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VIA ELECTRONIC MAIL (A-and-R-Docket@epa.gov)

U.S. Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mail Code 28221T
1200 Pennsylvania Ave., NW
Washington, DC 20460

Re: Comments on the Achievability and Benefits of EPA's Clean Power Plan for North Carolina (Docket ID No. EPA-HQ-OAR-2013-0602)

Dear Administrator McCarthy:

The Southern Environmental Law Center ("SELC"), on behalf of itself and Appalachian Voices, Clean Air Carolina, the Creation Care Alliance of Western North Carolina, Medical Advocates for Healthy Air, the North Carolina League of Conservation Voters, and Western North Carolina Alliance, respectfully submits the following comments regarding the Environmental Protection Agency's ("EPA") proposed "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units" at 79 Fed. Reg. 34,830, *et seq.* (June 18, 2014) ("the Clean Power Plan" or "CPP"). [1] The focus of these comments is on the achievability and benefits of EPA's Clean Power Plan for the State of North Carolina, as well as the legal validity of the Clean Power Plan. We appreciate the opportunity to submit these comments.

Summary of Comments

SELC is a non-profit, regional environmental organization dedicated to the protection of natural resources throughout a six-state region: North Carolina, South Carolina, Georgia, Alabama, Virginia and Tennessee. [2] Our region's dependence on fossil-fueled electricity generation accounts for a disproportionately large contribution to the carbon pollution that is the chief driver of climate change. At the same time, the Southeast is home to unique natural

[1] These comments also address information provided in the October 28, 2014 Notice of Data Availability and the additional information on a mass-based conversion provided on November 6, 2014. See Clean Power Plan Proposed Rule Notice of Data Availability – Oct. 28, 2014, 79 Fed. Reg. 64,543; Clean Power Plan Proposed Rule Notice: Additional Information Regarding the Translation of Emission Rate-Based CO2 Goals to Mass-Based Equivalents – Nov. 6, 2014, 79 Fed. Reg. 67,406.

[2] In addition to these comments, SELC is filing sets of comments on impacts of the proposal in Alabama, Georgia, Tennessee, South Carolina, and Virginia, as well as a separate set of comments on the treatment of biomass under the proposal.

areas—from the spruce-fir forests of the Appalachians to the coastal estuaries of our barrier islands—that are particularly vulnerable to the effects of a warming climate. Thus, SELC has a significant interest in the Clean Power Plan and its implications for the Southeast generally and North Carolina in particular.

SELC works extensively on issues concerning energy resources and their impact on the people, culture, environment, and economy in the Southeast through utility regulatory proceedings, stakeholder processes, and litigation and administrative advocacy under federal and state environmental laws. Since 2005, SELC has participated in dozens of proceedings before the North Carolina Utilities Commission, which regulates North Carolina's electric utilities. These proceedings have included integrated resource plan dockets, rate cases, demand-side management and energy efficiency ("DSM/EE") program approvals, DSM/EE cost-recovery proceedings, certificates of public convenience and necessity, solar program approvals, and avoided cost dockets. We also have extensive experience working on matters falling within the authority of the North Carolina Department of Environment and Natural Resources ("NCDENR"), as the State implementing agency for the Clean Air Act, including Title V and Prevention of Significant Deterioration ("PSD") permits. We also regularly engage in state law-making and policy venues on energy issues.

Drawing on this extensive in-state experience, our comments focus on North Carolina and the impact the Clean Power Plan will have on our unique energy mix. We agree with EPA that power companies and state decision-makers have already undertaken or set in motion measures affecting various parts of the electrical system that will reduce emissions of carbon pollution from fossil-fuel-fired power plants. In Part I of the comments, we discuss how the state-specific target proposed for North Carolina is readily achievable, and recommend refinements to the proposal that will allow North Carolina to achieve even deeper carbon pollution reductions using cost-effective energy efficiency and renewable energy resources. Part II summarizes an analysis performed by Synapse Energy Economics, which demonstrates that the benefits to North Carolina of implementing the Clean Power Plan would significantly outweigh the costs and provide benefits for all North Carolinians in the form of lower electricity costs, improved public health and welfare, a stronger economy, and a more resilient electric system. Finally, Part III responds to criticisms aimed by the North Carolina Department of Environment and Natural Resources at EPA's legal justification for regulating power plant carbon pollution emissions under Clean Air Act section 111(d).[3]

EPA's proposed Clean Power Plan is a good start to moving our nation away from reliance on polluting energy sources and toward a clean energy future. EPA has proposed the

[3] In large part, our comments address issues in the context of the proposed rate targets for North Carolina and other states, without noting how state mass targets may affect those issues. However, as a general matter, we note that the Clean Air Act requires that any state plan be at least as stringent as the emission rate achieved by applying the Best System of Emission Reduction (BSER). See 42 U.S.C. § 7411(c); see also 79 Fed. Reg. at 34,900 (in adopting a state plan, a state must "establish an emission standard or set of emission standards, and, perhaps other measures, along with implementing and enforcing measures, that will achieve a level of emission performance that is equal to or better than the level specified in the state plan."); Id. at 34,917 ("[N]o 'backsliding' on overall plan emission performance through a plan modification would be allowed"). Therefore, if a state adopts a mass-cap compliance strategy in place of a rate-based target, EPA should ensure that the mass-cap achieves carbon emissions reductions at least as stringent as what the Clean Power Plan would require of that state under a rate-based target.

Clean Power Plan to reduce carbon dioxide emissions from existing fossil-fueled power plants. In developing the CPP, EPA calculated emission rate goals for each state—interim goals to be achieved between 2020 and 2029 and final goals to be achieved by 2030—which, collectively, would result in a 30% reduction in power sector carbon emissions from 2005 levels by 2030. EPA based the targets on conservative assumptions about the achievability of various options and on the differences among states' current energy mixes. The Clean Power Plan has the potential achieve even deeper pollution reductions, at an even lower cost, if EPA revises the state targets to take into account states' full potential to develop renewable energy and energy efficiency resources.

As a regional leader in clean energy development, North Carolina is well positioned to comply with the CPP. The CPP grants North Carolina the flexibility to design and adopt its own plan for compliance. Accordingly, North Carolina can determine for itself which options for reducing emissions are feasible and cost-effective. Proactive steps taken by North Carolina's policy-makers, regulators and utilities long before the CPP was announced—retiring older coal-fired power plants, establishing incentives for energy efficiency, and setting standards for renewable energy—have already put the state on a path toward a low-carbon economy. Compliance with the CPP will help to further diversify and modernize North Carolina's electric system and grow the state's economy with energy efficiency and renewable energy resources, providing benefits that accrue to all North Carolinians.

I. North Carolina's CPP carbon dioxide emissions target is readily achievable, and North Carolina is already on track to achieve even greater emission reductions.

A. North Carolina's baseline emission rate and emissions target.

In developing a carbon dioxide ("CO_2") emissions target for North Carolina, EPA started by calculating a baseline emissions rate. This emission rate is based on 2012 emissions and generation data for coal-, oil-, and natural-gas-fired fired electrical generating units ("EGUs"), *plus* an assumed emission and generation rate for post-2012 affected EGUs that commenced construction by January 8, 2014.

In 2012, North Carolina produced 50.6 million megawatt-hours ("MWh") of generation from its coal-fired power plants, 15.2 million MWh from natural gas combined cycle ("NGCC") plants, and 360,000 MWh from other fossil fuel sources. Together, these sources emitted over 117 billion pounds of CO2 in 2012. As shown in Figure 1, below, based on these data, EPA calculated a baseline 2012 emission rate for North Carolina of 1,772 pounds ("lbs") of carbon dioxide per MWh of electricity.[4]

[4] EPA may have omitted at least one NGCC plant that should have been included in the North Carolina baseline: the 920-megawatt Lee plant, which came online in December 2012. Because the Lee plant began operation in 2012, it should be considered an existing (rather than under-construction) natural gas plant. Thus, North Carolina's target should include the ramp-up from 2012 generation to 70% generation at the Lee plant, and a decrease in coal generation that equals the total of this generation increase at Lee. If North Carolina's target instead reduces coal generation by only 15% of the generation at Lee (as it would if the Lee plant was under construction in 2012), this error should be corrected, and the target should be strengthened to account for additional reductions associated with the Lee plant.

Figure 1: Calculation of North Carolina Baseline Emission Rate

NC Baseline 2012 Emission Rate	=	million lbs	103,457	12,935	827	0	0	0	**= 1,772 lbs/MWh**
			Coal	NCGG	Other*	Nuclear**	Renewables**	E Efficiency**	
		million MWh	51	15	0	0	0	0	

*Other includes oil- and gas-fired EGUs, IGCC, and simple cycle combustion turbines.
**Nuclear, renewables, and energy efficiency are assumed to be at zero for purposes of EPA's baseline emission rate.

1. North Carolina's adjusted baseline

Importantly, EPA's baseline does not include existing renewables, energy efficiency, and nuclear. When 2012 generation from other sources—in particular, existing non-hydropower renewable energy generation and approximately 6% of total nuclear generation—is taken into account, the baseline is much lower: 1,646 lbs/MWh.[5] EPA refers to this as the "adjusted baseline." The adjusted baseline shows how far North Carolina had already gone toward achieving its target in 2012 (it does not, however, include energy efficiency savings as of 2012).

Figure 2: Calculation of North Carolina Adjusted Baseline Emission Rate

NC Adjusted Baseline 2012 Emission Rate	=	million lbs	103,457	12,935	827	**0**	**0**	0	**1,772 - 126 = 1,646 lbs/MWh**
			Coal	NCGG	Other*	**Nuclear**	**Renewables**	E Efficiency	
		million MWh	51	15	0	**2.3**	**2.7**	0	

North Carolina has progressed even farther toward its Clean Power Plan target since 2012. Taking into account reductions achieved to-date, as explained in more detail below and shown in the following figure, North Carolina's emission rate is 1,270.

Figure 3: North Carolina Reductions Achieved To Date

Reductions Achieved to Date	=	million lbs	103,457 - 31,954 = 71,503	12,935 + 10,619 = 23,554	827 + 9,249 = 10,076	0	**0**	0	**1,772 - 502 = 1,270 lbs/MWh**
			Coal	NCGG	Other	Nuclear	**Renewables**	E Efficiency	
		million MWh	51 - 16 = 35	15 + 13 = 28	.4 + 10.6 = 11	0 + 2.3 = 2.3	0 + 14 = 14	0 + 20 = 20	

[5] http://cleanpowerplanmaps.epa.gov/CleanPowerPlan/

2. North Carolina's carbon emission reduction target is readily achievable.

As discussed in detail in the following sections, EPA has proposed a "Best System of Emission Reduction" ("BSER") for fossil-fueled EGUs based on four "building blocks": 1) improving the efficiency (or "heat rate") at existing coal plants; 2) increasing use of existing, underutilized natural-gas plants; 3) increasing renewable generation, and preserving nuclear generation at risk for retirement; and 4) increasing end-use energy efficiency. These building blocks are proven strategies that are already being used by power companies and states across the country to reduce emissions of carbon pollution and other harmful air pollutants from fossil-fuel-fired power plants.

Applying each of the building blocks to reduce North Carolina's baseline emission rate, EPA established an emission rate target for North Carolina of 992 lbs CO_2/MWh by 2030. This equates to a 31% reduction in absolute carbon emissions (from 53.2 to 36.9 million metric tons) from affected sources (i.e., existing 2012 fossil sources and under-construction NGCC) by 2030.[6]

North Carolina's target is readily achievable; in fact, North Carolina will not need to take any additional action to comply with the Clean Power Plan, beyond the actions its electric utilities have already taken to date and the requirements of North Carolina law. As discussed in more detail below and shown in Figure 3 below, North Carolina's post-2012 coal retirements, its shift to increased natural gas generation, the addition of under-construction natural gas power plants, and preservation of existing nuclear reduce the State's emission rate to 1,377 lbs/MWh. When North Carolina's Renewable Energy Portfolio Standard requirements are added in, the State's emission rate falls to 949 lbs/MWh—well below the Clean Power Plan target of 992 lbs/MWh.

