

**United States of America
Before the
ENVIRONMENTAL PROTECTION AGENCY**

In the Matter of)	
)	Docket EPA-HQ-OAR-2013-0602
Carbon Pollution Emission Guidelines)	RIN 2060-AR33
for Existing Stationary Sources:)	
Electric Utility Generating Units)	

**COMMENTS BY 32 NATIONAL AND REGIONAL ENVIRONMENTAL ORGANIZATIONS
AND TEXAS REP. LON BURNAM ON
U.S. ENVIRONMENTAL PROTECTION AGENCY'S PROPOSED CLEAN POWER PLAN**

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I. INTRODUCTION

On June 18, 2014, the U.S. Environmental Protection Agency (“EPA”) published a proposed “Clean Power Plan” to reduce greenhouse gas emissions from existing stationary Electric Generating Units (“EGUs”).¹ Thirty-two national and regional environmental organizations and Texas State Representative Lon Burnam (hereinafter “Commenters”) hereby submit comments on the proposed CPP. The Commenter organizations are: Alliance to Halt Fermi 3, Beyond Nuclear, Blue Ridge Environmental Defense League, Cape Downwinders, Center for a Sustainable Coast, Citizens Allied for Safe Energy, Citizens Awareness Network, Citizens Environmental Coalition, the Dallas Peace Center, Ecology Party of Florida, Friends of the Coast, Georgia Women’s Action for New Directions, Hudson River Sloop Clearwater, Indian Point Safe Energy Coalition, NC WARN, Nevada Nuclear Waste Task Force, New England Coalition, North American Water Office, Northwest Environmental Advocates, Nuclear Energy Information Service, Nuclear Information and Resource Service, Nuclear Watch South, Residents Organized for a Safe Environment, Riverkeeper, Safe and Green Campaign, San Clemente Green, San Luis Obispo Mothers for Peace, San Onofre Safety, SEED Coalition, Sierra Club Nuclear Free Campaign, South Texas Coalition for Responsible Energy, and Three Mile Island Alert.²

Commenters – organizations and individuals working for protection of the environment through use of clean and low-carbon renewable energy and efficiency -- applaud the proposed CPP. Given that the electricity sector is the single largest source of greenhouse gas (GHG) emissions in the U.S., the CPP is a vital federal initiative for reducing carbon emissions in the United States. The EPA’s approach of setting carbon emission targets for individual states that are based on Best System of Emission Reduction (“BSER”) provides the dual benefit of (a) setting enforceable carbon emission reduction targets for each state and (b) providing states

¹ Proposed Rule, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (June 18, 2014) (hereinafter “CPP” or “Proposed Rule.”)

² A description of each Commenter is provided in Section II below.

with guidance for developing the most useful, cost-effective, and forward-looking plans for compliance with the targets.

Nevertheless, Commenters respectfully submit that the proposed CPP falls short of establishing a standard that is rigorous or well-informed enough to yield meaningful atmospheric carbon reductions in the coming decades. To summarize our criticisms:

- Identifying the "best" system of emission "reduction" must entail a thorough effort to capture feasible and cost-effective reductions, taking into consideration the goals and standards set by other countries. The attached comments by the Institute for Energy and Environmental Research (IEER) demonstrate, however, that a carbon emissions target far greater than the target set by EPA is necessary to protect the climate and is also feasible and cost-effective.³ EPA proposes a target of 30% reduction below 2005 carbon emission levels by 2030. 79 Fed. Reg. at 34,832. But it is feasible and cost-effective to reduce carbon emissions from EGUs by 55% below 2005 levels by 2030. It is also necessary for achieving climate-related goals. This degree of carbon reduction would be consistent with the European Union's target for GHG reductions of 40% below 1990 levels by 2030, putting the United States in a stronger position in the climate negotiations scheduled to take place in Paris in December 2015.
- The CPP's designation of natural gas and nuclear power as BSER electricity sources is not based on a documented, internally consistent, or fair analysis in the following respects:
 - The CPP relies heavily on natural gas for carbon emission reductions, based only on industry data on natural gas venting levels. EPA also ignores peer-reviewed literature that indicates much greater venting. Finally, EPA fails to take into account the much greater impact of methane on a ten- to thirty-year time frame. A full review of the data indicates that much, most, or almost all of the CPP's estimate of carbon emissions reduction may be negated by the greenhouse gas impacts of natural gas venting. The rising cost of natural gas consequent upon increased use for electricity generation would also impose disproportionate

³ Comments by the Institute for Energy and Environmental Research on the Proposed Clean Power Plan of the U.S. Environmental Protection Agency (Dec. 1, 2014) ("IEER Comments"). Commenters hereby adopt and incorporate the IEER Comments by reference. In addition, Commenters adopt and incorporate by reference the Comments of Dr. Mark Cooper, Senior Fellow for Economic Analysis, Institute for Energy and the Environment, Vermont Law School (Nov. 24, 2014) ("Cooper Comments"). Dr. Cooper's economic analysis of the proposed CPP demonstrates that the EPA's endorsement of nuclear energy development is not economically justified and that the most cost-effective energy sources for state governments to develop are renewables.

IEER and Dr. Cooper submitted their comments to EPA independently. For the EPA's convenience, Commenters have also attached them here as Exhibit A (IEER Comments) and Exhibit B (Cooper Comments).

economic impacts on low-income and minority populations that the EPA has ignored. EPA needs to re-evaluate its characterization of natural gas as BSER, using complete, current and reliable data and taking into account environmental justice considerations, before it may characterize natural gas as BSER or allow states to credit increased use of natural gas as an effective means for reducing carbon emissions.

- The EPA's proposed inclusion of existing or under-construction nuclear reactors as part of BSER is inconsistent with EPA's criteria for identification of BSER technology. Nuclear energy is not the "best" energy system from any standpoint, including costs, reliability, non-air-related impacts, or compatibility with other low-carbon energy sources.
- Equally importantly, by proposing to encourage state governments to include nuclear power plants in their compliance plans, the EPA sets a policy that undermines the agency's own goal of achieving substantial carbon reductions in the energy sector. The EPA undermines the states in two ways:
 - The greatest promise for long-term carbon emission reductions in the U.S. lies in the transition, now underway, from the 20th Century system of large, centralized baseload power plants to a 21st Century system of distributed resources with actively managed demand in which low-carbon renewable energy and efficiency play a crucial role. By encouraging states to devote their scarce resources to support of outdated and extremely expensive centralized nuclear power plants, the EPA would undermine the states' agility and resourcefulness in modernizing their electricity sectors and thereby maximizing carbon emission reductions and enabling grid resilience.
 - By endorsing nuclear power as a BSER technology, the EPA would provide implicit support to efforts by the nuclear industry to persuade states to include nuclear energy in their renewable energy portfolios. Not only is nuclear energy not renewable, but its use undermines the growth of the renewable energy sector.

