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Re: EPA-HQ-OAR-2013-0495

Public Citizen, Inc. hereby submits comments on the EPA's Proposed Rule on *Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units*.¹

Public Citizen, Inc. is a national consumer advocacy organization with over 300,000 members and supporters across the country. As an organization dedicated to serving the needs of America's households, our priority is promoting those policies and regulations that provide families with affordable, reliable and clean energy. As one of America's largest consumer advocacy organizations, Public Citizen has a long record of advocating policies that result in sustainable energy—with sustainability defined not only from a climate perspective but from a household financial standpoint as well.

We agree with the EPA's conclusion that consumers will **not** experience rate increases as a result of this proposed rule,² because market dynamics separate from EPA's proposed actions have rendered new coal fired power plants uneconomical in comparison to superior generation and efficiency alternatives. As a result, the EPA mandates for new coal power plants to obtain dramatically lower emissions compared to current, standard coal power plants won't raise electric rates because inexpensive, competing technologies such as renewables, energy efficiency and natural gas can and will meet America's energy needs without raising costs.

The greenhouse gas emission standards for new power plants in this proposed rule will require new coal-fired power plants to nearly match the emissions of currently operating combined-cycle natural gas power plants. As a result of the rule, no new coal power plants could be built unless expensive carbon capture and sequestration (CCS) technology is applied. But because new coal fired generation is more expensive than competing sources like natural gas and renewables even *before* the application of CCS, the EPA's mandate will only ratify what the market has already determined: new energy generation will not be provided by coal-fired plants. The rule will therefore not impose any additional costs on consumers, even in the short term.

The rule nonetheless affords major benefits to consumers and society, creating a legal and regulatory framework to address the threat of catastrophic climate, the single greatest challenge facing humanity.

¹ www.gpo.gov/fdsys/pkg/FR-2014-01-08/pdf/2013-28668.pdf

² www.gpo.gov/fdsys/pkg/FR-2014-01-08/pdf/2013-28668.pdf at page 1433.

The proposed rule should be strengthened, however, as it pertains to emissions standards for natural gas power plants and the rule's reliance on carbon capture and storage (CCS). The natural gas emissions standards should be set at a lower amount, and be designed to phase down to zero emissions over time. And the EPA's reliance on risky and unproven CCS technology puts consumers and the environment at risk.

Because new coal-fired plants have already been priced out of the market before issuance of these rules, establishing greenhouse gas emission standards for future plants based on current natural gas emission rates is low-hanging fruit. However, as the EPA works to formulate rules on existing power plants and more generally to advance strategies to avert catastrophic climate change, it will need to pay careful attention to impacts on consumers, both out of equity and practical political concerns. Electricity costs are a significant cost for American consumers, especially lower-income consumers. Each year, the average American spends about \$760 purchasing electricity, representing 3.2% of all goods and services expenditures,³ with proportional costs much higher for low-income consumers.

The good news is, with existing technologies, there are manifold investment opportunities -- in energy efficiency and distributed generation such as solar -- to reduce carbon emissions and, simultaneously, reduce many families' electricity costs. As the EPA works to design future rules to reduce carbon emissions, it is vital that it capitalizes on those opportunities and include measures to mitigate and offset any potential costs to lower- and middle-income consumers.

In taking into account and emphasizing consumer considerations in formulation of greenhouse gas emission policy, we recommend EPA be guided by the following principles:

- Consumers are citizens, and every consumer – every citizen – has a profound interest in reducing the extent and impact of catastrophic climate change. Low-income consumers will be hit worst by climate change impacts, and so will benefit particularly from greenhouse gas pollution reductions.
- Low-, fixed- and moderate- income consumers must have access to affordable, essential energy. The EPA rules must guide states towards implementing cost-effective ways to reduce greenhouse gas emissions, particularly through deployment of energy efficiency technologies, and must facilitate the involvement of consumer advocates in the design and implementation of energy efficiency and renewable energy programs.
- Coal and dirty energy sources are priced artificially low due to externalization of costs. Failing to capture these hidden costs puts the health of all citizens – and, therefore, consumers – at risk. The GHG rules will more accurately reflect carbon pollution costs.
- Reducing carbon pollution will bring major public health advances for all consumers, most significantly by reducing air pollution.
- The actual financial cost of reducing GHG pollution is almost certain to be dramatically less than estimated by industry. In fact, the industry has been forecasting economic doom as a result of Clean Air Act regulations since the policy was adopted more than 40 years ago. The

³ www.nrel.gov/docs/legosti/fy97/20505.pdf

reality is that air pollutions targeted by the Clean Air Act have plummeted, while our national GDP has risen by 207 percent. The total benefits of the Clean Air Act amount to more than 40 times the costs of regulation. For every one dollar we have spent, we get more than \$40 of benefits in return.

