

more stringent NO_x standards than the proposed standards are needed in the future to reduce aircraft NO_x emissions in nonattainment areas.

Further stringency of the NO_x standards would reduce the expected growth in commercial aircraft emissions. The importance of controlling aircraft emissions has grown in many areas (especially areas not meeting the 1-hour and 8-hour ozone NAAQS) as controls on other sources become more stringent and attainment of the NAAQS's has still not been achieved. (Many airports in the U.S. are located in nonattainment areas.⁸⁷) As activity increases, aircraft would emit increasing amounts of NO_x in many nonattainment areas, and thus, aircraft emissions would further aggravate the problems in these areas (either by emitting pollutants directly within a nonattainment area or by contributing to regional transport emissions in an area upwind of a nonattainment area). More stringent aircraft engine NO_x standards would assist in alleviating these problems in nonattainment areas, and they would aid in preventing future concerns in areas currently designated as attainment (or maintenance) areas. In addition, attainment or maintenance of the NAAQS requires that aircraft engines be subject to a program of control compatible with their significance as pollution sources.

EPA, therefore, is considering more stringent future standards, beyond today's proposed standards. Leading up to CAEP/6 in February 2004, one of the objectives of CAEP (and/or the international aviation community) is to consider more stringent aircraft engine standards than CAEP/4 standards for all

gaseous emissions, especially NO_x.⁸⁸ ICAO CAEP working groups are currently assessing the technological feasibility, economic reasonableness, and environmental benefit of imposing more stringent NO_x emissions standards for aircraft engines beyond that which will become effective in 2004 (CAEP/4 standards). Options being considered range from 5 to 30 percent more stringent with an effective date as early as 2008 to 2012 (these options are accompanied by more stringent standards for low-thrust engines).⁸⁹ Based on the results of this assessment, a proposal for more stringent NO_x standards is expected to be made at CAEP/6.⁹⁰ (No changes to the standards of other pollutants, hydrocarbons and carbon monoxide, are anticipated.) Activity is also underway to identify and assess the potential for long-term technology goals to be established for further emissions reductions.^{91 92} The aim of the goal setting activity is to complement the ICAO CAEP standard setting process with information to aid the engine and airframe manufacturer's design process. The goals are expected to take into account the results of recently completed emissions reduction technology programs such as those conducted by National Aeronautics and Space Administration (NASA) and the European Commission and the timeline necessary to carry those technologies

from the research phase through commercialization.⁹³ EPA is currently working with FAA and CAEP working groups (as described in section V) in the evaluation of NO_x stringency options for CAEP/6 and the potential for long-term technology goals.

Manufacturers should be able to achieve additional reductions with more lead time than is provided by today's proposal. After CAEP/6, we would assess whether or not the new international consensus and longer-term standards (which are expected to be adopted) would be stringent enough to protect the U.S. public health and welfare. If so, we would propose to adopt the CAEP/6 NO_x standards soon thereafter. EPA (or the U.S.) retains the discretion to adopt more stringent standards in the future if the international consensus standards ultimately prove insufficient to protect U.S. air quality.

Deferring consideration of more stringent future standards until after CAEP/6 would allow us to obtain important additional information on the costs of such standards.⁹⁴ As described earlier in this notice, section 231 of the CAA authorizes EPA from "time to time" to revisit emission standards, and it requires that any standards' effective dates permit the development of necessary technology, giving appropriate consideration to the cost. We are not proposing more stringent NO_x standards today primarily because we need more time to better understand the cost of compliance of such standards, and additional cost data is expected to be available from CAEP/6 in February 2004. Producing (and/or developing) new engines or engine technologies requires significant financial investments from engine manufacturers, which takes time to recoup (the amount of time depends upon sales of engines, replacement parts, etc.). As discussed earlier, CAEP working groups are currently analyzing the costs and emission benefits (taking into account lead time) for the options of further NO_x stringency (beyond the CAEP/4 standards) being considered for CAEP/6.⁹⁵ After evaluating such

official forecast of aviation activity at FAA facilities. This includes FAA-towered airports, federally-contracted towered airports, nonfederally towered airports, and many non-towered airports. For detailed information on TAFS and the air carrier activity forecasts see the following FAA Web site: <http://www.apo.data.faa.gov/faatafall.HTM>. As of May 1, 2003, the aviation forecasts contained in TAFS for Fiscal Years 2002–2020 included the impact of the terrorists' attacks of September 11, 2001 and the recent economic downturn. However, these projections did not fully reflect the ongoing structural changes occurring within the aviation industry. A copy of the May 1, 2003 forecast summary report for air carrier activity can be found in Docket No. OAR–2002–0030.

⁸⁷ For information on the geographic location of airports, see the following U.S. Department of Transportation (Bureau of Transportation Statistics) Web site: <http://www.bts.gov/oai>. The report or database provided on the website entitled, "Airport Activity Statistics of Certificated Air Carriers: Summary Tables 2000," lists airports by community. In addition, see the following EPA website for information on nonattainment areas for criteria pollutants: <http://www.epa.gov/oar/oaqps/greenbk>.

⁸⁸ ICAO, CAEP, Fifth Meeting, Montreal, Quebec, January 1–17, 2001, "Report on Agenda Item 4," CAEP/5–WP/86, January 17, 2001. Copies of this document can be obtained from ICAO (<http://www.icao.int>).

⁸⁹ ICAO, CAEP, Steering Group Meeting, Paris, France, September 10–13, 2002, "Summary of Discussions and Decisions of the Second Meeting of the Steering Group," September 11, 2002, CAEP–SG20022–SD/2. A copy of this paper can be found in Docket OAR–2002–0030. Since this paper was written, the working groups have also decided to consider the range of stringency options for an effective date of 2008.

⁹⁰ ICAO, CAEP, Steering Group Meeting, Paris, France, September 10–13, 2002, "Summary of Discussions and Decisions of the First Meeting of the Steering Group," September 10, 2002, CAEP–SG20022–SD/1. A copy of this paper can be found in Docket OAR–2002–0030.

⁹¹ ICAO, CAEP, Fifth Meeting, Montreal, Quebec, January 1–17, 2001, "Report on Agenda Item 4," CAEP/5–WP/86, January 17, 2001. Copies of this document can be obtained from ICAO (<http://www.icao.int>).

⁹² For the purpose of setting long-term technology goals, activity on the below tasks was initiated after CAEP/5 in 2001, and it is expected to continue beyond CAEP/6.

(a) characterize emissions performance of future technologies being pursued under national and international research programs, including technology readiness;

(b) develop methodologies for quantifying aviation emissions inventories;

(c) develop forecasts of emission trends both locally and globally; and

(d) examine how such goals might be applied within the current regulatory regime.

⁹³ ICAO, CAEP, Fourth Meeting, Montreal, Quebec, April 6–8, 1998, Report, Document 9720, CAEP/4, see Appendix A to the Report on Agenda Item 4 (page 4–A–1). Copies of this document can be obtained from ICAO (<http://www.icao.int>).

⁹⁴ For low-thrust engines, deferring regulatory action on more stringent future standards until after CAEP/6 would also enable us to obtain additional information on the technological feasibility of such standards.

⁹⁵ Specifically, the Forecasting and Economic Analysis Support Group (FESG) is conducting an