The good news is that it is both feasible and cost-effective to reduce carbon emission to much lower levels without relying on new natural gas or nuclear energy. Commenters urge both the EPA and state governments to consult IEER's "Climate Protection Scenario" in Section V.C of the IEER Comments. In this Scenario, IEER presents individual models for carbon reductions for every state except Vermont, the District of Columbia, Alaska and Hawaii.⁴ These models

⁴ Vermont and the District of Columbia were excluded by the EPA (and hence also by IEER) because of a lack of affected sources. Alaska and Hawaii were not modeled, due to the complexities introduced by

demonstrate that states can achieve greater carbon reductions than the targets proposed by EPA, relying primarily on efficiency and renewable energy. This can be done at costs of carbon reduction per metric ton of CO₂ equivalent that are generally lower than those in the Clean Power Plan. Despite 2030 emission reductions being over two-and-a-half times greater (relative to 2012), IEER estimates that the IEER Climate Protection Plan would cost only about \$3.3 billion more in 2030, or about \$9 per person. Benefits, in terms of reduced health costs and lower damages in other areas would increase by tens of billions of dollars. IEER Comments, Section V.C.3.

II. DESCRIPTION OF COMMENTERS

The following is a description of the Commenter organizations and individuals. All of the Commenters are dedicated to the promotion of clean and renewable energy in the U.S. Many are neighbors of existing or proposed nuclear power plants, nuclear waste storage and disposal facilities, and uranium mines.

The Alliance to Halt Fermi 3 (ATHF3) is a non-profit organization based in Southeast Michigan whose mission is to stop DTE/Detroit Edison from building the proposed Fermi 3, a new nuclear reactor near Monroe, MI. ATHF3 is equally dedicated to the closure of the existing Fermi 2 nuclear reactor as soon as possible. ATHF3 advocates for a safe, sustainable, carbon-free, nuclear-free energy future based on conservation, energy efficiency and renewable forms of energy such as wind, solar, geothermal and hydropower.

Beyond Nuclear is a national watchdog organization on the nuclear power and radioactive waste industries, as well as on the federal government agencies that are supposed to protect the public and the environment from the risks of radiation and radioactive waste to human health and ecosystems. Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future, including on the risks associated with the inevitable generation of radioactive waste by the nuclear industry. Beyond Nuclear advocates for an energy future that is sustainable, benign, and democratic. It is headquartered in Takoma Park, Maryland, a Nuclear-Free Zone.

The Blue Ridge Environmental Defense League (“BREDL”) is a 30-year-old regional, community-based non-profit environmental organization with projects and chapters in seven southeastern states. Its founding principles are earth stewardship, environmental democracy, social justice, and community empowerment. BREDL encourages government agencies and citizens to take responsibility for conserving and protecting our natural resources. BREDL advocates grassroots involvement to empower whole communities in environmental issues. BREDL also functions as

the large numbers of non-affected sources of CO₂ emissions in these states. See IEER Comments, Section V.C.

a “watchdog” of the environment, monitoring issues and holding government officials accountable for their actions.

Hon. Lon Burnam is a representative to the Texas State Legislature. He lives in Fort Worth near the Comanche Peak nuclear power plant. Rep. Burnam formerly directed the organization Citizens for Fair Utility Regulation, which opposed the licensing of Comanche Peak on safety and economic grounds.

The mission of Cape Downwinders is to take action to protect the lives and welfare of the residents of Cape Cod, Martha’s Vineyard, and Nantucket against the threat of death or injury resulting from the use of nuclear energy at Pilgrim and other nuclear power plants.

The Center for a Sustainable Coast was formed in 1997 by a collaborative group of environmental professionals and active citizens concerned about protecting and restoring coastal Georgia’s natural resources. From its inception, the Center has focused on the disciplined use of science and rigorous analysis of issues to propose and advocate positions that advance the public interests of Georgia’s coast. In the course of this work, the Center seeks to raise awareness about critical development and natural resource issues and their inter-relationships – including energy, land-use, and business activities.

Citizens Allied for Safe Energy (“CASE”) promotes safe and sustainable distributed energy production on Florida’s homes, businesses and institutions, energy conservation and efficiency, and opposes energy production at Turkey Point which is harmful to the wetlands and aquifer on which it sits, and to the environment. CASE carries out this mission by educating and mobilizing the public and by civic action and presence. CASE has filed several petitions before the U.S. Nuclear Regulatory Commission (“NRC”) challenging the licensure and operation of Turkey Point on climatic and ecological grounds.

Citizens Awareness Network (“CAN”) is a volunteer, grassroots organization, committed to the creation of vibrant communities with the replacement of nuclear reactors and fossil fuels in New England with sustainable solutions. CAN is committed to empowering people to participate in the democratic process to ensure a sustainable, equitable and energy independent future, and the closure and safe decommissioning of New England’s aging fleet of nuclear reactors.

Citizens’ Environmental Coalition (“CEC”) is a 35-year-old grassroots organization dedicated to eliminating toxic pollution and cleaning up hazardous sites. CEC advocates closure of New York State’s nuclear reactors and cleanup of the West Valley radioactive waste site. CEC also promotes clean sustainable energy and efforts to deal with climate change.

The Dallas Peace Center is a 35 year old Peace and Justice nonprofit organization that exists to promote peace and justice concerns locally and globally.

Ecology Party of Florida is a political party whose goal is to bring environmental problems to the forefront of politics in the State of Florida, partly through environmental advocacy focused on select issues.

Friends of the Coast is a Maine-based organization advocating for nuclear safety, safe storage of nuclear waste, and protection of the human environment from nuclear pollution. Friends of the Coast was the only environmental advocacy organization actively engaged in the decommissioning of Maine Yankee Atomic Power Station (1997-2005) and the only non-governmental organization involved in oversight of the Maine Yankee Independent Spent Fuel Storage Installation.

Georgia Women's Action for New Directions ("Georgia WAND") is an independent grassroots, woman-led organization that seeks to direct women's voices into a powerful movement for social change. Georgia WAND promotes clean air, clean water, and a carbon-free, nuclear-free future through its environmental justice work. Georgia WAND monitors activities and policy decisions that affect the Savannah River Site and nuclear power plants.