Figure 3: North Carolina Reductions and Commitments To Date[7]

NC Rate After Reductions and Commitments To Date	=	million lbs	103,457 - 31,954 = 71,503	12,935 + 10,619 = 23,554	827 + 9,249 = 10,076	0	0	0	**1,772 - 823 = 949 lbs/MWh**
			Coal	NCGG	Other	Nuclear	Renewables	E Efficiency	
		million MWh	51 - 16 = 35	15 + 13 = 28	.4 + 10.6 = 11	0 + 2.3 = 2.3	0 + 14 = 14	0 + 20 = 20	

[6] EPA, Technical Support Document, Rate to Mass Translation Data File.

[7] More detailed information regarding these calculations is included in Attachment 1, entitled "North Carolina Reductions and Commitments To Date." While the assumptions that we made in performing these calculations were simplified in comparison to the level of detail needed to determine actual compliance, these calculations illustrate the achievability of North Carolina's target.

As explained in each of the subsections below, not only does this show that North Carolina is already committed to exceed its Clean Power Plan target, it also demonstrates that EPA should require greater reductions in North Carolina to reflect the best system of emission reductions.[8]

B. North Carolina can achieve the coal plant heat rate improvements in Building Block 1.

EPA's first building block is based on reducing the carbon intensity at existing coal plants (those that commenced construction before January 8, 2014) by improving the efficiency with which these units convert coal to electricity (otherwise known as heat rate improvements) by 6%. EPA found that best practices to reduce hourly heat rate variability could improve efficiency by 4%, and equipment upgrades could improve efficiency by an additional 2% on average.

A 6% improvement in the heat rate of North Carolina's existing coal plants would result in a decrease of 6,207 million pounds of CO_2, without any decrease in generation. With these reductions, North Carolina's emission rate would be lowered by 94 lbs/MWh, as shown in Figure 4, below.

Figure 4: Reduction to NC Baseline CO_2 Emissions from 6% Improved Plant Efficiency

Reductions from BB1	=	million lbs	**103,457 - 6,207 = 97,250**	12,935	827	0	0	0	**1,772 - 94 = 1,678 lbs/MWh**
			Coal	NCGG	Other	Nuclear	Renewables	E Efficiency	
		million MWh	51	15	0	0	0	0	

Some individuals have argued that efficiency improvements cannot be achieved at coal plants in North Carolina if these plants are also being re-dispatched to natural gas under Building Block 2 (discussed in more detail below), and therefore operating at lower capacities. This argument conflates the building blocks used to create North Carolina's target with the options available for compliance. In reality, increases in generation from other electricity sources—including and exceeding the limited increases envisioned by EPA's building blocks—will allow older and less efficient coal units to retire. It is therefore mistaken to assume that inefficient coal plants will continue to operate at a low capacity and inhibit North Carolina's ability to reach its target.

In fact, many coal plants in North Carolina have already retired since 2012, reducing North Carolina's emission rate to 1,759 lbs/MWh, and reducing the average coal plant emission rate from 2,044 lbs/MWh to 2,033 lbs/MWh. North Carolina coal plant heat rates have also improved, bringing North Carolina's emission rate down to 1,750 lbs/MWh.

[8] Section 111(d) of the Clean Air Act requires EPA to establish a standard of performance for covered sources based on a best system of emissions reduction. When determining the "best system," EPA must consider the cost of achieving emission reductions, as well as non-air quality health, environmental and energy requirements.

Figure 5: Reductions Achieved To Date Through Coal Plant Retirements and Heat Rate Improvements

Reductions Achieved to Date Through Coal Plant Retirements and Heat Rate Improvements		million lbs	**103,457 - 6,591 = 96,866**	12,935	827	0	**0**	0	**1,772 - 21 = 1,750 lbs/MWh**
	=		**Coal**	NCGG	Other	Nuclear	**Renewables**	E Efficiency	
		million MWh	**51 - 3 = 48**	15	.4	0	0	0	

The coal plants retired to date, along with their 2012 emissions, generation, and emissions rate, are shown in the following table:

Table **: North Carolina Coal Retirements from 2013-2014

Plant	2012 Emissions (lbs CO2)	2012 Generation (MWh)	Emissions Rate
Buck	485,138,840	219,929	2,206
L.V. Sutton	3,038,946,000	1,281,857	2,371
Riverbend	404,612,000	156,511	2,585
Cape Fear	953,802,000	473,340	2,015
Lee	1,696,340,000	829,335	2,045
Total	6,578,838,840	2,960,972	2,244

C. North Carolina can achieve the natural gas-fired power plant generation levels in Building Block 2 by re-dispatching from coal plants to underutilized natural gas.

Building Block 2 involves reducing emissions by shifting electricity generation from the most carbon-intensive units (coal, and oil and gas steam generators) to less carbon-intensive NGCC units. A typical NGCC plant produces less than half the CO_2 per MWh of a typical coal-fired unit.

According to EPA, NGCC units are being utilized at a nationwide average capacity factor of only 46%—well below what the units are capable of achieving. North Carolina's average NGCC capacity factor was 37% in 2012. Building Block 2a increases the average NGCC utilization rate to a maximum of 70% by re-dispatching existing fossil generation to these NGCCs. To determine a state's total potential NGCC generation at a 70% capacity factor, EPA multiplied the 2012 existing NGCC nameplate capacity by 8,784 hours (the number of hours in 2012) and then multiplied the product by 70%.

Figure 6, below, illustrates Building Block 2a for North Carolina, which lowers North Carolina's target emission rate by an increment of 223 lbs/MWh.

Figure 6: Reduction to NC Baseline CO_2 Emissions from Re-dispatch to Existing Natural Gas

Reductions from BB2a	=	million lbs	**97,250 - 26,442 = 70,808**	**12,935 + 11,713 = 24,648**	827	0	0	0	**1,678 - 223 = 1,455 lbs/MWh**
			Coal	**NCGG**	Other*	Nuclear	Renewables	E Efficiency	
		million MWh	**51 - 14 = 37**	**15 + 14 = 29**	0	0	0	0	

Building Block 2 also includes re-dispatch to "under-construction" NGCC units. This applies to any unit that came online after 2012, but was operating, or was undergoing construction, site preparation, or testing by January 8, 2014 (the cut-off date for classification as an "existing source"). EPA assumes that the capacity factor of under-construction NGCC units under a business-as-usual scenario would be 55%, and that this portion of the units' output will be unavailable for re-dispatch (EPA includes these emissions and MWh in the 111(d) emission rate formula under "other"). EPA further assumes that these under-construction NGCCs could increase to a 70% capacity factor and, therefore, 15% of their ultimate output is assumed to be available for re-dispatch purposes. This generation would displace coal generation in the same way that re-dispatch to existing NGCCs is described above.

In 2012, there were 2,249 MW of under-construction NGCC capacity in North Carolina. The three million MWh of re-dispatch to under-construction NGCCs would lower North Carolina's target emission rate by an increment of 126 lbs/MWh, as shown in Figure 7.

Figure 7: Reduction to NC Baseline CO_2 Emissions from Re-dispatch to Under-construction Natural Gas

Reductions from BB2b	=	million lbs	**70,808 - 5,694 = 65,111**	**24,648 + 2,522 = 27,170**	827	0	0	0	**1,455 - 126 = 1,329 lbs/MWh**
			Coal	**NCGG**	Other*	Nuclear	Renewables	E Efficiency	
		million MWh	**37 - 3 = 34**	**29 + 3 = 32**	0	0	0	0	

In fact, North Carolina could achieve even greater generation from NGCC plants. According to a study by Synapse that analyzed the potential for NGCC plants to displace coal-fired power plants, NGCC plants in North Carolina can achieve capacity factors of 80%.[9] This feasible generation level would result in additional coal displacement beyond EPA's target in Building Block 2.

[9] *See* http://www.synapse-energy.com/sites/default/files/SynapseReport.2013-09.EF_.Displacing-Coal.13-020.pdf. Synapse acknowledges that its projected improvement in NGCC capacity factor is subject to a number of potential constraints, including ramp rates, minimum load levels, and minimum up-times/minimum down-times; access to gas supply and pipeline capacity; environmental constraints; warranty conditions on the turbines; or other political, economic, or regulatory restrictions. Discussion of whether these constraints exist in North Carolina and, if so, whether they would restrict NGCC generation, is beyond the scope of these comments.

North Carolina has already achieved reductions in its emission rate through increased natural gas generation and development of under-construction natural gas facilities, as shown in Figure 8.

Figure 8: Reductions Achieved To Date Through Natural Gas Re-dispatch and Under-Construction Natural Gas

Reductions To Date Through Natural Gas	=	million lbs	**96,866 - 25,363 = 71,503**	12,935 + 10,619 = 23,554	827 + 9,249 = 10,076	0	0	0	**1,750 - 331 = 1,419 lbs/MWh**
			Coal	NCGG	Other	Nuclear	Renewables	E Efficiency	
		million MWh	**48 - 13 = 35**	15 + 13 = 28	.4 + 10.6 = 11	0	0	0	

D. North Carolina can achieve—and exceed—the clean energy generation levels in Block 3.

Building Block 3 involves replacing generation at fossil-fueled EGUs with less carbon-intensive generation. Specifically, in developing this building block, EPA quantified generation from new and preserved nuclear capacity, as well as renewable energy generation.[10]

1. EPA's development of the nuclear component of Block 3.

To develop the nuclear component of Block 3, EPA first estimated the total under-construction nuclear capacity in each state in 2012 and the amount of existing nuclear capacity that is considered at risk of being retired. North Carolina had no new nuclear plants under construction in 2012, so only the "at risk for retirement" nuclear capacity counted toward this portion of Block 3. EPA estimated that 5.8% of nuclear generation that was at risk of retirement in 2012 nationwide, and assigned credit for a flat 5.8% of each state's nuclear capacity in each state's emission reduction target.[11] In 2012, North Carolina had 39.6 million MWh of nuclear generation. Applying the 5.8% credit results in a credit of 2.3 million MWh, and lowers North Carolina's target emission rate by 38 lbs/MWh, as illustrated in Figure 9, below.

Figure 9: Reduction to NC Baseline CO_2 Emissions from Preserving At-risk Nuclear

Reductions from BB3a	=	million lbs	65,111	27,170	827	**0**	0	0	**1,329 - 38 = 1,291 lbs/MWh**
			Coal	NCGG	Other	**Nuclear**	Renewables	E Efficiency	
		million MWh	34	32	0	**2.3**	0	0	

[10] 79 Fed. Reg at 34,866.

[11] EPA assumes a 90% capacity factor for each state's 2012 nuclear capacity.

2. EPA's development of the renewable component of Block 3 significantly underestimates the potential for renewable energy in North Carolina.

The second component of Block 3 is renewable energy generation. In its proposed approach, EPA assumed that each state could increase its use of renewable energy resources to a level consistent with renewable portfolio standards ("RPS") in its region. EPA took this approach for two reasons. First, states that have adopted an RPS, like North Carolina, have set state RPS requirements taking into account issues like feasibility and costs, so these state policy decisions serve as a sound basis for the EPA targets. Second, renewable resource development potential varies by region. EPA's decision to adopt a regional approach based on existing legal obligations of neighboring states ensures that the renewables target reflects regional availability of renewable energy resources. In short, states have already decided that these investments are feasible and cost-effective based on each state's access to renewable energy in its region.

To develop the renewable generation component of Block 3, EPA first quantified the level of renewable generation in each region in 2012, prior to implementation of the RPS. Next, EPA estimated the average of the state RPS percentage requirements for 2020 in each region and multiplied it by total 2012 generation for the region. Finally, EPA computed a regional growth factor that would be necessary to bring the region from the 2012 starting level up to the average regional RPS requirement in 2020.[12] For the Southeast region, the regional growth factor is 13% per year.

