

Comment on Proposed EPA “Affordable Clean Energy” Rule
(In reference to Docket ID No. EPA-HQ-OAR-2017-0355)

We are writing on behalf of Concerned Scientists @ IU, a grass-roots, non-partisan community organization consisting of over 1100 members—scientists, students, and supporters of science—from the south-central Indiana region. While many of our members are faculty, students or staff at Indiana University, our organization does not officially represent the University. Concerned Scientists @ IU is dedicated to strengthening the essential role of science in public policy and evidence-based decision making. We have elected to respond to this particular rulemaking initiative because we feel that it fails to address in any substantive way the looming environmental crisis associated with human-induced global climate, as codified in the consensus scientific reviews by the Intergovernmental Panel on Climate Change (IPCC), the U.S. National Climate Assessment, and similar summary reports from the National Academy of Sciences, the U.N. Environment Programme, and virtually every major U.S. scientific organization.

We strongly oppose the proposal to replace the Clean Power Plan (CPP) with the Affordable Clean Energy (ACE) rule. By its needlessly narrow focus on a technological “best system of emission reduction” (BSER) applying only to a modest number of coal-fired electric generating units – a focus justified unconvincingly by unsupported legal interpretations of section 111(d) of the Clean Air Act (CAA), interpretations inconsistent with decades of earlier Congressional language, Court decisions and EPA practices – the ACE rule would fail to meet EPA’s statutory responsibility “to promote the public health and welfare” and to “accelerate...control of air pollution.” Ultimately, the proposed plan so deeply weakens EPA carbon emission targets that it virtually guarantees that the U.S. commitments to the UNFCCC climate agreements will be abrogated, that our leadership in global climate policy will be lost, and that the window of global opportunity to limit global average temperature increase to 1.5 degrees Celsius will be missed through U.S.-led inaction.

General comments:

As noted in the proposal, *“In 2009, and again in 2016, the EPA Administrator issued findings under sections 202(a) and 231(a)(2)(A) of the Clean Air Act, respectively, that the current, elevated concentrations of six well-mixed GHGs [greenhouse gases] in the atmosphere may reasonably be anticipated to endanger public health and welfare of current and future generations in the United States.”* The CPP addressed that danger by setting a standard for 32% reductions in GHG emissions from existing electric utility generating units (EGUs), relative to 2005 levels, to be achieved by 2030. It supported that goal with a BSER based on a mixture of three “building blocks,” including technical improvements at fossil fuel-fired plants and replacements of carbon-intensive electricity generation with lower-carbon or zero-carbon alternatives. The CPP allowed individual states wide flexibility in their own plans to meet that standard. The CPP standard represents a significant attempt to reduce GHG emissions and the attendant dangers to public health and welfare resulting from climate change. Furthermore, the suggested modifications in electricity production were projected in the Regulatory Impact Analysis (RIA) accompanying the CPP proposal to create the auxiliary benefit of substantial reductions in emissions of fine particulate matter and ground-level ozone, avoiding between 1500 and 3600 premature deaths annually by 2030.

In contrast, the ACE proposal sets no federal standard for GHG emission reductions, but rather leaves the setting of such standards to individual states. The RIA carried out by EPA to support the ACE rule projects that replacement of the CPP by the ACE will *“result in a decrease of annual CO₂ emissions of*

about 7 million to 30 million short tons relative to a future without a CAA Section 111(d) regulation affecting the power sector.” That reduction is to be compared with current U.S. electric power sector CO₂ emissions of nearly 2 billion short tons per year, so that the projected ACE impact would be about a 1% reduction in GHG emissions from the existing electric power sector. At a time when the newest (2018) report from the IPCC calls for a 45% reduction in global GHG emissions from 2010 to 2030, in order to avoid very damaging worldwide consequences of climate change, the ACE goal can only be judged as a disgracefully inadequate attempt to produce real impact on protecting public health and welfare. The concomitant climate change impacts are likely to result in increased hazards associated with high temperatures to America’s urban population; hazards associated with sea-level rise to tens of millions of Americans living in coastal communities; changes in precipitation and extreme weather events, exacerbating flooding, drought and fire hazards; and negative impacts on agriculture, fisheries, and water resources across the U.S.

