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Ground Control to EPA: The Regulation of Aviation Greenhouse Gas Emissions under the Clean Air Act

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Introduction by Professor J.E. Murdock III

Clint has done a scholarly job of examining the Hobbesian choices facing aviation environmental policy decision makers. While Kyoto may have set some laudable goals, Clint carefully lays out the complex web of practical and legal [domestic and international] impediments that make any policy choice difficult, if not impossible, to implement. His paper concludes that the Congress needs to rethink and rewrite the relevant statutes. A paper that Obama policy leaders, Hill staffers, airline lawyers and aviation experts would be well advised to read.



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Due to a variety of recent legal and political developments, aviation interests face the potential regulation of greenhouse gas emissions from aircraft, aircraft engines, and aviation operations by the Environmental Protection Agency (EPA) under Section 231 of the Clean Air Act (CAA). This significant turn of events could radically alter the regulatory, environmental, economic, and safety landscape confronting the airline and aerospace industries at the federal level. This paper will assess the driving forces prompting this outcome, including: a more environmentally activist Obama presidency (and the corresponding character of the EPA); the Supreme Court's 2007 decision in *Massachusetts v. EPA*; Congressional pressure for a climate change solution; petitions from both state governments and nonprofit organizations to the EPA over aviation emissions; and the EPA's recently released blueprint for economy-wide greenhouse regulation under the Clean Air Act. Also playing a significant role in this controversy, but not extensively covered in this paper, are recent developments in climate change science by the UN's Intergovernmental Panel on Climate Change and the international legal ramifications resulting from a unilateral adoption of aviation emissions standards under the Chicago Convention. After discussing the viability and inevitability of EPA aviation regulations, the paper will evaluate the most likely emissions options under the Clean Air Act based on their political and economic implications.

I. Background of the Clean Air Act

The Clean Air Act, originally enacted in 1970 and with the last major amendments in 1990, authorized state and federal governments to create air pollution emissions regulations for both stationary and mobile sources.¹ Section 231 of the Clear Air Act (herein "Section 231")

requires the Administrator of the EPA to commence a study of aircraft emissions to determine “(A) the extent to which such emissions affect air quality in air quality control regions throughout the United States, and (B) the technological feasibility of controlling such emissions.” In the next subdivision of this section, the statute states:

(2) (A) The Administrator shall, from time to time, issue proposed emission standards applicable to the emission of any air pollutant from any class or classes of aircraft engines which in his judgment causes, or contributes to, air pollution which may reasonably be anticipated to endanger public health or welfare.

(B) (i) The Administrator shall consult with the Administrator of the Federal Aviation Administration on aircraft engine emission standards.

(ii) The Administrator shall not change the aircraft engine emission standards if such change would significantly increase noise and adversely affect safety.²

As a result of recent legal interpretations that conclude greenhouse gas emissions are pollutants that might “endanger public health or welfare,” states and environmental non-profit groups have seized upon the Section 231 requirement that the EPA Administrator “shall” issue aviation standards under the Act.³ Pursuant to the subdivision mentioned, the EPA released a study on aircraft emissions and the feasibility of control in 1972.⁴ Subsequently, the Agency has enacted regulations to control a variety of aviation pollutants, including smoke, fuel venting, carbon monoxide, nitrogen oxide, particulate matter, and ozone, in 1973⁵, 1997⁶, and 2003⁷. With the more recent finding that carbon dioxide represents a regulated pollutant under the Clean Air Act

that could trigger a “public health and welfare” finding, greenhouse gas emissions appear to be the next frontier for EPA regulation.

II. Political and Legal Rationale for EPA Regulation under Section 231

Due to a number of political and legal factors, the regulation of both in-use and new aviation greenhouse gas emissions should be viewed as all but inevitable. The recent election of President Barack Obama is likely to usher in a new era of climate regulations, a fundamental campaign promise, both through an across-the-board cap-and-trade program for greenhouse gas emissions and specific technology-forcing standards developed by the EPA for individual emissions sources. Drawing from statements by several of Obama’s legal advisors, a recent article in the news service *Energy & Environment Daily* predicted the potential (and probable) actions by the new President:

Some envision Obama moving as soon as he takes office Jan. 20, 2009, by issuing a long-sought endangerment finding that declares greenhouse gas emissions a threat to public health or welfare, an opening salvo that would clear the way for a wide range of EPA regulations on power plants, automobile and other major sources of heat-trapping gases. Others expect Obama to outline his executive powers in an early speech and then allow EPA and other agencies to work through the details.⁸