For purposes of Block 3, North Carolina is part of the Southeast region, which also includes Alabama, Florida, Georgia, Kentucky, Mississippi, South Carolina and Tennessee. Because North Carolina is the only state in the region with an RPS, EPA based the Southeast regional average on North Carolina's RPS goal. For the Southeast region, EPA calculated a renewable energy goal of 10% of total 2012 generation by 2029. This amounts to 11.7 million MWh (11,668,176 MWh) of renewable generation, which lowers North Carolina's target emission rate by 165 lbs/MWh.[13]

Figure 10: Reduction to NC Baseline CO2 Emissions from Renewable Energy (EPA Level)

Reductions from BB3b	=	million lbs	65,111	27,170	827	0	**0**	0	**1,291 - 165 = 1,126 lbs/MWh**
			Coal	NCGG	Other*	Nuclear	**Renewables**	E Efficiency	
		million MWh	34	32	0	2.3	**12**	0	

[12] EPA also seeks comment on an alternative approach, in which state targets are set based on the lesser of (1) projected market potential, or (2) data on existing renewable energy generation and technical potential. According to EPA's technical support documents for this alternative, EPA appears to have identified an alternate renewable energy target for North Carolina of 5% of 2012 generation. As explained in body of these comments, this 5% target does not even represent North Carolina's commitments under its Renewable Energy Portfolio Standard, much less its full renewable potential.

[13] EPA, GHG Abatement Measures at 4-28, 4-30 (June 10, 2014), http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-ghg-abatement-measures.pdf.

a. North Carolina can easily meet and exceed this target, and is already bound to do so under the State REPS.

North Carolina is already on track to meet and exceed the level of renewable energy generation assumed in the Plan. In 2007, the North Carolina General Assembly enacted the State's Renewable Energy and Efficiency Portfolio Standard ("REPS"), the first (and to date, only) such standard in the Southeast. In 2012, renewables made up 2.3% of generation in North Carolina, equivalent to 2.7 million MWh. By 2021, North Carolina's REPS requires electric utilities to achieve combined renewable and energy efficiency levels of 12.5% of 2020 retail sales (municipal utilities and electric membership corporations must meet a lower target of 10%). For the state's largest utilities, Duke Energy Carolinas ("DEC") and Duke Energy Progress ("DEP"), this amounts to 21,969,750 MWh[14]—almost double the 11,668,176 MWh targeted under the Clean Power Plan. To the extent that the utilities elect to meet part of their REPS requirement with energy efficiency, these reductions will also count toward compliance with the Clean Power Plan target. Moreover, the utilities would still need to meet at least 13,181,850 MWh of the REPS requirements with renewable energy.[15] In sum, the Clean Power Plan renewable target for North Carolina is not only achievable, it must be achieved (and greatly surpassed) under existing North Carolina law.

b. EPA should strengthen North Carolina's renewables building block to reflect expected and required increases in renewable energy.

EPA's target significantly underestimates the potential for renewable energy in North Carolina in several ways, explained in more detail in the following sections. First, EPA assumed that states will not even start increasing their use of renewable energy until 2017—an assumption at odds with the reality of rapid renewable energy ("RE") deployment in North Carolina. North Carolina has significantly increased its investment in renewable energy resources since 2012, making the 2012 renewable generation numbers woefully out of date. Second, EPA's goal of 10% of 2012 generation does not even reflect North Carolina's REPS, which require almost twice what EPA assumes. Third, EPA's target is highly conservative because it is based on existing state policy, not on the cost-effective renewable potential in the state (or region). Finally, EPA assumes that new renewable energy will not displace any existing generation.

To correct its mistaken assumptions, EPA should (1) account for actual and expected renewables growth between 2013 and 2017, rather than assuming that North Carolina will not experience any renewable growth until 2017; (2) assume full compliance with current REPS requirements that are set by state law; (3) ensure that the growth rate of renewables deployment is at least as aggressive as historical rates; (4) update its formula to account correctly for emission reductions from renewable energy; and (5) clarify that out of state renewable energy

[14] This number is calculated using Duke Energy Progress and Duke Energy Carolina's retail sales projections for 2020 (175,758,000 MWh), and multiplying these sales projections by 12.5% to come up with their 2021 REPS requirements.

[15] The North Carolina REPS allows up to 40% of the 12.5% requirement (which equals 5% of total retail sales) to be met with energy efficiency.

certificates ("RECs") can be used towards compliance to ensure the most cost effective use of renewable energy.

i. EPA should account for actual and expected renewables growth between 2013 and 2017

EPA starts with each state's 2012 renewable energy generation, and then assumes that states will not begin ramping up renewable energy from 2012 levels until 2017. This approach fails to capture any of the recent or expected growth in renewable energy in North Carolina between 2012 and 2017, ignoring the significant investments that are already underway.

Since 2012, our state's renewable energy generation has increased from 2,704 GWh to 3,224 GWh. These increases are expected to continue due to North Carolina's ongoing RPS obligations and the ongoing dramatic cost declines in solar and wind technologies. The following figure shows that this growth in renewable generation to date reduces North Carolina's emission rate by 56 lbs/MWh.

Figure 11: Reductions Achieved To Date Through Renewable Energy and Nuclear Preservation

Reductions To Date Through Renewables and Nuclear	=	million lbs	**71,503**	23,554	10,076	**0**	**0**	0	**1,419 - 98 = 1,321 lbs/MWh**
			Coal	NCGG	Other	**Nuclear**	**Renewables**	E Efficiency	
		million MWh	**35**	28	11	**+ 2.3**	**+ 3.2**	0	

EPA should strengthen the renewable assumptions underlying its target for North Carolina to take into account the significant increase in renewable energy since 2012. Additionally, EPA should update these numbers again prior to 2017 to ensure that renewable energy targets reflect the real world investments that have already been made, allowing state targets to become more aggressive as states ramp up their renewable generation.

ii. EPA should assume full compliance with current RPS requirements that are set by state law.

North Carolina's REPS requires that the state's electric power suppliers (investor-owned utilities, electric membership corporations or co-operatives, and municipal utilities) supply an increasing portion of their retail electricity sales from renewable energy or energy efficiency resources. Beginning in 2012, each electric power supplier was required to meet 3% of the prior year's retail electricity sales from renewable energy resources; this percentage ultimately increases to 10% of retail sales in 2018 for all suppliers (capping out at this level for EMCs and municipal utilities), and 12.5% in 2021 for the investor-owned utilities. Through 2020, up to 25% of the total requirement (3.125% of sales) can come from implementation of energy efficiency and demand-side management measures, and in 2021 and after up to 40% of the

requirement (5% of sales) can come from EE/DSM. Under the REPS, renewable energy generated out of state may be purchased and used for compliance as long as it is delivered to a public utility that serves retail electric customers in North Carolina. In addition, utilities may comply by purchasing renewable energy certificates ("RECs"); no more than 25% of the requirements may be met with out-of-state RECs, however. N.C. Gen. Stat. § 62-133.8(b)-(c).

Under EPA's proposed approach, 17 of the 29 states with RPS obligations under state law have lower targets under the EPA approach than what is required to meet their existing state laws.[16] This includes North Carolina, whose electric suppliers have an obligation under its REPS to achieve approximately 34 million MWh of clean energy by 2021[17], but only11.7 million MWh by 2030 under EPA's proposed rule. This cannot reflect the "best" system of emission reduction. EPA should assume that state will achieve the greater of their EPA regional target or the level of renewables needed to comply with their state RPS obligations, and adjust the targets for states like North Carolina accordingly.[18]

Figure 12: North Carolina Existing Emission Reductions from Coal, NCGG, Other, and Nuclear, Plus Emission Reductions from Compliance with REPS Requirements

Existing Reductions and REPS Renewable	=	million lbs	**71,503**	23,554	10,076	0	0	0	**1,377 - 528 = 949 lbs/MWh**
			Coal	NCGG	Other	Nuclear	Renewables	E Efficiency	
		million MWh	**35**	28	11	2.3	14	20	

iii. EPA should ensure that the rate of renewables deployment is at least as aggressive as historical rates.

We urge EPA to ensure that the rate of renewable energy deployment assumed in the CPP's analysis is at least as aggressive as the historical rates of deployment. This will ensure that

[16] Clemmer, S. *EPA clean power plan underestimates power of renewable energy to reduce carbon emissions*. Oct. 2014. Available at http://blog.ucsusa.org/epa-clean-power-plan-underestimates-power-of-renewable-energy-to-reduce-carbon-emissions-682, last accessed November 23, 2014.

[17] The REPS requirements and compliance figures are based on the requirements for North Carolina's largest utilities, Duke Energy Carolinas and Duke Energy Progress. REPS requirements also apply to other entities, and therefore actual reductions through REPS compliance are larger than those presented in this analysis. This analysis includes an assumption that the utilities will elect to meet the 2021 REPS requirements through 2% annual avoided sales due to energy efficiency measures, and through renewable energy levels at 10.5% of 2020 retail sales. The MWh avoided sales achieved through energy efficiency measures are presented as the cumulative savings through 2030. The renewable energy MWh levels are based on 10.5% of Duke Energy Carolinas' and Duke Energy Progress' projected 2020 retail sales in NC (133,342,000 MWh). DEC 2014 IRP at tbl.C-5, Q:\eng-air\NC IRP (868)\2014 docket\e100 sub 141 DEC 2014 Annual Plan PUBLIC_Final.pdf; DEP 2014 IRP at tbl.C-5, Q:\eng-air\NC IRP (868)\2014 docket\E-100 Sub 141 DEP 2014 Annual Plan_Redacted.pdf

[18] Union of Concerned Scientists, *Strengthening the EPA's clean power plan*. Oct. 2014. Available at http://www.ucsusa.org/sites/default/files/attach/2014/10/Strengthening-the-EPA-Clean-Power-Plan.pdf, last accessed November 23, 2014.

renewable energy targets truly reflect the "best" system of emission reduction, based on real world information. EPA can use this information to set a national renewable energy growth rate benchmark based on demonstrated growth nationally from 2009 to 2013. The Union of Concerned Scientists ("UCS") has developed a "Demonstrated Growth" approach, which calculates a national average renewable energy benchmark growth rate of 1% of annual electricity sales based on actual state data from 2009 to 2013 from EIA. We encourage EPA to adopt the UCS Demonstrated Growth approach. For states below the benchmark, EPA should assume that these states can gradually achieve 1% by 2020 and continue at that level through 2030, similar to the approach that EPA takes for the energy efficiency building block. For the leading 15 states, EPA should assume that they can continue at their five-year average rate up to 1.5% per year.[19] This approach will better reflect recent growth in renewable energy across the country and allow those states with the best renewable energy policies to be captured in the rule rather than diminishing these aggressive state goals through averaging.

If EPA adopts these recommendations—increasing renewable energy growth rate benchmarks to reflect national best practices, assuming full compliance with state RPS policies and accounting for renewable energy growth from 2013-2017—UCS projects that these tweaks would increase the state's renewable energy target in 2020 from EPA's proposal of 4,477 GWh to 11,621 GWh.[20] In 2030, North Carolina could achieve 26,674 GWh of renewables, compared to EPA's proposed target of 11,668 GWh.[21] This analysis confirms that much more ambitious renewable energy targets are achievable.

Figure 13: Reduction to NC Baseline CO_2 Emissions from Renewable Energy (Achievable Level)

Reductions from Renewables (Achievable Level)	=	million lbs	65,111	27,170	827	0	**0**	0	**1,291 - 326 = 965 lbs/MWh**
			Coal	NCGG	Other*	Nuclear	**Renewables**	E Efficiency	
		million MWh	34	32	0	2.3	**27**	0	

iv. EPA should update its formula to account correctly for emission reductions from renewable energy.

In its October 27, 2014, Notice of Data Availability ("NODA"),[22] EPA explains that the formula used in its proposed rule did not adequately account for the emission reductions from renewable energy. As EPA explains, the original formula failed to account for the reduction in generation at coal and gas power plants that will occur when generation from additional renewables is added to the grid. When EPA sets final state targets, it should use the corrected

[19] Union of Concerned Scientists, *Strengthening the EPA's clean power plan*. Oct. 2014. Available at http://www.ucsusa.org/sites/default/files/attach/2014/10/Strengthening-the-EPA-Clean-Power-Plan.pdf, last accessed November 23, 2014.

[20] UCS Demonstrated RE Growth State Levels Excel Spreadsheet, Attachment 2.

[21] *Id*.

[22] U.S. EPA, Notice of Data Availability, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 64,543 (Oct. 30, 2014).

formula proposed in the Notice of Data Availability to ensure that renewable energy is given full credit for its ability to displace fossil generation and reduce emissions from carbon dioxide. [23]

v. EPA should allow out-of-state RECs to count towards compliance.

