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July 2, 2009

Steven Biel
MoveOn.org Political Action

Dear Mr. Biel:

Pursuant to MoveOn.org's request for legal analysis regarding the need for Clean Air Act authority to regulate greenhouse gases in light of the pending Waxman-Markey bill, I provide the following in my capacity as Legal Director of the Global Warming Legal Action Project, a project of the Civil Society Institute.

WHY WE NEED EPA GHG REGULATORY AUTHORITY

Complementary regulatory authority is essential to de-carbonize US electricity generation. Coal-fired electricity is the largest single source of US greenhouse gases: some 27% (1.958 billion tons) of our 2005 total of 7.206 billion tons. Without such regulatory measures, the Waxman-Markey cap will result in **increased** emissions from coal-fired power plants by 2020.

In 2020, W-M provides 5.056 billion tons per year ("btpy") of allowances, plus another 2 btpy in offsets, for a total of 7.056 btpy. Total US GHG emissions in 2005 were 7.206 btpy, which means W-M provides actual emission reductions of only 150 million tpy by 2020, or just a 2% decrease from 2005 levels. And because we are expecting regulatory reductions greater than this 150 million tpy from the mobile source sector -- more than 100 million tpy from national Pavley alone -- coal will have room under the cap to actually **increase** its emissions. In fact, such expansion is already underway; close to 30 Gigawatts of new coal-fired electricity are in the permitting pipeline, with collective GHG emissions of approximately 250 million tpy.

In other words, we are actually digging ourselves deeper into the coal hole, and making it much harder to later dig ourselves out. Instead of starting on a path of gradually reducing coal-fired electricity emissions, W-M allows these emissions to increase over the next decade based purely on the hope that after 2020 the cap will suddenly force massive conversion away from coal. The W-M goal for 2030 is 5.533 btpy (3.533 btpy allowances plus 2 btpy offsets), which requires 1.5 btpy of actual emissions reductions from the 2020 total of 7.056. Assuming coal will be emitting about 2.5 btpy in 2020 and must only reduce proportionate to its share of total emissions (then

35%), that means coal will have to cut 875 million tpy over that period. Aside from prayers to the gods of CCS retrofits, no one has any idea how the industry would do that.

As explained below, using EPA's existing regulatory authority would allow for more gradual (and realistic) emissions reductions (especially between now and 2020), putting us that much further along the path to eventually eliminating GHG emissions from coal-fired power plants.

Potential CO₂ Reductions Under CAA § 111(d) (NSPS)

EPA has broad authority under section 111(d) of the Clean Air Act to require performance standards for existing sources of CO₂ and other greenhouse gases. Imposing reasonable performance standards on existing coal-fired power plants could result in dramatic CO₂ emissions reductions.

Available options for reducing CO₂ from existing coal plants include:

- Improving efficiency – Older coal plants generally run at much higher heat rates than new plants, making them far less efficient. Upgrading plant components (turbines, boilers, air heaters, etc.) could increase efficiency by as much as 30% for some of the least efficient units. Across the fleet, these upgrades could improve efficiency by 6-9% on average, resulting in a commensurate decrease in CO₂ emissions. These upgrades are economically feasible. They would likely cost considerably less than costs that have already been imposed on existing coal plants to comply with other provisions of the Clean Air Act, notably the acid rain provisions. **Efficiency upgrades could reduce CO₂ emissions by as much as 176 million tons/year, which is 2.4% of total U.S. greenhouse gas emissions.**
- Co-firing biomass – Requiring coal plants to co-fire biomass, a CO₂-neutral fuel, would reduce CO₂ emissions by the percentage of biomass that the plant uses. Circulating fluidized bed (CFB) plants can be run exclusively on biomass with minor modifications to allow for materials handling. Pulverized coal (PC) plants can be retrofit to co-fire 5-15% biomass. The low end of that range is realistic for most PC plants. **Conservatively estimated, co-firing biomass could reduce CO₂ emissions by 98 million tons/year, which is 1.3% of total U.S. greenhouse gas emissions.**
- Co-firing natural gas – Many existing coal plants are already designed to burn natural gas. Others can be retrofit to run on or co-fire natural gas by replacing the burners. Like efficiency improvements, the costs compare favorably to costs that have been imposed to comply with other Clean Air Act requirements. At Genco's Parish Station in Texas, two PC boilers were retrofitted with dual-fuel burners, enabling the units to reach full load exclusively on natural gas. **Converting the fleet to natural gas would cut CO₂ emissions from coal plants in half, resulting in a 13% reduction in total U.S. greenhouse gas emissions.**

- Carbon Capture and Sequestration (CCS) – Some experts anticipate that CCS technology will be available for existing coal plants in the next 15-20 years. At that point, EPA could require that existing coal plants reduce their CO2 emissions by approximately 85%.

Limits on CO2 Emissions Under CAA § 165 (PSD/NSR)

EPA can curb the increase in greenhouse gas emissions that would otherwise result from newly constructed coal plants by exercising its authority under section 165 of the Clean Air Act **to impose Best Available Control Technology (“BACT”) emission limits for greenhouse gas emissions**. Options for limiting CO2 emissions from new plants include:

- Boiler efficiency – The most efficient designs now being adopted in several states for new coal plants are integrated gasification combined cycle (IGCC) and ultra super-critical boiler designs. These plants are 4-8% more efficient than plants with conventional, “subcritical” boilers and 2-5% more efficient than plants with super-critical boilers. Requiring all new plants to adopt one of these technologies would result in up to 8% lower CO2 emissions.
- CCS potential – Given the direction in the current bill to move the coal sector towards carbon capture and sequestration (“CCS”), it is critical that EPA retain authority to require emission limits associated with CCS-compatible technologies. For example, the cost of capturing CO2 emissions from an IGCC plant is expected to be much lower than the cost for PC plants. In addition, the energy penalty associated with the capture technology is much less for an IGCC plant than for a PC plant. Requiring IGCC for new coal plants would enable those plants to use CCS more efficiently and less expensively, as sequestration becomes viable.
- Fuel Efficiency and Clean Fuel Co-firing – The type of fuel burned in a coal plant significantly affects the amounts of greenhouse gas emissions. For example, lignite is a poor quality fuel that, compared to other coal types, requires much greater fuel inputs to produce an equivalent amount of electricity generation. Co-firing with natural gas may be an attractive option in some permit proceedings. EPA should retain its section 165 authority to require emission limits that reflect the best available fuel inputs.

Sincerely,

Matthew F. Pawa, Esq.

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