



The Honorable Gina McCarthy  
Administrator, United States Environmental Protection Agency  
Air and Radiation Docket and Information Center  
U.S. Environmental Protection Agency (2822T)  
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Washington, DC 20460

Submitted via: Electronic Transmission: [a-and-r-docket@epa.gov](mailto:a-and-r-docket@epa.gov)  
Docket ID No. EPA-HQ-OAR-2013-0602

**Re: The Earth Partners Comments Regarding Docket ID No. EPA-HQ-OAR-2013-0602**

Dear Administrator McCarthy,

The Earth Partners strongly supports the objectives of the proposed Clean Power Plan. This policy would represent one of the most important steps the United States can take to address climate change. We would like to make several suggestions on how the Clean Power Plan could be strengthened, in particular through clarifying the role of bioenergy and biomass co-firing at existing coal plants.

Coal power comprises one quarter of U.S. national emissions, from 541 coal plants totaling 377 GW of power. Most U.S. coal power plants are over 30 years old, an aging sector in which hundreds of MW are likely to be retired in the next five years. Biomass co-firing may be one of the few options available to plants that have insufficient lifespan to invest in more expensive mitigation options like carbon capture and storage, or that have exhausted efficiency improvement options. All CO<sub>2</sub> mitigation options should be pursued, but co-firing of carbon-neutral or carbon-negative biomass (around which there should be rigorous sustainability and carbon accounting requirements) should not be ignored as a cost-effective emissions reduction strategy.

This past summer, The Earth Partners and the Rocky Mountain Institute hosted a roundtable attended by stakeholders from some of the largest U.S. utilities. Parties agreed that even if biomass co-firing does not make sense for all coal plants, it should be a compliance option under the Clean Power Plan because utilities will look seriously at biomass opportunities that preserve the value of their coal power assets. Utility stakeholders agree that a 5-10% (on an energy basis) biomass co-firing program would be feasible at many coal plants, needing little to no equipment or retrofit upgrades, if biomass can be procured at competitive costs.

***Biomass co-firing potential – scale and cost***

This summer The Earth Partners completed a report that indicates that biomass co-firing has significant potential to cost-effectively reduce U.S. coal power CO<sub>2</sub> emissions (McGlynn et al. 2014).<sup>1</sup> The study assessed availability of four categories of sustainable biomass: agricultural residues, forest management and wood processing residues, biomass waste, and some energy crops. Proper management of these resources would ensure no net land-based carbon emissions to the atmosphere and low-to-zero delay in carbon resequstration. The assessment found an annual supply of this “sustainable” biomass available to the power sector of 165 million dry tons in the U.S., which accounts for aggressive future demand for

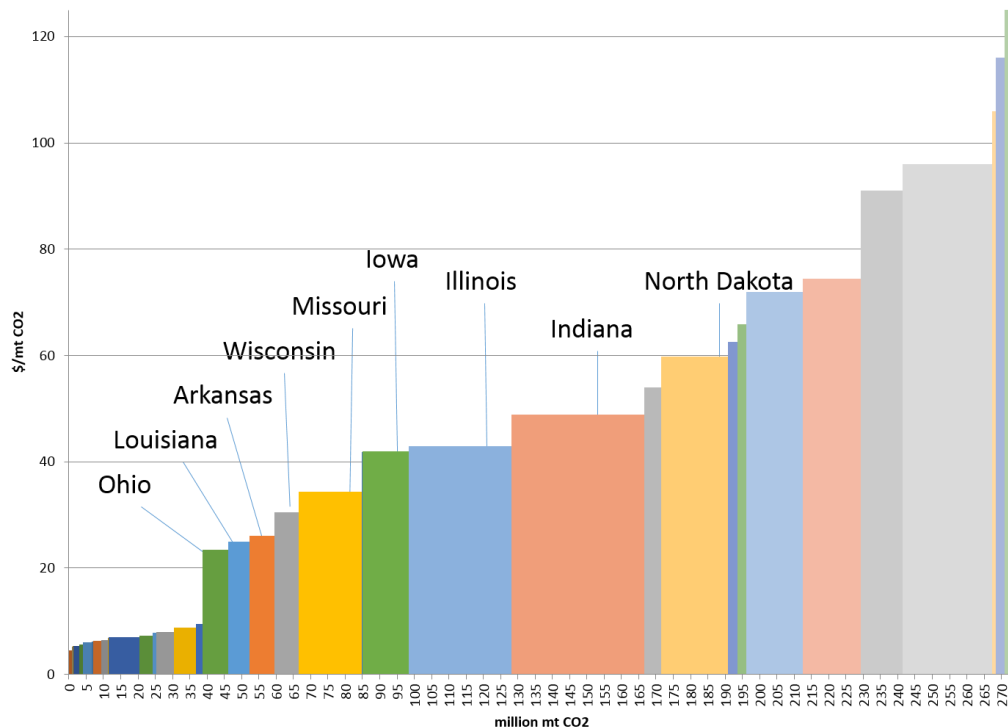
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<sup>1</sup> <http://theearthpartners.com/wp-content/uploads/2013/08/RMI-TEP-US-China-biomass-co-firing-10-19-2014-FINAL.pdf>