EPA is proposing that a state could take into account all of the CO_2 emission reductions from renewable energy procured by electric suppliers in the state, whether they occur in-state or in other states.[24] This approach is consistent with existing state RPS policies, such as North Carolina's, which often allow for the use of renewable energy generated in another state to comply with a portion of an RPS, so long as the renewable energy is properly tracked and credited. Allowing states to comply with targets using out-of-state purchases of renewable energy will greatly increase the cost-effectiveness of using renewables as part of a compliance strategy. Importantly, EPA should ensure that compliance credit goes to the states where the purchasers of RECs and energy reside, regardless of where the renewable energy was physically generated.

Renewable energy has been tracked and traded in the United States for nearly 20 years, resulting in integrated electronic tracking systems and standardized approaches to trading and establishing ownership.[25] The currency for these trading systems is the Renewable Energy Certificate ("REC"), which represents the "renewable attributes" of a MWh of energy.[26] North Carolina operates its own REC trading system, known as the North Carolina Renewable Energy Tracking System or "NC-RETS."[27] The attributes embodied in a REC depend on state law, but typically include the legal right to claim delivery and usage of renewable energy.[28] The consistent feature of REC trading is that each REC should only be used (or "retired") once. The goal of a tracking system is to give states (and EPA) confidence that investments in renewable energy are adequately quantified, non-duplicative, and verifiable.

E. North Carolina can achieve—and exceed—the energy efficiency savings in Block 4.

Building Block 4 involves reducing fossil-fueled generation using demand-side energy efficiency resources (also called "end-use" energy efficiency measures, to distinguish them from increased efficiency at the power plant). Energy efficiency is an abundant, least-cost resource that has been deployed successfully across the United States for decades. Given the proven track record of energy efficiency programs, leading national organizations of utility regulators, state energy officials, and state air regulators have expressed their support for using energy efficiency

[23] Between the two proposed formulas for backing out historical fossil generation, we favor substitution on a pro rata basis across generation types.

[24] Prepublication version of CPP, p. 495.

[25] Quarrier, R. and D. Farnsworth. 2014. Tracking renewable energy for the U.S. EPA's clean power plan: Guidelines for states to use existing REC tracking systems to comply with 111(d), available at http://www.resource-solutions.org/pub_pdfs/Tracking%20Renewable%20Energy.pdf, last accessed November 23, 2014.

[26] *Id*. at 4.

[27] *Id*. at 5.

[28] *Id*.

as a means to meet the carbon reduction targets set through the CPP.[29] Energy efficiency lowers the costs of providing electricity to all customers and reduces utility bills. [30] Energy efficiency also reduces environmental impacts and compliance costs, conserves water, reduces energy market prices, lowers portfolio risk, promotes local economic development and job growth, and assists low and fixed income populations.[31] Critics often claim that energy efficiency is hard to achieve in states like North Carolina with relatively low electricity rates; however, this claim is belied by the fact that several states with leading energy efficiency programs have electricity rates comparable to, or even lower than, rates in North Carolina.[32]

1. EPA's development of Block 4.

In developing the Clean Power Plan's state goals, EPA calculated that all states could attain minimum annual incremental savings of 1.5% of retail sales from energy efficiency measures by 2030, by ramping up savings from 2012 levels by 0.2% per year starting in 2017.[33] For NC, EPA assumed cumulative savings of 10.26% from 2020-2029.[34] The incremental savings levels assumed in 2017 were based on the state's 2012 level of performance. For North Carolina, EPA started with projected incremental savings in 2017, and increased these savings by 0.2% annually until reaching 1.5% in 2025. EPA then held the 1.5% level constant through 2030. This building block lowers North Carolina's target emission rate by 133 lbs/MWh.

Figure 14: Reduction to NC Baseline CO_2 Emissions from Energy Efficiency (EPA Level)

Reductions from BB4	=	million lbs	65,111	27,170	827	0	0	**0**	**1,126 - 133 = 993 lbs/MWh**
			Coal	NCGG	Other*	Nuclear	Renewables	**E Efficiency**	
		million MWh	34	32	0	2.3	12	**12**	

Collectively, these energy efficiency assumptions resulted in cumulative savings of 12,169,442 MWh of avoided generation in North Carolina in 2030. EPA assumed that states that are net importers of electricity will receive credit for only a portion of their energy efficiency investments. As a net electricity importing state, North Carolina receives credit for 86% (its share of in-state generation) of its energy efficiency investments.[35] Therefore, EPA reduced the level of avoided generation to reflect this assumption As discussed below, modifications to this

[29] National Association of Regulatory Utility Commissioners, National Association of Clean Air Agencies, and National Association of State Energy Officials. Principles for Including Energy Efficiency in 111(d) of the Clean Air Act. May 2014. http://naruc.org/Publications/Energy-Efficiency-Principles.pdf.

[30] *See* Direct Testimony of Timothy J. Duff, North Carolina Utility Commission Docket No E7 Sub 1032, p 13.

[31] *Supra* note 1. *See also Analyzing and Managing Bill Impacts of Energy Efficiency Programs: Principles and Recommendations,* Utility Motivation and Energy Efficiency Working Group, State and Local Energy Efficiency Action Network (July 2011) at 6, note 4. *Available at* http://www1.eere.energy.gov/seeaction/pdfs/ratepayer_efficiency_billimpacts.pdf.

[32] John D. Wilson, Energy Efficiency Program Impacts and Policies in the Southeast (May 2009) at 4, http://www.cleanenergy.org/images/files/SACE_Energy_Efficiency_Southeast_May_2009.pdf.

[33] 79 Fed. Reg. at 34,872.

[34] EPA, Goal Computation Appendix 1, http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents.

[35] EPA, Goal Computation Technical Support Document, Appendix 1.

assumption should be made so that importing states receive full credit for the efficiency programs that they implement. This is especially important because the principal arguments in favor of employing higher levels of efficiency center around the benefits of avoiding supply-side generation.

2. EPA's development of Block 4 significantly underestimates the potential for energy efficiency in North Carolina.

EPA used assumptions about energy efficiency ("EE") in developing Block 4 that are overly conservative and that result in a target that is too low. First, EPA assumed no growth in annual efficiency savings between 2012 and 2017—an assumption at odds with EPA's reasonable expectation that states should be able to increase their incremental energy savings over the 2017 to 2022 period. In addition, the assumption of a 0.2% ramp rate is far too slow. Further, EPA's assumption that 1.5% annual savings are possible from energy efficiency ignores the fact that leading states are already achieving annual savings of 2% and higher. Finally, EPA excluded several sources of energy efficiency savings with huge potential, such as building codes, transmission and distribution, voltage optimization, and combined heat and power.

To ensure that North Carolina's emission rate target reflects the state's full energy efficiency potential, EPA should: (a) ensure that energy efficiency potential assumptions are reflective of true potential; (b) update energy efficiency cost assumptions to reflect current information; (c) update the emission rate formula to account correctly for emission reductions achieved through energy efficiency; and (d) incorporate the full value of energy efficiency programs as a compliance mechanism.

a. EPA's energy efficiency potential assumptions underrepresent the full potential in North Carolina.

As with renewable energy, North Carolina is already on track to meet or beat the modest level of energy efficiency that EPA assumed in the CPP. As explained previously, a portion of the utilities' REPS obligation may be met with EE: up to 3.125% of retail sales can come from EE through 2020, and up to 5% can come from EE in 2021 and after.[36] Importantly, this is an annual percentage, not a cumulative percentage. Because EE/DSM resources are the lowest cost energy resources, North Carolina's electric suppliers are expected to maximize their use of these resources for REPS compliance.

North Carolina's major electric utilities have already made a serious commitment to aggressive energy efficiency goals. In connection with the merger of Duke Energy and Progress Energy, DEC and DEP each agreed to adopt an annual energy efficiency savings performance target of 1% of the prior year's retail electricity sales beginning in 2015 and a cumulative target of 7% of retail electricity sales over the five-year period 2014-2018.[37] In their Integrated

[36] N.C. Gen. Stat. § 62-133.8.

[37] The EE savings targets were memorialized in a settlement agreement with Southern Alliance for Clean Energy, the South Carolina Coastal Conservation League and Environmental Defense Fund, which was approved by the Public Service Commission of South Carolina in its Order Approving Joint Dispatch Agreement, Order 2012-517, SC PSC Docket No. 2011-158-E (July 11, 2012) at 43.

Resource Plans, DEC and DEP each modeled a level of EE that was based on these performance targets. DEC modeled a "High EE" scenario under which it achieved a total load reduction of 11% over the 2009-2029 period.[38] Under DEP's "High EE" scenario, the utility would achieve a 9.1% total load reduction from 2009-2029.[39] In its 2014 IRP, DEC projects that its energy efficiency programs will reduce demand and load by about 7.6% of retail sales by 2022, or about 1700 MW.[40]

Moreover, efficiency savings achieved in leading states demonstrate the increasing achievability of energy efficiency. Eleven states achieved energy savings of over 1% of retail sales in 2012,[41] and leading utilities are already saving from 1.5-2% of annual electricity sales.[42] National investments in utility energy efficiency programs have grown at a rapid pace—increasing from $1.6 billion in 2006 to $5.9 billion in 2011[43]—and are projected to continue to increase to between $8.1 billion and $12.2 billion over the next decade, with the most significant increases occurring in regions with lower levels of historical program spending.[44] Given these trends, and the comparatively low levels of energy efficiency currently being realized in North Carolina, the potential to ramp up energy savings across the State is enormous,[45] and North Carolina's utilities can and should achieve much higher levels of energy savings going forward.

b. EPA should update its energy efficiency cost assumptions to reflect up-to-date costs of efficiency programs.

Energy efficiency is recognized as the most widely available and lowest-cost option for reducing carbon emissions.[46] EPA's Regulatory Impact Analysis on the Clean Power Plan cites two studies finding that demand-side efficiency improvements can be realized at less cost than the savings from avoided power generation.[47] However, EPA's estimates of energy efficiency

[38] DEC 2014 IRP at pdf p. 52, Q:\eng-air\NC IRP (868)\2014 docket\e100 sub 141 DEC 2014 Annual Plan PUBLIC_Final.pdf

[39] DEP 2014 IRP at pdf p. 51, Q:\eng-air\NC IRP (868)\2014 docket\E-100 Sub 141 DEP 2014 Annual Plan_Redacted.pdf

[40] Calculated by comparing projected 2022 gross EE impacts, DEC 2014 IRP at 102, to projected 2022 retail sales, DEC-DEP Response to Public Staff Data Request Item 1-9.

[41] *Id.* at 5-17–5-19.

[42] ACEEE 2014 Scorecard

[43] Abatement TSD at 5-2, 5-14–5-15, 5-19.

[44] *Id*.

[45] Abatement TSD at 5-19.

[46] Maggie Molina, Am. Council for an Energy-Efficient Economy, *The Best Value for America's Dollar: A National Review of the Cost of Utility Energy Efficiency Programs* (Mar. 2014), *available at* aceee.org/research-report/u1402; Sara Hayes and Garrett Herndon, Am. Council for an Energy-Efficient Economy, *Trailblazing Without the Smog: Incorporating Energy Efficiency into Greenhouse Gas Limits for Existing Power Plants* (Oct. 2013), *available at* www.aceee.org/research-report/e13i.

[47] U.S. EPA, Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants 2-14 (June 2014) ("RIA"), *available at* www.epa.gov/ttn/ecas/regdata/RIAs/111dproposalRIAfinal0602.pdf.

costs, which reflect a very low cost compared to supply-side resources, are likely too high.[48] In practice, energy efficiency costs are one half to one third less than the capital cost of the resources they displace: deferred capital investment drives the cost of energy efficiency measures to 2.1-2.8 cents/kWh of saved energy.[49] On average, energy efficiency programs that are deployed in the Southeast now cost 2.8 cents per kilowatt hour (kWh).[50]

Cost assumptions that reflect the true cost of energy efficiency programs are vital if states are to capture all cost-effective energy efficiency resources. As a result, EPA's cost assumptions should include the more realistic assessments that are being seen in the marketplace.

c. EPA should revise its goal-setting formula to correctly account for emission reductions from energy efficiency resources.

As described in more detail above, EPA failed to properly account for energy efficiency and renewable energy resources in the goal-setting formula. Rather than backing out the equivalent level of existing fossil-fired generation that these resources would displace, EPA simply added the generation from these resources into the denominator of the lbs/MWh emission rate. EPA should adopt the methodology set forth in the NODA to capture the emission-reduction benefits of these resources fully.

d. EPA should revise its goal-setting formula for states that are net-importers of electricity.