Given the substantial discretion granted to the EPA Administrator under Section 231, the newly approved Administrator in the Obama administration further points to an expanded EPA role in

aviation regulation under the Clean Air Act. Both Obama's eventual selection to head the Agency, Lisa Jackson, formerly New Jersey Environmental Protection Commissioner, and the other name frequently mentioned for this position, Mary Nichols, head of the California Air Resources Board, signal an endorsement of Clean Air Act aviation regulation.⁹ Both New Jersey and California signed onto a December 2007 petition requesting that EPA exercise its authority under Section 231(a) of the Clean Air Act to regulate greenhouse gas emissions from new and existing aircraft and aircraft engines.¹⁰

Furthermore, Congressional action could authorize an expanded EPA role in aviation emissions. In a discussion draft of comprehensive climate change legislation released in October 2008 by then-Chairman of the House Energy and Commerce Committee, John Dingell (D-MI), the proposed provisions would have triggered EPA regulation of aviation emissions:

For purposes of paragraph (2)(A) of section 231(a), the Administrator shall be treated as having made a determination under that paragraph that greenhouse gases emitted from new aircraft engines cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.¹¹

This document was widely considered to be the moderate blueprint for legislative efforts to address climate change in the 111th Congress. However, in October 2008 Congressman Henry Waxman (D-CA) ousted Dingell from his Chairmanship of the Energy and Commerce Committee. Waxman is expected to be more environmentally radical than Dingell, making EPA authority over aviation through legislative fiat a very real possibility.¹²

The Supreme Court's 2007 decision in the case of *Massachusetts v. EPA* provides further fuel to the EPA regulatory fire. While the case focused on the ability and obligation of the EPA to regulate greenhouse gas emissions from new motor vehicles under Section 202 of the Clean Air Act, the language interpreted by the Court is nearly identical to the aircraft emissions guidelines in Section 231. For example, Section 202 states "The Administrator shall by regulation prescribe...standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicles, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."¹³ In this 5-4 decision, the Court found that "greenhouse gas emissions fit well within the Clean Air Act's capacious definition of air pollutant" and that the contribution of emissions from the U.S. transportation sector was "enormous" and "a meaningful contribution to greenhouse gas emissions."¹⁴ This sweeping interpretation of the Clean Air Act, combined with recent climate science indications that global warming threatens public health, provides the legal justification for EPA regulation of motor vehicle emissions and, due to the substantially similar language in Section 231, aircraft emissions.

In an *amicus curiae* brief¹⁵ responding to the state petition for EPA action under Section 231, lawyers for the Air Transport Association (ATA) and the Aerospace Industry Association (AIA) tried to outline limits on the EPA's legal authority. They argued that "Section 231 does not require the EPA to issue 'technology-forcing' standards, but instead provides that the EPA Administrator, 'from time to time,' may issue proposed standards for those emissions which 'in his judgment causes, or contributes to, air pollution' and then issue such final regulations 'as he deems appropriate.'"¹⁶ There are also a variety of international legal objections that could arise under the International Civil Aviation Organization and the Chicago Convention if EPA

regulation extended to foreign air carriers.¹⁷ While both of these positions represent logical justifications for statutory restraint, it appears that the political and legal momentum in favor of regulation is likely to prevail.

III. Possible EPA Options under the Clean Air Act

Prompted by the *Massachusetts v. EPA* decision, on July 30, 2008, the EPA released an Advanced Notice of Proposed Rulemaking (ANPR) on “Regulating Greenhouse Gas Emissions Under the Clean Air Act.”¹⁸ Prefaced by statements of opposition from a variety of federal agencies and the current EPA Administrator, Stephen Johnson, this sizable document provides a fairly detailed blueprint of the types of regulatory actions available to the EPA to control carbon dioxide and other greenhouse gas emissions under the Clean Air Act. This ANPR, while not binding, lays out technology-forcing mandates, operational requirements, and jurisdictional considerations as it relates to all stationary and mobile sources of pollution (from airplanes to lawnmowers to residential buildings). Finding that greenhouse gas emissions obviously endanger “public health or welfare” and trigger regulatory action under the Act, the EPA spent little time assessing the environmental and scientific problems caused by these pollutants. It is worth highlighting that, unlike the motor vehicle section of the Clean Air Act, Section 231 does not limit EPA regulation to new aircraft or aircraft engines. Therefore, any new regulatory regime established would have an even more significant impact by applying to both new and in-use aircraft.¹⁹