- Consumers must have a voice at the table in the formulation of policy. EPA should proactively engage consumers in the design of the federal rules, including by creating a consumer/community liaison/advocate at the federal EPA, and should require that states ensure robust participation of consumers in the development of implementation plans.

The rest of these comments explain:

- The background of the proposed rules.
- What the proposed rules will do.
- The proposed rule in the context of current market trends.
- How the rule is good for consumers.
- Why the emission standards for natural gas power plants should be strengthened.
- Why the rule should not allow for CCS.

I. Background

Section 111(b) of the Clean Air Act requires the EPA to establish New Source Performance Standards (NSPS) for any new power plants that “contribute significantly” to air pollution that endangers public health.⁴

In April 2007, the U.S. Supreme Court ruled, in *Massachusetts v. EPA*, that the EPA must regulate greenhouse gas emissions under its existing Clean Air Act authority if it concludes that greenhouse gas emissions endanger public health.⁵ In June 2012, a unanimous decision by the US Court of Appeals found that the EPA’s scientific reasoning for finding that greenhouse gas emissions endangered public health was valid and sound.⁶ The EPA therefore has a non-discretionary duty to regulate greenhouse gases.

Coal and natural gas emissions in the electric power sector represent 28.7% and 9.4%, respectively, of America’s total greenhouse gas emissions.⁷

II. What the Proposed Rule Will Do

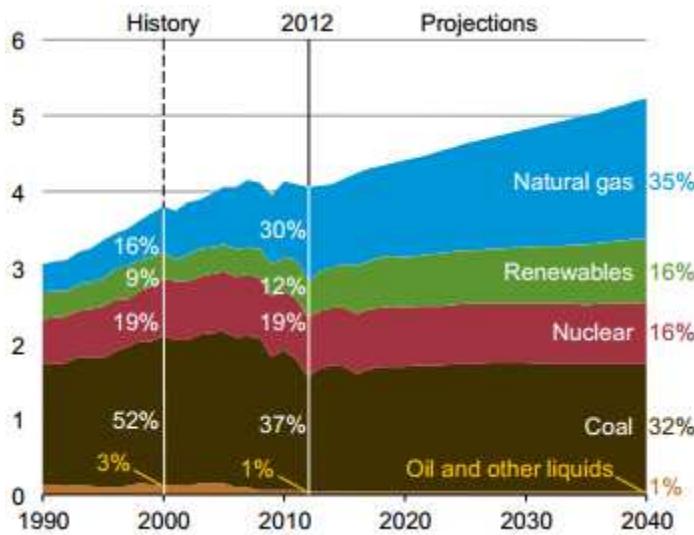
⁴ 42 USC § 7411

⁵ www.supremecourt.gov/opinions/06pdf/05-1120.pdf

⁶ [www.cadc.uscourts.gov/internet/opinions.nsf/52AC9DC9471D374685257A290052ACF6/\\$file/09-1322-1380690.pdf](http://www.cadc.uscourts.gov/internet/opinions.nsf/52AC9DC9471D374685257A290052ACF6/$file/09-1322-1380690.pdf)

⁷ www.c2es.org/federal/executive/epa/ghg-standards-for-new-power-plants

The rule sets an emissions limit for new coal fired power plants of 1,100 pounds of CO₂/MWh,



requiring new coal fired facilities to partially capture emissions in excess of the threshold with carbon capture and sequestration (CCS) technology. A new scrubbed pulverized coal power plant absent CCS generates ~2,000 lb CO₂/MWh, while an ultra-supercritical coal plant generates ~1,700 lb CO₂/MWh.