liquid biofuels, biomass heating, and bioproducts, and also includes scenarios under which biomass availability is severely constrained due to soil nutrient and environmental concerns. Tapping this full technical potential for sustainable biomass for co-firing could offset up to 273 million tons of CO<sub>2</sub> annually.

If the U.S. were to tap only part of this potential and offset 10 percent of coal use in each state, emissions could be reduced annually by 84 million tons. For perspective, the Clean Power Plan indicates that increasing coal plant efficiency can achieve 4-6 percent reductions across the coal fleet. Including 10 percent coal offset through biomass co-firing would increase the efficacy of Building Block 1 by up to 50 percent.

Assuming a range of biomass costs and co-firing rates, over 45 percent of the total emissions reductions could be achieved at a cost below \$45 per ton of CO<sub>2</sub> avoided. The mitigation cost curve and table below lists mitigation cost estimates of full implementation of co-firing potential based on in-state biomass availability and coal power capacity, assuming biomass availability only within states. In reality if the assessment considered a uniform U.S. biomass market across states, 100 percent of the emissions reduction potential could be achieved at \$37 per ton CO<sub>2</sub>.



**Figure 1. Mitigation potential and CO<sub>2</sub> abatement cost of biomass co-firing by state. McGlynn 2014.**

State	Metric tons CO <sub>2</sub> reduced	\$/CO <sub>2</sub> e abatement	Portion of coal offset (%)
Virginia	739,040	4.47	0.06
Utah	449,438	5.26	0.02
Maryland	294,028	5.37	0.02
Pennsylvania	1,695,798	5.38	0.02
Arizona	957,265	5.64	0.02
Georgia	2,559,347	6.07	0.06

<b>Wyoming</b>	492,710	6.12	0.01
<b>Tennessee</b>	2,271,176	6.23	0.07
<b>Oklahoma</b>	1,885,274	6.39	0.06
<b>Hawaii</b>	104,230	6.91	0.07
<b>Texas</b>	9,154,337	7.00	0.05
<b>North Carolina</b>	3,697,517	7.24	0.09
<b>West Virginia</b>	1,119,684	7.82	0.02
<b>Nevada</b>	111,138	7.86	0.02
<b>Michigan</b>	5,087,655	7.97	0.09
<b>Kentucky</b>	6,180,002	8.76	0.09
<b>Colorado</b>	1,915,327	9.43	0.05
<b>Ohio</b>	7,448,929	23.46	0.11
<b>Louisiana</b>	6,223,303	24.92	0.23
<b>Arkansas</b>	7,369,331	26.09	0.23
<b>Wisconsin</b>	6,912,010	30.42	0.19
<b>Missouri</b>	18,169,319	34.30	0.24
<b>Delaware</b>	388,662	41.84	0.30
<b>Iowa</b>	13,120,617	41.90	0.34
<b>Illinois</b>	29,897,891	42.86	0.33
<b>Indiana</b>	38,389,564	48.92	0.45
<b>Montana</b>	4,814,940	54.04	0.28
<b>North Dakota</b>	19,536,360	59.85	0.48
<b>Washington</b>	2,641,378	62.59	0.54
<b>New York</b>	2,637,230	65.85	0.62
<b>Kansas</b>	16,318,538	72.05	0.50
<b>Nebraska</b>	16,638,204	74.55	0.60
<b>Mississippi</b>	12,254,166	91.12	1.00
<b>Minnesota</b>	25,960,142	96.50	1.00
<b>New Hampshire</b>	918,293	106.71	1.00
<b>Oregon</b>	2,747,879	116.52	1.00
<b>South Dakota</b>	1,785,597	217.97	1.00
<b>Alaska</b>	699,459	327.92	1.00
<b>California</b>	257,131	383.46	1.00