Hudson River Sloop Clearwater is a member-supported non-profit corporation whose mission is to preserve and protect the Hudson River, its tributaries, and related bodies of water. To achieve this, Clearwater works to provide innovative environmental programs, advocacy, and celebrations to inspire, educate, and activate the next generation of environmental leaders. Clearwater advocates for the closing of the Indian Point nuclear reactors in New York.

The Indian Point Safe Energy Coalition ("IPSEC") is broad coalition of public policy, public health, civic and environmental groups that formed following Sep 11 in response to a flood of official and citizen concerns about the safety and security of the Indian Point nuclear plant, which is sited in the highly populated and demographically dense New York Metropolitan region. IPSEC advocates the closure of Indian Point and strongly supports the creation of clean energy jobs and the modernization of the transmission and energy infrastructure.

NC WARN is a member-based non-profit organization tackling the accelerating crisis posed by climate change – along with the various risks of nuclear power – by watch-dogging Duke Energy practices and working for a swift North Carolina transition to energy efficiency and clean power generation. NC WARN partners with other citizen groups and uses sound scientific research to inform and involve the public on important environmental issues.

Formed in the late 1980s, Nevada Nuclear Waste Task Force focuses its work on national nuclear waste policy and issues surrounding the proposed Yucca Mountain high-level radioactive waste repository.

Since 1971, the New England Coalition ("NEC") has advocated for safe energy in New England and has provided education and resources for alternatives to nuclear power. NEC has also intervened in numerous NRC licensing proceedings involving the safety and environmental impacts of spent fuel storage at New England nuclear power plants.

North America Water Office (“NAWO”) was chartered in 1982 to educate people about solutions to environmental problems caused by society's wastes. NAWO focuses on electric utility wastes and the disproportionate adverse health and economic impacts of electric utility wastes on Indigenous Peoples, People of Color and those who live at subsistence levels. NAWO’s mission is to phase in modern renewable energy and energy efficiency systems and technologies, to phase out destructive electrical generation technologies and obsolete, abusive energy management practices, and to empower those who are disproportionately affected to utilize mitigation and remediation strategies.

Northwest Environmental Advocates (“NWEA”) promotes human health and environmental restoration in Oregon and Washington and on a national level. NWEA was founded in 1969 by citizens who were concerned about the imminent operation of the Trojan Nuclear Power Plant, located along the Columbia River at Rainier, Oregon. NWEA fought the Trojan plant throughout its inception until its eventual closure in 1993. NWEA has also been active in challenging a number of other nuclear reactors.

Nuclear Energy Information Service (“NEIS”) is a non-profit organization committed to ending nuclear power. NEIS’ primary mission is to provide the public and its members with information about the hazards, safety problems, environmental effects and economic costs of nuclear power, radioactive waste, and ionizing radiation exposure; and to promote viable sustainable energy solutions and alternatives to nuclear power.

Nuclear Information and Resource Service (“NIRS”) is a non-profit corporation with over 35,000 members across the United States and world. NIRS has a mission to promote a nuclear-free, carbon-free energy policy and a concern for the health and safety of the people and ecosphere.

Nuclear Watch South is a grassroots, direct-action environmental group dedicated to phasing out nuclear power plants and promoting renewable energy sources; abolishing nuclear weapons and safeguarding nuclear materials; and establishing ethical social policies for nuclear waste management.

Residents Organized for a Safe Environment works to provide a safe and clean planet for our children and grandchildren and the seven generations to come, by supporting ethically sound environmental decisions for the future.

Riverkeeper is a non-profit, membership-supported environmental organization. Its mission is to protect the environmental, recreational and commercial integrity of the Hudson River and its tributaries, and safeguard the drinking water of nine million New York City and Hudson Valley residents. Since its inception in 1966, Riverkeeper has used litigation, science, advocacy, and public education to raise and address concerns relating to the environmentally destructive, unsafe, and unnecessary Indian Point nuclear power plant.

Safe and Green Campaign is a grassroots effort of citizens living in the evacuation zone of Vermont Yankee to shut down and decommission the reactor safely, and replace it with truly clean energy.

San Clemente Green (“SCG”) is an informal group of over 5,000 citizens dedicated to sustainable living. SCG’s members are deeply concerned about the risks of living near the San Onofre Nuclear Generating Station. SCG opposed the restart of SONGS and supports the safe decommissioning of the nuclear plant.

San Luis Obispo Mothers for Peace (“SLOMFP”) is a non-profit organization concerned with the risks and hazards connected with the Diablo Canyon Nuclear Power Plant and with the dangers of nuclear power, weapons and waste on national and global levels. An all-volunteer, non-profit group, SLOMFP has challenged NRC licensing decisions within the NRC and in Federal Courts since 1973.

San Onofre Safety is a Southern California citizens’ organization that educates the public about nuclear safety issues, with a major focus on California.

The Sierra Club Nuclear Free Campaign works to promote an energy efficient world, powered by clean, renewable technologies, free from dirty, dangerous, costly nuclear power and its legacy of toxic waste. Sierra Club Nuclear Free Campaign works to stop proposed new nuclear power and license extensions of existing plants and to address the mounting problems associated with nuclear radioactive waste.

The South Texas Association for Responsible Energy advocates for safe, clean energy solutions and for the safe disposal of radioactive waste that results from nuclear generation.

The Sustainable Energy and Economic Development (“SEED”) Coalition is a project of Texas Fund for Energy and Environmental Education, Inc., a statewide nonprofit organization with 5,000 members working for clean air and clean energy in Texas. The organization advocates for sustainable energy, including energy efficiency, renewable energy, and conservation.

Founded in 1977, Three Mile Island Alert (“TMIA”) is a safe-energy organization based in Harrisburg, Pennsylvania. TMIA monitors Peach Bottom, Susquehanna, and Three Mile Island nuclear generating stations. TMIA has enjoyed widespread public and political support in its role as a watchdog of nuclear power production. In the spring of 1987 and spring of 2004, TMIA was recognized by the Pennsylvania House of Representatives for community service.

III. THE EPA HAS SET CARBON EMISSIONS TARGETS FAR BELOW LEVELS THAT ARE NECESSARY TO ACHIEVE MEANINGFUL AND TIMELY CARBON REDUCTIONS.