The rule sets a slightly lower standard for new natural gas power plants of 1,000 lb CO₂/MWh—an emissions standard in line with currently operating, new combined-cycle natural gas power plants. Source: Energy Information Agency, “2014Early

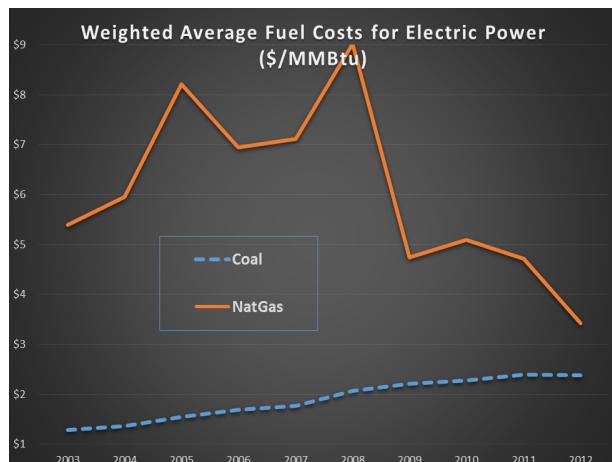
Release Overview,”

available at: <http://www.eia.gov/forecasts/aeo/er/pdf/0383er%282014%29.pdf>

III. The Proposed Rule in Context of Electric Power Market Trends

Three factors have sharply reduced coal’s viability as the traditional baseload generation source in America:

1. Generally lower natural gas prices fueled by hydraulic fracturing-led domestic production, combined with lower capital costs for gas-fired generation, has made natural gas the leading alternative to coal;
2. Increasing renewable energy production due to regulatory incentives and sharply declining costs for solar and wind;
3. Significant expansion of energy efficiency. Since 2005, energy use per capita and per dollar of Gross Domestic Product have been on a steady decline due to the combination of state-based energy efficiency initiatives and shifts resulting from the economic



Data source: Energy Information Agency, “Weighted Average Cost of Fossil Fuels for the Electric Power Industry, 2002-2012, available at: http://www.eia.gov/electricity/annual/html/epa_07_04.html

downturn. These changing dynamics together have led to lower electricity prices for most households since 2009,⁸ as coal's share of power production fell from 52% in 2000 to 37% in 2012 (see image one).

Solar generation is helping to drive savings for consumers as well, as solar installation costs rival coal costs in some parts of the United States,⁹ exemplified by the City of Austin's solar power purchase agreement with SunEdison that will deliver 150MW of photovoltaic solar energy at less than 5¢/kw—a rate lower than the current cost of electricity in the city.¹⁰

The proposed rule follows four existing state-level greenhouse gas emission standards for new power plants: California,¹¹ Oregon¹² and Washington¹³ all with a 1,100 lb CO₂/MWh standard. New York State features a tougher, 925 lb CO₂/MWh standard¹⁴ (a level that should serve as the starting point for the EPA proposed rule). And Massachusetts recently affixed a defacto expiration date for a proposed new natural gas power plant¹⁵—a principle that should be incorporated as part of this rule.

IV. Why the Rule Is Good For Household Consumers

While the coal industry has spent considerable resources inventing a story about the “war on coal,” it is in fact market dynamics – the fact that efficiency and natural gas (and renewables) are cheaper than coal – that is displacing coal. Adoption of the rule will not have any price impact on consumers, because new coal plants are cost prohibitive with or without the rule. There are nonetheless important benefits in adopting the rules, in ensuring a more accurate accounting of the social cost of energy generation in guiding market dynamics to reduce the risk of catastrophic climate change.

A. Even Absent The Proposed Rule, New Pulverized Coal Plants are Uneconomic Compared to Renewables

The Congressional Research Service recently dismissed the so-called “war on coal,” concluding that market conditions, and not EPA rules, were to blame for coal’s decline as a fuel for power: “The primary impacts of many of the [EPA] rules will largely be on coal-fired plants more than 40 years old that have not, until now, installed state-of-the-art pollution controls. Many of these plants are inefficient and are being replaced by more efficient combined cycle natural gas plants, a

⁸ Annual Energy Outlook 2014 Early Release, US Energy Information Administration
[www.eia.gov/forecasts/aeo/er/pdf/0383er\(2014\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2014).pdf)

⁹ www.bloomberg.com/news/2011-04-05/solar-energy-costs-may-already-rival-coal-spurring-installation-boom.html

¹⁰ www.greentechmedia.com/articles/read/Cheapest-Solar-Ever-Austin-Energy-Buys-PV-From-SunEdison-at-5-Cents-Per-Ki

¹¹ SB 1368 http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

¹² SB 101 http://arcweb.sos.state.or.us/pages/rules/oars_800/oar_860/860_085.html

