



**December 1, 2014**

**To: Administrator Gina McCarthy**

**cc: Janet McCabe**, Acting Assistant Administrator, Office of Air and Radiation;

**Joseph Goffman**, Associate Assistant Administrator & Senior Counsel, Office of Air and Radiation

**Docket ID No. EPA-HQ-OAR-2013-0602**

**Proposed Clean Power Plan for Existing Power Plants**

Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Proposed Rule Vol. 79, Federal Register, No. 117, Wednesday, June 18, 2014  
Environmental Protection Agency 40 CFR Part 60.

Environmental Protection Agency, EPA Docket Center (EPA/DC), Mailcode 28221T, Attention Docket ID No. OAR-2013-0602, 1200 Pennsylvania Avenue, NW, Washington, DC 20460.

Submitted via email to [A-and-R-Docket@epa.gov](mailto:A-and-R-Docket@epa.gov)

**Dear Administrator McCarthy,**

The Union of Concerned Scientists (UCS) commends the Environmental Protection Agency (EPA) for issuing a draft carbon pollution standard for existing fossil-fired power plants under the authority of the Clean Air Act (CAA) section 111(d). The EPA's draft Clean Power Plan (CPP), released on June 2, 2014 and published in the Federal Register on June 18, 2014, will help ensure reductions in power plant carbon dioxide (CO<sub>2</sub>) emissions and a transition to cleaner generation sources. This standard is a critical first step in helping to slow the pace of climate change and limit its impacts.

We appreciate the opportunity to submit comments on this proposal and hope to see our views incorporated in the final standard when it is issued in June 2015. UCS is the nation's leading science-based nonprofit working for a healthy planet and a safer world. We work on behalf of our more than 450,000 supporters and network of nearly 18,000 scientists to advance public awareness of both the science of climate change and the solutions available to help lower emissions and mitigate some of the worst impacts of climate change.

UCS strongly supports the EPA's efforts to regulate carbon emissions from existing fossil fuel-fired power plants under the CAA. The EPA's actions are firmly grounded in science. The threat posed by unchecked climate change, which is driven primarily by carbon emissions from human activities, has been clearly articulated by numerous national and international scientific

## Union of Concerned Scientists – Technical Comments on the Clean Power Plan

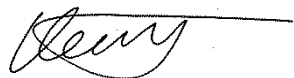
organizations, including the U.S. National Academy of Sciences<sup>[1]</sup>, the U.S. Global Change Research Program,<sup>[2]</sup> and the Intergovernmental Panel on Climate Change.<sup>[3]</sup> In 2012, CO<sub>2</sub> emissions from power plants were the largest single source of U.S. CO<sub>2</sub> emissions, responsible for approximately 38 percent of these emissions.<sup>[4]</sup> Taking action to reduce emissions from the electricity sector is therefore crucial to our overall efforts to tackle climate change.

We take this opportunity to provide detailed comments on several issues raised by the proposal published in the Federal Register on June 18, 2014, in the Notice of Data Availability (NODA) issued on October 28, 2014, and in associated Technical Support Documents (TSDs). We would particularly like to call your attention to our comments on an approach to strengthening the renewable energy provisions of the Clean Power Plan. We recommend modifications to EPA's approaches that would nearly double EPA's 2030 renewables target from 12 percent to 23 percent of U.S. electricity sales by 2030. UCS modeling shows that strengthening the renewables building block to these levels is affordable and would increase the total emissions reductions achieved by the CPP from 30 percent to approximately 40 percent below 2005 levels by 2030.

We request that the EPA take these comments into consideration as it works to finalize the Clean Power Plan by June 1, 2015.

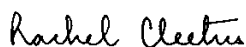
Sincerely,

On behalf of the Union of Concerned Scientists:



Kenneth Kimmell, *President*


Prepared by:



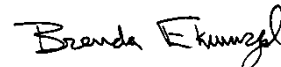
Rachel Cleetus  
*Senior Climate  
Economist*



Steve Clemmer  
*Director, Energy  
Research & Analysis*



Jeff Deyette  
*Asst. Director, Energy  
Research & Analysis*



Brenda Ekwurzel  
*Senior Climate Scientist*



Julie McNamara  
*Energy Research  
Associate*



Jeremy Richardson  
*Senior Energy Analyst*



John Rogers  
*Senior Energy Analyst*

<sup>[1]</sup> G8+5 Academies' Joint Statement: Climate Change and the transformation of energy technologies for a low carbon future. 2009. <http://www.nationalacademies.org/includes/G8+5energy-climate09.pdf>. UCS incorporates by reference all of the materials cited in these comments and ask that they be included in the official record of this proceeding.

<sup>[2]</sup> Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2.