Under the Clean Air Act, EPA must identify the "best" system of emission "reduction." In order to evaluate what is the “best” the U.S. can do, EPA should start by evaluating international

programs for GHG emission reductions and then evaluate whether those targets are also achievable in this country. The CPP, however, does not include such a discussion.

As discussed in the IEER comments, the Intergovernmental Panel on Climate Change (“IPCC”) has concluded that by 2050, carbon-equivalent (“CO₂eq”) emissions should be reduced globally from 2010 levels by between 41 and 72 percent if the goal is to limit global average temperature rise to 2°C. IEER Comments, Section III. Consistent with these goals, the European Union has set a target for greenhouse gases (“GHG”) of a 40% reduction below 1990 levels by 2030. To achieve comparable reductions in carbon emissions, by 2030 the U.S. would have to reduce its GHG emissions by 40% relative to 1990; and by 2050 the U.S. would have to reduce its GHG emissions by 84% relative to 1990. *Id.*

EPA proposes a target of 30% reduction below 2005 carbon emission levels by 2030. 79 Fed. Reg. at 34,832. As discussed at length in the IEER Comments, this amounts to only about a 7 percent reduction in emissions relative to 1990. IEER Comments, Section III. To set such a low target for carbon emission reductions by 2030 would make it virtually impossible to achieve 84% carbon emission reductions by 2050. *Id.* In addition, the EPA’s heavy reliance on natural gas to meet the 2030 targets makes it even more difficult to achieve higher emissions reductions by 2050. IEER Comments, Section V.B.3. In any event, EPA’s proposed reliance on natural gas is not necessary; as discussed below in Section V, it is both feasible and cost-effective to reduce carbon emissions from EGUs by about 55% below 2005 levels by 2030. *See also* IEER Comments, Section V.C.

IV. EPA’S DESIGNATION OF NATURAL GAS AND NUCLEAR ENERGY AS BSER ELECTRICITY SOURCES IS ARBITRARY AND CAPRICIOUS.

A. Background

As stated in the proposed rule, Section 111(d) of the Clean Air Act requires that state plans must establish standards of performance that:

reflect the degree of emission limitation achievable through the application of the “best system of emission reduction” that, taking into account the cost of achieving such reduction and any non-air quality health and environmental impacts and energy requirements, the Administrator determines has been adequately demonstrated (BSER).

79 Fed. Reg. at 34,834. In the CPP, the BSER is based on four “building blocks” that “comprise improved operations at EGUs, dispatching lower-emitting EGUs and zero-emitting energy sources, and end-use energy efficiency.” *Id.*

EPA’s four building blocks include two technologies for which it has failed to justify the designation “BSER”: natural gas and nuclear power. In the case of natural gas, EPA has relied on outdated and incomplete information to conclude that increased use of natural gas would reduce carbon emissions. In the case of nuclear energy, the EPA has ignored a great deal of

evidence – including EPA’s own evidence and conclusions – that nuclear energy has enormous costs and non-air impacts. EPA has also failed to address evidence that reliance on nuclear power hampers long-term carbon emissions reductions because it undermines development of a resilient and low-carbon 21st century electricity grid. These costs, non-air impacts and long-term planning considerations render nuclear energy unsuitable for designation as BSER.

B. Why a Reasonable and Well-Supported Designation of BSER Technology Is Important

In the preamble to the proposed rule, EPA has all but stated that the designation of an energy technology as BSER is unimportant, because states will be free to construct their own compliance plans that may or may not include energy sources identified as BSER. 79 Fed. Reg. at 34,835. Nevertheless, EPA is legally bound to develop BSER criteria in accordance with the criteria set forth in the Clean Air Act. And while EPA has a great deal of discretion in interpreting the BSER standard, EPA may not issue a rule that is “arbitrary and capricious.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mutual Auto Insurance Co*, 463 U.S. 29, 41 (1983). Instead, it must demonstrate that it has considered all factors relevant to the application of the standard. *See, e.g., Essex Chemical Corp. v. Ruckelshaus*, 486 F.2d 427, 434 (D.C. Cir. 1973).

Equally important, the EPA’s BSER analysis provides essential guidance to the states in developing the most cost-effective and far-reaching compliance plans. There is no longer any scientific debate that significant carbon emissions reductions are in the long-term health and economic interest of every state in the U.S. EPA has far greater resources than individual states for evaluating complex questions regarding the feasibility, costs and non-air quality health and environmental impacts of various energy technologies. EPA is also in a better position to provide national guidance on the most effective ways of reducing carbon emissions on the long-term “grand scale” demanded by today’s climate crisis. *Sierra Club v. Costle*, 657 F.2d 298, 330 (D.C. Cir. 1981). As the court explained in *Sierra Club*, EPA must:

exercise its discretion to choose an achievable emission level which represents the best balance of economic, environmental, and energy considerations. It follows that to exercise this discretion EPA must examine the effects of technology on the grand scale in order to decide which level of control is best. For example, an efficient water intensive technology capable of 95 percent removal efficiency might be “best” in the East where water is plentiful, but environmentally disastrous in the water-scarce West where a different technology, capable of only 80 percent reduction efficiency might be “best.” We cannot believe that Congress meant for EPA to ignore such future aggregate impacts of alternative standards. *The standard is, after all, a national standard with long-term effects.*

Id. (emphasis added). Thus, a well-reasoned and well-supported analysis by EPA of what are the “best” energy technologies for reducing carbon emissions is critical to the states’ ultimate success in reducing carbon emissions in the short and long term. As discussed below, despite the fact that this goal is fully achievable EPA has fallen short.

C. EPA Has Failed to Justify the Designation of Natural Gas as BSER.

The proposed CPP asserts that increased reliance on natural gas would have the effect of reducing carbon emissions, and therefore has classified it as a key building block in its BSER regulatory system. *See, e.g.*, 79 Fed. Reg. at 34,836, 34,851. But EPA has failed to support its conclusion with sound, current, or independently verified data. The data relied on by EPA are incomplete, outdated, and in many cases sponsored by the gas industry. In the one case where EPA explicitly disagreed with industry data and estimated a much larger number for venting, it failed to use its own estimate in evaluating the impact of natural gas vents and leaks. *See* IEER Comments, Section V.B.1.