**Table 1. Mitigation potential and CO2 abatement cost of biomass co-firing, by state. McGlynn 2014.**

Power sector experts that reviewed this study noted the assessment results are highly assumption dependent, and that they should be interpreted as an initial indication of the scale of potential. However, all reviewers agreed that the results indicate this should be an important policy priority.

***Leveraging policy support in rural and agricultural areas***

Significant economic co-benefits would accompany biomass co-firing, including job creation and improving land value in rural and agricultural communities. Biomass co-firing in the U.S. Southeast is estimated to create 6-times the jobs lost from reduced coal demand, due to the increased labor needed for biomass supply chains. Another recent study indicates a 500MW coal plant supports 2,540 direct jobs,

while a 500MW biomass plant supports 3,480 jobs. Much of this development would be concentrated in states with strong agriculture and forestry sectors. As seen with the passage of the Renewable Fuel Standard, engaging the agricultural sector can buoy policy support from otherwise conservative stakeholders.

### *Policy recommendations*

Given the potential role that sustainable biomass can play in offsetting coal power emissions, The Earth Partners suggests the following policy actions:

- **Explicitly include biomass co-firing as a component of Building Block 1 in the final 111(d) Clean Power Plan regulation**, both strengthening state emissions reduction targets by as much as 50 percent under Building Block 1, and signaling to states this option can be included in their 111(d) plans. This clarity is essential, given that to date biomass co-firing has not been included in many federal or state renewables incentive schemes. Even if biomass co-firing is not including in Building Block 1, EPA should clarify that it **can be used as a mitigation option**.
- **Provide states with the appropriate clarity to include biomass co-firing under 111(d)**. EPA needs to finalize their “Biogenic Emissions Accounting Framework for Stationary Sources” originally proposed in 2011. EPA has recently released an updated version of the Framework, which is very helpful, but it still needs to be made “regulation ready,” with sufficient operational detail to allow industry to comply with data requirements. Currently, the Framework provides a general, high-level model for how biogenic emissions would be accounted for, but no detail on how it would be put into practice or how it could affect relevant industries.
- Assistant Administrator McCabe’s November 19, 2014 letter to Air Division Directors was a helpful signal that bioenergy is being appropriately considered by EPA. However, important pieces of information need to be clarified, in cooperation with diverse stakeholder groups, in order to understand EPA’s intent in regulating biogenic emissions, including:
  - **Clarify how EPA is defining “waste-derived and certain forest-derived industrial byproducts”**, which EPA appears to be indicating will be the only “categories” of feedstock considered to be low- or no-emissions. This clarity is critical for both state policy makers and industry.
  - **Clarify what framework EPA will use to “evaluate the biogenic feedstock components of proposed state plans...”** Given the complexity of biogenic emissions and the diversity of biomass feedstocks, states and industry will want to understand minimum expectations EPA has for demonstrating a low-carbon biopower strategy.
- To address the previous comments, The Earth Partners suggests that EPA, USDA, and other agencies work with industry, NGOs, and land management experts to **develop a model “biomass sustainability and emissions accounting framework” that states can use (voluntarily) as part of their 111(d) plans**.
  - Including this model guidance as part of the finalized Clean Power Plan can help states more easily take up bioenergy as part of their state plan, reducing risk of developing complex policies that might not meet EPA’s expectations.
  - Perhaps more importantly, it can also help ensure that the U.S. builds a national biomass market, avoiding a state-by-state patchwork quilt of biomass regulations that would create significant market barriers.