In its goal-setting formula, EPA assumed that states that are net importers of electricity should receive credit for only a portion of their energy efficiency investments. The portion is represented as the share of in-state generation that is not imported. As a net electricity importing state, North Carolina receives credit for 85% of its energy efficiency investments, which represents its share of in-state generation in 2012. However, this assumption discounts the value of energy efficiency programs as a compliance mechanism.

EPA should revise its formula so that the full level of energy efficiency resources that a state invests in will be counted as a compliance mechanism. This is especially true if EPA were to adopt the approach set forth in its NODA and adjust its emission rate formula to reflect the fact that renewable energy and energy efficiency resources are deferring fossil-fired generation. Such an adjustment will be required so that the calculation adequately represents the underlying assumption. For states like North Carolina that are net importers, it is important that they get full credit for their investments in energy efficiency where such investments are reducing generation from fossil-fired resources. Without such an assumption, a significant amount of energy

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[48] *See* Molina at 34–37; Megan A. Billingsley, et al., Lawrence Berkeley Nat'l Lab., *The Program Administrator Cost of Saved Energy for Utility Customer-Funded Energy Efficiency Programs* 52–57 (Mar. 2014), *available at* http://emp.lbl.gov/sites/all/files/lbnl-6595e.pdf.

[49] *See* Megan A. Billingsley *et al*., Lawrence Berkeley National Laboratory, "The Program Administrator Cost of Energy Saved for Utility Customer-Funded Energy Efficiency Programs," at xi (March 2014); Maggie Molina, American Council for an Energy Efficient Economy, "The Best Value for America's Energy Dollar," at iii (March 25, 2014).

[50] *See* Molina at 39.

efficiency will not be recognized as a compliance option, even if the practical effect of such programs is that they are displacing in-state generation.

Figure 15: Reduction to NC Baseline CO_2 Emissions from Energy Efficiency (Adjusted)

Reductions from BB4	=	million lbs	65,111	27,170	827	0	0	**0**	**1,125 - 156 = 969 lbs/MWh**
			Coal	NCGG	Other	Nuclear	Renewables	**E Efficiency**	
		million MWh	34	32	0	2.3	12	**20**	

F. Given the expected growth of renewable energy and energy efficiency resources in North Carolina, EPA should set a much lower target for the state.

If EPA had taken into account the actual expected renewable and energy efficiency growth in North Carolina, the State's target would be much lower. The following figure shows that North Carolina is poised to achieve a target of 809 lbs/MWh, taking into account the expected renewable and energy efficiency growth. EPA should revise North Carolina's target to match the real-world reductions that are expected to occur in the state.

Figure 16: Revised NC Target, Adjusted To Include Achievable Renewable and Energy Efficiency Levels

Reductions from Achievable Renewables and E Efficiency	=	million lbs	65,111	27,170	827	0	**0**	**0**	**1,291 - 363 = 809 lbs/MWh**
			Coal	NCGG	Other	Nuclear	**Renewables**	**E Efficiency**	
		million MWh	34	32	0	2.3	**27**	**20**	

II. <u>The Clean Power Plan will create net benefits for everyone in North Carolina.</u>

A. The Clean Power Plan will reduce energy costs for customers.

The Clean Power Plan's economic benefits to North Carolina electricity customers far outweigh the costs of compliance with the Plan. According to a report by Synapse Energy Economics, Inc. (the "Synapse Report"), North Carolina customers will save **$201 to $348 million** dollars each year in 2030 and beyond by complying with the Clean Power Plan.[51] These savings result from the use of energy efficiency and renewables to displace the higher operating and fuel costs of existing fossil plants (i.e., coal, NGCC, and other power plants that burn fossil fuels). The total savings increase with increased reliance on energy efficiency.

Importantly, these benefits are limited to savings to electric utility customers, and do not include a host of additional benefits such as job creation, economic growth, and improvements to public health and welfare resulting from lower carbon dioxide emissions. These additional benefits are discussed in more detail below.

[51] Synapse Energy Economics, Inc., Alternate Scenarios for 111(d) Implementation in North Carolina (Nov. 26, 2014), Attachment 3.

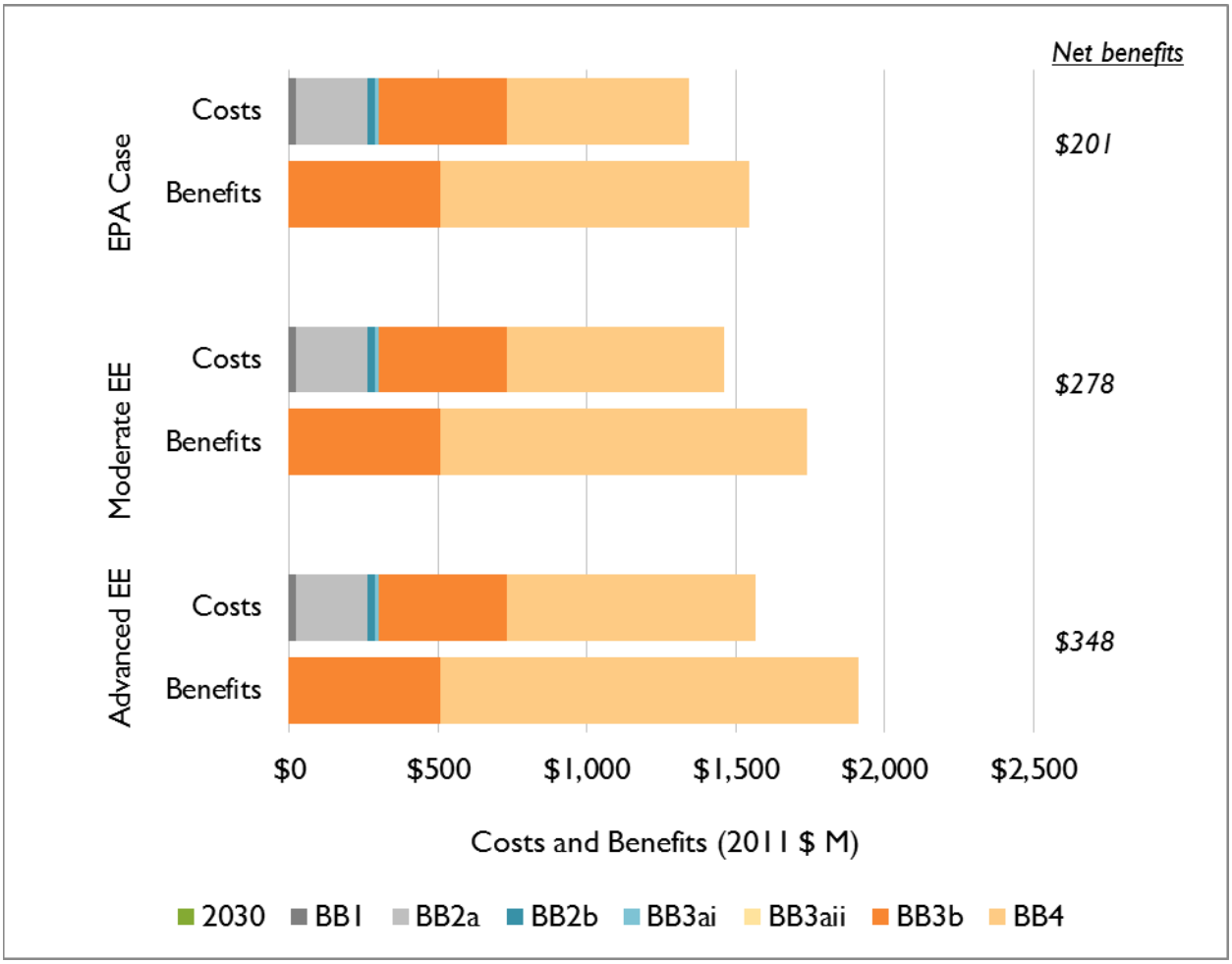
Figure 15, below, shows the net benefits (i.e., the benefits minus the costs) of the Clean Power Plan to North Carolina customers under three scenarios at varying levels of efficiency savings:

(1) North Carolina's compliance matches the reductions identified in each of the building blocks (the "EPA Case"), including 1.5% annual energy efficiency savings by 2023, for net cumulative savings of 10.76% by 2030;

(2) North Carolina increases its annual energy efficiency savings level to 1.75% by 2023 ("Moderate EE"); and

(3) North Carolina increases its annual energy efficiency savings to 2% by 2022 ("Advanced EE").

Figure 17: Annual Ratepayer Costs and Benefits of Clean Power Plan Compliance in North Carolina by 2030



BB1: Coal plant heat rate improvements BB2a: Redispatch to existing natural gas BB2b: Redispatch to under-construction natural gas BB3ai: Maintain 6% of existing nuclear BB3aii: Under-construction nuclear BB3: Increase renewable generation to 10% BB4: Energy efficiency

Under the EPA Case, North Carolina customers will save $201 million in annual benefits by 2030. If North Carolina relies more heavily for compliance on energy efficiency, the cheapest system resource—as allowed by the flexibility of the Clean Power Plan—then the net benefits rise to $348 million under the Advanced EE scenario, or $278 million under the Moderate EE scenario.

The Advanced EE scenario represents an aggressive but attainable savings level, based on savings levels already achieved in several leading states.[52] The Moderate EE scenario represents a savings level that is in line with savings that are already achieved and targeted in an even greater number of states. Cumulative energy savings under both scenarios are estimated using EPA's Clean Power Plan GHG Abatement Scenario 1 EE Savings Tool.[53]

It is important to note that increased energy efficiency savings will reduce the need for North Carolina to rely on other compliance tools, reducing costs even further. This impact is not shown in the Moderate and Advanced EE scenarios, which instead depict the other building blocks as constants and the additional energy efficiency savings as additive—in other words, the Moderate and Advanced EE scenarios show the impacts of *overcompliance* with the Clean Power Plan. In reality, additional energy efficiency would displace the extent to which North Carolina needs to rely on other, more expensive compliance tools, reducing the costs of compliance and increasing the net benefits of the Clean Power Plan to even more than $278 or $348 million.

1. Benefits Analysis

The customer benefits in Figure 15 result from the increased use of lower-cost resources (energy efficiency and renewables) and the corresponding decrease in generation from higher-cost resources.[54] In each scenario, generation from existing coal, gas, and other fossil units is replaced with generation from energy efficiency and renewables. Coal units are displaced first, followed by other fossil units, then existing NGCCs, then under-construction NGCC units. This methodology is consistent with the principle that coal and other higher-emitting units would be displaced before natural gas units, in order to achieve compliance with the Clean Power Plan in a more efficient and expeditious manner. In the alternative that more costly to operate oil- or gas-fired units are displaced by these additional energy efficiency and renewable resources, the net benefits of the Clean Power Plan would be even greater.

Increasing energy efficiency above the EPA-Case level in the Moderate EE scenario has the effect of displacing 1,700 GWh of fossil generation in 2020, rising to 3,500 GWh in 2030. As a result of even higher energy efficiency savings, the Advanced EE scenario displaces 3,700 GWh of existing fossil generation in 2020, and 6,600 GWh in 2030.

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[52] These states include Vermont, Massachusetts, and Rhode Island. For achieved savings levels see: ACEEE. 2013. The 2013 State Energy Efficiency Scorecard, Appendix H, November 2013; EEAC Consultant. 2014. "2013 Plan-Year Reports, EECA Consultant, Initial Review." Available at: http://www.ma-eeac.org/Presentations.html; and: National Grid. 2014. 2013 Energy Efficiency Year-End Report, May 1, 2014.

[53] The EE Savings Tool is available at: http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents.

