

## IMPLEMENTATION OF PASSENGER AND EMPLOYEE TRIP-REDUCTION STRATEGIES AT BOSTON LOGAN INTERNATIONAL AIRPORT

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### INTRODUCTION

The Massachusetts Port Authority, owner and operator of Logan International Airport in Boston, Massachusetts, has been engaged for several years in initiatives focused on reducing employee and passenger vehicle trips to and from Logan. Logan is the tenth busiest airport in the United States in terms of air passengers, handling about 24 million passengers in 1993. Because 90 percent of Logan's passengers either begin or end their trip in Boston, Logan ranks fifth among United States airports in the number of ground access passengers.

Reducing air passenger and employee trips to and from Logan Airport is important to the Authority from the perspective of both air quality and airport management. This presentation discusses a few of the more successful initiatives the Authority has undertaken, the basis for the particular initiatives, what the Authority has learned, and where the next steps might be taken in the ground access program.

### LOGAN INTERNATIONAL AIRPORT

Boston's proximity to the airport, less than two miles from downtown, is a plus and a minus for air passengers as they plan their ground access trips. The proximity of the airport is a plus for ground access passengers, but they must travel in a traffic mix that includes traffic from the regional highway and roadway system. Access from Boston and points south and west is currently limited to two cross-harbor tunnels and a bridge. (A new third harbor tunnel is under construction at this time.)

### PASSENGER AND EMPLOYEE ACCESS TRIPS

Table 1 shows the proportional distribution of passenger and employee access modes at Logan Airport. The information is based on air passenger survey data from 1990. The Authority periodically commissions surveys of both air passengers and airport employees.

The two highest categories of ground access users are employee parking (employees who drive to work and park at the airport) and air passengers who are picked

up and dropped off. Although the Authority has had considerable success in influencing air passenger and employee mode choices, the primary access mode to and from Logan Airport remains the private automobile.

Table 2 illustrates the Authority's preferred method of categorizing air passenger access modes for the purposes of its analysis, planning, and policy making. Recognizing that all of the several modes of ground access transportation are, and will be, available for access trips, the Authority has developed an access mode continuum. Using an index called vehicle trips per person, known as VTPP, the Authority has established a hierarchy of modes, from the least-desirable mode, pick-up and drop-off, to the most-desirable mode, transit.

The purpose of the continuum is to facilitate planning and measurement of the Authority's goal to limit the growth in vehicle trips at the airport to a proportion less than or equal to air passenger growth. The Authority aims to attain this goal by encouraging mode choices toward the more desirable modes on the continuum.

### PROGRAM TO INFLUENCE GROUND ACCESS MODE CHOICES

With the ground access mode choice continuum method in place for measuring the direction and success of the Authority's programs, policy decisions and implementation can be directed toward target groups in

TABLE 1 DISTRIBUTION OF PASSENGER AND EMPLOYEE TRIPS (AVERAGE WEEKDAY 1990)

<u>Trips</u>	<u>Percent</u>
Employee Parking	22
Pick-up/Drop-off	17
Transit/HOV	14
Taxicab	14
Long-Term Parking	13
Rental Car	11
Door-to-Door	5
Employee other	4

**TABLE 2 PASSENGER ACCESS MODE CONTINUUM**

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Pick-up/Drop-off  
Taxicab  
Long-Term Parking  
Rental Car  
Door-to-Door  
Scheduled HOV\*  
Transit\*\*

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\* Includes Logan Express

\*\* MBTA Blue Line to Massport Shuttle bus and the Airport Water Shuttle

an effort to influence their behavior. The Authority uses a market-based strategy to determine which types of passengers are responsible for the less desirable mode choice trips and plans its programs accordingly.

Any successful approach to trip-reduction strategies for airports begins with the essential realization that for an air traveler, in contrast to a commuter, the mode choice to and from the airport is very much secondary to the choice of making the air trip. Once the overall nature of the air passenger's ground access mode choice is understood, planning can be directed toward influencing choices.

