

## MEASURES TO REDUCE VEHICLE EMISSIONS AT AIRPORTS

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*M. Allen Hoffman*  
*Leigh Fisher Associates*

### INTRODUCTION

Federal and State legislation relating to air quality is beginning to affect how airports operate. The key to reducing overall emissions of pollutants at an airport is to reduce vehicle trips to the airport. Particular emphasis has been given to reducing vehicle trips generated by airport employees. Because State air quality regulations in California are among the strictest in the country, methods to reduce vehicle trips and emissions at several large and medium hub California airports are emphasized in this paper. Finally, the need and potential strategies to reduce vehicle trips and emissions generated by airline passengers are discussed.

### FEDERAL AND CALIFORNIA AIR QUALITY LEGISLATION

The Clean Air Act of 1970 established the current Federal air quality standards for the acceptable levels of air pollutants. In 1977, the Clean Air Act was amended to require that regional attainment plans be prepared for areas not meeting the national ambient air quality standards. The Clean Air Act Amendments of 1990 (CAAA) include current requirements and procedures for attaining the Federal air quality standards. For example, the CAAA requires that each State develop a State Implementation Plan (SIP) designed to attain minimum desired air quality standards within nonattainment areas. The CAAA also provides specific conformity definitions and guidelines for achieving these standards. Of considerable importance to airports is that a federally funded project will not be given approval or support if it is found to be not in compliance with the SIP.

As of November 15, 1993, States covering 98 nonattainment areas had submitted revisions to their SIPs, preparatory to a requirement that they file plans by November 15, 1994, committing themselves to a 15-percent reduction in urban smog by the end of 1996. The States are also required to achieve reductions of at least 3 percent per year thereafter until they attain compliance, in any case no later than the year 2010. Three strategies are envisioned in the CAAA framework for achieving these reductions in the nonattainment areas

through cleaner vehicles, cleaner fuels, and a reduction in vehicle miles traveled.

The California Clean Air Act of 1988 required that all nonattainment air basins develop new attainment plans to meet State and Federal ambient air quality standards. In response to this requirement, the 1991 Air Quality Management Plan (AQMP) was adopted in southern California by the South Coast Air Quality Management District and the Southern California Association of Governments. The basic strategies of the 1991 AQMP include:

- Use of clean fuels,
- Rapid introduction of clean vehicles,
- Conservation of natural gas and electricity,
- Reduction of emissions from all sources, and
- Reduction of vehicle miles traveled.

At an airport, a variety of sources are responsible for air pollution, including aircraft exhaust, fuel evaporation, exhaust from ground service vehicles, combustion of fuels from space and water heaters in terminals and other buildings, and exhaust from private and commercial vehicles (e.g., shuttle buses, courtesy vans, and taxicabs). Of all these sources, vehicular traffic has a high potential for exposing the general public to local pollutants, particularly in areas such as parking structures or enclosed lower-level roadways at the terminal building.

### MEASURES EMPLOYED BY VARIOUS AIRPORTS TO REDUCE EMPLOYEE-RELATED VEHICLE EMISSIONS

At present, air quality legislation is being implemented primarily through employers in an effort to target work-related commuting trips. In the San Francisco Bay Area, commuting trips typically make up 25 percent of daily vehicle miles traveled (VMT) on the regional roadway system. Similarly, most air quality improvement measures being implemented at airports consist primarily of programs to reduce airport employee vehicle trips. Employee-related airport trips typically make up a significant portion of the total daily airport trips. For example, at San Francisco International

Airport about 40 percent of daily trips are employee-related.

In California, many large and medium hub airport operators are implementing various measures intended to reduce vehicle emissions. These airports include Burbank-Glendale-Pasadena, John Wayne (Orange County), and Los Angeles International airports in southern California and San Francisco International and Sacramento Metro airports in northern California. McCarran International Airport (Las Vegas, Nevada) has also recently implemented several measures to reduce vehicle emissions at the airport.

### **Burbank-Glendale-Pasadena Airport**

In 1992, the Burbank-Glendale-Pasadena Airport Authority created the position of Employee Transportation Manager with the responsibility for such activities as planning ground transportation improvements, promoting the use of public transit, facilitating public transit access to the airport, and developing programs to encourage higher vehicle-occupancy rates.