In the aviation portion of the ANPR, the EPA makes clear that, while the Federal Aviation Administration (FAA) has the primary role in aviation regulation in the United States,

Section 231(a) of the Clean Air Act “authorizes...EPA to set technology-forcing standards to the extent appropriate.”²⁰ The EPA also notes that over the last three decades the Agency has been involved in setting aircraft emissions standards for a variety of non-greenhouse gas pollutants. They further recognize the relatively small contribution of aviation carbon dioxide emissions to overall U.S sources (about 4%).²¹ The EPA displays a laundry list of technological controls on aircraft and aircraft engines, as well as operational measures to reduce greenhouse gas emissions in this sector. The technological mandates discussed include: balanced engine bypass ratios; aerodynamic drag and weight reductions; film surface grooves; hybrid laminar flow technology; blended winglets; spiroid tips; and alternative fuels. The operational changes mentioned in the ANPR are Reduced Vertical Separation Minimum (RVSM), Continuous Descent Approaches, and single-engine taxiing. While the EPA requests comments on all of these options, perhaps the most likely approach is the development of near-term and long-term aviation sector carbon dioxide or greenhouse gas emissions standards. The EPA says that such a standard, utilizing a fleet average of emissions for each airline, would allow flexibility for carriers to deploy technological efficiency and operational strategies to address the new regulation.²² The ANPR also mentions that, while these proposals would be designed to address emissions from gas turbine engines utilized in commercial aviation, the EPA’s “authority under the Clean Air Act extends to any aircraft emissions” including general or business aviation. While general aviation represents only about 1% of carbon dioxide from U.S. transportation, the EPA requested comments on test procedures and emission standards for this source.²³ In addition to these recommendations, there are also a variety of other operational steps that could be applied to in-use aircraft, including: increase in the number of landing operations per hour; reduction of

auxiliary power unit usage; coordination with air traffic control centers to select more fuel-efficient routes and speeds; and reduction in levels of excess fuel carried.²⁴

IV. Policy Ramifications of EPA Regulation of Aviation Greenhouse Gas Emissions

This colossal shift in aircraft regulation would have a number of consequences for the government, industry, and consumers. In preliminary comments from the U.S. Department of Transportation (DOT) on the EPA's ANPR, released as a supplementary document with the Federal Register publication, a number of serious economic and policy concerns are expressed in opposition to expanded EPA authority over aviation emissions.²⁵ While some of the DOT's (and, in turn, the FAA's) objections can be chalked up to a bureaucratic turf battle, several of the questions raised need to be answered prior to full-scale EPA mandates of aircraft technology and operations.

The first objection raised by DOT is economic in nature. The DOT spells out their reluctance to endorse the Clean Air Act as the best avenue for emissions reductions:

We are concerned that attempting to regulate greenhouse gases under the Clean Air Act will harm the U.S. economy while failing to actually reduce global greenhouse gas emissions.

Clean Air Act regulation would necessarily be applied unevenly across sources, sectors, and emissions-causing activities, depending on the particular existing statutory language in each section of the Act. Imposing Clean Air Act regulations on U.S. businesses,

without an international approach that involves all of the world's major emitters, may well drive U.S. production, jobs, *and emissions* overseas, with no net improvement to greenhouse gas concentrations...If implemented, the actions that the draft contemplates would significantly increase energy and transportation costs for the American people and U.S. industry with no assurance that the regulations would materially affect global greenhouse gas atmospheric concentrations or emissions.²⁶

This argument is particularly true in light of an airline and aerospace industry that is fully committed to reducing fuel usage for business reasons; the disruption of business operations by an EPA that lacks extensive regulatory experience in aviation is highly probable. . The costs of complying with new and unproven EPA mandates regarding technology and operations would be significant. As Robert Stavins, professor of Harvard University's environmental economics program and advocate for federal greenhouse gas restrictions, notes, use of the Clean Air Act would be "extremely costly. It plays into the hands of the opposition. It's going to make action on climate look silly and costly."²⁷ The possibility that U.S. regulations could only apply to American carriers as a result of EPA decisions or international legal proceedings would further magnify the potential harm to domestic aviation interests. The broader economic impacts could be substantial, as both ATA and AIA estimate that their industries do nearly \$200 billion in business annually.²⁸