There are three components to the Authority's market-based strategy. First, air passengers are segmented into distinct markets. Most airport authorities and aviation ground transportation industry operators, including the Authority, identify the airport access mode that air passengers will choose on the basis of characteristics such as the purpose of the air trip (business or non-business), where the air passenger lives in the vicinity of the airport (if a local resident), or whether they are visitors from outside the region. The second important component is the geographic origin of the ground access trip. The third component is a consideration of what services are available to the air travelers at the local origin of their ground access trip. In the case of Logan, there are a number of private services available and the Authority has programs in place to provide services to fill the gaps in service.

All strategies undertaken by the Authority are planned and implemented within the financial capabilities of the Authority based on a realistic appraisal in hand of what is feasible in terms of political and operational constraints.

## **SPECIFIC GROUND ACCESS INITIATIVES**

### **Logan Express**

Logan Express is a direct, non-stop bus service initiated by Massport in 1986 from two remote locations, one to

the west of the airport about 20 miles away, and one to the south about 12 miles from the airport. In the last year the Authority has added a new express bus service about 15 miles to the north of the airport. These three express services are operated seven days a week with weekday service at 30-minute intervals from 5:30 a.m. until about midnight. They have dedicated parking at the remote locations and the Logan Express terminals are open 24 hours a day, providing a secure area for people to wait. In terms of pricing and incentives, the Logan Express offers below-market fares and a weekend versus a weekday fare to encourage ridership. The pricing of the dedicated parking is very reasonable at about \$4 to \$5 a day.

The principal users of the Logan Express service (85 percent) are residents; the other 15 percent are airport employees and non-resident air travelers. The Authority has conducted surveys of riders of the buses and found that they would have parked or been dropped off at the airport if the service were not available. Because Logan Express targets air travelers who would otherwise have chosen the least desirable mode choice along the ground access continuum (pick-up and drop-off in private automobile) and seeks to influence their choice toward a more desirable mode, the Authority considers the Logan Express a significant success.

This success extends across all market segments. Ridership is a mix of business and nonbusiness travelers. The Authority's surveys and experience show that business and nonbusiness travelers alike have come to rely on this service for getting to and from the airport in a reasonable time and by a reliable mode.

### **Airport Water Shuttle**

Another transportation access service initiated a number of years ago by the Authority is the Airport Water Shuttle, now operated jointly by the Authority and The Beacon Companies, owner of the Boston Harbor Hotel. Operating from edge of Boston's downtown financial district, the shuttle runs seven days a week on 15-minute headways from 6:00 a.m. to 8:00 p.m. The ride involves a short, 10-minute trip across the harbor and arrives at the south side of the airport, where water shuttle passengers board a bus that takes them directly to the airline terminals. There is no parking available on the airport, and the only parking available in downtown Boston is very expensive parking at the hotel. The principal users of the Airport Water Shuttle service are nonresident business travelers, who typically start or end their trip at locations within a short (5-10 minute) walk from the hotel.

### **Rapid Transit**

Another part of the Authority's program that stretches back over several years is to provide linkages between

other ground transportation services and the airport. An example is the linkage between the public rapid transit station located just beyond the airport premises and the terminals about one mile away on the airport roadways. Initially, a shuttle bus service was offered by the regional transit agency responsible for the train to the airport. The agency charged a fare, and the shuttle followed a single route through the airport curbsides. The Authority eventually took the shuttle service over, eliminated the fare, and split the routes to better serve passengers on their trips to the various terminals. The frequencies on the shuttle are consistent with transit frequencies, and the Authority has found that the service has increased in popularity in the recent years, particularly on those days of the week when it is difficult to drive to Logan.

