 3, 2014,

EPA's cost-benefit analysis is skewed and inappropriate because while it assesses the scope of benefits globally, it only assesses costs domestically, enabling it to artificially claim that the benefits outweigh the costs. EPA's failure to assess costs and benefits domestically puts it in noncompliance with OMB Circular A-5 requirements.[96]

2. Using the Social Cost of Carbon to Estimate Benefits is Problematic

As IER has already noted earlier in this comment, EPA justifies the rule by drawing upon the "Social Cost of Carbon" estimates to claim that the CO2-related benefits outweigh the economic costs.[97]

The SCC, as detailed in Section I, is a seriously flawed tool for agencies to use. Its flaws, however, are not merely legal – they also have important policy ramifications. The SCC has proven to be too malleable to assumptions and a subjective rather than an objective measure. As IER explained in its comment to the Federal Register on the SCC:[98]

> First, in terms of the pure theory, the SCC is inappropriate for use in federal rulemaking because of the malleability of the underlying concept itself; to repeat, **the SCC is not an objective feature of the world "out there"** but is instead **reliant on subjective modeling decisions made by the analyst**. Second, in terms of the practical implementation, use of the SCC has **lacked transparency** and—more serious—has **violated long-standing OMB guidelines**. Even if the SCC were an objective scientific parameter—which it is not—these procedural abuses in the use of the SCC would alone render it a dubious element for continued use in the regulatory process. [Emphasis added]

The Integrated Assessment Models, including those that the White House Working Group used, are extremely dubious. The peer-reviewed article by MIT economist Robert Pindyck referenced in Section I notes:

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http://www.brookings.edu/~/media/research/files/papers/2014/06/04%20determining%20proper%20scope%20climate%20change%20benefits%20gayer/04_determining_proper_scope_climate_change_benefits

[96] Robert P. Murphy, Testimony Before the Senate Committee on Environment and Public Works on "The 'Social Cost of Carbon:' Some Surprising Facts," July 18, 2013, http://instituteforenergyresearch.org/wp-content/uploads/2013/07/2013.07.18-Murphy-EPW-Testimony-on-Social-Cost-of-Carbon-FINAL.pdf

[97] EPA, paragraph 79 FR 34940.

[98] Institute for Energy Research, "*Comment On Technical Support Document: Technical Update Of The Social Cost Of Carbon For Regulatory Impact Analysis Under Executive Order No. 12866*," Federal Register, February 2014, http://instituteforenergyresearch.org/wp-content/uploads/2014/02/IER-Comment-on-SCC.pdf.

> A plethora of integrated assessment models (IAMs) have been constructed and used to estimate the social cost of carbon (SCC) and evaluate alternative abatement policies. These models have crucial flaws that make them close to useless as tools for policy analysis: certain inputs (e.g. the discount rate) are arbitrary, but have huge effects on the SCC estimates the models produce; the models' descriptions of the impact of climate change are completely ad hoc, with no theoretical or empirical foundation; and the models can tell us nothing about the most important driver of the SCC, the possibility of a catastrophic climate outcome. **IAM-based analyses of climate policy create a perception of knowledge and precision, but that perception is illusory and misleading.**"[99] [Emphasis added]

Pindyck also explains that the damage functions are so arbitrary that developers of IAMs can simply make up functional forms and corresponding parameter values, which is precisely what they have done.[100]

3. "Co-Benefits" Claims are Already Being Addressed by Other Sections of the CAA

In addition to reductions in CO_2 emissions, EPA is touting associated reductions in criteria pollutants and their precursors, even though these pollutants are already addressed by the agency in other rulemakings. To justify double-regulation, EPA says, "The estimated benefits associated with these emission reductions are beyond those achieved by previous EPA rulemakings…"[101] This explanation is not sufficient because the agency is also working on tightening standards on current rules, so therefore, they are not static like this proposed rule implies. Furthermore, EPA fails to explain whether further emissions reductions are desirable or feasible. EPA should justify the proposed rule based on climate benefits alone.