Furthermore, EPA acknowledges in accompanying documentation that replacement of the CPP with the ACE is likely to result in up to 1400 **more** premature deaths annually from pollution-related ailments associated with other emissions from coal-fired units. In the language of the proposed rule such human tragedies are drily monetized under the rubric of “foregone benefits.” It is not obvious that those foregone benefits include any estimated allowance for climate change impacts associated with inadequately limited GHG emissions: premature heat-related deaths and steadily increasing costs arising from climate emergency management, crop failures or mass migrations from flooded coastal regions.

The language of the CAA section 101 clarifies that the Act’s primary purpose is “(1) *to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population; [and] (2) to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution.*” The EPA’s 2009 and 2016 “endangerment” findings clearly identify, according to the language of CAA section 108, the six greenhouse gases as air pollutants “(A) *emissions of which...cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare*” and “(B) *the presence of which in the ambient air results from numerous or diverse mobile or stationary sources.*” How can the EPA now justify that its minimalist approach to GHG emissions standards in the current proposal will “promote the public health and welfare” and “accelerate...control of air pollution”? Nowhere in the proposal does it even address this central goal of EPA regulatory standards. Rather, the EPA presents its proposal as part of the Agency response to President Trump’s Executive Order 13783, which seeks to “*suspend, revise or rescind those [regulations] that unduly burden the development of domestic energy resources beyond the degree necessary to protect the public interest or otherwise comply with the law.*” (We have added the boldface for emphasis.) Claims included in the proposal itself (described further below) make it clear that the CPP does not “unduly burden the development of domestic energy resources,” and does serve the public interest. In contrast, we argue here that the ACE falls far short of protecting the public interest.

In response to solicitation of comment C-1:

The first argument that the ACE proposal invokes to justify replacing the CPP is that more aggressive EPA regulatory action might “interfere” with rapid CO₂ emission reductions that are already occurring as a result of market trends: “*work put in by federal or state regulatory agencies – as well as by the affected sources themselves – to address section 111(d) requirements could quickly be overtaken by external market forces which could make those efforts redundant or, even worse, put them in conflict with industry trends that are already reducing CO₂ emissions.*” The proposal offers no evidence for how

reasonable EPA guidelines, as proposed in the CPP, leaving individual states significant flexibility in how they may meet a proposed emission standard, might conflict with market forces that may lead to performance even better than that standard.

At the moment many, but not all, states are on a trajectory to meet or exceed the CPP proposed standard by 2030. As of 2017, only 12 states were falling far short of the required trajectory.¹ Those 12 states contributed 40% of the national CO₂ emissions from EGUs in 2014. The point of a federal emission standard is precisely to regulate the minimal performance each state must meet to “promote the public health and welfare.” There is obviously no penalty for states that do even better. However, such states will suffer an effective penalty if, despite their efforts, atmospheric CO₂ concentrations continue to rise rapidly due to emissions from states that fail to meet a federal standard. The ACE proposal argues that EPA should not impose such a federal standard, but we refute that argument later in this comment.

Furthermore, the ACE proposal ignores the possibility that recent market trends may have been driven, in part, by the perceived need to address CPP standards, even before official implementation of the CPP. While the CPP was certainly not responsible for natural gas price reductions, it has had some effect on CO₂ emission reductions. For example, the neighboring Logansport, Indiana coal-fired power plant closed in January 2016, when city officials determined that it would be too expensive to retrofit the plant to help the state meet CPP goals. Logansport has already found other sources of electricity to make up for the lost power plant, and there are no plans to reopen the facility if the ACE were to go into effect.² The promise of the CPP may have helped to stimulate the considerable national job growth in the renewable energy sector. More generally, as noted in the 2017 OMB Report to Congress on the Benefits and Costs of Federal Regulations³: *“Jaffe and Palmer⁴ find that increases in compliance costs generated by environmental regulations lead to a lagged effect of increases in research and development expenditures, as measured by patents of new environmental technologies. Other studies provide similar findings. These studies suggest that there may be positive economic effects related to technological innovation in the years following increased environmental regulatory compliance costs.”*

In response to solicitation of comment C-2:

The primary justification EPA offers for its inadequate ACE approach remains the narrow, technical misreading of the CAA that was already invoked in the separate proposal to repeal the CPP. Our Concerned Scientists @ IU group has already opposed that justification in a comment⁵ submitted in response to the CPP repeal proposal, but we will reiterate some of our points here.

