December 1, 2014

Gina McCarthy  
Administrator  
Environmental Protection Agency  
EPA Docket Center (EPA/DC)  
Mail Code 28221T, Attn. Docket ID No. EPA-HQ-OAR-2013-0602  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Dear Administrator McCarthy:

On behalf of the University of Arizona, we are pleased to submit these comments on the Environmental Protection Agency’s proposed Clean Power Plan.

*Our interest:*

We represent a coalition of researchers and scholars affiliated with the University of Arizona. A land-grant “Research One” university founded in 1885, the University of Arizona is home to top-ranked environmental science departments with strong supporting programs in environmental assessment and environmental and energy law and policy. The University maintains a strong commitment to engaging with the public and policymakers at all levels of government, sharing its research expertise and building knowledge networks to address today’s environmental and energy challenges.

Of particular relevance to these comments, the University is home to several research programs devoted to the intersection of energy and environmental impacts in the southwest. For example, Climate Assessment for the Southwest (CLIMAS) assesses the impacts of climate variability and longer-term climate change on human and natural systems in the Southwest. The Southwest Climate Science Center (SWCSC) is part of a network of eight climate science centers created by the U.S. Department of the Interior to provide scientific information, tools, and techniques that land, water, wildlife, cultural resource, and municipal managers can use to anticipate, monitor, and adapt to climate change. The UA Renewable Energy Network (REN) is a university-wide initiative designed to support the expanded regional, national, and global use of abundant, clean, and economical renewable energy by connecting community and industry to the UA’s research and educational programs. Water, Environmental, and Energy Solutions (WEES) is a funding initiative to integrate UA’s vast expertise in water, the environment, and energy. The University of Arizona’s Center for Climate Adaptation Science and Solutions (CCASS) draws on
an interdisciplinary group of researchers who study, inform, and work collaboratively with governmental, non-governmental, and private sectors to promote practical, science-based approaches to better adapt to climate change.

**General Comments:**

The Clean Power Plan will help ensure needed reductions in climate-warming gases.

We support EPA’s Section 111(d) Clean Power Plan as a sensible and pragmatic regulatory effort to reduce greenhouse gas emissions from the nation’s electricity sector. This sector is currently responsible for 39 percent of the nation’s greenhouse gas emissions. Reducing the contribution from this sector is vital to reducing the United States’ contribution to greenhouse gas concentrations and thereby helping to stabilize concentrations at levels that will prevent serious and pervasive impacts to the environment and to society at large. The United Nations Intergovernmental Panel on Climate Change recently warned that “[c]ontinued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.” The EPA’s rule will contribute to keeping the rise in global temperatures below 2 degrees Celsius and hence at levels scientists believe is necessary to prevent the most dangerous impacts of rising greenhouse gas concentrations.

**Climate change is projected to have, and is having, particularly severe impacts upon the environment, resources and human communities in the desert southwest.**

EPA’s progress in addressing climate change is particularly important for the desert southwest, a region where rising temperatures and drought are predicted to have particularly devastating effects upon ecosystems and communities. Hotter temperatures and more droughts threaten the region’s scarce water resources. Water flow in the Colorado River, which supplies water to more than 30 million people in the southwest, including Los Angeles, Las Vegas and Phoenix, is declining, in part due to reduced snowpack run-off that feeds the River. Rising temperatures drive greater use of water and energy for cooling at the same time they threaten public health. Extreme heat waves and devastating wildfires are also expected to worsen in the Southwestern United States as a result of climate change. In the past four decades, the incidence of wildfires has risen four-fold, and the total number of acres burned has increased six-fold in the Western United States alone.¹ Studies show that climate change will cause wetter and warmer winters followed by a faster snowmelt in the West.² These changes potentially lengthen the fire season by up to a month or more on each end.³ An increase in wildfires also has a feedback effect upon.

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2. Id.
3. Id.
climate change since fires release carbon into the atmosphere that is otherwise stored in vegetation.

_EPA is to be commended for incorporating flexibility into the Plan, particularly with respect to how states comply with their individual emissions targets._

EPA’s Clean Power Plan recognizes the progress states have made to reduce the carbon footprint from their energy sectors through innovative policymaking designed to grow the percentage of electricity supplied by renewable power, enhance energy efficiency and conservation programs and catalyze research and development into new technologies. The Plan does this by determining a state’s target for emissions reductions based upon factors unique to the state and yet allowing each state the flexibility to meet their individual target in the manner that best suits the state’s needs.