The primary method for regulation of criteria pollutants and their precursors that contribute to ozone pollution is already addressed by EPA through the National Ambient Air Quality Standards (NAAQs) program. States are already having difficulty complying with those standards, which are more stringent than ever before and which were

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[99] Robert Pindyck, (2013) "Climate Change Policy: What Do the Models Tell Us?" Journal of Economic Literature, Vol. 51, No. 3, September 2013, pp. 860-72.
[100] Pindyck, page 11.
[101] EPA Page 79 FR 34936

updated in 2008.[102] EPA is under court order to propose a new standard by December 1, 2014, which will likely be more stringent than the current standard.[103]

EPA also notes in the proposed rulemaking that the MATS rule addressed many of the problems this new rule is designed to solve. EPA claims:

> The MATS rule will also reduce SO_2 and fine particle pollution, which will reduce particle concentrations in the air and prevent thousands of premature deaths and tens of thousands of heart attacks, bronchitis cases and asthma episodes.[104]

Since EPA claims that MATS is already reducing SO_2 and PM 2.5 to prevent premature deaths, it is hard for the agency to also claim that the ESPS rule needs to add another layer of air pollution regulation rather than work toward its alleged goal of combating climate change.

In addition to the MATS rule, EPA has promulgated the Cross-State Air Pollution Rule (CSAPR), as of 2011. This rule also "requires states to significantly improve air quality by reducing power plant emissions that contribute to ozone and/or fine particle pollution in other states."[105]

PM2.5 levels are steadily declining nationally, according to EPA's own data. This graph from the agency's website illustrates the downward trajectory of PM2.5 levels, even without the proposed rule:[106]

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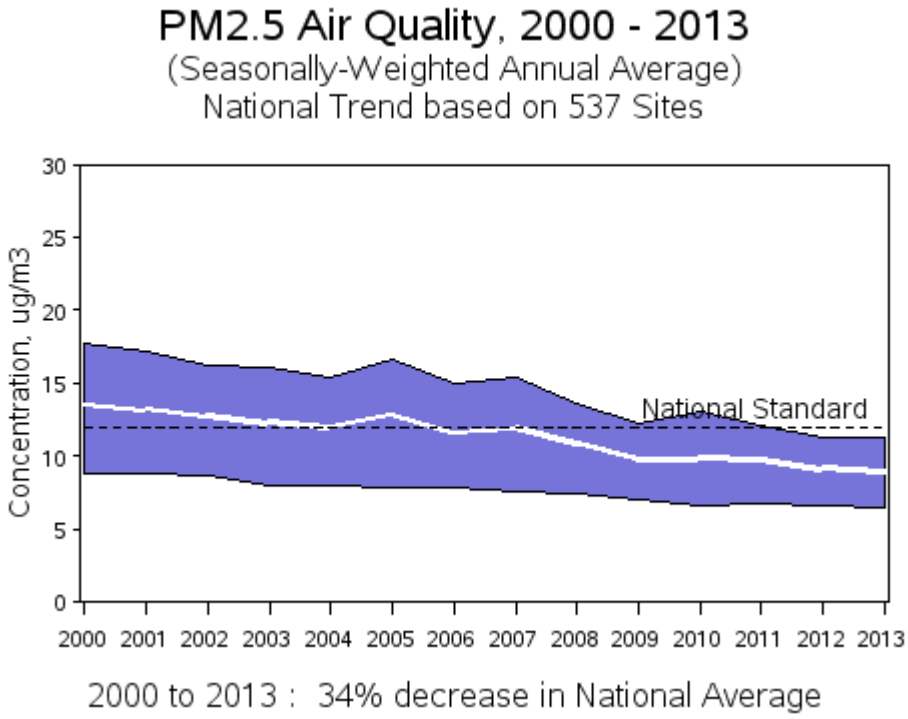
[102] John Glennon, *EPA's Ozone Proposal Could be the Most Expensive Regulation Yet,* Institute for Energy Research, November 19, 2014, http://instituteforenergyresearch.org/analysis/epas-next-ozone-proposal-expensive-regulation-yet/.
[103] *Id.*
[104] EPA, 79 FR 34929
[105] EPA, "Cross-State Air Pollution Rule", http://www.epa.gov/crossstaterule/.
[106] EPA, "Particulate Matter," http://www.epa.gov/airtrends/pm.html



According to EPA, PM2.5 has decreased nationally by 34 percent since 2000, raising the question of why additional regulations on this pollutant are necessary.