Second, regulation by the EPA ignores the potential benefits that will result from Next Generation Air Transportation System or NextGen, the interagency effort to ²⁹modernize American airspace through satellite-based air traffic navigation. Led by the FAA and with participation from private organizations, the Department of Defense, NASA, the Department of Homeland Security, the National Oceanic and Atmospheric Administration, and the White

House Office of Science and Technology Policy, NextGen seeks to deploy technology by 2025 to allow all aircraft and airports in U.S. airspace to adapt to weather, traffic, trajectory, and security issues in real-time.³⁰ Many of the operational changes discussed in the ANPR would be more efficiently accomplished by the deployment of better technology to govern air traffic control, navigation, and congestion. The DOT comments: “Through NextGen, the Department’s Federal Aviation Administration, in cooperation with private sector interests, is actively pursuing operational and technological advances that could result in a 33 percent reduction in aircraft fuel burn and carbon dioxide emissions.”³¹ It is also worth noting that there is an overwhelming economic justification for airlines to achieve greater fuel economy as U.S. airlines spent \$60 billion for fuel in 2008. NextGen offers great promise toward that end.

Third, EPA regulation ignores the consensus-driven process of environmental standard-setting that is currently being pursued by the United States through ICAO. Many of the proposals included in the ANPR (fleet averaging or flat carbon dioxide standards) have been considered and rejected as unworkable by ICAO and the aviation community. The FAA is actively working through ICAO to ensure that minimum, market-based, international standards are agreed to. DOT lays out the benefits of the ICAO approach: “The FAA’s emphasis on international collaboration is compelled by the international nature of commercial aviation and the fact that performance characteristics of engines and airframes-environmental and otherwise-work best when they maximize consistency among particular national regulations.”³²

Finally, EPA regulation under Section 231 would usurp FAA authority and potentially hinder the safety guidelines that should govern any new aviation standards. While the EPA goes to great lengths to promise consultation and collaboration with the FAA, they lack the experience and expertise to initiate, issue, or monitor aviation regulations. In particular, the operational

controls suggested in the ANPR would go through channels “without consideration of the safety implications that the FAA is legally required to address.”³³ There is a risk that overlapping, duplicative, and inconsistent aviation standards could result in confusion and safety lapses. The ATA and AIA find a statutory basis for this safety consideration, emphasizing that “Congress intended the CAA not to require EPA to set the most stringent aircraft emissions standards that technically feasible, but rather, to ensure that its aircraft emissions standards do not affect aircraft safety.”³⁴ These groups underscore this point by arguing that “sound policy considerations thus make the compelling argument that aircraft emissions standards must move forward based upon proven technology, not by testing the edge of the technology envelope.”³⁵

V. Conclusion

A simple comparison of the Clean Air Act and the FAA statutes and regulations governing aviation demonstrates that the Clean Air Act and the EPA are ill-suited instruments to comprehensively address aircraft emissions. The potential for great safety, regulatory, and economic harm as a result of this new process demands a clear delineation of authority and responsibilities between the EPA and FAA. Despite the problems discussed above, the recently-altered political and legal landscape regarding climate change policy makes an EPA seat at the aviation table nearly inevitable.

However, despite the Obama administration’s commitment to comprehensive climate change mitigation and recent Supreme Court rulings that appear to tie the EPA’s hands, the Federal Government should not allow the technicalities of an Act written 35 years ago to govern its decision-making. In pursuing economy-wide climate legislation in 2009 and 2010, Congress

should amend the Clean Air Act to spell out when and how EPA pollution regulations should govern aircraft. In the interest of safety and international negotiation, they could remove the “public health and welfare” trigger for EPA action or include mobile aviation sources under a new climate regime and pre-empt future EPA regulations. Much like the decisions made for the Kyoto Protocol (in which the body deferred to ICAO for international climate policy), Congress should recognize that the most able agency ought to shoulder responsibility for any emissions regulations that could impact safety or economic considerations. For their part, the aerospace and airline industries need to play a more significant stakeholder role in discussions with the Obama administration. They should emphasize their commitment to reduced fuel usage and NextGen, as well as raise legitimate concerns about duplicative and unnecessary environmental standards.