_EPA’s interpretation of Section 111(d) of the Clean Air Act to allow states to count emissions reductions within the electricity sector as a whole and not just within the “fence line” of electric generating facilities, is supported by the statute and the practical reality of electricity provision._

Under the Clean Air Act, EPA is authorized to promulgate guidelines for state plans setting forth criteria for emissions reductions from electric generating units using the “best system of emission reduction . . . adequately demonstrated.” A “system” is not just one thing, but a set of things. It makes sense that, with respect to electric generating units, the “best system” referred to by Congress would include reductions achieved through substitution of EGU-generated electricity with renewable generated electricity and energy conservation measures. The legislative history furthermore supports EPA’s broad interpretation of its authority under Section 111(d) of the Act. Given EPA’s status as the agency to whom Congress delegated the administration of the Clean Air Act, EPA’s interpretations of the Act’s provisions should be accorded deference.

_Comments related to Arizona’s Compliance with the proposed Clean Power Plan:_

_The Clean Power Plan’s flexibility will assist Arizona in achieving its proposed federally-mandated emissions reduction target through greater reliance upon renewable energy and energy efficiency measures than contemplated in EPA’s assumptions._

EPA is providing states with the flexibility to achieve the required reductions from their electricity sectors through whatever combination of approaches best matches the state’s goals and priorities. This is particularly important to Arizona, a state that has the capacity and indeed,
the legal obligation, to increase its reliance on renewable energy generation for at least two reasons.

First, EPA’s proposed emissions reduction target for Arizona underestimates the emissions reductions the State can and indeed, under state law, must achieve under Building Block 3 related to renewable energy.

Under Arizona’s Renewable Energy Standard and Tariff (REST), five percent of the electricity generated from the State’s regulated utilities must come from qualifying renewables in 2015, ten percent in 2020 and fifteen percent by 2025. This mandated increase in renewables generation will displace substantial amounts of fossil fuel generation. This State-mandated increase of renewable generation exceeds that assumed by EPA when EPA established the State’s target emissions reduction amount. Under EPA assumptions, by 2029, 4 percent of Arizona’s annual electricity generation should come from renewables, an increase of just 2 percent from 2012 amounts. Thus whereas, under EPA assumptions, increases in renewables generation accounts for just 10 percent of the emissions reductions needed for Arizona to meet its 2029 target, under Arizona’s mandatory REST renewables generation can in fact account for 19 percent of the emissions reductions that will be required. Furthermore, given the current relatively low cost of utility-scale solar photovoltaic (PV) capacity and continued likely PV cost reductions, the share of generation from renewables in Arizona by 2025 could well exceed the RPS target, with a correspondingly greater contribution to emissions reductions.

Similarly, EPA’s proposed emissions reduction target for Arizona underestimates the emissions the State can and indeed, under state law, must achieve through the State’s energy efficiency standard.

Under Arizona’s energy efficiency standard, the State’s investor-owned utilities, electric cooperatives and the Salt River Project, must ramp up the efficiency of their electricity production by percentages that exceed the assumptions underlying EPA’s target for the State. Specifically, under state law, Arizona utilities and cooperatives must conserve between 15.75 (Salt River Project) and 22 (investor-owned utilities) percent of electricity sales by 2020. Under EPA’s more lenient assumptions for demand-side energy efficiency (Block 4), the State’s utilities need only increase efficiency by 1.5 percent per year after 2017 and need only reach a maximum of 5.2 percent in 2020 and 11.4 percent in 2029. Thus there is an over 10 percent point difference between the State’s and EPA’s assumptions regarding energy efficiency in just 2020. Arizona’s ability and, indeed, obligation to “overcomply” with the proposed federal

4 The assumptions underlying this calculation are (1) hydroelectric generation remains at 5% of total generation and nuclear generation remains at 25% of total generation [see, U.S. Energy Information Administration, Arizona State Energy Profile, http://www.eia.gov/state/print.cfm?sid=AZ], (2) no growth in total consumption over time, and (3) the emissions rate for displaced fossil fuel generation is equal to the current average rate for fossil fuel generation in Arizona. If, for instance, there is growth in consumption over time, the mandated increase in renewables would contribute less than 19% of the emission reduction called for by EPA, but still much more than the 10% specified in Block 3.
targets for energy efficiency will ease the costs and feasibility of the State’s efforts to comply with its overall Clean Power Plan carbon emissions reduction target.

