PROSPECTIVE FUTURE DIRECTIONS AND POLICIES

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INTRODUCTION

Prospective future directions and policies are particularly appropriate and timely topics in the context of airports and air quality. Airport operations are being closely scrutinized as a source of air pollution in metropolitan areas, and methods for reducing emissions from aircraft and surface vehicles are being explored. In some areas, airports are the largest source of ozone-producing emissions. For example, at Los Angeles International Airport, nitrogen oxides emissions from all activities (which includes aircraft, ground support vehicles, and passenger vehicles) are greater than from any single industrial source in the Los Angeles area. The same is true for hydrocarbons. Because most airports produce significant emissions and may be targeted for more stringent control measures, airport managers should become more involved in air quality matters in the future, if they are not already.

What can we expect in the future for air quality programs that apply to airports? My remarks are based on experience with California air quality programs; but, because airport air quality issues are very much alike across the country, what I say about California can be taken as generally applicable.

CURRENT AIR QUALITY SETTING

To paraphrase an old saying, "If you want to know where you're going, you need to know where you are." Therefore I will start by briefly recapping the current air quality setting in California and the air quality regulations that apply to airports now.

California's urban areas have the worst air quality in the nation. Figure 1 shows an all too typical example of what Los Angeles residents experience many days each summer. Ozone concentrations exceed health protective levels by about two and one half times in the Los Angeles area and cause enormous damage to people's health, to materials, and to vegetation. Although other areas of California have lower levels than Los Angeles, they are still generally higher than elsewhere in the Nation.

California has responded to its air quality problem with the most aggressive control program in the world. Our technology-forcing motor vehicle control programs require new cars to be dramatically cleaner. (Figure 1) For example, the hydrocarbon emissions of a new 1994 passenger car are about one quarter those of a new 1975 car. With California's low-emission vehicle and clean-fuels programs, cars built in 2003 will emission levels that average only about one quarter those the 1994 cars. California is also actively pursuing zero-emission vehicles, requiring that by 1998, 2 percent of all new vehicles sold in California by major manufacturers have zero tailpipe emissions.

Along with motor vehicle emissions, California has also reduced the ozone- producing emissions from other sources. Industrial emissions have been lowered by approximately 40 percent since 1975. Changes have been made in the composition of paints and even personal care products such as hair sprays and underarm deodorants to reduce their smog-forming potential.

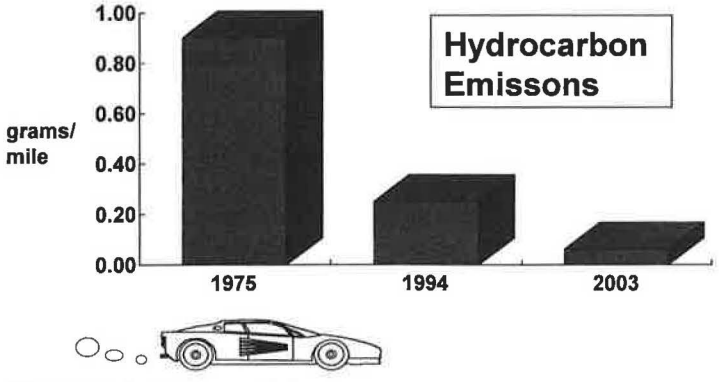

FIGURE 1 Motor vehicle cleanup.

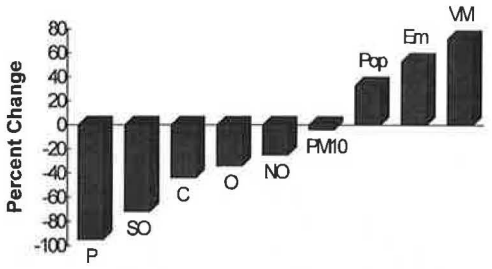

FIGURE 2 Comparing air quality and growth in Los Angeles, 1975-1990.

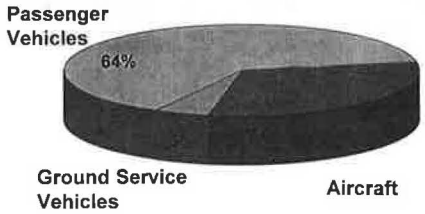

FIGURE 3 Hydrocarbon emission services at airports.

