

Private operations of remote parking facilities compete very favorably with remote parking facilities being operated by airport sponsors. Airport-operated remote parking is treated as an "economy" service and is tailored for low operating costs rather than convenience of the airline passenger. The emphasis generally is on maximum cost efficiency. As a result, shuttle frequencies are generally lower at airport-operated remote facilities than at privately operated facilities. Airport-operated facilities also require passengers to go to a pick-up point, and this requires walking within the lot. For these reasons, the airport-operated remote facilities have not been as well used as the privately operated facilities, even though the latter often charge higher rates. The customers appear to be prepared to pay a premium for quality service.

In summary, airport operators should consider planning for remote lots with first-class, service-oriented shuttle systems in lieu of additional close-in parking structures. The higher costs of better shuttle service can be recouped through the higher charges the airline passengers appear willing to pay.

#### PRESENTATION 3

James T. Murphy, Federal Aviation Administration, Washington, DC

Parking facilities at Dulles International Airport and Washington National Airport were briefly described. Dulles parking facilities are located in a single lot of 3,600 spaces. At National Airport, about 4,000 spaces are provided in 7 lots.

At Dulles, the biggest complaint of users is the service provided at parking exit booths. Dulles is unique because 40% of its passenger traffic occurs in 1-1/2 hours in the evening peak. Dulles parking facilities accommodate a number of long-term parkers (e.g., passengers on flights to Europe who park for durations of 2 to 3 weeks). Until recently, because of the peak exiting, there occasionally was a 40-minute wait at the parking lot exits.

At National Airport, 351 of the 4,000 spaces are devoted to short-term parking. These short-term spaces accommodate 46% of the cars, with a turnover rate of 12 to 15 times a day. The use of the parking space is controlled by pricing.

Computerized Revenue Control System at Dulles  
An improved revenue control system was recently introduced at Dulles Airport and has increased revenues per enplaned passenger. Under the new computerized system, revenues have risen about \$200,000 per year. In addition, the new system has resulted in "no lost tickets."

The system operates as follows: Entering cars receive a ticket from a conventional ticket spitter. During nighttime hours, a license plate inventory is recorded and entered into the computer system. Upon the exit of a car from parking, the license plate number is punched into the computer system at the cashier's booth. Within an average of 15 seconds, the computer cross references the nighttime inventory to check if the ticket time corresponds with the inventory. Another advantage was that the new system leaves a "perfect audit trail."

The FAA strongly favors this new parking revenue control system, and workshop attendees were invited to visit Dulles Airport for an on-site inspection of the system.

#### PRESENTATION 4

Richard Hall, Peat, Marwick, Mitchell & Co., San Francisco

This presentation focused on the planning process for airport parking. Because of their size alone, airport parking facilities have an impact on all aspects of airport land use planning. Airport garages, like the one at O'Hare International Airport in Chicago, rank among the largest buildings in the nation, and surface parking at many airports is (or will be) measured in the tens of acres. For example, at Tampa International Airport, a lot of more than 10 acres is needed for overflow conditions just for holiday periods of the year.

The financial impacts of airport parking are also significant. Construction of structured parking costs several thousand dollars per space, whereas costs for shuttle bus service to remote surface parking--as at Houston Intercontinental Airport--are measured in the hundreds of thousands of dollars per year. Parking is a major contributor to airport revenues. Airport Operators Council International survey data for airports serving medium and large hubs indicate that annual parking revenues account for an average of about 20% of total gross revenues.

Three topics in the planning of public parking facilities were addressed:

1. Determining space requirements,
2. Environmental concerns, and
3. The need for more data and studies.

The discussion focused primarily on long-term parking where the traveler parks his vehicle for the trip duration. Long-term parking typically accounts for less than 10% of air passengers at an airport, but the vehicles typically occupy more than 50% of the total parking spaces in use.

Parking space requirements tend to grow in direct proportion to air passenger levels. As a result, parking requirements increase somewhat faster than other airport facilities requirements such as aircraft gates. Improved private or public transit service to airports has not yet had a significant effect in reducing automobile parking requirements.

However, the relationship of spaces versus passengers is qualified. The relationship refers to originating rather than enplaning passengers, and, in some instances, further detail is needed for planning purposes. At Tampa International, for example, peak space requirements for long-term parking do not necessarily occur in the peak of the tourist season. It is the resident air traveler, rather than the visitor, who contributes to the demand for long-term parking.