#### **Recent Modifications to Ground Access Initiatives**

The Authority has made some significant modifications to its services, most notably the Logan Express. At the time Logan Express services were initiated, the southern corridor service operated out of a suburban transit station. The service carried only half as many passengers as the western corridor service, yet the southern market area held as many air passengers as the western market.

The Authority undertook to determine why the southern service seemed to be underutilized. Although the transit station had a garage for 2,000, it filled up very early in the morning. Although the pick-up location for the bus service was within the shelter of the station itself, the station was not climate controlled. In addition, the Logan Express station did not have an identity of its own separate from the facility.

In July 1990, the Authority acted to correct these deficiencies and relocated the service to the site of a former drive-in theater located across from a regional shopping center and at the intersection of a major circumferential highway and a radial route to Boston. The concession building of the drive-in was remodeled to resemble an airline terminal and a Logan Express sign that could be seen from the highway was installed. The facility has a comfortable waiting area and airline ticket counters at which American and Northwest sell tickets.

A year after the relocation and modifications, the ridership had increased by about 40 percent during a time when Logan air passengers overall numbers decreased by 4 percent and the western express service ridership had decreased by 4 percent. Presently, both the western and southern Logan Express services are averaging over 20,000 passengers a month.

#### **MARKETING OF GROUND ACCESS TRANSPORTATION SERVICES**

The Authority has established an advertising and marketing program that includes a toll-free number (1-800-LOGAN) that travelers can call to get information on transportation services to the airport provided by the Authority and by private firms. The advertising program, initiated in 1986 for the purpose of explaining to air travelers that Logan Airport had an access problem, was essentially a problem-awareness program. In recent years, after the problem was established in the minds of air travelers, the marketing program shifted to actively encouraging the use of ground access modes on the more desirable end of the mode choice continuum.

#### **SERVICE CHARACTERISTICS**

When the Authority plans to improve existing services or develop new services, the planning process begins with the understanding that the Authority's high occupancy ground access alternatives compete directly with the on-demand services on the ground access continuum available to air passengers, namely the private auto and rental cars, taxis, and door-to-door limos.

Over time, it has been the Authority's experience that certain service characteristics are most important to air passengers. The successful services offers frequent, direct service on evenly-spaced intervals so that air passengers need not memorize or refer to complicated schedules. While the frequency of HOV alternative service may be less than that of an all-purpose rapid transit service, it is more important for air travelers that frequencies relate to the length of the air trip. For the Logan Express, which provides service to air passengers who typically would need at least a half-hour and sometimes more than an hour to drive to or from the airport by private car, experience has shown that a half-hour frequency is sufficient.

Service reliability is very important to the success of an HOV service because of the severe consequences for an air passenger missing a flight. The hours of operation of an HOV service must be consistent with normal flight schedules and take into consideration flight delays. Parking must be available at the remote locations and, as is the case at the Logan Express terminals, public transit service must be either limited or unavailable.

The siting of remote terminals and services is crucial to success. The HOV stops must be along the traditional travel paths of the region's air passengers, and the air passenger must perceive the stop as a convenient interruption in the ground access trip. The

market area study of each Logan Express service demonstrates that passengers from areas closer to the airport than the remote site of the service are unwilling to backtrack.

From a marketing perspective, it is equally important that the terminal be visible. In order to be successful, the service must be perceived as easy to reach from the highway. The Authority discovered that 44 percent of the south Logan Express service users did not begin using the service until after the terminal was moved to its new location and a sign visible from the nearby regional highway had been erected.

The Logan Express terminal locations are integrated with the regional highway system at or near the intersection of major highways. For each of the three Logan Express services, air passengers have a drive of five minutes or less from the highway to the remote terminal site.

## **OTHER ALTERNATIVES**

### **High Occupancy Vehicles**

Within Route 128, the primary beltway around the Boston metropolitan area, there are numerous paths available to air passengers as they choose access modes to the airport, and it becomes impractical to site a remote bus service facility. There are fewer passengers using each major road as their traditional travel path. At the same time, in comparison to travel times from outside the Route 128 beltway, travel time to the airport is perceived as short by air passengers inside Route 128.