The results to date of these programs are encouraging for the 1975-1990 period in Los Angeles. (Figure 2) Ozone is down by about 35 percent since 1975; carbon monoxide levels continue to drop; and lead and sulfur dioxide are no longer problems. What is especially noteworthy is that these improvements in Los Angeles came during a period when population in the area increased by more than 35 percent, employment by 50 percent, and the number of vehicle miles travelled by more than 70 percent.

Although progress has been made, there is still a long, long way to go before California has clean air. For example, Los Angeles still has about 140 days with high ozone pollution each year. To have clean air some day, much less by the deadlines set out in Federal law, California will need to reduce the emissions from every source to the maximum degree possible. This includes airports, which are a large source of air pollution. The point is that air quality issues will become a priority for airports.

CURRENT AIRPORT AIR QUALITY REGULATIONS

Three types of regulation call for improvements in airport air quality

The Clean Air Act

The Federal Clean Air Act and Amendments (CAAA) lays out extensive pollution control requirements for areas with air pollution problems. Most of these areas, primarily the large urban areas, have, or shortly will have, plans for the pollution control measures to be carried out. These plans are referred to as revisions to the State Implementation Plan or SIP. An airport located in an area with an adopted SIP must comply with any measure in the plan that applies to it.

Aircraft Emission Standards

As laid out in the CAAA, the U.S. Environmental Protection Agency (EPA) alone has authority to set emission standards for aircraft, although for safety reasons, it must receive the concurrence of the Federal Aviation Administration (FAA). EPA last set aircraft engine emission standards for hydrocarbons in 1982. Despite these standards and the cleaner engines that have been developed, aircraft operations are still a significant portion (30 percent)of the total pollution at an airport. (Figure 3) The other two major sources are ground service vehicle emissions (relatively small) and ground access or passenger vehicles, which are the largest source of emissions (64 percent).

Airport certification

Some airports are subject to the requirement in the Airport and Airways Development Act for an air quality certificate. Before the FAA grants construction funds for certain types of projects, certification of compliance with applicable air quality standards must be obtained from the State in which the airport will be located, constructed, and operated. The Air Resources Board is actively involved in carrying out this responsibility in California, where two major airports are currently operating under conditional certificates. These conditional certificates contain a trigger clause that requires the airport to apply for an amended certificate when the specified levels are exceeded. These triggers include number of aircraft operations, passengers served, or parking spaces provided. When a trigger is tripped and the airport applies for an amended certificate, the Air Resources Board renegotiates the mitigation measures that the airport must undertake to offset the emissions associated with increased level of activity.

FIGURE 4 Future airport-related air quality programs.

FUTURE AIRPORT-RELATED AIR QUALITY PROGRAMS

As a general observation, it is clear that airport activities will be scrutinized for opportunities to reduce emissions. Airport managers should realize this will occur and likely lead to control measures or remedial actions that could directly affect airport operations. The full participation and cooperation of airport managers will be needed as measures are developed and selected. Cooperative working relationships and joint ventures maximize the possibility for "win-win" results. Nonparticipation by airport managers will mean losing the ability to influence decisions about how the airport is operated. The bottom line is that airports are a part of the air quality problem, and they must also become a part of the solution.

The measures that can be applied to airports fall into two categories: those that seek to control the existing conditions through regulatory actions and those aimed at reducing specific sources of air pollution from aircraft and surface vehicles. (Figure 4)

Regulatory Actions

Conformity

EPA promulgated final regulations on general conformity in late November 1991. General conformity means that all federally funded projects are required to conform with the State Implementation Plan (SIP). Although general conformity requirements have been around since 1977, the recently adopted regulations are far more specific than previous versions.

For airport expansion or other airport projects, the general conformity provisions require that, prior to funding a project, FAA must make a finding of project conformity. The best basis on which to make such a finding is for the emission increases from the project to have been specifically accounted for in the SIP. Other options include the State committing either to offset the emission increases elsewhere in the area or to revise the SIP in the future to accommodate the emission increases.