IEER identified six significant technical deficiencies in EPA's analysis of methane emissions. As summarized below:

1. The EPA relies mainly on industry-supplied data for estimating natural-gas-related methane emissions, especially for emissions from hydraulic fracturing operations. EPA also used an earlier joint study it did with the Gas Research Institute which included field measurements done in 1992.
2. In the one case where the EPA concluded that a set of industry data underestimated emissions from completed hydrofractured wells, the EPA estimated emissions using the defective industry data and made another estimate without it; but it never used its own, much higher emissions estimate.
3. The EPA's oil and natural gas technical support document failed even to refer to - - much less to evaluate or use -- recent independent measurements, including measurements made from aircraft. These measurements indicate that leaks from production may be far higher than the values used by the EPA.
4. The EPA used leak and venting rates averaged over all natural gas production. However, the increase in production that will be required to supply the fuel for the increase in natural gas combined cycle ("NGCC") generation envisaged by the CPP is projected to come from tight gas and shale gas formations. Data indicate a significant difference between the two.
5. The EPA entirely ignored the 20-year value of the global warming potential of methane, which is critical to examine whether tipping points might be crossed between now and the end of the century, when the IPCC 5 analysis indicates that essentially all fossil fuel use needs to be phased out if the temperature rise is to be kept below 2°C.
6. The EPA did not consider the impact of setting a course of greatly expanded natural gas use in electricity generation up to the year 2030 and beyond that

year. Specifically, the EPA did not examine whether its trajectory of increasing natural gas use is compatible with longer-term goals for much greater reduction in greenhouse gas emissions.

EPA's failure to use independently-produced and peer-reviewed data and analyses about natural gas venting and leaks may hide critical errors that would preclude designation of natural gas as BSER. If natural gas venting and leak rates are significantly higher than the EPA estimates – and published estimates indicate that they may well be – the positive impacts of displacing coal by natural gas generation, could be largely or completely negated, especially if the 20-year warming potential of methane is used. It is essential to consider effects on this shorter time frame since greenhouse gas accumulations are now creating impacts faster than previously estimated. Specifically it is now estimated that essentially complete summer Arctic ice melting – a potential “tipping point” – may happen on a ten to thirty year time frame. IEER Comments, Section V.B.1. Lower CO₂eq emission reductions would also increase the effective cost of using natural gas to displace coal per unit of CO₂eq emissions reduced, possibly significantly above the EPA's estimates. *Id.*

By proposing to rely heavily on natural gas for carbon emission reductions, the EPA also fails to account for the disparate impacts of rising natural gas prices on low-income households, many of whom already experience severe conflicts regarding whether and how to pay for life's necessities, including food, fuel, medicine, and rent. IEER Comments, Section V.B.1. Given that climate disruption has a disproportionate effect on environmental justice communities (79 Fed. Reg. at 34,949), EPA should avoid strategies for avoiding climate disruption that would perpetuate disproportionate adverse environmental justice impacts.

D. Nuclear Power Plants Are Not BSER.

1. Nuclear power plants are not a cost-effective or reliable energy source.

In determining what energy sources constitute BSER, EPA puts a premium on cost-effectiveness. *See, e.g.,* 79 Fed. Reg. at 34,832, 32,833, 34,834-35, 34,845. The concept of cost-effectiveness necessarily includes reliability of performance, because substitution of other energy sources when existing power sources are out of service may be expensive.

EPA asserts that nuclear energy is a cost-effective and reliable source of energy. For instance, EPA states:

The nation's nuclear fleet today routinely operates at high average utilization rates, suggesting no reason to expect adverse reliability consequences from completion or preservation of additional nuclear capacity.

79 Fed. Reg. at 34,883. Thus, EPA builds 6% of existing nuclear reactors and reactors currently under construction into its BSER system. *See* IEER Comments, Section V.B.2.

Unfortunately, EPA's inclusion of nuclear power in the CPP is based on flawed reasoning. For several important reasons, preserving at-risk plants and/or building new plants are not cost-effective methods of achieving carbon emission reductions. See IEER Comments, Sections V.B.2, V.C.3; Cooper Comments, Section I.D.2, VII.

First, EPA's conception that nuclear power is reliable is not applicable in the real world, because it is a logical fallacy to assume that only 6% of a reactor's capacity would be available. As stated in IEER's Comments:

One cannot keep six percent of a reactor open. If a nuclear reactor is uneconomical, it would be completely shut down and there would be zero electricity generation. If such a reactor were to be subsidized and kept open, the subsidy would have to be for the whole reactor, not six percent of it. Hence, by including this six percent in its calculation of the target rate, the EPA has provided the nuclear industry in deregulated markets with a tool to extract financial concessions for 100 percent of the reactor.

IEER Comments at 34.

Second, many "at-risk" nuclear plants (*i.e.*, reactors that are located in areas where electricity generation has been deregulated) are expensive to operate. Keeping those reactors on line will result in much higher costs of carbon reductions than the \$12 to \$17 per metric ton estimated in the CPP. *Id.* The CPP does not distinguish between these at-risk reactors and reactors in regulated states, where state governments may subsidize them through the rate-making process.⁵

Third, EPA also fails to recognize that new and under-construction nuclear plants are far more expensive than alternative energy sources, such as increased efficiency, wind and utility solar. IEER Comments, Section V.B.2. And EPA's position begs an important policy question: if nuclear power is so cost-effective, why would EPA propose to put states in a position where the

⁵ Notably, analyses already indicate that the continued operation of the Indian Point nuclear power plant is not a necessary, or even a particularly helpful, element to support emission reductions in New York State. In particular, recent modeling by energy economists show that under certain scenarios in which Indian Point Units 2 and 3 cease operating, CO₂ emissions can decline and then flatten out over time relative to a base case scenario in which Indian Point is operating. Synapse Energy Economics, Inc., Indian Point Energy Center: Effects of the Implementation of Closed-Cycle Cooling on New York Emissions and Reliability (February 28, 2014) at 33-35, 40, available at, <http://www.riverkeeper.org/wp-content/uploads/2014/11/Synapse-IPEC-Final-Report-r.pdf> (see, *inter alia*, discussion of scenario 14). These analyses also show that regardless of the operation of Indian Point, CO₂ emissions in New York can be significantly lowered through the implementation of high levels of additional renewables and/or increased levels of energy efficiency. See *id.* at 40-41. Such conclusions underscore the imprudence of encouraging states to dedicate resources to support outdated, dangerous plants like Indian Point at the potential expense of robust and aggressive growth of renewable energy generation and energy efficiency programs.

CPP would force them to subsidize existing nuclear energy or complete under-construction plants?