Air passengers have traditionally relied on highways to reach airports. Where the highway system does not collect enough travelers at convenient centers to justify a high occupancy vehicle service, the Authority is developing new concepts designed to meet the needs of the air traveler within the Route 128 roadway (but outside the City of Boston itself). One service in the planning stages is a form of shared ride service where passengers going to the airport take a van that does not make more than two or three stops between the origin and the airport.

The Authority is also considering adding a stop on the western-corridor Logan Express at a town with a high concentration of air passengers that lies inward toward Boston. During off-peak hours, the service would make a stop at this inner town during the trip from the remote western site. During peak hours, the Authority would provide a separate service to and from both the existing remote site and the new inner site along the route.

### **Remote Air Passenger Terminals**

In an effort to increase market share, the Authority is in the initial stages of planning a program to transform Logan Express terminals into remote air passenger terminals with airport terminal amenities. Marketing efforts will include an advertising program to reach out to large corporations in each market area.

The Authority's plans also include fare incentives to attract certain air passenger groups that may not consider the Logan Express as affordable when compared to packaged services. Fare programs may include family discounts recognizing that the base fare, although it is below market price, may be less attractive for several people traveling together. Another fare program may include discounts for people traveling to the airport simply to greet or see off air passengers. The Authority is also considering offering round-trip fares (perhaps at a reduced rate) to air passengers on the Logan Express services, an option that is not currently available.

### **Curbside Enhancements to HOV Service**

The Authority is considering providing HOV passengers dedicated ground transportation service waiting areas inside the airline terminal. Passengers would be able to buy an HOV ticket and wait in areas that are not exposed to the elements. A public address system would announce the arrival of the HOV at the curb.

### **Third Harbor Tunnel Project**

A third tunnel under the Boston Harbor is under construction from downtown Boston to the airport and points north of Boston at this time. The new tunnel, scheduled to open in approximately two years, will provide direct access to the Massachusetts Turnpike from the airport and points north. (The Turnpike is the major radial highway linking to Logan Airport to western Massachusetts). In the initial stages, the tunnel will be open exclusively to commercial vehicles, which may provide the Authority with an opportunity to develop ground access HOV initiatives specifically for the Third Harbor Tunnel.

### **Commuter Rail**

A commuter rail and Amtrak facility, called South Station, is located in downtown Boston. Although South



Station is not far from the airport, transit access to Logan from the station is not convenient because many air passengers on their way to Logan by transit must transfer up to three times to get to the station. To alleviate the difficulties involved in transit trips to the airport via South Station, the Authority is considering high-frequency bus service to connect South Station and the airport through the new Third Harbor Tunnel. South Station serves as the collection point for all the southern commuter rail lines, Amtrak, and many public and private buses. With development, the facility could serve as a natural multimodal transfer point.

### **EMPLOYEE VEHICLE TRIPS**

Logan International Airport is directly responsible for 16,000 jobs in the air transport industry, aviation service industry, regulatory agencies such as the Federal Aviation Administration, and state agencies such as the Massachusetts State Police. The Massachusetts Port Authority also employs 500 administrative and maintenance workers, about 200 of whom work on the airport premises.

The Authority has been actively planning and aggressively implementing measures to influence the mode choices of employees at Logan Airport. In contrast to programs designed for downtown and suburban office workers, airport employee ground access programs must account for the fact that airport employees have different travel and demographic characteristics. At Logan Airport, approximately 25 percent of average daily airport vehicle trips are made by employees, compared to 60 percent by air passengers. There are 150 employers at Logan Airport and 16,000 employees. (Approximately 3 percent of these are Massachusetts Port Authority employees, over whom Authority has a some measure of direct control.)