Another purported benefit is that the rule will also reduce ozone levels and, in turn, allegedly prevent asthma attacks. It is extremely unclear, however, what the exact nature of the relationship is between ozone and asthma. The Texas Commission on Environmental Quality recently reviewed EPA's Health Risk and Exposure Assessment (HREA) for the Ozone NAAQs and pointed out that EPA's own Clean Air Scientific Advisory Committee (CASAC) has "repeatedly indicated that the limited evidence on new-onset asthma should not contribute greatly to the consideration of the strength of evidence for respiratory-related effects."[107] It is also important to note that ozone levels have declined by 25 percent between 1980 and 2012 (according to EPA itself), but that asthma levels have been increasing. If ozone worsens asthma, then why do the data run in opposite directions?[108] Finally, TCEQ concluded, "It is important to emphasize that although the causes of asthma are not fully understood, there are many factors that influence the development and exacerbation of asthma." Until EPA can clearly point to a causal relationship between its rulemakings and reductions in the number of people suffering from asthma, it is inappropriate for the agency to claim this as a benefit.

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[107] Michael Honeycutt & Stephanie Shirley, "A Toxicological Review of the Ozone NAAQs", Texas Commission on Environmental Quality, http://www.tceq.com/assets/public/implementation/tox/ozone/superconference.pdf.

[108] Karen Kerrigan, "Fact of the Day: Claims About Climate Change, Ozone, Public Health Don't Add Up," The Center for Regulatory Solutions, http://centerforregulatorysolutions.org/fact-of-the-day-claims-about-climate-change-ozone-public-health-dont-add-up/

It is disingenuous for EPA to tout “co-benefits” for a rule which is meant to address the climate, but which fails to do so by more than a few hundredth of a degree. Even more concerning, the supposed “co-benefits” are already addressed by the agency through various other rules. If EPA fails to justify this proposal on climate benefits, the rule should not be finalized.

Conclusion

In the above Comment, we have documented numerous flaws with the proposed rulemaking. EPA’s rule is not permitted by the plain language of the Clean Air Act. Additionally, EPA’s targets are arbitrary and capricious because the Agency omitted the climate analysis which it has done in the past in rules such as the GHG regulation of light-duty vehicles. This rule could also have serious negative consequences for the electric grid and for the U.S. economy.

Most Americans, when they are told about the effects that the rule would have on the economy and about the extremely limited benefits it would have for the climate, oppose the rule. They also believe that this is an overreach of the executive branch and would prefer that their elected representatives address environmental problems rather than agency officials. This reality is apparent in opinion polling, in midterm election results, and in the defeat of bills similar to the proposed rule on the floor of Congress.

The rule also has deleterious consequences for the electrical grid. The proposed rulemaking would take as much as 200 GW of coal-fired power out of service by 2031, an estimate that is far higher than EPA’s conservative estimates. The agency’s building blocks for compliance also work at cross-purposes and, at times, would actually result in higher CO_2 emissions.

The economic impacts of the proposed rule also outweigh the extremely limited environmental benefits. Electricity prices could rise by as much as 17 percent by 2031, and in Spain, where the government pursued aggressive green energy policies, 2.2 jobs were lost for every job created. The climate benefits, however, only amount to a reduction of 0.018 degrees Centigrade by 2100, and air pollution “co-benefits” are unnecessary because the EPA has already promulgated other rules which improve air quality.

Several fatal flaws in this rule outweigh the purported benefits, and EPA should withdraw the regulation.