<sup>[3]</sup> Intergovernmental Panel on Climate Change. 2014. Fifth assessment synthesis report. Online at [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_LONGERREPORT.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_LONGERREPORT.pdf)

<sup>[4]</sup> U.S. Environmental Protection Agency. 2014. Inventory of US Greenhouse Gas Emissions and Sinks, 1990-2012. <http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2014-Main-Text.pdf>

## Executive Summary of UCS Technical Comments

### 1. Strong Support for the Clean Power Plan

- UCS supports the Clean Power Plan as a significant opportunity to achieve cost-effective emissions reductions in the power sector, which is the single largest source of U.S. CO<sub>2</sub> emissions, and help slow the pace of climate change.
- UCS supports the flexible framework in the draft rule, including a role for renewable energy and energy efficiency, which puts states in a leadership role in deciding how best to make cost-effective emission reductions. However, UCS analysis and expertise in the power sector lead us to the conclusion that there are significant opportunities to strengthen the rule, especially by increasing the contribution from renewable energy.
- We commend the EPA for the extensive stakeholder process it has conducted leading up to the release of the draft rule, and for its continued outreach to all affected parties including through this comment period. We strongly support the timeline to finalize the rule by June 1, 2015, and the deadlines for state compliance.

### 2. Climate Science Imperative to Act

- According to the Third National Climate Assessment, scientific evidence “unequivocally shows that our climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases.”<sup>1</sup> The Intergovernmental Panel on Climate Change Fifth Assessment Report states that many of the observed changes such as the warming of the atmosphere and ocean, loss of snow and ice and sea level rise are “unprecedented”, and that a continued rise in emissions will increase the risk of “severe, pervasive and irreversible impacts for people and ecosystems.”<sup>2</sup>
- In light of the urgent need to cut our global warming emissions to help slow the pace of climate change and limit its impacts, UCS strongly recommends that the EPA finalize a strong rule to cut carbon emissions from power plants in June 2015 as part of a national effort to limit U.S. emissions and provide communities more time to prepare.
- UCS also notes that a strong Clean Power Plan is critical to ensuring a robust U.S. contribution to global efforts to limit emissions, including delivering on the upper end of the range of the 26 to 28 percent reduction in 2005 levels of net U.S. GHG emissions by 2025 announced by the Obama Administration in its joint climate change announcement with China.

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<sup>1</sup> Melillo, J. M., T.C. Richmond, and G. W. Yohe (Eds.) 2014. Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2. Online at <http://nca2014.globalchange.gov/>.

<sup>2</sup> Intergovernmental Panel on Climate Change (IPCC). 2014. Fifth Assessment Synthesis Report. Online at [http://ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_LONGERREPORT.pdf](http://ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_LONGERREPORT.pdf).

**3. The Best System of Emissions Reductions (BSER)**

- UCS supports the scope of, and flexibility in, the BSER for the Clean Power Plan, which reflects the many cost-effective options available to reduce power sector carbon emissions.
- UCS opposes the option of setting the BSER as only the first two building blocks, i.e. increasing the efficiency of existing coal-fired power plants and shifting power generation from existing coal-fired power plants to underutilized natural gas combined cycle (NGCC) plants, because that would exclude the potential for renewables and efficiency to deliver significantly greater emissions reductions at reasonable cost.
- We especially support the flexible choices provided to states, the inclusion of a role for renewable energy and energy efficiency in reducing emissions, the option to form multi-state compliance plans, and the inclusion of market-based emissions trading approaches—all of which will help drive down emissions at a lower cost.
- We recommend that the EPA strengthen, and regularly update, the CPP to reflect the full potential of affordable real-world emission reduction opportunities, and commensurate with the urgent need to address climate change. Our analysis shows that emission reductions of at least 40 percent below 2005 levels by 2030 are technically and economically feasible, and this level therefore corresponds with the best system of emission reduction.<sup>3</sup>

**4. Heat Rate Improvements: Building Block 1**

- UCS supports the EPA's determination of a 6 percent heat rate improvement (HRI) at existing coal-fired power plants as part of the BSER because several recent engineering studies support the conclusion that this level is technically feasible and economically reasonable.
- UCS supports the EPA's methodology for determining the HRI potential at coal-fired power plants to reduce carbon emissions because studying the variability in heat rates across the fleet is a sound way to gauge the potential for HRI.
- UCS recommends including biomass and natural gas co-firing in setting the BSER because there are states and regions where these options are cost-effective.

**5. Coal to Gas Switching: Building Block 2**

- UCS supports using generation from excess capacity at existing NGCC plants to displace generation from coal and oil/gas steam units, as part of the Clean Power Plan's Building Block 2. The state re-dispatch targets set by the EPA are achievable in the 2020

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<sup>3</sup> Our analysis showed that simply strengthening the renewables building block, as described in detail in section 6, would result in an additional 10 percent increase in emission reductions above the 30 percent reduction from 2005 levels by 2030 that the proposed rule achieves.