¹³ SB 6001 www.efsec.wa.gov/rulerev.shtml

¹⁴ 6 NYCRR Part 251, www.dec.ny.gov/press/83269.html

¹⁵ Matthew L. Wald, “Massachusetts Regulators Approve a Gas-Fired Power Plant With an Expiration Date,” *The New York Times*, February 20, 2014, www.nytimes.com/2014/02/21/business/energy-environment/massachusetts-approves-a-gas-power-plant-with-an-expiration-date.html

development likely to be encouraged if the price of competing fuel—natural gas—continues to be low, almost regardless of EPA rules.”¹⁶

But some coal companies have deliberately produced misinformation to blame the closing of coal fired power plants on EPA rules when in reality the plants were closed due to market dynamics. For example, coal utility American Electric Power (AEP) recently issued a press release: “Because of the unrealistic compliance timelines in the EPA proposals, we will have to prematurely shut down nearly 25 percent of our current coal-fueled generating capacity [and] cut hundreds of good power-plant jobs... the sudden increase in electricity rates and impacts on state economies will be significant at a time when people and states are still struggling.”¹⁷ But this politically-tinged statement was untrue: One week before issuing the press release, AEP chairman and CEO Mike Morris told Wall Street investors on a conference call that the shutting down of the coal power plants was a win-win for both shareholders and customers because “[a]s you know, those are high-cost plants and dispatch infrequently.”¹⁸

Indeed, several recent coal power plants closings are the direct result of coal being uncompetitive with the combination of natural gas, renewables and energy efficiency. NRG's Huntley coal-fired power plant in New York State will retire not because of EPA regulations but because of cheaper natural gas and falling demand due to energy efficiency.¹⁹ Rochester Public Utilities' Silver Lake coal plant was retired because competing power from natural gas and renewables was cheaper, as a state official remarked, “It’s not surprising and not inconsistent with what utilities around the country are deciding to do with smaller, older coal-fired power plants. They are determining that those facilities are so inefficient they are no longer economical to run, and continuing to do so would be detrimental to their customers.”²⁰ And in Massachusetts, the announced retirement of the Brayton Point coal power plant was attributed to EPA rules, when in reality the private equity owners closed the plant as part of a capacity withholding market manipulation scheme.²¹

The same goes for state-of-the-art emission-controlled new coal fired power plants. \$100 billion of integrated gasification combined cycle coal generators were cancelled in North America over just the past few years because cheap natural gas was a far better investment.²²

Competing technologies have also eclipsed coal in terms of cost.

A new 600 MW combined cycle natural gas plant features capital costs of roughly \$760 million—compared to capital costs for a similar pulverized coal power plant *without CCS as mandated by the proposed rule* of at least \$3 billion.²³

¹⁶ James E. McCarthy & Claudia Copeland, *EPA's Regulation of Coal-Fired Power: Is a “Train Wreck” Coming?* August 8, 2011 www.lawandenvironment.com/uploads/file/CRS-EPA.pdf

¹⁷ www.aep.com/newsroom/newsreleases/?id=1697

¹⁸ www.nationaljournal.com/daily/power-company-contradicts-itself-on-epa-rules-20110615

¹⁹ www.ieefa.org/press-release/

²⁰ www.startribune.com/business/165367786.html

²¹ FERC Docket No. ER14-1409, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13527062>

²² www.industrialinfo.com/news/abstract.jsp?newsitemID=239120

²³ Public Citizen estimates taken from EIA and RMI data.

Similar price disadvantages for coal exist when comparing the leveled costs. Leveled costs take into consideration all of the costs—capital, operation, fuel—over the life of the plant in order for the operator to be profitable. Leveled costs for a combined cycle natural gas power plant are roughly \$50/MWh—compared to roughly \$88/MWh for pulverized coal.²⁴

Coal was the workhorse of the power industry for so long because it was cheap and more efficient than its rivals, and because we didn't care about or fully understand the environmental costs. But new coal is no longer cost competitive, and these EPA rules simply enshrine the Supreme Court mandate for coal to better account for its environmental costs.

Due to the larger financial risks involved, there isn't a single proposal in the United States to build a merchant pulverized coal power plant.