¹ EPA, “History of the Clean Air Act,” http://www.epa.gov/air/caa/caa_history.html (accessed December 1, 2008).

² 42 U.S.C. 7521, http://www.law.cornell.edu/uscode/html/uscode42/uscode42.usc_sec_42_00007571----000-.html (accessed November 15, 2008).

³ People of the State of California (Petitioner) v. Stephen Johnson (Defendant), “PETITION FOR RULE MAKING SEEKING THE REGULATION OF GREENHOUSE GAS EMISSIONS FROM AIRCRAFT,” November 6, 2007 [herein California Petition]; The States of California, Connecticut, New Jersey, and New Mexico, et al. (Petitioners) v. Stephen Johnson, “PETITION FOR RULE MAKING SEEKING THE REGULATION OF GREENHOUSE GAS EMISSIONS FROM AIRCRAFT,” December 4, 2007, <http://www.airportattorneys.com/files/AircraftPetition.pdf> [herein States Petition] ; Earthjustice, et al v. Stephen Johnson, “Petition for Rulemaking Under the Clean Air Act to Reduce the Emission of Air Pollutants from Aircraft that Contribute to Global Climate Change,” December 5, 2007, <http://www.airportattorneys.com/files/AircraftGHGPetition.pdf>.

⁴ National Center for Environmental Economics and EPA, “Aircraft Emissions: Impact on Air Quality and Feasibility of Control,” 1972, <http://yosemite1.epa.gov/ee/epa/ria.nsf/vwRef/A.72.2?OpenDocument> (Accessed November 15, 2008).

⁵ 38 Federal Register 19088-19090 (July 17, 1973).

⁶ 62 Federal Register 25356 (May 8, 1997).

⁷ 68 Federal Register 56226 (September 30, 2003).

⁸ Darren Samuelson, “Obama facing pressure to tackle emissions through EPA,” *Energy & Environment Daily*, December 1, 2008, www.eenews.net/special_reports/transition/ (Accessed December 1, 2008).

⁹ Stephen Power, “Obama, Aides Consider Appointing Energy ‘Czar,’” *Wall Street Journal*, December 5, 2008, http://online.wsj.com/article/SB122851742327183933.html?mod=googlenews_wsj (Accessed December 10, 2008).

¹⁰ States Petition.

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http://energycommerce.house.gov/images/stories/Documents/PDF/selected_legislation/clim08_001_xml.pdf
(Accessed December 1, 2008).
- ¹² Eoin O’Carroll, “Waxman unseats Dingell as House Energy Committee Chair,” *Christian Science Monitor*, November 20, 2008, <http://features.csmonitor.com/environment/2008/11/20/waxman-unseats-dingell-as-house-energy-committee-chair/> (accessed December 1, 2008).
- ¹³ 42 U.S.C. 7521, http://www.law.cornell.edu/uscode/html/uscode42/usc_sec_42_00007521----000-.html
- ¹⁴ 549 U.S. 497 (2007), , <http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf>
- ¹⁵ *Amicus curiae* is Latin for "friend of the court," and refers to a brief filed with the court by someone who is not a party to the case. William H. Rehnquist, *The Supreme Court* (New York, NY: Knopf Publishing Group, 2001), 89.
- ¹⁶ AIR TRANSPORT ASSOCIATION OF AMERICA, INC. and AEROSPACE INDUSTRIES ASSOCIATION, Joint Brief of Amici Curiae in Support of Respondent US Environmental Protection Agency, October 12, 2006, <http://www.4cleanair.org/Documents/AmicusBrief110106.pdf> (accessed December 1, 2008).
- ¹⁷ *Ibid*, 6.
- ¹⁸ 73 Federal Register 44354-44473.
- ¹⁹ California Petition, 12.
- ²⁰ 73 Federal Register 44433.
- ²¹ 73 Federal Register 44469.
- ²² 73 Federal Register 44470-44473.
- ²³ 73 Federal Register 44473.
- ²⁴ Ian Waitz, et al. “Aviation and Environment: Report to the United States Congress,” (December 2004), 34, http://web.mit.edu/aeroastro/partner/reports/congrept_aviation_envirn.pdf (accessed December 1, 2008).
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- ³¹ 73 Federal Register 44364.
- ³² 73 Federal Register 44365.
- ³³ *Ibid*.
- ³⁴ ATA, 16-17.
- ³⁵ *Ibid*.