The EPA argues that the BSER must be executable *at a single source*, so that the rebalancing of electric production among the three building blocks of the CPP is disallowed by both statute and previous EPA practice. Both claims are erroneous. First, the ACE proposal states: *“EPA has generally taken the approach of basing regulatory requirements on controls and measures designed to reduce air pollutants from the production process without limiting the aggregate amount of production.”* The CPP is fully consistent with this approach. It does not call for limiting the aggregate amount of electric energy produced, but merely allows for “substituting increased generation from lower-emitting” or zero-emitting alternative sources. So the issue comes back to the question of whether allowing states to consider a broad range of sources is within the section 111(d) guidelines.

The ACE proposal furthermore claims: *“The BSER should be interpreted as a source-specific measure, in light of the fact that [Best Available Control Technology, or BACT] standards, for which the BSER is*

expressly linked by statutory text, are unambiguously intended to be source-specific.” This linkage is expressly overridden for existing sources by language of the Congressional Conference Committee that agreed on 1977 amendments to the Clean Air Act. The Committee explicitly clarified *“that standards adopted for existing sources under section 111(d) of the act are to be based on available means of emission control (not necessarily technological).”* Furthermore, in 1990 amendments to the Clean Air Act, Congress removed the “technological” restriction even from consideration for *new* sources. All three building blocks allowed for by the CPP represent available means of emission control, even though blocks 2 and 3 are not explicitly technological.

The D.C. Circuit Court, in its 1981 decision in *Sierra Club v. Costle*, explicitly endorsed the more flexible averaging approach promoted by CPP, by finding that, in the service of securing maximum emission reductions, EPA may weigh *“cost, energy and environmental impacts in the broadest sense at the national and regional levels and over time, as opposed to simply at the plant level in the immediate present.”* Furthermore, the CAA indicates that establishing standards of performance under section 111(d) is to be similar to that under section 110 of the Act, and that latter section states that emission limitations and control measures can include *“fees, marketable permits, and auctions of emissions rights,”* reinforcing an approved role for averaging systems.

Comparable flexible averaging programs implemented under the CAA and by states and companies have demonstrated that they can significantly lower the cost of cutting pollution because they facilitate capture of the lowest-cost emission reduction opportunities. EPA has long interpreted the statute to authorize the Agency to determine when an averaging framework is an appropriate emission reduction system for a section 111(d) standard. In one of its first 111(d) rulemakings after the Clean Air Act Amendments of 1990, EPA’s 1995 emission guidelines for existing municipal waste combustors allowed states to establish averaging and trading programs through which these sources could meet standards for nitrogen oxides (“NO_x”) emissions. The following statement in the 2017 OMB Annual Report to Congress on the Benefits and Costs of Federal Regulations³ explicitly acknowledges EPA’s authority to regulate emissions under CAA across “a broad range of sources.” In discussing EPA regulations limiting fine particulate matter concentrations in the atmosphere, the OMB report claims there is significant uncertainty in estimating health benefits *“because fine particles vary considerably in composition across sources...when a given rule controls a broad range of sources, there is likely less uncertainty in the benefits estimate than if the rule controls a single type of source.”*

The ACE proposal goes on to claim that the CAA does not delegate discretion to the EPA Administrator to *“establish...for an entire category of existing sources”* standards that can only be accomplished by a *“fundamental redesign of that category.”* It is quite a stretch to refer to the rebalancing allowed by CPP’s three building blocks as a “fundamental redesign” of electric power generation. Indeed, such a claim is in explicit contradiction to the language of the 2015 CPP proposal, which stated that *“the BSER, which incorporates building blocks 2 and 3, cannot be said to force a fundamental redefinition of the business of generating electric power.”*

The ACE proposal attempts a few further arguments to evade EPA’s authority to regulate broad ranges of sources. For example: *“EPA’s area of expertise is control of emissions at the source. EPA is not the expert agency with regard to electricity management. FERC is the expert at the federal level and public utility commissions are the experts at the state and local level.”* But the CPP does not make a recommendation with regard to “electricity management,” it simply offers such approaches for possible individual state consideration in their plans to meet CPP emissions guidelines.