Finally, the EPA unlawfully encroaches upon the regulatory domain of the NRC by implicitly assuming that about 30% of existing nuclear capacity, which is due to expire before 2030, will be available. See IEER Comments, Section V.B.2. The EPA can only rely on the continuation of this existing nuclear reactor capacity by assuming that the NRC will approve as safe the extension of those reactor licenses. Such an assumption undermines the NRC's statutory responsibility to deny license renewal applications if the NRC concludes they would pose an unreasonable risks to public health and safety. See 42 U.S.C. §§ 2133(c) and (d)). NRC has conceded that renewal of a reactor license should not be allowed unless the licensee can demonstrate that it has taken measures to address "the detrimental effects of aging" during the reactor's license renewal term. Final Rule, Nuclear Power Plant License Renewal; Revisions, 60 Fed. Reg. 22,461, 22,464 (May 8, 1995). See also 10 C.F.R. § 54.29(a)(1) (requiring a reasonable assurance finding regarding a licensee's program for "managing the effects of aging" on certain reactor components).

Thus, EPA should avoid trespassing on NRC's unique regulatory domain by presuming a positive outcome for NRC license renewal reviews. Even assuming for purposes of argument that such encroachment is lawful, it would be extremely poor public policy for the EPA to build extended operation of aging and increasingly dangerous reactors into its regulatory scheme as a *fait accompli*.

2. Nuclear power's non-air-related environmental impacts are disproportionately high in comparison to renewables.

EPA asserts that nuclear energy is "positive on balance" when measured against other BSER carbon-reducing energy sources.⁶ 79 Fed. Reg. at 34,883. But this position is not consistent with overwhelming evidence that the non-air quality impacts of nuclear energy are large and irreversible, including the risk of catastrophic nuclear accidents such as experienced by the Fukushima Daichii reactor complex; the devastating environmental impacts of uranium mining and milling; the impacts of routine environmental emissions of such radionuclides as tritium and carbon-14; and the routine creation of plutonium and thousands of tons of highly radioactive spent fuel. See IEER Comments, Section V.B.2. These significant environmental impacts are far greater than the impacts of any renewable energy source considered in the CPP.

The EPA's proposed conclusion is also inconsistent with information that EPA presents to the general public on its own website, where EPA compares environmental impacts of nuclear energy with hydroelectricity, non-hydroelectric renewable energy, and other energy sources. <http://www.epa.gov/cleanenergy/energy-and-you/affect/index.html>. EPA's own information

⁶ EPA also favorably compares nuclear energy to coal. 79 Fed. Reg. at 34,883. But it is not useful or logical to compare a carbon-reducing technology to one that emits large amounts of carbon. EPA should compare nuclear to other BSER technologies to determine which is "best."

shows that the environmental impacts of nuclear energy dwarf the impacts of the renewable energy sources. The CPP's failure to acknowledge this internal contradiction within EPA renders the CPP's conclusions about the benign characteristics of nuclear power "arbitrary and capricious." *Motor Vehicle Manufacturers Assoc'n*, 463 U.S. at 42.

For instance:

a. Water use impacts. EPA's website is critical of the environmental impacts of nuclear reactors' water use. According to the website, nuclear power plants "use large quantities of water for steam production and for cooling. When nuclear power plants remove water from a lake or river for steam production and cooling, fish and other aquatic life can be affected." *Id.*⁷ See also IEER Comments, Section V.B.2.

In the proposed CPP, EPA reverses course. EPA cites the proposed Watts Bar Unit 2 nuclear reactor for the proposition that "all" five new reactors now under construction have closed-cycle cooling systems, with "lower water usage than some existing fossil-fuel fired EGUs." 79 Fed. Reg. at 34,883. But once, again, EPA's comparison of nuclear energy with coal is not useful or meaningful. Rather, nuclear energy should be compared with BSER energy sources. As EPA's website shows, water use by solar and wind energy sources is trivial in comparison to coal, and water use by wind energy is non-existent. <http://www.epa.gov/cleanenergy/energy-and-you/affect/sw-generation.html>. In any event, EPA is incorrect about at least one new reactor: the proposed Watts Bar Unit 2 reactor would use a combination of closed-cycle cooling *and* once-through cooling. See Final Environmental Impact Statement for Watts Bar Nuclear Power Plant Unit 2 at 3-4 (NRC 2013); Environmental Assessment, Watts Bar Nuclear Plant Supplemental Condenser Cooling Water Project (TVA 1998).

b. Water discharge impacts. According to EPA's website, "[w]ater pollutants, such as heavy metals and salts, build up in the water used in the nuclear power plant systems. These water pollutants, as well as the higher temperature of the water discharged from the power plant, can negatively affect water quality and aquatic life." <http://www.epa.gov/cleanenergy/energy-and-you/affect/water-discharge.html>. Solar photovoltaics, in contrast, "do not discharge any water while creating electricity." *Id.* Nor does wind power discharge any water. *Id.* This very significant adverse non-air quality impact of nuclear power is essentially ignored in the CPP, and to the extent it is acknowledged it is misrepresented: as discussed in note 6 above, EPA incorrectly states that Watts Bar Unit 2 exclusively relies on closed-cycle cooling, which minimizes thermal impacts of water discharges.

⁷ If anything, EPA has understated the water use impacts of nuclear reactors: on average, nuclear energy in the most water-intensive of traditional energy resources, followed by coal and natural gas. Fisher, et al., *Freshwater use by U.S. power plants: Electricity's thirst for a precious resource* (Union of Concerned Scientists 2011). Available at http://www.ucsusa.org/clean_energy/our-energy-choices/energy-and-water-use/freshwater-use-by-us-power-plants.html#.VGkEw1ff-4o. See also IEER Comments, Section V.B.2.

In fact, as discussed above, Watts Bar Unit 2 would rely on supplemental once-through cooling in *addition* to the primary closed-cycle cooling system.

c. Waste generation impacts. On its website, the EPA asserts that nuclear power plants collectively produce about 2,000 metric tons per year of “spent” or used reactor fuel, which is stored at reactor sites in pools and steel-lined concrete vaults.