[54] The benefits of replacing existing fossil generation are calculated by multiplying the displaced generation from each existing resource by its variable operating costs, including fuel. Operating and maintenance costs for existing units were derived from the Electricity Market Module used in the 2014 Annual Energy Outlook. EIA. Electricity Market Module: Assumption to Annual Electricity Outlook 2014. Table 8.2, page 97.2. Available http://www.eia.gov/forecasts/aeo/assumptions/pdf/electricity.pdf. Fuel cost projections for existing units were calculated using the price of fuel delivered to electric power consumers in the South Atlantic region, as outlined in the 2014 Annual Energy Outlook

2. Cost analysis

a. Cost assumptions for coal efficiency upgrades

The cost of coal efficiency upgrades is based on EPA's national average cost of lowering the emission rate of coal results: $8 per metric ton of CO_2.[55] Assuming an average marginal coal unit emission rate of 907 pounds per MWh, this compliance cost translates into a cost of $3 per MWh.

b. Cost assumptions for re-dispatch to NGCCs

The cost of re-dispatch to natural gas is based on EPA's national average cost of the price incentive necessary to re-dispatch from coal and steam generation to new and under-construction NGCCs: $33 per metric ton of CO_2.[56] Assuming an average marginal coal unit emission rate of 907 pounds per MWh, this compliance cost translates into a cost of $14 per MWh.

c. Cost assumptions for at-risk nuclear

The cost of maintaining at-risk nuclear plants is based on EPA's national average cost of $6 per MWh.[57]

d. The cost of renewable energy is lower than EPA recognizes, resulting in greater net benefits.

EPA relied on outdated assumptions about the costs of renewable energy. Current data show that wind and solar technologies are significantly less costly than EPA assumed in its analysis. In fact, a recent analysis by the Natural Resources Defense Council shows that EPA used outdated renewable energy cost and performance numbers, including levelized costs for both wind and solar energy that are 46% above current averages.[58] We encourage EPA to update cost and performance data for renewable energy resources in order to reflect the dramatic cost reductions that have occurred in recent years. Reliance on outdated cost assumptions grossly underestimates the cost-effective renewable energy potential in North Carolina.

The price of wind and solar have dropped precipitously in recent years, fueling tremendous growth in these technologies.[59] The cost decreases have been so substantial that both technologies are now out-performing fossil generation in many areas of the country.[60]

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[55] 111(d) Greenhouse Gas Abatement TSD, p.2-39. Levelized capital costs less coal savings. Only 2020 cost is available; used for all years.

[56] 111(d) Greenhouse Gas Abatement TSD, p.2-36. Average cost to reach 70% capacity factor; state re-dispatch constraint; assumes "CO_2 charges on the variable cost of dispatch for existing coal, steam, IGCC, and O/G steam with emission rates greater than 1,100 lbs/MWh)." Only 2020-2029 cost is available; using for all years.

[57] 111(d) Greenhouse Gas Abatement TSD, p. 4-34. Only 2012 cost is available; using for all years.

[58] http://www.nrdc.org/air/pollution-standards/clean-power-plan-energy-savings.asp

[59] American Wind Energy Association. State Wind Energy Statistics: South Carolina at 6 (April 2014). Available at http://www.awea.org/Resources/state.aspx?ItemNumber=5186, last accessed November 25, 2014.

[60] Diane Cardwell, Solar and Wind Energy Start to Win on Price vs. Conventional Fuels, The New York Times (Nov. 23, 2014).

Wind costs have dipped to as low as 1.4 cents per kWh,[61] while utility-scale solar has reached lows of under 5 cents per kWh.[62]

These cost declines are not reflected in EPA's IPM model. For wind, EPA projects capital costs of $2.26 per watt in 2016 to $2.04 per watt in 2030.[63] However, the U.S. Department of Energy (DOE) has determined that wind projects installed in 2013 were already much cheaper than these projections, with pricing in the $0.90 to $1.30 per watt range.[64]

For solar, EPA's IPM modeling assumes solar PV installed costs of $3,098/kW.[65] This model adopts costs from the Energy Information Administration's (EIA) Annual Energy Outlook 2013. New industry data demonstrate that these cost assumptions are significantly out of date. The Natural Resources Defense Council ("NRDC") has compiled more recent solar cost information, based on data from the Department of Energy, Bloomberg New Energy Finance and SEIA,which assessed the cost of solar PV as an average of $1,770/kW.[66] Updating EPA's assumptions based on more current industry data would lower the levelized cost of solar energy from $224/MWh to $153/MWh.[67]

For illustrative purposes, the cost of renewables used in Figure 17 is based on the price of out-of-state RECs that are bundled together with energy purchases ("bundled RECs"). Bundled RECs would cost an estimated $48 per MWh, which includes the cost of new transmission projects and the cost of energy. The cost of new transmission projects is $26 per MWh, which is the estimated cost of transmission from a Class 5 wind resource into North Carolina. This estimate is based on currently operational and under-development transmission projects from the Interior to the Southeast, in addition to a Black & Veatch report on transmission project costs.[68]

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[61] *Id.*

[62] Eric Wesoff, *Cheapest Solar Ever? Austin Energy Buys PV from SunEdison at Five Cents Per Kilowatt-Hour*, Greentech Media (March 10, 2014), available at http://www.greentechmedia.com/articles/read/Cheapest-Solar-Ever-Austin-Energy-Buys-PV-From-SunEdison-at-5-Cents-Per-Ki, last accessed November 25, 2014.

[63] EPA Power Sector Modeling Platform v.5.13, Chapter 4: Generating Resources, Table 4-16, Performance and Unit Cost Assumptions for Potential (New) Renewable and Non-Conventional Technology Capacity in EPA Base Case v.5.13, available at http://www.epa.gov/powersectormodeling/BaseCasev513.html, last accessed November 22, 2014. EPA's cost estimates are based on EPA's application of the Integrated Planning Model (IPM) v5.13. Documentation describing assumptions, updates, and changes are available at: http://www.epa.gov/powersectormodeling/BaseCasev513.html.

[64] DOE Wind Technologies Market Report 2013, *available at* http://emp.lbl.gov/sites/all/files/2013_Wind_Technologies_Market_Report_Final3.pdf, last accessed November 22, 2014.

[65] NRDC, Issue Brief: The EPA's Clean Power Plan Could Save Up to $9 Billion in 2030. November 2014. Available at http://www.nrdc.org/air/pollution-standards/files/clean-power-plan-energy-savings-IB.pdf, last accessed November 25, 2014.

[66] *Id.* at Note 7.

[67] *Id.* at Note 3.

[68] Black & Veatch. "Capital costs for transmissions and substations." Prepared for WECC. October 2012. Available at: https://www.wecc.biz/Reliability/BV_WECC_TransCostReport_Final.pdf. Because transmission costs are primarily driven by the miles covered by a transmission line and the number of substations required, this figure represents the estimated distance from Class 5 wind resources to a large city in North Carolina with a similar spacing of substations as reported on a recently built line from Texas to Tennessee.

The cost of energy is $22/MWh, and is based on recent costs associated with purchasing power from a wind developer through a long-term power purchase agreement (PPA).[69]

Although this analysis assumed that bundled RECs are used for compliance, it is possible that other forms of renewable energy may present even lower cost options, in which case the net benefits of the Clean Power Plan would be even higher. For example, the costs of unbundled RECs would be even lower than the cost of bundled RECs, since unbundled RECs would not require the addition of new transmission lines. In addition, in-state renewable energy resources may provide even lower-cost options. Georgia Power Company is currently seeking approval for 515 MW of new utility-scale solar generation at an average price of less than 6.5 cents per kWh.[70] Georgia Power has stated that these contracts are priced below the Company's projected avoided costs, meaning that they provide "overwhelming benefit" to customers in the form of projected energy savings.[71]

The solar and wind cost declines projected by market experts are the product of rapid technological advances, so it is understandable that EPA's proposal does not adequately capture them. However, EPA should ensure that the final rule does include updated cost projections. In addition, EPA should use those updated projections to more accurately quantify the amount of renewable energy that can be deployed at reasonable cost in North Carolina.

We recognize that the North Carolina REPS requires a certain amount of renewable energy to be purchased in-state, as opposed to purchase through out-of-state RECs. To the extent the cost of in-state renewable generation is greater than out-of-state generation, these costs are not reflected in Figure 17 because they would be a result of North Carolina's REPS, rather than EPA's Clean Power Plan. However, we anticipate that electric utilities will pursue the least-cost path toward meeting their REPS requirements, consistent with their obligation to minimize costs to customers. The experience of REPS implementation to date bolsters this expectation: an independent study by RTI International and La Capra Associates found that North Carolina's REPS has led to no appreciable rate impact on North Carolina ratepayers.[72]

e. The cost of energy efficiency is lower than EPA recognizes, resulting in greater net benefits.

EPA greatly overestimated the cost of energy efficiency in its Clean Power Plan analysis. When EPA's inflated cost assumptions are corrected, the cost of compliance is far lower than EPA anticipates, resulting in greater net benefits to ratepayers. We encourage EPA to update its energy efficiency costs to reflect the real-world, lower cost of energy efficiency.

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[69] Synapse market research.

[70] Lacey, Stephen. *Georgia is the latest state to procure dirt-cheap solar power*. Oct. 15, 2014. Available at http://www.greentechmedia.com/articles/read/how-cheaply-can-georgia-power-buy-solar-for-6.5-cents; last accessed November 23, 2014.

[71] Georgia Power Company, Application for Certification of 2015 and 2016 ASI Prime PPAs and Request for Approval of 2015 ASI PPAs, Direct Testimony filed Oct. 21, 2014, Georgia Public Service Commission Docket No. 38877 at 12.

[72] Lawrence, S., R. Loomis, R. Stevens et al., RTI International and La Capra Associates. *The Economic, Utility Portfolio, and Rate Impact of Clean Energy Development in North Carolina*. Feb. 2013. At 4-12.

In its analysis, EPA estimates that the cost of energy efficiency is 8.5 to 9.0 cents/kWh.[73] Data from recent years, however, show that the median cost of utility-administered energy efficiency programs is 3.1 cents per kWh. Applying EPA's annual energy efficiency price escalation rate, this cost is expected to grow to 3.3 cents per kWh in 2020 and up to 3.5 cents per kWh in 2030 (which translates to $33 per MWh in 2020 and $35 per MWh in 2030). EPA's estimate therefore overstates the cost of energy efficiency by almost three times what has been demonstrated and what is expected in coming years. An analysis by NRDC similarly reveals that EPA used extremely conservative energy efficiency costs that are 68 to 81% higher than current averages.[74]

The more realistic cost estimate presented in these comments is based on an in-progress literature review of recent cost of saved energy ("COSE") estimates, standardized to use the same basic assumptions of discount rate, measure life time, and dollar year. Across 10 studies, program administrators' COSE values range from 2.5 to 5.6 cents per kWh of lifetime savings, with a median value of 3.1 cents per kWh and an average value of 3.3 cents per kWh.

In sum, the Clean Power Plan—far from increasing electricity costs, as many detractors claim—will lower electric utilities' costs to serve North Carolina customers. Moreover, higher levels of energy efficiency will reduce costs even further. In addition to lowering electric system costs, compliance with the Plan will benefit North Carolina's citizens in a number of ways, as described below.

B. The Clean Power Plan will spur job growth in North Carolina.

Compliance with the Clean Power Plan will generate additional jobs and spur business growth in North Carolina. Thanks to the State's proactive policies, North Carolina's clean energy sector is already thriving and poised for explosive growth as the nation transitions toward a lower-carbon economy. The employment and business opportunities that will be spurred by EPA's plan include work in the solar, wind, energy efficiency, and energy storage sectors, as well as opportunities related to heat rate improvements at coal plants and increased dispatch of natural gas power plants.

According to an analysis prepared by ICF International, Inc. for the Natural Resources Defense Council, the Clean Power Plan can create approximately 6,700 jobs in North Carolina.[75] These job opportunities will grow if North Carolina pursues advanced energy efficiency savings.

North Carolina's substantial progress toward meeting its Clean Power Plan target is largely due to its robust clean energy sector, which has been creating jobs for years. According to a report by Environmental Entrepreneurs, North Carolina announced over 10,000 clean energy jobs in 2012, including but not limited to jobs in solar energy, energy efficiency, and wind

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[73] http://www.nrdc.org/air/pollution-standards/files/clean-power-plan-energy-savings-IB.pdf.

[74] http://www.nrdc.org/air/pollution-standards/clean-power-plan-energy-savings.asp.