To date, the Authority has implemented incentive programs to promote ridesharing (carpooling), use of transit, and walking or bicycling. Employees who carpool receive a \$100 savings bond per quarter and park in preferential parking spaces. Employees who rideshare are also provided with a guaranteed ride home and are eligible for a quarterly prize drawing. Employees using transit are provided with a transit subsidy of \$15 per month. Under the walking and bicycling incentive program, employees are given a \$100 savings bond each quarter, shower and locker facilities, bike racks, and free uniform cleaning.

Also the Authority has recently completed an Environmental Impact Statement and Environmental Impact Review (EIS/EIR) for land acquisition and the development of a replacement terminal for the airport. As part of the planning for this project, specific measures were developed to mitigate the estimated impacts on air quality by vehicle trips. These measures included roadway improvements designed to improve traffic flow and reduce congestion at intersections near the airport. These improvements reduce vehicle delay and therefore the amount of time a vehicle idles at an intersection.

Other proposed mitigation measures include:

- Promoting the use of transit by providing adequate and prioritized curb space at the terminal building,

- Providing information signs and kiosks and disseminating information on the types of commercial high-occupancy vehicles (HOVs) using the airport,

- Promoting the expansion of transit and commuter rail service to the airport, and

- Conducting public parking demand and pricing studies to discourage excessive vehicle trips to the airport.

### **John Wayne Airport (Orange County)**

At John Wayne Airport, Orange County is responsible for implementing employee-related air quality improvement measures. For example, County employees are eligible to work a compressed work week (i.e., the "9-80 Plan") where, during a two-week period, employees work eight 9-hour days and one 8-hour day and have the tenth day off.

The County has also implemented a "cash for commuting program" whereby employees are paid 75 cents for each day they travel to work by any method other than driving alone. In support of this program, the County supplies other amenities such as bicycle racks and locker and shower facilities.

Also, County employees and certain airline employees are provided with preferential parking spaces for carpool participants. A guaranteed ride-home program has also been implemented to ensure that no employee who carpools to work is stranded if he or she misses the ride home. The guaranteed ride home is usually provided by a supervisor or coworker. The County has also contracted with a local taxicab company for this service, as necessary.

### **Los Angeles International Airport**

At Los Angeles International Airport, the TDM Rideshare Division has been created within the Department of Aviation to develop, implement, and monitor rideshare programs as required by the South Coast Air Quality Management District. Key programs to date include a vanpool program that utilizes department-owned vans. The Division also manages a carpool program and provides preferential parking for employees. Employees who participate in the carpool and vanpool programs are provided a guaranteed ride home.

Employees who use transit are also eligible for a transit rebate of up to \$15 per month, and Department of Aviation employees have the option of working the

compressed 9-80 Plan work week described earlier for Orange County.

The City of Los Angeles is currently reorganizing the structure of the Department of Aviation to provide for the creation of a Surface Transportation Division. This office will be given the responsibility of overseeing the employee commuting programs as well as managing and planning for all ground transportation activity related to airline passengers.

### **San Francisco International Airport**

In addition to the Federal and State clean air legislation, the City and County of San Francisco Airports Commission is operating under an additional mandate to improve air quality at San Francisco International Airport. An EIR has been prepared in support of the Airport's master plan projects and resulting mitigation measures. The master plan projects now being planned include a new international terminal facility, a ground transportation center, and an automated people mover which will ultimately serve the entire airport and connect with the regional rail transit system.

To implement, monitor, and enforce trip-reduction measures at the airport, the Bay Area Air Quality Management District — at the request of the Airports Commission — has delegated its trip-reduction rule to the airport. The Airports Commission now assumes responsibility for ensuring that all airport employers — those with 100 or more employees at a single work site — develop and implement trip-reduction programs and measures to reduce the use of the single-occupant vehicle for employee commuting trips and to promote such activities as ridesharing, public transit, bicycling, or telecommuting. As a result, the Airports Commission effectively becomes responsible for a program encompassing about 31,000 employees and about 100 individual tenants -- rather than just the 1,100 persons who are direct employees of the airport.

Other trip-reduction measures at the airport include a free shuttle service between the airport and the commuter rail service, CalTrain. The Airports Commission has also undertaken extensive marketing efforts to inform both employees and airline passengers of alternatives to the single-occupancy vehicle. These efforts include billboards, radio ads, and skits which emphasize the theme "Share the Ride SFO." The airport is publishing an employee newsletter and has implemented an 800 number to provide the general public with transportation alternatives and employees with rideshare information and carpool matching.