EPA’s flexibility in allowing states to achieve reductions through “beyond the fenceline” measures by utilizing policies that are currently in place such as renewable energy standards and energy efficiency standards is crucial to Arizona’s ability to comply with federal targets in a cost-effective manner.

Regional compliance will reduce state compliance costs in the aggregate and provide states with greater flexibility in how they structure their electricity markets going forward.

Compliance on a regional basis is a key aspect of the flexibility EPA is providing to states when developing their section 111(d) plans. Regional compliance will facilitate cheaper compliance across the country including the southwest.

The theory behind regional compliance is simple: by expanding the territory from which emissions reductions can be made from a single state to a group of states, a regional approach will generate a greater number and variety of emissions reduction options and hence enable policymakers to comply with applicable emissions targets in a more efficient manner. Regional compliance may be facilitated through a cap and trade mechanism whereby policymakers apply a cap upon aggregate emissions from an entire region, but permit the reductions needed to meet the cap to be distributed in an efficient and equitable manner across the region.

Regional compliance is especially appropriate with respect to efforts to reduce greenhouse gas emissions from the electricity sector. First and foremost, for purposes of mitigating the impacts of climate change, the location of the reductions is of limited relevance. Greenhouse gas emissions are of greatest concern because of their buildup in the upper atmosphere, a buildup that is causing average temperatures to increase worldwide through a global greenhouse effect. Greenhouse gases are not local pollutants like particulates or nitrogen oxides and do not cause adverse health effects aside from their impacts upon the climate. Due to the relatively complete mixing of such gases in the global atmosphere, the location of such reductions is of limited importance. Hence the fact that a regional approach may result in a correspondingly greater or lesser amount of emissions occurring in a given state than may occur under a state-by-state compliance approach is not a concern.5

Second, the regional compliance approach reflects the fact that electricity in the United States is generated and distributed on a regional basis. One need only examine a map of the various electricity grids of the United States, each of which serves a different geographic region. Asking for compliance on a state-by-state basis when there are opportunities to move energy across state boundaries may lead to artificial line-drawing and duplicative rules.

5 The location of greenhouse gas emissions reductions may be significant as a result of the conventional pollutants that are also emitted during the combustion of fossil fuels. However, these pollutants are best regulated through separately targeted regulatory efforts, not through greenhouse gas policies.
The regional nature of a grid supports the reliability of the system as well as the diversity of electricity generation sources that can be fed into the system. Thus, for example, expanding the geographic size of balancing areas will allow a greater percentage of intermittent power sources (e.g., wind, solar) due to increased flexibility to respond to renewable energy fluctuations.\(^6\)

Finally, the states have demonstrated the viability of a regional approach to greenhouse gas reductions from the electricity sector. As EPA well knows, the first greenhouse gas cap and trade program to be applicable to the electricity sector in the United States is the Regional Greenhouse Gas Initiative being implemented by a group of New England and northeastern states. At present, RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to cap and reduce CO\(_2\) emissions from the power sector.

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\text{Compliance with EPA's Clean Power Plan through a regional approach has many advantages for states in the western United States and perhaps for Arizona in particular.}
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Sustaining the reliability of the grid and, at the same time, adding more intermittent sources, such as wind, solar and other renewable sources, is an important challenge. However, this challenge can be met more easily through a regional approach to electricity dispatch decision making. There is evidence that electricity dispatch is moving in this direction in the western United States. In October, 2014, the California Independent System Operator (CAISO) and PacifiCorp will begin operating an energy imbalance market, and NV Energy is expected to join in 2015. An energy imbalance market aggregates the variability of electricity generation and load for multiple balancing authority areas and utility territories, and performs a dispatch in 5-minute increments. Regional discussions related to the development of a western-wide Energy Imbalance Market are ongoing. CalISO and PacificCorp already cover the six states of California, Oregon, Washington, Utah, Idaho, and Wyoming. When NV Energy joins, this Energy Imbalance Market will also include Nevada.\(^7\)

Although detailed analysis has not been done on the issue, it is logical that inclusion in a multistate group of states may be advantageous for the State of Arizona. Thus, for instance, some Arizona utilities may find it less costly to acquire emissions permits for some of their coal-fired generators during an adjustment period than to replace coal generation with natural gas generation. Cost-savings of this sort would be passed on to customers via the state public utility regulation process. As long as the aggregate target (i.e., emissions cap) is met, the distribution of emissions reductions within the group (here states) is irrelevant. This could be an important benefit to Arizona as well as other states for which compliance on a state-only basis may be difficult. Given that some states are above compliance with renewable portfolio standards and

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others may not find it economically or technically feasible to reach regional targets, the use of tradeable renewable energy certificates (RECs) within a multi-state regime can allow in-state and out-of-state generation to count toward a state’s compliance goal. This will encourage development of renewable energy assets near the points-of-use and in locations where resources are more abundant, further reducing emissions. A regional approach will require standardization of tracking systems and oversight but may reduce costs for states.