It's not just natural gas power generation that has demonstrated cost effectiveness against coal. A recent ruling by an Administrative Law Judge with the Minnesota Public Utilities Commission concluded that a proposed solar generation project was more cost effective than building a similar sized natural gas power plant in the state.²⁵ Importantly, the solar project beat both natural gas and coal without any state or local subsidies.²⁶ Such superior price performance for solar will become increasingly common, as solar photovoltaic costs continue to plummet, from \$3.80/watt in 2008 to \$0.86/watt in mid-2012²⁷. That helped to explain how new solar additions to the grid outpaced new coal additions in 2013. New solar represented 21% of all new generation in 2013, while coal represented less than 11%.²⁸ Indeed, the City of Austin in March 2014 signed a 25-year power purchase agreement with SunEdison to supply electricity to the city from a 150MW solar photovoltaic array for less than 5¢/kw—a rate less than the city's prevailing rate.²⁹

Indeed, expensive investment in centralized power generation might be eclipsed in the near-term by distributed clean energy generation. Indeed, then Federal Energy Regulatory Commission Chairman Jon Wellinghoff promoted the idea of replacing centralized, baseload generation with small-scale, distributed renewable energy in an April 2009 interview.³⁰

B. The Proposed Rule Appropriately Reflects Coal's Social Costs to Human Health and Climate Change

The proposed rule attempts to address coal's harmful emissions, or externalities—respiratory disease, increased infant mortality, reduced life expectancy, and damages associated with climatic events such as flooding, droughts and increasingly severe storms. Because coal's harmful health and environmental costs are not reflected in the current price, the fuel source is made artificially cheap.

²⁴ Lazard's Levelized Cost of Energy Analysis

²⁵ www.startribune.com/business/238322571.html

²⁶ www.pv-tech.org/news/solar_beats_natural_gas_in_judge_ruling_for_us_utility

²⁷ www.eei.org/ourissues/finance/documents/disruptivechallenges.pdf

²⁸ www.ferc.gov/legal/staff-reports/2013/dec-energy-infrastructure.pdf

²⁹ www.greentechmedia.com/articles/read/Cheapest-Solar-Ever-Austin-Energy-Buys-PV-From-SunEdison-at-5-Cents-Per-Ki

³⁰ www.energyvox.org/2012/10/12/nimbyism-is-democracy/

When full health, environmental and carbon costs for coal are calculated, the cost of electricity generation from coal become a full 170 percent higher, jumping from 3.2 cents to 8.8 cents.³¹ By requiring new coal power plants to capture harmful greenhouse gas emissions to at least the level emitted by natural gas, the proposed rule attempts to simply require coal to begin to account for its harmful externalities. Consumers will benefit from the proposed rule because the regulations will play a role in improving the health and environment of our communities.

Indeed, the Obama Administration calculates the social cost of carbon (SCC) emissions at a cost of \$38/metric ton for 2015.³² This comprehensive calculation estimates the costs that emitting carbon from coal power plants and other sources have on flood damage, diminished agricultural production and direct impacts on human health.

But even this social cost of carbon estimate, which by itself would disallow new coal fired-power plants by pricing them out of the market, understates the real costs of greenhouse gas emissions:

The models used to develop SCC estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research.³³

Evidence of the extreme costs of inaction – which will be borne by consumers, and all of society – is mounting rapidly. On May 6, the Obama Administration released the Third U.S. National Climate Assessment, detailing the \$100 billion in climate- and weather-related damages to the US economy in 2012 alone.³⁴

C. The Rule Will Help Guide Market Dynamics to Reduce the Risk of Catastrophic Climate Change

There are three broad benefits for household consumers by adopting the proposed rule. First, the rules help to accurately account for externality costs like greenhouse gas emissions that cause catastrophic climate change while at the same time guiding market dynamics which have been shaping changing generation portfolios in electric power markets: relatively low and stable natural gas prices and steadily falling costs for renewable energy have been displacing more expensive and polluting coal. By formally recognizing climate change costs for new coal, the proposed rule will help enshrine these market trends and ensure that low- and no-carbon technologies will deservedly increase their market share.

Second, the EPA rule provides the first step towards badly-needed regulatory certainty for the utilities, where generation investment has been paralyzed as industry had been left to guess what the future rules for power plants that can last 50 years will look like. Consumers and businesses alike benefit when an industry like electricity requiring long-term planning actually has a long-term plan.