## Union of Concerned Scientists – Technical Comments on the Clean Power Plan

timeframe, especially when accounting for the large number of coal units already planned for retirement between 2013 and 2020. However, given the growing evidence that an overreliance on natural gas poses significant and complex risks to consumers, public health, and the climate, we recommend the EPA consider ways to avoid incentivizing natural gas generation and overbuilding infrastructure at the expense of other cost-effective, lower carbon resource alternatives.

- UCS recommends that the EPA maintain its proposed 70 percent target utilization rate for existing NGCC in determining the BSER for Building Block 2.
- UCS recommends that the EPA increase the amount of generation from under construction NGCC units that is incorporated in the BSER re-dispatch calculation. The EPA’s assumption that 79 percent of the total generation from under construction NGCC plants (e.g., a 55 percent capacity factor out of a total 70 percent capacity factor) would be utilized to meet new demand—and is therefore unavailable for re-dispatch purposes—overestimates the generation from these units likely to be used for new power demand rather than replacing generation from retiring coal units. We recommend reversing the EPA’s proposed allocation of generation from under construction NGCC units so that a capacity factor of 55 percent is available for re-dispatch purposes, and a capacity factor of 15 percent is unavailable.
- UCS recommends that the EPA use a regional—rather than state—method for determining potential for gas re-dispatch, noting that regionalization generally leads to lower costs and more accurately aligns with the construct and operation of power grids across the nation.
- UCS recommends that the EPA also set standards to directly curb methane emissions from the oil and gas sector and update its GWP to 34 to more accurately conform to the latest science.

### 6. Renewable Energy: Building Block 3

- UCS strongly supports the inclusion of renewable energy as a compliance option in the Clean Power Plan, but recommends modifications to strengthen Building Block 3 that would use the most up-to-date data on renewable energy, set renewable energy growth rates at levels already being achieved by leading states, incorporate full compliance with current state renewable electricity standards, and reflect expected renewable energy growth between 2013 and 2017. UCS analysis shows nearly doubling EPA’s renewable target to 23 percent of U.S. electricity sales by 2030 is affordable and would lead to greater emission reductions. This level corresponds with the best system of emission reduction (BSER), in contrast with the EPA’s proposal which is more of an “average system of emission reduction.”

## **Union of Concerned Scientists – Technical Comments on the Clean Power Plan**

- UCS also recommends improvements to strengthen EPA’s Alternative Approach including eliminating the technical potential benchmarks, relying primarily on economic potential to set state and regional targets, using more up-to-date renewable energy cost and performance assumptions, and reflecting regional differences and existing state commitments.
- UCS recommends using and, where necessary, expanding on existing regional renewable energy credit (REC) tracking systems as the most effective mechanism for tracking state compliance, accounting for interstate effects, and preventing double counting. We also recommend requiring adjustments to take into account the emissions reductions associated with voluntary renewable energy purchases (RECs or “green power”) to preserve the integrity of that market and the emissions reductions sought by voluntary institutional, commercial, and private purchasers, allowing such consumers to achieve reductions beyond those required under statutes and regulations.
- UCS recommends the EPA include the emission reductions from new renewables in the emission rate formula as a more consistent and equitable approach with how natural gas fuel switching is treated in Building Block 2, and exclude existing renewable energy and at-risk nuclear generation if the EPA opts to change the formula, given that their emission reductions are already embedded in the baseline emissions and generation mix.
- UCS supports incentives for early action, prior to 2020, to encourage investments in renewables and energy efficiency after a state compliance plan has been approved by the EPA, as long as these incentives do not undermine the overall level of emissions reductions achieved by the CPP.

### **7. Nuclear Power: Building Block 3**

- UCS supports the EPA’s proposal to include new nuclear reactors that are under construction in setting state emission reduction targets and for compliance, which is consistent with the EPA’s treatment of new natural gas combined cycle plants and UCS’s recommendation for new renewables that are under construction.
- UCS recommends excluding existing “at-risk” nuclear generation from the formula for setting state emission reduction targets, as the number of at-risk reactors is limited, site specific, and will likely decline over time as natural gas and wholesale electricity prices rise.
- UCS does not support allowing existing plants that may receive a license extension beyond 60 years to be counted as new generation for the purposes of compliance, given important safety issues that are outside of the EPA’s jurisdiction.

### **8. Energy Efficiency: Building Block 4**

- UCS recommends that the EPA use a target for incremental annual energy efficiency of at least 2.0 percent of electricity sales for each state, based on inclusion of a broader suite

## **Union of Concerned Scientists – Technical Comments on the Clean Power Plan**

of energy efficiency policies, measures, and technologies in its calculation of state targets.