<http://www.epa.gov/cleanenergy/energy-and-you/affect/sw-generation.html>

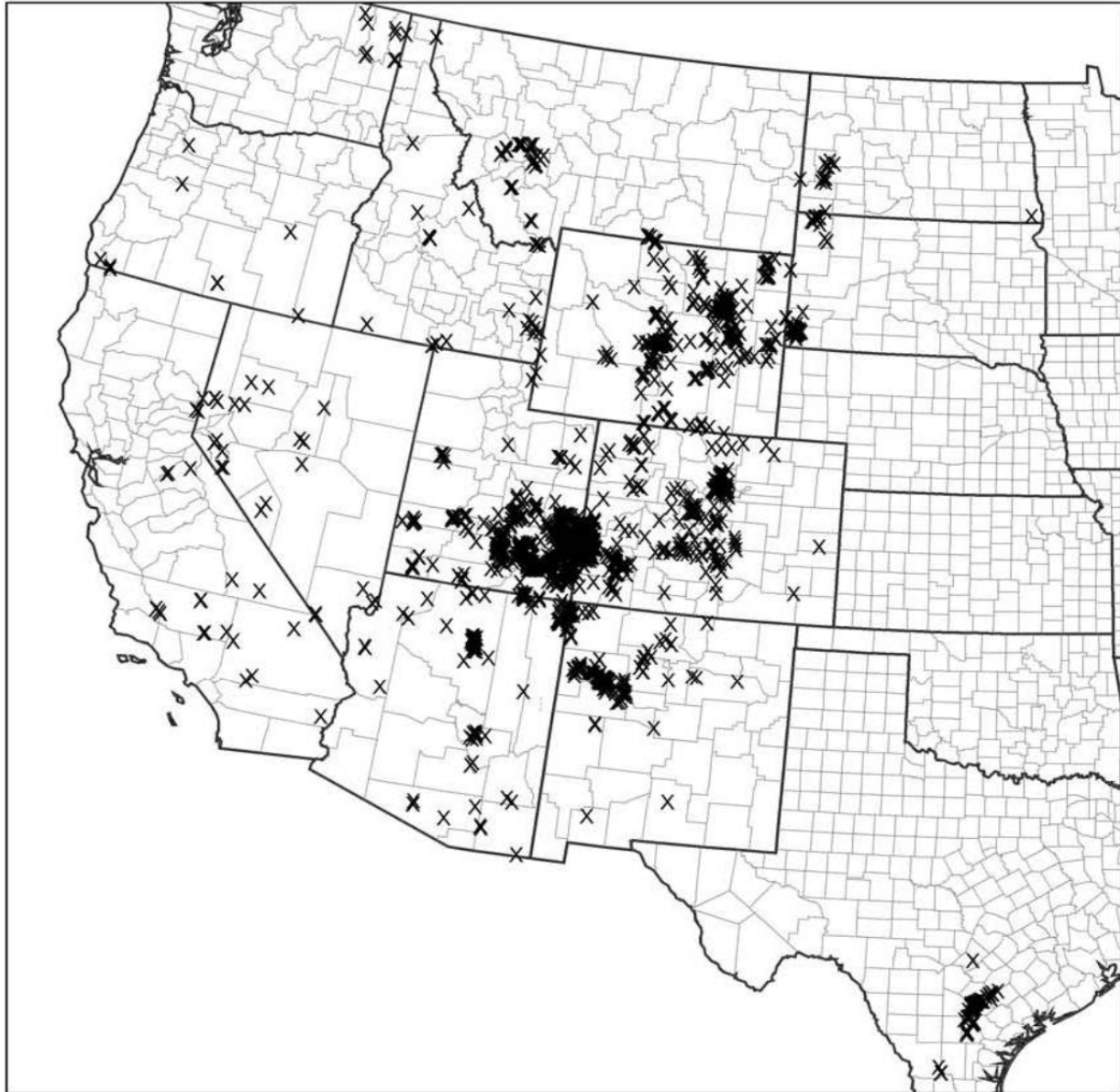
In addition, the website states that “much of the equipment in the nuclear power plants becomes contaminated with radiation and will become radioactive waste after the plant is closed.” EPA also acknowledges that none of the renewable technologies described on EPA’s website produce waste in significant quantities. The CPP pays only minor attention to this significant environmental problem, stating vaguely that “[t]he EPA recognizes that nuclear generation poses unique waste disposal issues. . .” 79 Fed. Reg. at 34,883. The CPP completely fails to acknowledge the conclusion of the U.S. Congress that the *only* safe means of permanently storing spent reactor fuel is to dispose of it in a geological repository (Nuclear Waste Policy Act (“NWPA”) of 1982, as amended, 42 U.S.C. § 10131(b)(1)); nor does EPA acknowledge that after more than four decades of nuclear power plant operation, no repository has yet been fully evaluated or licensed for the purpose of disposing of *existing* inventories of spent reactor fuel. And the government has not even begun to consider how it will dispose of the spent fuel that will be generated in the future by reactors that EPA proposes to include in the CPP.

Nor does the EPA acknowledge that the U.S. Nuclear Regulatory Commission (NRC), the agency responsible for ensuring the safe storage and disposal of spent reactor fuel, has done such a poor job of evaluating the impacts of spent fuel on the environment that it was forced by a federal court to suspend all reactor licensing and re-licensing while it conducted a comprehensive environmental study. See *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012); *Calvert Cliffs 3 Nuclear Project, LLC and Unistar Nuclear Operating Services, LLC* (Calvert Cliffs Nuclear Power Plant, Unit 3), et al., CLI-12-16, 76 NRC 63 (2012). And although NRC recently issued a study in response to the Court’s decision (Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel (2013) (“Extended Storage GEIS”)), the NRC has yet to grapple with the serious environmental issues posed by extended storage of spent fuel. See IEER Comments, Section V.B.2. As a result, three state governments, one Native American tribal organization, and nine environmental organizations have sued the NRC to overturn the Extended Storage GEIS for its inadequacy to satisfy the National Environmental Policy Act or the Atomic Energy Act. See *New York et al. v. NRC*, Docket Nos. 14-1210, 14-1212, 14-1216, 14-1217.⁸

⁸ If these lawsuits are successful, the result will be additional delays in licensing and re-licensing of reactors, thus further undermining their reliability.

3. Nuclear power's environmental justice impacts are disproportionately large.

EPA acknowledges the disparate impacts of climate disruption on low-income and minority populations. 79 Fed. Reg. at 34,949. But the CPP contains no analysis of the environmental justice effects of its proposed BSER technologies. As discussed above in Section IV.C, natural gas has disproportionate adverse economic effects on low-income communities. In addition, nuclear power has a longstanding and tragic history of harming environmental justice communities to a disproportionate degree. The following map, posted on the EPA's own website, vividly illustrates this impact by showing the disproportionately high location of abandoned uranium mines in the Western states, where the majority of Indian reservations and Native American communities are located.