Airport managers should plan to work closely with the appropriate air quality planning agencies to ensure that future airport projects that will increase emissions are accounted for in the SIP.

Airport Certification

As new requirements to make conformity findings are implemented, such findings could simultaneously fulfill the requirements for certification to FAA that a proposed airport project complies with applicable air quality standards. In this instance, the finding of compliance with applicable air quality standards could be synonymous with a finding of conformity with the adopted plan for the area.

Transportation Control Measures

If offsetting emission reductions are needed for airport certification purposes, possible measures include those affecting passenger vehicles at the airport. Passenger vehicles collectively are the largest source of emissions at an airport.

One possible approach is an "indirect source rule." Indirect sources are those places or activity centers that indirectly emit pollution by virtue of the large numbers of motor vehicles that they attract. In addition to airports, shopping centers and sports complexes are common examples of indirect sources. The specific actions associated with an indirect source rule are typically of a transportation control nature. Indirect source rules reflect the realization that further emission reductions from the transportation sector may need to include actions to reduce motor vehicle activity. Some actions to reduce the number of vehicle trips include bus service, shuttle vans, carpooling, preferential parking, and parking price adjustments.

Source Control Measures

Ground Service Vehicles

Ground service vehicles are a small but nevertheless significant source of emissions at an airport. The Air

Resources Board has not yet developed formal proposals for reducing emissions from the ground service vehicles under its jurisdiction, which are generally those with engines of 175 hp or greater. California's long-range plans do not propose setting emission standards for off-road vehicles, including those used at airports, until 1998 or later. EPA, meanwhile, has published proposed emission standards for "compression ignition" engines (diesels) of 50 hp and greater used in off-road applications. A strong cooperative effort involving the technical staff of the airports and the Air Resources Board or the EPA staff, as the case may be, will be needed to ensure that all the pertinent information can be considered when developing and selecting the most efficient and cost-effective measures.

Emission Standards for Aircraft Engines

EPA has the sole statutory responsibility for identifying and proposing new emission standards for aircraft engines with the concurrence of FAA. Although it has been more than 10 years since EPA last set aircraft engine emission standards, aircraft engines have become cleaner. As aircraft engine manufacturers worked to make the engines more fuel-efficient, there have been side benefits in reduction of hydrocarbon emissions. Unfortunately, the same is not true for NOx. And for many areas, NOx emission reductions are and will be a high priority. Finding a way to reduce NOx continues to be a challenge. EPA research on the potential for NOx emission reductions from aircraft should be a high priority.

Landing Fees

Landing fees raise very sensitive issues, as shown by the recent experience in Los Angeles. However, some European airports are exploring or have implemented regulations that tie landing fees to the amount of pollution an aircraft emits. The objective, of course, is to provide the airlines with some economic incentive to use the lowest emitting aircraft at that airport. Although such an approach is attractive from an air quality perspective, the issue is fraught with legal questions at the present time. As the legal issues are resolved, there may be opportunities to use this incentive approach to encourage airlines to move expeditiously to the least polluting aircraft.

Airport Bubble

The airport bubble is more a management approach than a specific emission control measure. The concept of an airport bubble is for the regulatory agency to treat the entire airport as one unit for pollution reduction purposes. The airport manager would be given an emission "budget" for the facility as a whole, a bubble, which would decline over time. Within the bubble, the airport manager could select which sources to reduce and by how much to meet the emissions budget.

This approach would give the airport manager increased responsibility, but also greater flexibility, to determine how, when, and where to reduce emissions in a manner that is least disruptive to airport operations. The weakness of the approach is the issue of the extent of the airport manager's control over all the emission sources on the airport property. However, lease conditions and pricing mechanisms are possible avenues to explore for answers to these concerns.

SUMMARY

The remarks presented above can be reduced to a single message: airports will be included in the future consideration of air pollution control strategies. Airport managers should become more active participants in air quality issues to ensure that their concerns are considered when pollution controls are developed and selected. If they opt not to participate, airport managers will find that the decisions on pollution control measures will be made without their input, and perhaps to their disadvantage.