Another attempt is made in the following statement: *“There are already significant changes taking place within the power sector that are resulting in shifts away from coal-fired generation to new technologies such as renewables. This shift is creating tremendous strain on the power infrastructure even without the added pressures of an EPA mandate to further shift away from additional coal-fired generation.”*

The strain on electric grid infrastructure is an issue, but one that is being successfully addressed by many states that are on track to meet the CPP emission standard. The issue the EPA should be addressing concerns those remaining states that are not on track to meet the CPP guidelines. Since they are not on track currently, presumably their power infrastructure is not yet under the same degree of “tremendous strain” as in states that are on the CPP track. Furthermore, as described in the EPA statement quoted in the preceding paragraph, it is not the responsibility of EPA to assess the condition of the power infrastructure; rather, its responsibility lies in the realm of protecting public health and safety from air pollutants and their direct and indirect impacts on U.S. citizens.

And yet another attempt: *“Establishing a BSER on assumptions of generation by various sources that accounts for the continuation of these [market] trends into the future would create significant work for both states and sources that may or may not result in emission reductions from ACE if the actual trends once again prove to be stronger than projected.”* This comment makes no sense. If the actual trends are stronger than projected, why has EPA gone to so much work already to replace the CPP with a much less stringent set of guidelines? Again, the impact of CPP will be on so far recalcitrant states.

And finally: *“EPA believes that a BSER focused on making these [coal-fired] plants as efficient as possible is the best way to ensure GHG emission reductions regardless of other factors such as technology changes for other types of generation, changes in fuel price, changes in electricity demand or changes in energy policy that neither environmental regulators nor power companies have the power to control.”* It is precisely such factors beyond power company control that makes the building block approach of the CPP sensible. It gives the states flexibility to adapt plans to changing market and technology conditions, while implementing an overall goal that will lead to a meaningful, as opposed to ineffective, reduction in GHG emissions.

In response to solicitation of comment C-4:

The ACE proposal defines the covered EGUs very narrowly to include a subset of *“fossil fuel-fired electric utility steam generating units”* that satisfy several other criteria. By this narrow focus, the proposal severely limits the GHG emission reductions that can be affected. EPA estimates that the rule would apply to about 600 coal-fired EGUs at 300 facilities nationwide. For this narrow class of affected EGUs, it defines the BSER as single-source heat rate improvements (HRI), *i.e.*, technological changes that will reduce the BTU input required per kilowatt-hour of electric output. The proposal does not apply to natural gas-fired stationary combustion turbines, because *“EPA does not currently have sufficient information on adequately demonstrated systems of emission reduction – including HRI opportunities”* for these. Since the potential for HRI varies considerably from one coal-fired plant to another, EPA claims it cannot mandate a given level of improvement in CO₂ emissions, but leaves that up to the individual states.

The ACE proposal notes the difference from the CPP in addressing these heat rate improvements: *“In the CPP, EPA quantified emission reductions achievable through HRIs on a regional basis (i.e., building block 1). The Agency concluded that EGUs can achieve on average a 4.3% improvement in the Eastern Interconnection, a 2.1% improvement in the Western Interconnection and a 2.3% improvement in the Texas Interconnection. The Agency then applied all three of the building blocks to 2012 baseline data*

and quantified, in the form of CO₂ emission rates, the reductions achievable in each Interconnection in 2030 and selected the least stringent as a national performance rate.” This is a reasonable approach that identifies a “minimal” federal standard to achieve the goal of *significant* GHG reductions nationwide.

The EPA attempts to bolster its delegation of standard-setting authority to the states by noting that section 111(d)(1) of the CAA authorizes EPA to promulgate regulations that establish procedures for states to submit plans establishing “standards of performance.” The ACE proposal contrasts this authority with section 111(b), “*which directs EPA to set standards of performance for affected new sources.*” However, the definition of “standard of performance” in section 111(a), intended to apply to the entirety of section 111, in combination with section 111(d)(2) of the CAA, make it clear that the EPA Administrator has an essential role to play in setting federal standards. The definition in section 111(a) is (with our emphasis indicated in boldface): “*a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction [BSER] which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) **the Administrator determines** has been adequately demonstrated.*” In fact, the ACE proposal acknowledges that the standards of performance that would be established under the CPP have been adequately demonstrated, because the new proposal keeps pointing out that market trends have led to reductions exceeding those standards.