Legend

x MAS/MILS Uranium Mines

Source of Mine Information:
EPA Uranium Location Database

Km
500



Source: (U.S. EPA 2006b)

According to a literature survey prepared by the Southwest Research and Information Center, more than 1,200 abandoned uranium mines have been documented on the Navajo Nation alone. C. Shuey, MPH, *Uranium Exposure and Public Health in New Mexico and the Navajo Nation: a Literature Summary* (Feb. 27, 2007).⁹ Seven uranium mills were operated in the State

⁹ Attached as Exhibit C.

of New Mexico between 1947 and 1995, generating more than 90 million tons of radioactive tailings that caused extensive radioactive and chemical groundwater contamination. *Id.* Given the sufficiency of renewable and cost-effective energy technologies that do not have such dire and disproportionate effects on Native American communities, the EPA lacks reasonable grounds to continue to characterize nuclear energy as “BSER.”

4. Reliance on nuclear power would undermine long-term carbon emission reductions

As discussed above, EPA must evaluate proposed BSER technologies on a “grand scale.” See *Sierra Club*, 657 F.2d at 330. Thus, the EPA should not characterize any energy technology as “best” for reducing emissions if its application would undermine other emissions-reducing technologies. Unfortunately, the CPP does not propose a BSER strategy that will be effective long-term on a “grand scale.” Instead, by proposing to encourage state governments to include nuclear power plants in their compliance plans, the EPA sets a policy that undermines the agency’s own goal of achieving substantial carbon reductions in the energy sector.

EPA’s first error is to treat renewables and nuclear energy as if they were interchangeable. For instance, EPA states:

As noted above with redispatch, an allowance system or tradable emission rate system would provide incentives for sources to reduce their emissions as much as possible, including through substituting for their generation with generation from renewable energy. In addition, owners of existing nuclear units and nuclear units currently under construction can take action to complete or preserve that capacity, the generation from which likewise can be dispatched in a coordinated manner to substitute for fossil fuel-fired generation. *As discussed above, coordination of these decisions in the integrated electricity system can occur through a variety of mechanisms, some centralized and some not.*

79 Fed. Reg. at 34,883 (emphasis added). In truth, however, nuclear reactors are very inflexible and a poor complement for variable solar and wind generation, the two most plentiful renewable resources in the United States. IEER Comments, Section V.B.3.

By encouraging states to devote their scarce resources to support of outdated and very expensive centralized nuclear power plants, the EPA would undermine the states’ agility and resourcefulness in modernizing their electricity sectors and thereby maximizing carbon emission reductions. Thus, EPA would diminish the great promise for carbon emissions which lies in the transition, now underway, from the 20th Century system of large, centralized baseload power plants to a 21st Century system of distributed resources with actively managed demand in which low-carbon renewable energy and efficiency play a crucial role.

Moreover, as Dr. Mark Cooper points out in his comments, subsidies to nuclear energy yield much smaller returns than subsidies to renewables:

The ultimate irony is that with a much smaller level of subsidy to drive innovation and economies of scale, the renewables have achieved dramatically declining costs in a little over a decade, which is exactly the economic process that has eluded the nuclear industry for half a century.

Cooper Comments at 161. As Dr. Cooper further states:

EPA suggested that the states can put a thumb on the scale in favor of aging nuclear reactors with a direct subsidy, but failed to examine the cost of aging reactors. EPA also suggests that the tens of billions of dollars yet to be spent on nuclear reactors under construction in three states be ignored in the state planning process. In so doing, it also ignored the massive subsidies that nuclear power has received in the past and is continuing to receive in the present to build new reactors and operate aging reactors.

Ignoring the ongoing costs of nuclear power, old or new, makes no sense, particularly because there is a plethora of lower cost, low carbon resources available. *If the states follow EPA's lead in dealing with nuclear compared to other non-carbon resources, they would unnecessarily raise the cost of carbon abatement.* EPA should correct these mistakes in promulgating the final rule, which would help the states avoid those same mistakes.

Cooper Comments at 6 (emphasis added).

Finally, by endorsing nuclear power as a BSER technology, the EPA would provide implicit support to efforts by the nuclear industry to persuade states to include nuclear energy in their clean energy portfolios or modify renewable energy portfolios to include nuclear. Not only is nuclear energy not renewable,¹⁰ but – as discussed above -- its use would undermine substantial growth of solar and wind energy.

¹⁰ The glossary of the Intergovernmental Panel on Climate Change defines renewable energy as follows:

Renewable energy is obtained from the continuing or repetitive currents of energy occurring in the natural environment and includes non-carbon technologies such as solar energy, hydropower, wind, tide and waves and geothermal heat, as well as carbon-neutral technologies such as biomass.

<http://www.ipcc.ch/pdf/glossary/ar4-wg3.pdf>. Nuclear energy is not renewable because uranium and thorium -- the only two materials that occur in nature that can be used for nuclear power -- are primordial materials that were in the Earth when it was formed. There are no "continuing or repetitive currents" that replenish them and they are therefore not renewable energy.

V. SIGNIFICANT CARBON EMISSION REDUCTIONS ARE DEMONSTRABLY FEASIBLE AND COST-EFFECTIVE IN ALL U.S. STATES BY USING RENEWABLES AND ENERGY EFFICIENCY.

EPA fails to recognize that it is both feasible and cost-effective to reduce carbon emissions from EGUs by about 55% below 2005 levels by 2030. This is demonstrated in 48 state-specific models, which are described in the IEER Comments, Section V.C. In addition, IEER has provided spreadsheets detailing the basis for its models.

As discussed above, IEER's models demonstrate that states can achieve greater carbon reductions than the targets proposed by EPA, relying primarily on efficiency and renewable energy. This can be done at costs of carbon reduction per metric ton of CO₂ equivalent that are generally lower than those in the Clean Power Plan. Despite 2030 emission reductions being over two-and-a-half times greater (relative to 2012), IEER estimates that the IEER Climate Protection Plan would cost only about \$3.3 billion more in 2030, or about \$9 per person. Benefits, in terms of reduced health costs and lower damages in other areas would increase by tens of billions of dollars. IEER Comments, Section V.C.3.

VI. CONCLUSION AND RECOMMENDATIONS

For the foregoing reasons, EPA should return the CPP to the drawing board and correct the legal and technical deficiencies identified in these comments, the IEER Comments, and the Cooper Comments. The EPA should re-issue a revised CPP that sets substantially more stringent targets for carbon emission reductions, that eliminates reliance on natural gas and nuclear energy, and that prepares the way for more significant carbon emission reductions in the future by relying much more heavily on renewable energy sources.

Respectfully submitted,



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