[75] Natural Resources Defense Council, *New Carbon Pollution Standards Can Save Americans $37.4 billion on Electric Bills, Create 274,000 Jobs*, http://www.nrdc.org/media/2014/140529.asp; http://www.nrdc.org/air/pollution-standards/files/cps-state-benefits-NC.pdf

energy.[76] Between 2007 and 2012, clean energy developments generated $1.4 billion in project investments, while creating or saving more than 20,000 jobs.[77] The North Carolina clean energy economy has continued to grow dramatically since that time. Between 2013 and mid-2014, Strata Solar announced nearly 800 jobs in solar construction in North Carolina. In 2014, Alevo announced the development of a battery manufacturing plant that will come online in early 2015 and employ 2,500 workers to create batteries for utility-scale storage, which will help increase the efficiency of existing power plants and renewable resources.

Solar in particular is booming in North Carolina and across the country. Nation-wide, there are nearly 143,000 Americans working in the solar industry, a 20% increase since 2012.[78] There are now more Americans working in the solar industry than are currently working as coal miners.[79] According to the Department of Energy's SunShot Vision Study, continued cost reductions will lead to over 340,000 workers in the solar industry by 2030.[80]

C. The Clean Power Plan will benefit North Carolinians' health and welfare.

By reducing the need for polluting, fossil-fueled generation, the Clean Power Plan will benefit the health and welfare of people across North Carolina. Cleaner air and cleaner water will result in lower incidences of illness and disease and fewer deaths from pollution-related illnesses.

EPA's proposal encourages the use of clean energy resources like energy efficiency and renewable energy, which have many additional co-benefits. Emissions from coal power cause asthma, heart disease, and other health impacts due to air and water pollution.[81] EPA estimates that its proposal will lead to a 25% reduction in the pollutants that cause soot and smog.[82] EPA's proposed regulation is expected to avoid 2,700-6,600 premature deaths and 140,000-150,000 asthma attacks every year.[83] In North Carolina, these health benefits would translate to 1,300 lives saved from 2020 to 2030, as well as hundreds of avoided hospitalizations and heart attacks.[84] Nationwide, this proposed rule will lead to $55-93 billion in public health and climate benefits compared to $7-8 billion in compliance costs.[85]

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[76] http://cleanenergyworksforus.org/wp-content/uploads/2013/07/North-Carolina.pdf.

[77] http://c.ymcdn.com/sites/www.energync.org/resource/resmgr/Resources_Page/NCSEA_RTI_LaCapraStudy2013.pdf.

[78] The Solar Foundation, *National Solar Job Census 2013*, available at http://thesolarfoundation.org/research/national-solar-jobs-census-2013, last accessed November 23, 2014.

[79] Wile, Rob. Business Insider. *The US now has more solar workers than coal miners*. July 2014. Available at http://www.businessinsider.com/us-has-more-solar-workers-than-coal-miners-2014-7, last accessed November 23, 2014.

[80] U.S. Dep't of Energy, *SunShot Vision Study*. February 2012. Available at http://www.eere.energy.gov/solar/sunshot/vision-study.html, last accessed November 22, 2014.

[81] Id. at 18, citing Golin, C.B. Towards the full cost of coal: a review of recent literature assessing the negative health care externalities associated with coal-fired electricity production. 2012.

[82] EPA Fact Sheet: Clean Power Plan. 2014. Available at http://www2.epa.gov/sites/production/files/2014-05/documents/20140602fs-overview.pdf; last accessed November 24, 2014.

[83] *Id*.

[84] Harvard School of Public Health, *Health Co-Benefits of Carbon Standards for Existing Power Plants*, http://www.chgeharvard.org/resource/health-co-benefits-carbon-standards-existing-power-plants; North Carolina: A Health Benefits Hot Spot, http://www.chgeharvard.org/sites/default/files/userfiles2/north_carolina.jpg.

[85] *Id*.

Renewable resources and energy efficiency also protect water quality and save water. Renewable resources like solar PV and wind turbines operate using no water, unlike steam cycle thermal power plants such as fossil and nuclear plants.[86] Renewable resources and efficiency also eliminate the many risks to public health and the environment posed by fossil and nuclear plants, including contamination of ground- and surface water by coal ash pits, catastrophic failure of coal ash dams and nuclear plants, thermal discharges (i.e., heat pollution) by plants that lack closed-loop cooling systems, discharges of pollutants to surface waters, and loss of fish and other aquatic life that are impinged and entrained in power plant cooling systems.

D. The Clean Power Plan will provide additional co-benefits to the electric system.

The Clean Power Plan encourages the use of modern electricity resources, such as solar power and energy efficiency, which have many additional co-benefits. Solar and energy efficiency technologies can be deployed quickly and easily in many locations, making them extremely flexible energy resources.

In addition, solar is a zero-fuel resource, so solar energy protects customers from the risks of price volatility from fossil fuel generation. This allows solar energy, when purchased over a long term contract, to provide transparent and stable energy prices that are not pegged to fluctuating fuel prices or subject to cost increases.[87] As a result, solar energy can provide important hedge value to customers, insulating them from potential future increases in fuel prices from natural gas and coal.

Finally, distributed solar power and energy efficiency benefit our transmission system. Because they allow us to generate electricity right where we need it, these resources can lessen the strain on our aging grid and reduce the need for expensive new transmission and distribution infrastructure.[88] Solar and energy efficiency improvements can also reduce system energy losses when installed at or near load centers, which can be as high as 7% on a distribution system and up to 20% at the time of system peak.[89]

III. EPA's proposal to regulate emissions of carbon dioxide from existing coal-fired power plants is a permissible interpretation of Clean Air Act section 111(d).

In the months leading up to and following EPA's June 2, 2014 announcement of the proposed Clean Power Plan, representatives from North Carolina's Department of Environment and Natural Resources ("NCDENR") have questioned the legal basis for the proposal in

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[86] *Id*. at 17.

[87] Stainken, K., R. Umoff, C.C. Hitt, D. Wooley. *Cutting Carbon Emissions Under §111(d): The case for expanding solar energy in America*. 2014. At 16. Available at http://www.seia.org/research-resources/cutting-carbon-emissions-under-111d-case-expanding-solar-energy-america; last accessed November 24, 2014.

[88] Stainken, K., R. Umoff, C.C. Hitt, D. Wooley. *Cutting Carbon Emissions Under §111(d): The case for expanding solar energy in America*. 2014. At 8. Available at http://www.seia.org/research-resources/cutting-carbon-emissions-under-111d-case-expanding-solar-energy-america; last accessed November 24, 2014.

[89] *Id*. at 14.

presentations to various federal and state legislative and executive committees and in oral and written statements to EPA. In its legal critiques, NCDENR has raised three basic arguments: (1) EPA cannot regulate power plant carbon dioxide emissions under Clean Air Act section 111(d) because EPA has promulgated emission standards for power plant hazardous air emissions under section 112; (2) EPA cannot use section 111(d) to limit carbon dioxide emissions because it already is listed as a criteria pollutant under section 108; and (3) section 111(d) requires controls on emission sources only, and does not authorize "beyond the fence line" compliance flexibility.[90]

Each of these arguments is flawed. EPA interprets section 111(d) to limit development of standards of performance for specific *pollutants* regulated under section 112, rather than for entire categories of *sources* regulated under that section. EPA's interpretation is a permissible construction that, in fact, is the most natural reading of the statute and best effectuates each of the statutory provisions. NCDENR's argument that carbon dioxide is listed under section 108 is false—EPA has not listed carbon dioxide as a criteria pollutant. And EPA's broad interpretation of "best system of emission reduction" to include beyond-the-fence-line compliance approaches is a logical and permissible reading of these generically defined statutory terms. To demonstrate the flaws in NCDENR's legal critique, these comments will first briefly outline the applicable statutory and regulatory framework for section 111 before addressing NCDENR's specific criticisms.

A. Statutory and regulatory framework.

Clean Air Act section 111 directs EPA to establish "standards of performance" limiting emissions of harmful air pollutants in three phases. First, EPA must identify categories of stationary sources that cause or contribute significantly to "air pollution which may reasonably be anticipated to endanger health or welfare." 42 U.S.C § 7411(b). Second, EPA must establish national standards of performance for *new sources* in each such category. *Id.* Finally, once EPA has developed standards of performance for new sources in a category, it must then prescribe regulations under which states develop standards of performance for *existing sources* in the same source category. *Id.* §7411(d).

Section 111(d) provides that EPA "shall prescribe regulations which shall establish a procedure . . . under which each State shall submit [to EPA] a plan which . . . establishes standards of performance *for any air pollutant* . . . to which a standard of performance under this section would apply if such existing source were a new source." *Id.* (emphasis added). Congress exempted two categories of air pollutants from this mandate: *any air pollutant* (1) for which air quality criteria have been issued or which is listed under section 108(a); or (2) which is emitted from a source category covered under the hazardous air pollutant provisions of section 112. *Id.* Neither exemption applies here.

[90] NCDENR also has argued that EPA cannot establish guidelines for regulating existing power plant sources of carbon dioxide under section 111(d) because EPA's proposed standards of performance for new power plant sources under section 111(b) are unlawful. We do not address this mistaken contention here, but incorporate by reference our comments in the rulemaking docket for the new source standards under section 111(b).

EPA regulations implementing section 111(d) establish a broad framework under which EPA establishes emission guidelines for each covered pollutant. 40 C.F.R. § 60.22(a). The guidelines set minimum required emissions limitations based on the best adequately demonstrated systems of emission reductions. *Id.* at § 60.22(b). States then have flexibility to tailor their own plans to implement the standards of performance, so long as they meet or are equivalent to EPA's emission guideline. *Id.* EPA's implementing regulations also provide for case-by-case variances from an emission guideline to allow for "significantly more reasonable" compliance options, 40 C.F.R. § 60.24(f)(3), such as where necessary to take into account the remaining useful life of an existing source that would be subject to the performance standard. 42 U.S.C. § 7411(d)(1)(B).

Although EPA promulgated its guidelines for implementing section 111(d) in 1975, the agency has issued few performance standards for existing sources. Thus, while this is EPA's default approach, it has not been extensively elaborated or refined through a long history of prior rulemakings, and nothing in the Clean Air Act requires EPA to adhere rigidly to this approach for each air pollutant or each existing source category. In fact, EPA may adopt any reasonable approach to develop, issue, and implement existing source standards, so long as they meet the minimum requirements of the Clean Air Act and the agency adequately explains its approach and rationale through appropriate notice and comment rulemaking. *See, e.g., FCC v. Fox Television Stations, Inc.* 566 U.S. 502, 515 (2009) (an agency may change its position so long as it provides "good reasons" for doing so). In this instance, EPA's rationale for using 111(d) as a legal basis to establish guidelines of performance for existing power plant sources of carbon dioxide is fully consistent with the Clean Air Act, EPA's implementing regulations, and past practice.

B. Power plant carbon dioxide emissions are not regulated as hazardous air pollutants under Clean Air Act section 112.

NCDENR mistakenly contends that EPA is foreclosed from promulgating performance standards for power plant carbon dioxide emissions because power plant hazardous air pollutant emissions already are regulated under section 112. According to NCDENR's erroneous reading of the Clean Air Act, "[s]ection 111(d) prohibits EPA from regulating pollutants from source categories regulated under sections 112."[91] But this interpretation is not compelled by the language of the Act, its legislative history, or fundamental principles of statutory construction. To the contrary, the language, structure, and history of the Act support EPA's longstanding interpretation that the limitation in section 111(d) applies to hazardous air *pollutants* regulated under section 112, and not more broadly to the *sources* that emit both hazardous and non-hazardous air pollutants.

The text of section 111(d) does not compel the result NCDENR advocates. Two separate versions of section 111(d) were enacted into law during the 1990 amendments to the Clean Air Act.[92] The House version prohibited using section 111(d) to set standards for existing

[91] *See, e.g.*, Testimony of D. van der Vaart before the House Committee on Energy and Commerce, Subcommittee on Energy and Power at 5 (Nov. 14, 2013), Attachment 4.