In support of the carpool and vanpool program, the Airports Commission is studying the financial implications of implementing a guaranteed ride-home program using group-ride, door-to-door van service. The airport is also studying the potential for implementing ferry service between the Port of San Francisco and the airport using hovercraft ferry vehicles.

### **Sacramento Metro Airport**

In 1992, the Sacramento County Department of Airports began several programs at Sacramento Metro Airport aimed at reducing emissions at the airport. Key components include rideshare programs and the conversion of airport fleet vehicles to methanol. As of January 1994, about 28 percent of airport vehicles had been converted to methanol.

In July 1994, the County is planning to open a remote rental car facility that will provide counter operations for all on-airport rental car companies. A consolidated shuttle bus system using vehicles operating on compressed natural gas will transport airline passengers between the terminal building and the remote facility. In an effort to further reduce VMT and improve air quality, the off-airport rental car shuttles will also be required to pick up and drop off their passengers at the remote facility. These passengers will then transfer to the consolidated bus to travel to the terminal building. The airport estimates that total pollutants from rental car shuttles will be reduced by about 60 percent with the consolidated shuttle system.

### **McCarran International Airport**

At McCarran International Airport (Las Vegas), the Department of Aviation has implemented a clean fuels program that includes a compressed natural gas fueling facility and a program to switch vehicles to natural gas. The compressed natural gas fueling facility is for use by Department of Aviation vehicles, but it will ultimately be available for use by airport tenants and the general public. As part of the clean fuels program, airport parking lot shuttle buses have been converted to operate on compressed natural gas.

The Department is also attempting to reduce vehicle emissions at the curbside (and to reduce congestion as well) by adopting a policy to prohibit vehicle waiting on the curbside at the arrival level.

## **MEASURES TO REDUCE EMISSIONS GENERATED BY AIRLINE PASSENGER TRIPS**

Airline passengers are often reluctant to use mass transit because they believe it is inconvenient. Transit schedules and travel times are often incompatible with travelers' plans, and travelers say that carrying baggage onto and off a bus or van is inconvenient. Also, air travelers (especially business travelers) are not particularly price-sensitive and are usually willing to pay for the convenience of driving to and parking at the airport or of using a taxicab.

One strategy that can be used to reduce vehicle trips related to airline passengers is to encourage the use of HOVs for airport trips. As a means of improving the convenience of the HOV mode, the airport operator could consider implementing remote airport terminals with ticket counters and luggage check-in facilities. These facilities could offer the passenger the opportunity to avoid airport congestion and airport parking fees. The development of a "ground transportation center" could also help to reduce commercial-vehicle VMT by allowing only one stop instead of repetitive stops along a terminal frontage roadway. Also, because ground transportation services would be provided at one location, the airport operator could promote transit services by providing a first-rate facility with a waiting area, concessions, and other amenities and a display of available transportation services.

The second strategy is to limit commercial vehicle trips and curbside dwell times. Methods of accomplishing this include implementing commercial vehicle fees to discourage unnecessary vehicle trips and circuits of the airport roadway. Individual vehicles can be monitored and controlled, and fees can be collected through a number of means including automated vehicle identification systems.

The airport operator could also discourage the use of private vehicles for passenger pick-up and drop-off by providing options to the congested curbside. One such alternative might be to provide HOVs with the most convenient curbside locations. Also, alternative drop-off locations could be provided to allow the driver to avoid congestion and delay at the curbside.

Finally, airport roadways can be improved to accommodate the expected level of roadway traffic, thereby reducing start-stop traffic and congestion that results in additional vehicle emissions. Also, the curbside should be designed to facilitate traffic flow through this area. For example, if room is available, pull-through parking spaces can improve roadway operations by eliminating the need for a vehicle to back into oncoming traffic. Also, the implementation of metered parking spaces near the terminal could allow curbside pick-up without the driver having to leave the vehicle idling at the curbside or to loop the roadway.

## **SUMMARY**

Most strategies to improve air quality at airports are primarily aimed at reducing emissions related to employee and airport tenant activities. This in turn is mainly a result of air quality legislation directed at employers with 100 employees or more. Also, employee commuting travel is easier to modify than airline passenger travel to and from the airport.

However, airport operators planning federally funded construction projects are typically required to prepare an EIS. As part of this process, the operator is usually required to implement and monitor certain measures designed to mitigate the emissions generated by surface transportation. To meet these mitigation goals, airport operators should develop emission-reduction strategies aimed at airline passengers as well as airport employees.