

TESTIMONY OF DAVID BOOKBINDER
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Madame Chair, Ranking Member Inhofe, thank you for the opportunity to testify today as to what regulatory steps the next Administration should take under the Clean Air Act to address climate change. My name is David Bookbinder, and I am the Chief Climate Counsel for Sierra Club. Sierra Club is a national non-profit organization, founded by John Muir in 1892, whose 1.1 million members and supporters are dedicated to exploring, enjoying, and protecting the planet.

Let me begin by acknowledging that climate change, a problem that affects every aspect of our environment and whose solution that will affect every aspect of our economy, is best addressed by tailor-made legislation. You, and the members of this Committee whose work on the Lieberman-Warner bill has brought us so much closer to this goal, understand this better than anyone else.

The good news is that, in the absence of such legislation, the Clean Air Act will still enable us to get the job done.

Any Clean Air Act greenhouse gas ("GHG") regulatory program will be driven by two time constraints, both of which require us to start work on significantly reducing these emissions as soon as possible. The first is obvious: global warming is real, is caused by human beings, and its potential effects on human society are catastrophic. Every day – every hour -- we come closer to the point at which atmospheric concentrations of GHGs make those effects unavoidable.

The second clock is more prosaic: it is the countdown to the December 2009 Copenhagen climate talks. The next President of the United States **must** be able to go to Copenhagen and say that the United States is – finally – getting our house in order and is ready to engage with the rest of the world. Global warming can only be addressed by global action, and the United States cannot credibly participate in those discussions without first taking meaningful steps to reduce our own emissions. Without either comprehensive climate legislation or the regulatory program I will describe, there is little point in the U.S. even attending the Copenhagen talks. And if the U.S. is not at Copenhagen, then we lose our best opportunity of avoiding those catastrophic consequences.

So, what can we do between January 21 and December 1? With just two sets of rulemakings we can take an enormous whack at U.S. GHG emissions and, in doing so, give the President the credibility he will need to negotiate with the rest of

the world. The first rulemaking would be to set CO₂ emission limits for both new *and existing* power plants. The second rulemaking would be to approve California's vehicle GHG emission standards and, as has been the consistent practice over decades, adopt California's standards as national ones. These actions alone will place significant limits on almost half of U.S. GHG emissions. Other measures will necessarily follow, but because other categories of emitters are responsible for far smaller shares of U.S. emissions, *e.g.*, petroleum refineries (3%), Portland cement kilns (2%), iron and steel mills (1%), it is critically important that we focus on getting the biggest bang for the buck before Copenhagen.

I. THE REGULATORY PREDICATE: ENDANGERMENT OF PUBLIC HEALTH AND WELFARE

The first thing EPA should do is issue a determination that GHG emissions "are reasonably anticipated to endanger public health and welfare". As Congress defined the term "welfare" in §302 of the Act, this means determining that GHGs "are reasonably anticipated to endanger public health or soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, or climate."

Even the Bush Administration EPA concedes that this is so, even as it has steadfastly refused to do so officially. As EPA stated earlier this year (73 Fed. Reg. 12156, 12167; footnotes omitted):

The IPCC made the following conclusions with *very high confidence* regarding what are expected to be key impacts for North America: coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution; climate change will constrain North America's over-allocated water resources, increasing competition among agricultural, municipal, industrial and ecological uses; climate change impacts on infrastructure and human health and safety in urban centers will be compounded by aging infrastructure, maladapted urban form and building stock, urban heat islands, air pollution, population growth and an aging population; and, disturbances such as wildfire and insect outbreaks are increasing and are likely to intensify in a warmer future with drier soils and longer growing seasons.

Severe heat waves are projected to intensify in magnitude and duration over the portions of the U.S. where these events already occur, with likely increases in mortality and morbidity, especially among the elderly, young and frail. Ranges of vector-borne and tick-borne diseases in North America may expand but with modulation by public health measures and other factors.

Climate change is also expected to facilitate the spread of invasive species and disrupt ecosystem services. Over the 21st

century, changes in climate will also cause species to shift north and to higher elevations and fundamentally rearrange U.S. ecosystems. Differential capacities for range shifts and constraints from development, habitat fragmentation, invasive species, and broken ecological connections will alter ecosystem structure, function, and services.

The IPCC projects with virtual certainty declining air quality in U.S. and other world cities due to warmer and fewer cold days and nights and/or warmer/more frequent hot days and nights over most land areas. Climate change is expected to lead to increases in ozone pollution, with associated risks in respiratory infection and aggravation of asthma. Ozone exposure also may contribute to premature death in people with heart and lung disease. In addition to human health effects, tropospheric ozone has significant adverse effects on certain vegetation. The directional effect of climate change on ambient particulate matter levels remains uncertain.

It should be noted that moderate climate change in the early decades of the century is projected to have some “positive” effects including an increase aggregate yields of rainfed agriculture by 5-20% in the U.S. Such effects, however, contain important variability among regions. Moreover, major challenges are projected for crops that are near the warm end of their suitable range or depend on highly utilized water resources. Recent studies indicate that climate change scenarios that include increased frequency of heat stress, droughts and flooding events reduce crop yields and livestock productivity beyond the impacts due to changes in mean variables alone. Climate variability and change also modify the risks of pest and pathogen outbreaks.

Following this rather grim recitation, EPA concluded:

As the previous section indicates, global climate change is a substantial and critical challenge for the environment. There is little question that the conditions brought about as a result of global climate change are serious, whether reviewing the issue as a global, national or state-specific issue.

Because GHGs are thus “reasonably anticipated to endanger public health and welfare”, EPA should make this determination applicable to each section of the Clean Air Act that requires it as a predicate to regulatory action; CO₂ is CO₂, regardless of whether it comes out of the tailpipe of a car or the smokestack of a power plant, and the same is true for every other GHG.

II. REGULATING EMISSIONS FROM NEW AND EXISTING FOSSIL-FUEL FIRED POWER PLANTS

A. Standards

New plants. When revising New Source Performance Standards (NSPS) for power plants in 2006, EPA refused to impose CO₂ limits on the grounds that it lacked authority to do so. Challenged in court, this rulemaking was remanded to EPA following the Supreme Court's decision in *Massachusetts v. EPA*, and it is now the appropriate vehicle for limiting new fossil fuel-fired power plant emissions to 800 lb. CO₂/MWh. This would permit new gas-fired plants but would effectively stop any new coal-fired ones that did not employ carbon capture and sequestration ("CCS"). This rulemaking should also contain a second phase, effective 2016, tightening the standard to approximately 250 lb. CO₂/MWh. This would be achievable via either combined gas/solar or gas/wind generation or 90% CCS.

However, even before EPA starts this NSPS rulemaking, it should immediately require Best Available Control Technology ("BACT") (and provide BACT guidance) for CO₂ from new coal-fired plants. Unlike most agency actions, this could be done in a matter of days; all EPA need do is reverse its current position in the *Bonanza* power plant litigation, now pending before the agency's Environmental Appeals Board.

On August 30, 2007, EPA issued a Clean Air Act permit for the proposed Bonanza coal-fired power plant in Uintah County, Utah. Although this plant would emit 1.8 million tons of CO₂ a year, EPA did not impose any CO₂ emissions limits. Sierra Club challenged this decision on the grounds that §165(a)(4) of the Act requires BACT "for each pollutant subject to regulation" under the Act.

Massachusetts held that CO₂ was a "pollutant", and in §821 of the Clean Air Act Amendments of 1990 Congress mandated that EPA "shall promulgate regulations within 18 months . . . to require all affected sources subject to Title IV of the Clean Air Act" to "monitor carbon dioxide emissions . . ." 42 U.S.C. § 7651k note; Pub. L. 101-549; 104 Stat. 2699. EPA then promulgated these regulations in 1993. 40 C.F.R. § 75.1 *et seq.*

Because carbon dioxide is thus clearly both a "pollutant" (per *Massachusetts*) and is "subject to regulation" (per Congressional command), it seemed obvious that the Bonanza permit must require a BACT limit for CO₂. Obvious, except, of course, to EPA, which claimed that Congress did not mean the word "regulation" in §165(a)(4) to mean the same thing as the word "regulation" in §821. According to EPA, "regulation" in §165(a)(4) means "subject to actual emissions limits", and does not include the monitoring and reporting regulations required under §821. (That is EPA's lead argument; its back-up argument is that §821 is not actually part of the Clean Air Act, even as it has both administratively and judicially enforced §821 via the Act's enforcement provisions in §§ 113 and 304.)

Existing plants. Coal-fired power plants are the single largest source – 24% -- of U.S. GHG emissions, and in conjunction with the NSPS limits for new plants, EPA should impose limits on existing ones. The first phase should require at least the 8-10% reduction in CO₂/MWh via measures that EPA has already identified in the Technical Support Documents to its recent Advanced Notice of Proposed Rulemaking (“ANPRM”). The second phase would impose a 90% CO₂ emission reduction; as with the second phase standard for new plants, this could be achieved by either allowing existing sources to take credit for additional renewable generation or via CCS, and should have the same effective date of 2016. (The necessary CO₂ transport and sequestration regulations would be part of this process, and EPA has already begun work on the latter.)

Apropos of this, it is important to note that it is technologically possible to separate CO₂ from post-combustion flue gas; various absorption mechanisms (using alkanolamines, chilled ammonia, etc.), as well as oxy-fuel combustion, have demonstrated 90% CO₂ capture rates. Industry tells us that the technologies for CO₂ pipeline transport and underground storage are also fairly well understood, although it has never been undertaken on the scale contemplated here.

B. Legal Authority

Section 111 (New Source Performance Standards) is the Act’s basic mechanism for regulating stationary source emissions, and under it EPA has set standards for numerous pollutants across dozens of “source categories”, e.g., lead smelters, paper mills, etc.

When setting NSPS for new sources, §111(d)(1) requires EPA to also establish standards *for existing sources*. However, there are both procedural and substantive differences in how the CAA deals with existing facilities, and although §111(d) was enacted in 1970, EPA has set such standards for only 5 out of more than 70 NSPS source categories.¹

Procedurally, §111(d) is modeled on the §110 State Implementation Plan (“SIP”) process. After EPA finalizes standards, a state has 9 months to submit a plan for how it will impose them on existing sources, EPA has 4 months to review the plan, etc.

Substantively, §111(a)(1) requires “Best Demonstrated Technology”, *i.e.*, standards reflecting “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.” (EPA interprets this to mean that such “systems, and

¹ For municipal waste combustors, municipal solid waste landfills, sulfuric acid plants, hospital waste incinerators and Kraft pulp mills.

corresponding emission rates, need not be actually in use or achieved in practice at potentially regulated sources or even at commercial scale.” ANPRM p. 427.)

However, in setting standards for existing facilities, §111(d)(2) requires EPA to consider the “remaining useful lives of the sources . . . to which such standard applies.” The implementing regulations expand on this and allow states to apply “less stringent standards or longer compliance schedules” if the state demonstrates “unreasonable cost of control resulting from plant age, location or basic process design” or “other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable.” 40 C.F.R. 60.24(f). In conjunction with this rulemaking, I anticipate that EPA would amend these regulations in order to better tailor them to these circumstances.

III. REGULATING VEHICLE GHG EMISSIONS

EPA should immediately (a) grant California the waiver of preemption under §209(b) for its vehicle GHG standards, (b) adopt California’s standards as federal standards through Model Year 2016 under §202, and (c) have the Department of Justice withdraw the government’s Second Circuit brief arguing that California’s standards are preempted by federal fuel economy standards. EPA should also explore conducting a joint rulemaking with California for a unified GHG emission standard after Model Year 2016.

In addition, because EPA also has authority over *existing* vehicle emissions via its authority over fuels under § 211, it should begin a rulemaking on a low-carbon fuel standard.

IV. REGULATING SOURCES NOT COVERED BY CLIMATE LEGISLATION

If EPA has the resources, it may want to consider starting the process of regulating sources of GHGs that need not be part of comprehensive climate legislation. There are several candidates for such regulation; the most likely would be methane emissions from CAFOs, mines and landfills, and hydrofluorocarbons (HFCs) and sulfur hexafluoride (SF6), used in various industrial applications.

V. MISCELLANEOUS

In addition to the measures described above, there are three other actions that EPA should undertake at the outset to clarify some of the uncertainty surrounding GHG regulation.

First, EPA should affirmatively state that it will **not** be issuing a National Ambient Air Quality Standard (“NAAQS”) for CO2. There are two reasons for this. First, given the climate effects we are already experiencing, it would be a rather pointless exercise, as the NAAQS would presumably need to be set below the

current atmospheric CO₂ level of 385 parts per million (“ppm”), and possibly close to the pre-industrial CO₂ concentration of 250 ppm. Second, the argument that an endangerment determination mandates that EPA then set a NAAQS overlooks the fact that §108(a)(1)(c) limits EPA’s obligation to establish a NAAQS to pollutants “for which [EPA] plans to issue air quality criteria”. It thus appears to confer some discretion on EPA whether to establish a NAAQS, and the circumstances here appear to justify the exercise of such discretion.

Second, EPA should state that it has no intent of requiring Prevention of Serious Deterioration (“PSD”) permits for sources emitting less than 5,000-10,000 tons per year (“tpy”) of CO₂. No one – not industry, not the environmental community, not EPA, not the state air agencies – believes that those sources should be regulated. In the absence of a legislative fix to the CAA requirement for a PSD permit for sources emitting >250 tpy of CO₂, EPA has already floated in the ANPRM a number of regulatory options that could accomplish this; the most promising appears to be a “general permit” approach as is used under Title V of the Act and in other environmental statutes such as the Clean Water Act.

Finally, while it is clear that the Clean Air Act is well-suited to taking on greenhouse gases and climate change, I do not know whether the same is true for the agency itself. This is not a criticism; in contrast to many of the other witnesses here today, I have never worked at EPA and thus have far less knowledge of the agency than they do. I merely think that, given the unique challenges presented by global warming, it would be a useful exercise to examine whether EPA’s current organizational structure is best suited for dealing with climate issues.

In conclusion, I want to acknowledge that trying to tackle GHGs via a Clean Air Act regulatory program is a second-best solution. A series of administrative rulemakings, lacking the national attention and debate that would attend comprehensive federal legislation, and tinged with uncertainty due to the usual thicket of regulatory and legal issues, is no one’s preferred way of dealing with this problem. But in the absence of such legislation, both the science and politics of global warming demand immediate action.