*In view of the numerous benefits of compliance through regional cooperation, we urge that EPA, in its final rule, clarify ambiguities regarding such a compliance path and considering enhancing the timeframe for regional compliance.*

To ensure states are able to take advantage of the benefits of a regional compliance strategy, we urge EPA to implement a series of measures that address the many uncertainties regarding multi-state compliance in the proposed rule and further strengthen the incentives for forming multi-state groups.

**EPA needs to define the multi-state goals and how they will be calculated and enforced.**

Currently the proposed rule is silent on how it will determine a multi-state goal, as opposed to the state goals. In contrast to the specificity with which the agency has addressed state goals, providing a rate-based measure of greenhouse gas emissions for each state on both an interim and a permanent basis, the rule is silent with respect to the manner in which the agency will calculate a multi-state goal. As a result, states do not know whether collaborating with other states will pose advantages and the scope of those advantages.

**EPA should provide a longer compliance deadline for states that will be complying through a regional grouping of states.**

Compliance on a regional basis is considerably more complex than complying on an individual state level. State officials will have to understand the emissions portfolio of the region, and may need to create new multi-governmental entities. This may require state regulations and possibly even legislative action. The additional year currently provided under EPA’s rule is not a sufficient amount of time for states to coordinate. We would suggest EPA provide states complying on a regional basis an additional two years to submit their proposed Section 111(d) plans.
EPA should impose mass-based limits upon greenhouse gas emissions from each state, rather than a rate-based measure.

In the current proposal, EPA establishes state-specific GHG targets for each state using a rate-based measure that assesses compliance in pounds of carbon dioxide per megawatt hour. The agency has also said states can convert their rate-based targets into mass-based limits. A rate-based program requires emission cuts based on generation, and emissions could theoretically rise if electricity demand grows. A mass-based program is a hard cap, usually expressed in tons of emissions.

Mass-based limits are preferable because they are a more effective response to the dangers posed by climate change. Mass-based limits better match the science of climate change, which is driven by the accumulation of greenhouse gases. By providing a hard cap upon state emissions, a mass-based cap will compel states to implement alternatives to fossil fuel electricity generation even in the face of rising population numbers. This is particularly critical to states such as Arizona, which have experienced steady population growth.

Furthermore, a mass-based cap will be easier for the states to use as part of a multi-state trading program. Translating the rate-based cap into emissions-based cap from the beginning will ensure that there are no delays when states begin the process of working together to develop their 111(d) plans.

Conclusion

The undersigned researchers at the University of Arizona commends EPA for employing Section 111(d) of the Clean Air Act to require reductions in greenhouse gases from the electricity sector. This sector is responsible for over one-third of the nation’s greenhouse gas emissions. Given the overwhelming need for action to reduce the environmental, human health, economic and social risks from global climate change, reductions from this sector are needed. EPA has crafted a feasible plan for reducing such emissions, liberally, but responsibly, construing the Clean Air Act to provide for off-site as well as on-site emissions reductions when calculating reductions gained from the electricity sector. The agency has furthermore provided states maximum flexibility when complying, allowing states to use a mix of methods to reach their targets and, importantly, authorizing compliance on a regional basis. We conclude that regional compliance
will enable states to comply in the most efficient manner and that a regional compliance strategy will be of benefit to the western states and to Arizona. We furthermore recommend that EPA adopt revisions to its Plan that we believe will strengthen the incentives for states to comply on a regional basis.

Sincerely,

Ardeth Barnhart
Director for Renewable Energy, Institute of the Environment, University of Arizona

Kirsten Engel
Charles E. Ares Professor of Law, University of Arizona College of Law

Derek Lemoine
Assistant Professor of Economics, Eller College of Management, University of Arizona

Jonathan Overpeck
Co-Director, Institute of the Environment
Regents Professor of Geosciences and Atmospheric Sciences, University of Arizona

Stanley Reynolds
Professor of Economics, Eller College of Management, University of Arizona

Cc:

Henry R. Darwin
Director
Arizona Department of Environmental Quality

Eric Massey
Director, Air Quality Program
Arizona Department of Environmental Quality