[92] In comments to the House subcommittee on Energy and Power, NCDENR bases its legal critique on the 1990 revisions to section 112. *See* Testimony of D. van der Vaart at 5-6, Attachment 4. In so doing, NCDENR mischaracterizes the purpose of the amendments to section 112, claiming that it was motivated by and linked to

sources regulated under section 112. *See* Brief of Respondent EPA, Part V, *New Jersey v. EPA*, 517 F.3d 574, 582 (D.C. Cir. 2008), *available at* 2007 WL2155494. The Senate version, on the other hand, did not refer to *sources* regulated under section 112 at all. Instead, it prohibited using section 111(d) to set standards for denominated hazardous *air pollutants* regulated under section 112. *Id.* Despite the differences between the two versions, both were included in the Statutes at Large and became part of the Clean Air Act. Pub. L. NO. 101-549, §§ 108(g), 302(a). EPA has consistently and appropriately adopted the Senate version of the 1990 amendment to section 111(d) to preclude regulation of existing sources *only with respect to hazardous air pollutants* emitted from a source category covered under section 112.[93] *See, e.g.*, Brief of Respondent EPA, Part V, *New Jersey v. EPA*, 517 F.3d 574, 582 (D.C. Cir. 2008) ("The section 111(d) exclusion *only* extends to hazardous air pollutants"), *available at* 2007 WL2155494. Thus, according to EPA's reasonable and uniform interpretation, regulation of carbon dioxide emissions from power plants under section 111(d) is appropriate, even though power plant hazardous air pollutant emissions are covered under section 112.

EPA's interpretation is also appropriate under the House version of section 111(d), which requires, in pertinent part, that:

> each State shall submit to [EPA] a plan which (A) establishes standards of performance for any existing source for any *air pollutant* (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from *a source category* which is regulated under section 7412 of this title.

42 U.S.C. § 7411(d)(1) (emphasis added).

It is true that the mandate of the statute is not entirely clear based on its terms, as it refers to *any air pollutant* as well as *source categories* of such air pollutants; DENR appears to have seized on this ambiguity. Where, as here, Congress's intent is not clear on the face of a statute, however, EPA has discretion to interpret the statutory directives, and the agency's interpretation governs so long as it is reasonable. *Chevron U.S.A. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 863 (1984). EPA's interpretation of section 111(d) in the Clean Power Plan is both reasonable and consistent with the agency's prior construction of the statute.

Well established principles of statutory construction further demonstrate the propriety of EPA's construction of these statutory provisions. First, EPA's interpretation of section 111(d) to limit regulation of hazardous air pollutants rather than source categories is a reasonable approach

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concurrent revisions to section 111. But this is incorrect. The 1990 amendments to section 112 responded to the failure of the original risk-based approach in the 1970-version of section 112. S. Rep. No. 101-228, reprinted in 1990 U.S.C.C.A.N. 3385, 3517. The 1990 amendments thus replaced the risk-based system with a technology-based approach that seeks to protect public health by ensuring that all new sources of hazardous air pollutants meet the same level of emission control that is achieved by the best-performing sources for new sources, and the average level of emission control achieved by the top-performers for existing sources. *Id.* at 3788-89.

[93] In dicta, the D.C. Circuit Court of Appeals mistakenly characterized EPA as having conceded that section 111(d) precludes regulation of source categories regulated under section 112. *New Jersey v. EPA*, 517 F.3d 574, 582. The Court's observation was neither necessary to its decision nor was it accurate.

to harmonizing the House and Senate versions of the statute. *See Citizens to Save Spencer County v. EPA*, 600 F.2d 844, 872 (D.C. Cir. 1979). In instances such as this, where EPA is interpreting a jurisdictional provision of a statute it administers, *Chevron* deference is especially appropriate. *See City of Arlington v. FCC*, 133 S. Ct. 1863, 1871 (2013). EPA's interpretation of section 111(d) to authorize standards of performance for air pollutants that would otherwise remain unregulated, while prohibiting duplicative regulation of hazardous air pollutants, is a "permissible construction of the statute" that should withstand review. *Id*. at 1874.

Second, NCDENR's proffered interpretation of section 111(d) creates an unnecessary and undesirable Hobson's choice, in which EPA would be forced to decide between regulating categories of sources that emit hazardous air pollutants and regulating dangerous, non-hazardous air pollutants that are also emitted by those source categories. In fact, NCDENR's approach would essentially nullify section 111(d). Given the long list of hazardous air pollutants in section 112(b), and the large numbers of source categories that emit them, it is hard to think of an air pollutant that would fall within the scope of section 111 that is not also emitted by a source category subject to section 112 standards for hazardous air emissions. In contrast to this untenable construction, EPA's interpretation construes the statute as a whole to give meaning and effect to each provision. *See FDA v. Brown and Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000).

Finally, NCDENR's reading of section 111(d) would yield absurd results by rendering that section superfluous. Here again, EPA's consistently applied interpretation of section 111(d) reconciles a potential but avoidable conflict in a manner that gives meaning and effect to all pertinent provisions. *See, e.g., Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1041-42 (D.C. Cir. 2001) (affirming EPA's reconciliation of potentially conflicting provisions of the Clean Air Act under the doctrine against producing absurd results). Thus, the Mercury and Air Toxics standards promulgated under section 112 are not an impediment to EPA's proposal to establish standards of performance for emissions of non-hazardous greenhouse gases like carbon dioxide from existing coal-fired power plants.

C. Carbon dioxide is not listed as a criteria pollutant for regulation under Clean Air Act section 108.

NCDENR next argues that "[s]ection 111(d) also prohibits regulating pollutants listed under section 108," and "all of the conditions necessary to list greenhouse gases under section 108 have already been met."[94] But NCDENR's argument is premised on a flawed syllogism.

NCDENR has explained its assumption that EPA's 2009 finding that carbon dioxide (in combination with other greenhouse gasses) endangers public health and welfare automatically resulted in a section 108 listing in this way: (1) "[s]ection 111(d) prohibits regulating pollutants listed under section 108"; (2) "[a] pollutant must be listed under section 108 when three criteria are satisfied"; and (3) "[t]hose criteria were satisfied when EPA published its endangerment finding under section 202."[95] NCDENR is incorrect legally and factually.

[94] D. van der Vaart Testimony at 6, Attachment 4.

[95] *Id.*

The 2009 "endangerment" finding was made under the mobile source provisions of section 202 of the Clean Air Act as a necessary first step toward regulating motor vehicle emissions of greenhouse gasses. The "endangerment" finding by itself does not cause a pollutant to be listed under section 108, even if all of the other prerequisite criteria necessary for listing a criteria pollutant have been met.[96] A listing decision requires a distinct, affirmative action by EPA subject to all of the public participation and review requirements of the Administrative Procedures Act. In this instance, EPA has not, in fact, listed or even proposed listing carbon dioxide or other greenhouse gases as criteria pollutants under Clean Air Act section 108. Contrary to NCDENR's argument, there is no legal or factual impediment to EPA's proposal to establish performance standards for power plant carbon dioxide emissions.

D. Regulating beyond the fence line.

Finally, NCDENR erroneously claims that "[t]he plain language of the Act as well as legal precedent precludes EPA and States from designing a standard that relies on reductions made outside of the emissions unit."[97] Tellingly, NCDENR does not identify the "plain language" or the legal precedent that purportedly limits EPA to developing unit-specific guidelines and constrains EPA from creating flexible compliance options. The reason for this omission is simple—it does not exist. In contrast to NCDENR's unsupported argument, "[t]here is widespread agreement in the academic community that § 111 authorizes the use of many types of flexible approaches."[98]

To the extent the Clean Air Act defines the terms used in section 111(d), it does so broadly, leaving EPA wide latitude to interpret them in any reasonable manner that effectuates the pollution reduction goals of the Act. In section 111(a), Congress defined "standard of performance" to mean "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 (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." 42 U.S.C. § 7411(a)(1). The general definitions in Clean Air Act section 302 define "standard of performance" to mean "a requirement of continuous emission reduction, *including* any requirement relating to the operation or maintenance of a source to assure continuous emission reduction. 42 U.S.C. § 7602(l) (emphasis added). On the face of the statute, EPA has broad discretion to identify the best *system* of emission reduction and is limited only to the extent the standard is achievable and considers certain factors such as cost and other non-air quality impacts. The applicable definitions do not, as NCDENR argues, limit EPA to

[96] On the other hand, the endangerment finding satisfies one of the criteria for developing new source performance standards which is a prerequisite to development of standards of performance for existing sources. *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,829, 34,841-34,844 (June 18, 2014).

[97] D. van der Vaart Testimony at 6, Attachment 4.

[98] G. Wannier, J. Schwartz, N. Ricardson, M. Livermore, & D. Burtaw, *Prevailing Academic View on Compliance Flexibility under Section 111 of the Clean Air Act*, Institute for Policy Integrity, New York University School of Law Discussion Paper No. 2011/2 at 1, Attachment 5.

developing unit-specific guidelines. And courts should not infer such an unexpressed limitation on the agency's discretion to reasonably interpret its statutory mandate. *Chevron U.S.A. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 863 (1984); *see Texas Rural Legal Aid Inc. v. Legal Serv. Corp.*, 940 F.2d 685, 694 (D.C. Cir. 1991) ("Under *Chevron* [courts] normally withhold deference from an agency's interpretation of a statute only when Congress has 'directly spoken to the precise question at issue.'").

To the extent Congress has spoken on the issue of EPA's discretion to fashion flexible compliance approaches under section 111(d), "it has removed, rather than added, barriers to flexible mechanisms in EPA regulations." G. Wannier, *et al*., *Prevailing Academic View on Compliance Flexibility under Section 111 of the Clean Air Act*, supra. at 4. In particular, "Congress amended § 111 [in 1990] to remove the word 'technology' from its definition of performance standards, indicating that standards need not be technology-based." *Id.* Thus, not only is there no support in the statute for NCDENR's overly restrictive reading of the statute, accepted principles of statutory interpretation refute NCDENR's contention.

Additionally, section 111(d) explicitly provides that the procedure for implementing standards of performance for existing sources "shall . . . be similar to that provided by section 7410 [section 110] of this title." 42 U.S.C. § 7411(d)(1). The process prescribed under section 110 grants states great latitude to fashion state implementation plans so long as they will achieve air quality protections that are at least equivalent to minimum federal standards, and specifically authorizes flexible compliance approaches "including economic incentives such as fees, marketable permits, and auctions of emission rights." 42 U.S.C. § 7410(a)(2)(A). Based on well-established practice, states have, in fact, exercised this flexibility to implement pollutant reductions required under section 110 through a variety of non-source-specific mechanisms, including renewable portfolio standards, demand-side management, utility planning, and other indirect emission reduction systems. *See* EPA Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State Implementation Plans/Tribal Implementation Plans (2011); EPA Guidance on SIP Credits for Emissions Reductions from Electric-Sector Energy Efficiency and Renewable Energy Measures (2004) (These guidance documents have been successfully implemented in Texas, Shreveport, Louisiana, and the Washington, D.C. region, all of which modified their SIPs to receive credit for reductions achieved through energy efficiency and renewable energy measures). And there is no question that EPA has similar flexibility in suggesting—and in some cases implementing through Federal Implementation Plans—flexible compliance approaches, as section 111(d)(2) accords EPA the same authority granted to the states in order to fashion a federal "backstop" program for existing sources. 42 U.S.C. § 7411(d)(2); *see* G. Wannier, *et al.*, *Prevailing Academic View on Compliance Flexibility under Section 111 of the Clean Air Act*, supra. at 4.

Thus, contrary to NCDENR's unsupported criticisms, there is little question that "EPA has the authority to outline flexible structures in its [section 111(d)] guidance to states on existing source regulation, either in the form of a specific preferred option or by listing several alternative options." G. Wannier, *et al.*, *Prevailing Academic View on Compliance Flexibility under Section 111 of the Clean Air Act*, *supra* at 4.

IV. Conclusion

EPA's proposed Clean Power Plan is a good start to moving our nation away from reliance on polluting energy sources and toward a clean energy future. The Clean Power Plan is a legally sound approach to tackling the problem of power plant emissions that offers states broad flexibility to select the compliance options that work best for them. North Carolina stands to benefit significantly from the Clean Power Plan in the form of lower electricity costs, job and economic growth, and improved public health and welfare. Thanks to proactive state policies and actions by electric utilities, North Carolina is well on its way to meeting EPA's modest emission rate target. We believe that EPA's proposed emission rate targets are based on overly conservative assumptions about the achievability of renewable energy and energy efficiency resources, however. Accordingly, we urge EPA to finalize a strong final rule by revising North Carolina's emissions target to take into account our state's full potential to develop renewable energy and energy efficiency resources.

Sincerely,

s/Myra Blake
John Suttles
Gudrun Thompson