Section 111(d)(2) of the CAA states that “*The Administrator shall have the same authority (A) to prescribe a plan for a State in cases where a State fails to submit a satisfactory plan...*” How is the Administrator to judge, without an EPA numerical emission guideline, which state plans are satisfactory and which are not, given that the primary information EPA is requesting from the states in the ACE proposal is a goal emission rate of CO₂ from affected plants? The EPA already explicitly anticipated this argument in its 1975 implementing rulemaking, where it states: “*It would make no sense to interpret section 111(d) as requiring the Administrator to base approval or disapproval of State plans solely on procedural criteria. Under that interpretation, States could set extremely lenient standards – even standards permitting greatly increased emissions – so long as EPA’s procedural requirements were met. Given that the pollutants in question are (or may be) harmful to public health and welfare, and that section 111(d) is the only provision of the Act requiring their [existing EGU’s] control, it is difficult to believe that Congress meant to leave such a gaping loophole in a statutory scheme otherwise designed to force meaningful action.*” The Supreme Court has affirmed EPA’s role in issuing emission guidelines under section 111(d) in *American Electric Power Company v. Connecticut* (2011), by noting that states issue section 111(d) standards “*in compliance with [EPA] guidelines and subject to federal oversight.*”

In recognition of the fact that its proposed delegation of standard-setting authority to the states is in direct contradiction to the 1975 implementing regulations, the EPA also includes in the ACE proposal a recommended, substantial change to those implementing regulations. We comment on that part of the proposal in the next section.

In response to solicitation of comment C-50:

Included within the ACE proposal is this: “*EPA is proposing to promulgate new implementing regulations [for section 111(d)] that are in accordance with the statute in its current form.*” The proposal claims that the original 1975 implementing regulations are out of alignment with CAA amendments passed in 1977 and 1990, despite the fact that the original implementing regulations have gone unchallenged up until now. Those original regulations called for the EPA Administrator to identify “emission guidelines,” specifying the degree of emission reduction achievable with the BSER, but to allow states the flexibility

to deploy different systems than the BSER, so long as the state plans achieved equivalent or better emission reductions.

The ACE proposal basically substitutes “information” for those traditional “emission guidelines,” leaving the states extreme leeway in defining their own standards of performance: *“The states will use information provided by EPA as guidance, but will be expected to conduct unit-specific evaluations of HRI potential, technical feasibility, and applicability for each of the BSER candidate technologies...it is within the state’s discretion to take certain factors concerning that source, such as remaining useful life, into consideration when determining how the standard of performance should be applied.”*

The new proposal thus replaces “emission guidelines” in the implementing regulations with “guideline document,” without any indication of how this change is necessitated by the 1977 or 1990 CAA amendments. The 1977 amendments did replace the term “emission standard” in section 111(d) with “standard of performance,” presumably with the intention of clarifying that it is not up to the states, but only to the EPA Administrator, to set emission standards. But that change appears to be mostly semantic, as section 111(a) defines “standard of performance” as *“a standard for emissions of air pollutants which reflects the degree of emission limitation achievable...”* So the 1977 amendment basically replaced “emission standard” with “standard for emissions.” Nonetheless, the ACE proposal simply states: *“However, EPA does not believe anything in CAA section 111(a)(1) or section 111(d) compels EPA to provide a presumptive emission standard that reflects the degree of emission limitation achievable by application of the BSER.”* Without such a standard, however, it would be left ambiguous what criteria an EPA Administrator will use in deciding whether a given state’s submitted plan is, or is not, “satisfactory”, as required by the explicit language in section 111(d)(2). This proposed change ultimately would nullify the power of the EPA to effect substantive national greenhouse gas emission reductions.

In response to solicitation of comment C-48:

The timeline for establishing standards of performance under section 111(d) would be very significantly stretched out by other proposed changes to the implementing regulations. The EPA now proposes to extend the timeline for state plan submissions from 9 months to 3 years, the timeline for EPA review of state plans from 4 to 12 months, and the timeline for EPA to promulgate a federal plan to replace unsatisfactory or incomplete state plans from 6 months to 2 years. The cumulative effect of the proposed timing changes is to stretch out a process that could take up to 1.5 years under existing implementing regulations to 6.5 years under the proposed changes. The delays thus built into the regulatory process are unacceptably long when dealing with the rapid rate of current buildup of greenhouse gas concentrations in the atmosphere. The effect of those delays will be to greatly increase the eventual cost to the Nation of dealing with the effects of climate change. Given the clear and strongly-worded conclusions of the recent IPCC Special Report on the Impacts of Climate Change above 1.5°C⁶, we can ill afford to wait more than half a decade to initiate substantive GHG emissions.