³¹ www.hamiltonproject.org/multimedia/charts/private_and_social_costs_of_electricity_generation_by_source/

³² www.bloomberg.com/news/2013-06-28/moved-by-microwaves-hunter-targets-social-cost-of-carbon-.html

³³ www.epa.gov/climatechange/EPAactivities/economics/scc.html

³⁴ www.whitehouse.gov/climate-change

Third, the proposed rule will meaningfully reduce greenhouse emissions not only for the US power sector, but can play a role as part of America's offer for a global emissions reduction treaty. Controlling greenhouse gas emissions will address the harmful impacts of climate change, providing benefits for families in the form of improved health and mitigation of climatic catastrophes.

V. Emissions Limits for Natural Gas Must Be Strengthened

While combined cycle natural gas power plants are cleaner than comparative coal units, they are still a toxic and polluting source of energy. The proposed rule, while protecting consumers in terms of electric rates, fails to adequately limit natural gas emissions. The rule sets a slightly lower standard for new natural gas power plants of 1,000 lb CO₂/MWh—an emissions standard in line with currently operating, new combined-cycle natural gas power plants.

The standard should be tightened to force natural gas plants to become less carbon polluting and progressively tighten to the zero emission standard needed to avert catastrophic climate change. EPA's standard should at a minimum match New York State's 925 lb CO₂/MWh,³⁵ with this maximum allowing emission standard ratcheting down to zero over a period of 15-20 years, similar to the standard adopted by Massachusetts.³⁶ The fact is that all new combined-cycle natural gas power plants can easily meet the stronger New York State standard, and the next few years will only see continued improvements in efficiency and emissions reductions from new gas plants.

VI. Although Possibly Moot due to Expense, Carbon Capture and Sequestration is A Dangerous Technology that should not be Sanctioned by the Proposed Rule

Carbon capture and sequestration (CCS) involves the stuffing of greenhouse gas emissions underground or underwater in order to avoid their release into the atmosphere, where they would otherwise contribute to climate change. While injection of carbon emissions has long been used for enhanced oil recovery, trapping the gasses permanently pose significant air quality, biological resource impacts, water supply and geological formation integrity challenges. Southern Company's Kemper integrated gasification combined cycle facility is currently more than \$2 billion over budget and its CCS technology still unproven.³⁷ CCS assumes the permanent storage of toxic gases deep in various geological formations, despite the inability of the technology to guarantee safe storage of such toxins given the likelihood of geological challenges such as earthquakes.

The challenges of storing significant volumes of industrial-waste, toxic greenhouse gas emissions in the earth in perpetuity are numerous and ultimately prove too daunting to enable CCS to be a reasonable or cost-effective solution. Impediments include: ensuring underground storage for centuries without leakage; rejection of liability for permanent storage by the corporations responsible for generating the greenhouse gas emissions; inability to plan for geologic events leading to

³⁵ 6 NYCRR Part 251, www.dec.ny.gov/press/83269.html

³⁶ Matthew L. Wald, "Massachusetts Regulators Approve a Gas-Fired Power Plant With an Expiration Date," *The New York Times*, February 20, 2014, www.nytimes.com/2014/02/21/business/energy-environment/massachusetts-approves-a-gas-power-plant-with-an-expiration-date.htm

³⁷ www.reuters.com/article/2013/09/20/us-usa-energy-emissions-kemper-idUSBRE98J0Y520130920

catastrophic release of stored toxins into the atmosphere or groundwater.³⁸ The long-term community health risks presented by possible accidental rupture and release of stored gasses, along with risks to groundwater resources from the storage of said gases near aquifers pose unacceptable levels of risk; use of CCS should therefore not be sanctioned by the rule.

Conclusion

It is market forces, not the proposed EPA rule, that are the cause of a multi-generational decline in coal mining employment and coal power generation. The plain fact is that coal has been eclipsed by competing technologies that are cheaper and cleaner. Consumers stand to benefit from this proposed rule because it will establish clear emissions standards for an industry that is the largest single source of criteria pollutants that cause climate change, and will help speed the transition that is already under way to cleaner and cheaper alternatives to coal. Consumers will benefit both short- and long-term from a transition that enshrines efficiency standards in the power generation market.

³⁸ Peter Folger, *Carbon Capture and Sequestration: Research, Development, and Demonstration at the U.S. Department of Energy*, Congressional Research Service, February 10, 2014, www.fas.org/sgp/crs/misc/R42496.pdf