- UCS similarly recommends that the EPA use a target of at least 0.25 percent per year for the ramp-up rate, based on the broader suite of opportunities, and incorporate a differential approach for states at the lowest annual levels, to better reflect opportunities for states at low levels of efficiency development.
- UCS recommends that the EPA update its baseline year for energy efficiency targets to 2013 and update cost and performance assumptions for efficiency technologies and measures to reflect the most recent data on state-level energy efficiency programs, and incorporate a range of other strategies to ensure the integrity and effectiveness of Building Block 4, including with respect to interstate trading, voluntary actions, and improvements in transmission and distribution.

### **9. Regional and Market-Based Approaches to Compliance with the Clean Power Plan**

- UCS supports the flexibility in the Clean Power Plan that allows states to comply with the emissions reductions requirements called for by the CPP on a regional or multi-state basis if they so choose because this can lead to lower cost emission reductions.
- We also support the inclusion of market-based approaches to compliance, including emissions trading programs, carbon caps and carbon revenue-raising options, as long as the emissions reductions achieved are equivalent to the state goals in the CPP.
- UCS recommends that EPA provide guidance, in the case of states that choose to use market-based approaches that generate carbon revenues, on using such revenues, in part, to support or retrain displaced workers, invest in renewable energy and energy efficiency programs, and provide assistance to low-income and environmental justice communities.

### **10. Timing of Implementation and Compliance Dates for the Clean Power Plan**

- UCS supports the EPA's proposal for the implementation timeline of the Clean Power Plan, the deadlines for state and multi-state compliance plans, and the dates for compliance with interim and final state goals.
- We strongly recommend that the EPA review and update state goals and other aspects of the Clean Power Plan no later than 2025, to reflect technology improvements that can contribute to a Best System of Emission Reduction (BSER) determination and opportunities for cost-effective emissions reductions.
- UCS does not support a change in the glide path for emissions reductions that would potentially delay emissions reductions.

## **11. Need and Cost-effective Potential to Strengthen the Clean Power Plan**

- Given the urgent need to cut global warming emissions, UCS recommends that the EPA ensure that the CPP achieves the full potential of cost-effective emissions reductions available in the power sector, and that these reductions take place in a timely manner. Strengthening the CPP is also a critical component of the US contribution to international efforts to cut global emissions and slow the pace of climate change.
- Based on our analysis, we recommend several ways to cost-effectively strengthen the Clean Power Plan in keeping with the BSER criteria, including by:
  - Increasing the contribution from the renewable energy and energy efficiency building blocks;
  - Implementing a change in the goal computation formula to ensure that new and incremental renewable energy (RE), energy efficiency (EE) and nuclear generation explicitly replaces generation from fossil fuel-fired sources, which is a better representation of the BSER and consistent with the treatment of incremental NGCC; simultaneously, we recommend a formula change to remove existing generation resources (renewable energy and “at risk” nuclear energy) from the denominator of the formula used to calculate state goals since the associated emission reductions are already embedded in the baseline emissions and generation mix.
  - Including both the generation and emissions impacts of new NGCC units in the state goal calculation;
  - Ensuring that there are no changes to the 2020-2029 glide path that result in a delay in the interim and final goals for emissions reductions achieved by the CPP.

## **12. Environmental and Economic Justice Concerns**

- UCS recognizes that, unless state compliance plans include specific worker transition provisions, the proposed standard for carbon emissions at existing power plants may have disproportionately negative impacts among certain coal-heavy geographic regions, coal-dependent communities, and coal-related workers.
- UCS recommends that the EPA work in conjunction with other federal and state agencies to leverage existing programs and resources that can be brought to bear in addressing impacts to coal communities and assisting displaced workers. States should consider a variety of policy mechanisms, both within the context of state compliance plans and through complementary policies enacted by state legislatures, to address these needs.
- UCS recommends that EPA require states to conduct environmental justice analyses of their compliance plans, and provide guidance to states on how to assess changes in criteria pollutants, water quality, and other environmental damage that may result from



## Union of Concerned Scientists – Technical Comments on the Clean Power Plan

their compliance plans and assess the potential impacts on neighboring or downwind communities.<sup>4</sup>

- UCS recommends that states prioritize the development of renewable energy resources and the expansion of energy efficiency programs in overburdened and impacted communities, including low-income, minority, disadvantaged, and coal-heavy populations.

### 13. Guidance to States

- UCS recommends that the EPA provide clear guidance to states in developing their compliance plans to ensure that states are able to develop and submit robust plans in a timely way, and that such guidance cover issues such as treatment of certain energy options, best practices, methodologies, non-compliance penalties, processes, and options for addressing worker transition and environmental justice concerns.

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<sup>4</sup> For example, the EPA should integrate the technical guidance in Plan EJ 2014 into its guidance for state compliance plans for the CPP to help states comply with the requirement for an environmental justice analysis of those plans. (EPA. N.d. Plan EJ 2014. Online at <http://www.epa.gov/environmentaljustice/plan-ej/>)