Of these 16,000 employees, about one quarter are flight crew members. Their average length of time away from Logan on a tour of duty is three days. The remaining three quarters are employees who begin and end their trip at Logan Airport on the same day. Of the 16,000 employees at Logan, approximately 60 percent commute to Logan on an average weekday. Almost all of them (90 percent) commute by private auto; the remainder take alternative modes.

### **Airport Workers vs. Office Workers**

There are several important differences between the needs of Logan Airport employees and those of typical

office workers. Logan Airport is a seven-day-a-week, 24-hour operation, including holidays. In other words, the facility needs employees on the airport at all hours. Many airport employees are subject to overtime (either scheduled or nonscheduled). The nonscheduled overtime is usually tied to flight delays and cancellations or unexpected maintenance work, events that are very difficult to predict and plan for. Only 25 percent of Logan employees arrive at the airport between 7:00 and 9:00 a.m. Another 25 percent arrive between 5:00 and 7:00 a.m., and 20 percent arrive between 1:00 and 4:00 p.m. The numerous shifts, which vary by company and seasonal workload, make it difficult to formulate programs around particular time periods.

### **Employee Trips in Air Passenger HOV Modes**

For several reasons, air passenger HOV services typically do not attract many Logan Airport employees. The hours of operation or frequency of service is not convenient to employee schedules. The concentration of employee origins is very different from that of air passengers. More than 50 percent of airport employee trips (compared to 10 percent of air passenger trips) originate in the corridor immediately north of Logan Airport. About 45 percent of air passengers start their trip to the airport either from Boston or the corridor west of Boston; only 10 percent of employee trips are from this area. Many private bus services have long layovers in Boston, which are not convenient for employees commuting to Logan Airport. The fares of many of the private HOV services are too high for airport employees who commute on a regular basis.

### **Employee HOV Incentives**

About a year ago the Authority began offering a monthly Logan Express pass for all Logan Airport employees as an incentive to use HOV services. The pass is priced slightly lower than the monthly rate for employee parking and is equivalent to between 8 and 12 one-way trips on the Logan Express. Taking advantage of the price incentive, employees of at least one airline convinced their employer to subsidize their Logan Express pass in exchange for their parking privileges. The Authority expects that more employees will follow suit in the future.

The results of the employee programs have been encouraging. Ridership for employees on Logan Express services compares favorably to the concentration of employees in each of the markets areas. On each of the

three Logan Express routes, for example, employees account for between 5 and 11 percent of ridership.

The Authority also offers ten-ride discount booklets to Logan Airport employees who do not find the pass convenient or economical. The Airport Water Shuttle service offers a discount for all Logan Airport employees, and some of the private high occupancy vehicle services offer slight discounts to regular users or Logan Airport employees. Currently, these discounts are not deep enough to change employee travel behavior.

Massachusetts Port Authority employees receive a subsidy for 50 percent of the monthly cost of commuting by alternative modes instead of single-occupancy vehicles. The employee share of transit passes may be paid through payroll deduction.

### **Future Program Elements**

Future program elements planned or under consideration include a remote employee parking lot in a town west of Logan Airport close to where many airport employees live. The lot is scheduled to be opened sometime in 1995, and the Authority plans to relocate employee parking to that lot and reduce the number of employee parking spaces available on the airport. A bus service will run between the airport and the lot. The Authority estimates that some employees will switch to alternative modes of access rather than drive to the remote lot and be bused to work at the airport.

The Authority anticipates offering ride matching and priority parking on the airport for those who choose ridesharing over single occupant driving to the remote lot. The program may include a guaranteed-ride-home element for HOV users and carpoolers.

Other elements that may be incorporated in the future include: adding trips to some of the HOV modes (including the Logan Express) to better accommodate employee schedules, working with private carriers to offer a limited amount of direct service to accommodate employee schedules, encouraging private carriers to offer deeper discounts, and adding services (or links to existing services) that are based on employee rather than air passenger concentrations.