Comments on Impacts:

Tables 6-14 in the proposal specify projected impacts of the ACE rule. The most striking numbers in Table 8 project an *increase* in coal production for power sector use by 8-10% by 2035, in comparison to the CPP, despite market trends that currently disfavor coal production. Even with the heat rate improvements projected for the BSER, coal-fired production will remain far more carbon-intensive than alternative energy sources. This ACE projection appears in parallel with the latest IPCC report⁶, which

recommends that avoidance of dire climate consequences requires that coal production would have to drop from its present share of nearly 40% of worldwide electricity production to between 1% and 7% by 2050. This projected result makes it clear that the current EPA management does not view climate change as a serious threat, despite the overwhelming scientific consensus regarding both the reality and the imminence of this threat.

Table 10 makes it clear that there are not extensive savings in compliance costs for the new proposed rule, relative to the CPP. Indeed, the ACE proposal admits that *“achieving the emissions levels required under CPP requires less effort and expense, relative to a scenario without the CPP, and the estimated compliance costs are significantly lower than what was estimated in the final CPP RIA [Regulatory Impact Analysis].”* Furthermore, Table 14 makes it clear that the reductions in health and environmental benefits of the proposed plan, relative to the CPP, far outweigh any compliance cost savings associated with the proposed rule.

It is true that the benefits foregone far outweigh the compliance cost gains even though the “domestic climate benefits” foregone in Table 14 appear to us to be considerably underestimated. With regard to the method of estimation of climate benefits, the proposal offers only the following statement: *“To estimate the climate benefits associated with changes in CO₂ emissions, EPA applies a measure of the domestic social cost of carbon (SC-CO₂). The SC-CO₂ is a metric that estimates the monetary value of impacts associated with marginal changes in CO₂ emissions in a given year. The SC-CO₂ estimates used in the RIA for this proposed rulemaking focus on the direct impacts of climate change that are anticipated to occur within U.S. borders.”* Do those “direct impacts” include allowance for heat-related diseases and premature deaths, for increased costs of emergency management to handle effects of more frequent severe storms, floods and droughts, for reduced crop yields, for massive migration from flooded coastal regions, and for other predicted consequences of climate change? And what is the justification for including only impacts “within U.S. borders”? Certainly, unacceptably high GHG emissions from U.S. EGUs will also contribute to harmful impacts outside U.S. borders, for which the U.S. might well be liable. In particular, the U.S. is likely to incur significant costs associated with resettling foreign migrants from flooded coastal regions and with global security challenges associated with climate-related disruption.

Summary:

In conclusion, on behalf of our 1100+ members, we strongly oppose adoption of the Affordable Clean Energy rule. Its impact, in the long run, would be to make electricity production in the U.S. *less affordable and dirtier* than the Clean Power Plan it is proposed to replace. It would abdicate EPA’s statutory responsibility *“to promote the public health and welfare”* and to *“accelerate...control of air pollution.”* It would delegate to individual states the authority to devise their own emission standards, with federal guideline information that is woefully inadequate to address the impacts of ongoing human-induced climate change. The arguments EPA invokes to justify the excessively narrow focus of its proposed BSER are based on legal arguments that are refuted by decades’ worth of Congressional language, court decisions and EPA’s own past practices. The RIA results for the ACE appear to suggest that the main intended beneficiary of the proposed rulemaking is the domestic coal industry, rather than the health and welfare of American citizens.

References:

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2. Tina Casey, *New "Affordable Clean Energy" Plan Lands with a Thud*, (CleanTechnica, Aug. 29, 2018), <https://cleantechnica.com/2018/08/29/new-affordable-clean-energy-plan-lands-with-a-thud/>
3. Office of Management and Budget, *2017 Draft Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act*
4. Adam Jaffe and Karen Palmer, *Environmental Regulation and Innovation: A Panel Data Study*, Review of Economics and Statistics 1997, 610-19.
5. Comment submitted by Concerned Scientists @ IU to proposed repeal of Clean Power Plan (Apr. 26, 2018), <https://www.regulations.gov/document?D=EPA-HQ-OAR-2017-0355-19786>
6. Intergovernmental Panel on Climate Change, 2018, *Global Warming of 1.5 °C, an IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*