Air passenger traffic is growing rapidly because of discount fares and other factors, and this raises another point concerning parking spaces--a

shortage of capacity is apparent and frustrating to the user. An air passenger might accept a wait at the ticket counter, but not a "lot is full" notice for long-term parking. Consequently, at airports with parking capacity problems (as is currently the case at Kansas City and El Paso), the sponsor will hear about it . . . including unkind newspaper articles.

Regarding environmental concerns, resistance to the expansion of airport parking facilities by some state and community representatives was cited. Portland International (Oregon) and Dulles International Airports are examples. There is opposition to so-called "monuments to the automobile" because more airport parking appears to be inconsistent with community goals of increased transit to save fuel and improve air quality.

But placing limits on airport parking may not necessarily achieve environmental goals. If an air traveler cannot park at the airport for the trip duration and good commercial or public transit is not available, that traveler may choose to be dropped off and picked up at curbside by a family member. When this happens, automobile-miles traveled for airport access are doubled.

It also was stressed that localized air quality problems are a concern within and near garages. For example, Minneapolis-St. Paul International Airport has even undertaken wind-tunnel modeling of potential new airport parking facilities.

There is a real need for more data and further studies. To supply airport parking properly, it is first necessary to have a full understanding of demand. Because demand characteristics are different at each airport, hour-to-hour or day-by-day, information must be collected on:

1. Vehicle accumulations (spaces occupied),
2. Parking durations (lengths of time parked), and
3. Entrances/exits from parking (traffic volumes).

This information is typically obtained by computer processing of data from samples of processed parking tickets. "We, and other consultants, do our best to pick the best samples," Mr. Hall said, "but it would be desirable to have this information available on a routine basis at large airports. Capabilities of the new systems for parking revenue control (as discussed in the foregoing presentations) are encouraging in this respect."

Finally, there is a real need for comprehensive "before and after" case studies to improve the planning of airport parking (and to assist in "selling" these plans). Detailed activity measurements before and after a rate change, or before and after a new parking facility is opened, could address such fundamental planning questions as the following:

1. What differentials are necessary in parking rates to influence the use of various parking facilities at an airport? . . . particularly when different service characteristics are a factor (e.g., close-in versus remote parking facilities).
2. Does expansion of airport parking facilities cause changes in the mode of airport access?

Mr. Hall observed that the closest example of such a study was the Cleveland Hopkins Airport

Access Study in 1970, sponsored by the U.S. Department of Transportation. The study concerned airport access before and after rail transit was introduced, but even that detailed study did not fully describe parking impacts.

#### WORKSHOP MODERATOR'S COMMENTS

William M. Schoenfeld, Los Angeles Department of Airports, Los Angeles

When the new Los Angeles International Airport (LAX) terminal opened in 1961, 4,728 parking spaces were provided at a daily parking rate of \$2.00. Today more than 21,000 spaces are provided at LAX, at up to \$6.00 daily rates.

Lots	Spaces	Daily Rates
1 - 7 (Central Terminal)	6,214	\$6.00
A (Perimeter)	1,380	4.00
C (Perimeter)	5,343	2.00
VSP (Perimeter)	5,853	1.50
West Imperial Terminal	869	2.00/\$1 entry
Fly Away (Van Nuys Airport)	1,377	1.00 entry
	21,036	

To reduce curb space congestion, 264 metered spaces are now provided in the Central Terminal Area at LAX, with charges of \$.25 per half hour (with a one-hour maximum). The concept has been highly successful and additional meters will be installed.

The parking rate structure at LAX is designed to discourage long-term parking in the central terminal area, thereby making more space available for short-term parking. The current rapid growth in passenger activity may require another rate increase to shift more parkers to the underutilized perimeter facilities.

The perimeter lots (A, C, and VSP) have free tram service to and from the terminals. To increase the attractiveness of these facilities the Los Angeles Department of Airports recently purchased twenty new Argosy Airstream trams for some \$600,000 and negotiated an agreement with Airways Services, Inc. for tram operations and maintenance. The result has been a considerable upgrading of service.

Activity in the West Imperial Terminal Lot is highly seasonal. A cashier operation is used from May to October, and a dollar coin entry system is used during the slower months.

The FlyAway Lot, located some 25 miles from LAX, at the Van Nuys Airport, is actually a parking facility for LAX. High frequency bus transportation is provided between the FlyAway facility and LAX, subsidized by the Department at a rate which has decreased from \$2.45 to \$0.65 per passenger.

Statistics. Passenger activity at LAX grew from less than 10 million annual passengers (MAP) in 1963 to over 21 MAP in 1969. Various factors in the early 1970's slowed the growth rate; the 1975 total was 23.7 MAP. The growth since that time is as follows: