



## Exploring Airport Employee Commute and Parking Strategies

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**AIRPORT COOPERATIVE RESEARCH PROGRAM**

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**ACRP SYNTHESIS 36**

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**Exploring Airport  
Employee Commute and  
Parking Strategies**

***A Synthesis of Airport Practice***

**CONSULTANT**

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Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the Federal Aviation Administration (FAA). The ACRP carries out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing federal research programs. It is modeled after the successful National Cooperative Highway Research Program and Transit Cooperative Research Program. The ACRP undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration. The ACRP provides a forum where airport operators can cooperatively address common operational problems.

The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), Airlines for America (A4A), and the Airport Consultants Council (ACC) as vital links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

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**Cover figure:** LAX vans.

## FOREWORD

Airport administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the airport industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire airport community, the Airport Cooperative Research Program authorized the Transportation Research Board to undertake a continuing project. This project, ACRP Project 11-03, "Synthesis of Information Related to Airport Practices," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an ACRP report series, *Synthesis of Airport Practice*.

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

## PREFACE

*By Gail R. Staba  
Senior Program Officer  
Transportation  
Research Board*

Airport employees are vital to the operation of an airport. They staff the airport on a daily basis from well before the first flight operation until after the last flight operation, which at many airports is 24 hours a day, 365 days a year. Airport employees generate a significant number of vehicle trips to and from the airport each day, which impacts air quality, airport traffic conditions, and traffic in the communities surrounding the airport and on the freeway system. The purpose of this report was to determine what is known about airport employee commute patterns and commute modes, what programs are being offered to airport employees by the airport operator or a transportation management association (TMA) to provide them with alternatives to the drive alone commute to work, how progress is being monitored, what is known about the effectiveness of airport employee commute options (ECO) programs, what the challenges are for the providers of such programs, and to research some employee commute options programs offered by non-airport employers for program elements that may have applicability in the airport environment.

This report was accomplished through a literature search of airport employee commute programs, commute programs offered by non-airport employers that may have applicability in the airport environment, and through interviews with four U.S. and one U.K. airport operators (of 16 airports and 3 TMAs identified, 84% interviewed) that offer comprehensive airport employee commute options programs. Each of the five case studies provides an example of how employee commute options strategies are applied in the airport environment.

Diane M. Ricard, DMR Consulting, Pasadena, California, collected and synthesized the information and wrote the report. The members of the topic panel are acknowledged on the preceding page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

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Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the Web at [www.trb.org](http://www.trb.org)) retains the color versions.

# EXPLORING AIRPORT EMPLOYEE COMMUTE AND PARKING STRATEGIES

**SUMMARY** Many commercial airport operators in the United States devote time and resources to providing improving ground access choices for air passengers, and encouraging air passengers to shift to transit modes that have less impact on airport roadways and the environment; in contrast, a small amount of attention has been paid to the provision of airport employee commute options. However, airport employees' commute options and their mode choices have an impact not only on airport traffic and the environment, but on airport economics, the quality of life for employees, and airport employee recruitment and retention.

Employees are vital to the operation of an airport. They staff the airport on a daily basis from well before the first flight until after the last, which at many airports means 24 hours a day, 365 days a year. The service hours and trip frequencies of public transportation systems are often geared toward the downtown commuter with a Monday-through-Friday schedule—typically in the 7:30 a.m. to 6:30 p.m. timeframe. Thus, public transportation may not satisfy airport employee commute needs, meaning the private automobile may be the only available commute mode.

Airport employees generate a significant number of vehicle trips to and from the airport each day, which affects air quality, airport traffic conditions, and traffic in the communities surrounding the airport and on the freeway system. In addition, employees commuting by private automobile impact the airport operator who must provide space for employee parking, and assume the costs of operating and maintaining it.

The purpose of this ACRP Synthesis (Topic S06-03): *Exploring Airport Employee Commute and Parking Strategies*, was to determine what is known about airport employee commute patterns and modes, what programs are being offered to airport employees by the airport operator or a transportation management association (TMA) that provide alternatives to the drive-alone commute to work, how these programs are monitored, what is known about the effectiveness of airport employee commute options (ECO) programs, and what the challenges are for the providers of such programs; and to review some ECO programs offered by non-airport employers for elements that may be relevant in the airport environment.

This review was accomplished through a literature search of airport employee commute programs and programs offered by non-airport employers that may have applicability in the airport environment; and through interviews with four U.S. airport operators and one airport operator in the United Kingdom that offer comprehensive airport ECO programs. Each of the five case studies provides an interesting example of how employee commute options strategies are applied in the airport environment.

The scope of the survey task was to interview six to eight airport operators, airport TMAs, or TMAs serving a geographic area including an airport, which offer the most robust airport ECO programs, and develop case studies that would be informative for organizations developing or enhancing an airport ECO program. The sample was to include one airport in the United Kingdom. To the extent possible, the sample was to include both airports with good public transportation access and airports with limited access.



A list of 19 potential interview candidates was developed based on the consultant's knowledge of what is being offered at U.S. airports, inquiries about airport operators that might offer comprehensive ECO programs, suggestions by the Topic Panel, and information obtained in the literature search. From the 16 airport operators and three TMAs that were interviewed (an 84% response rate), it was determined that although some airport operators offer benefits or provide information to encourage commuting by modes other than the single-occupant vehicles, six airports provided comprehensive ECO programs. Case studies were completed for five of the airports. Each is considered to have good public transportation access. Insufficient information was available at the time of report submission to complete the sixth case study. The case study response rate was 83%.

Case studies were developed for Boston Logan International Airport (BOS), Los Angeles International Airport (LAX), Portland (Oregon) International Airport (PDX), San Francisco International Airport (SFO), and London Stansted Airport (STN). Each of the four U.S. airport operators offers an ECO program for its own employees, which is less than 10% of the total airport employee population. Each program also has elements that are available to all airport employees. Most of the STN ECO program elements are available to all STN employees.

The following table of study airports prepared by DMR Consulting (October 2011) compares the program elements for the ECO programs provided by the airport operators at the five case study airports. The programs shared some of the same elements, including ride-matching

Program Elements	BOS	LAX	PDX	SFO	London Stansted
Full-Time Employee Equivalents Devoted to ECO Program	Less than 1	4.5	Less than 1	Less than 1	2.25
Office Location for Employee Assistance	√ (Limited Hours)	√			√
Airport Employee Survey					
Total employee population	√			√	√
Employees of airport operator		√	√		
Public Transportation Monthly Pass Subsidy (airport operator employees only)	√	√	√		
Employee Portion of Public Transportation or Rideshare Costs with Pre-Tax earnings	√			√	
Dedicated Funding Source for ECO Program Elements					√
Employee Bus Service Sponsored by Airport Operator	√				
Airport Operator Sponsored Express Bus System, with Employee Discounts	√	√			
Funds Portion of Scheduled HOV Operating Costs	√			√	√
Employee Vanpool Program		√			
Carpool Program	√	√	√	√	√
Work Schedule					
Flextime	√	√	√	√	
Compressed work week		√	√	√	
Telecommute	√		√		√
Guaranteed Ride Home for:					
Carpools/vanpools	√	√		√	√
Public transportation	√	√	√	√	
All alternatives to driving alone	√			√	
Bicycle Purchase Program					√
Bicycle Parking	√	√	√	√	√
Contribution to Bicycle Path Infrastructure		√	√	√	√
Showers and Lockers		√	√	√	√

All program elements are offered exclusively to employees of the airport operator; some program elements are available to all airport employees.

for carpools, a guaranteed ride home for participants using some or all alternative modes to the single-occupancy vehicle, and bicycle parking. At least two of the programs included subsidized public transportation passes, employee purchase of transit passes using pre-tax dollars, full or partial subsidization of a public transportation option that accommodates airport employees, or dedicated staff to assist employees in determining their commute options.

The distinguishing elements of each of the five ECO programs are as follows:

- BOS: The Massachusetts Port Authority (Massport), owner and operator of BOS, provides an early morning employee shuttle, the Sunrise Shuttle. The Sunrise Shuttle serves employees in the surrounding community of East Boston, enabling them to report to work before the start of public transit service. A second route serving another area of East Boston and the adjacent town of Winthrop began service in November of 2011.
- STN: BAA Stansted, the owner and operator of STN, provides funding to scheduled high-occupancy vehicle (HOV) operators to enhance existing service or provide new service for up to three years, providing the highest level of subsidy in the first year and lower levels in subsequent years, with the goal of commercial viability by the third year. The funding is generated by a portion of air passenger and employee parking revenue that is directed to the Passenger Transport Levy Fund.
- LAX: Los Angeles World Airports (LAWA), owner and operator of LAX, sponsors a vanpool program with 65 vans that has a 97% occupancy rate.
- PDX: The Port of Portland, owner and operator of PDX, contributed financially to the extension of the MAX light rail system into PDX, and worked with TriMet, the provider of the light rail system, to ensure that light rail service would be provided as early in the morning as possible to accommodate employee work schedules.
- SFO: The City and County of San Francisco Airport Commission, the owner and operator of SFO, subsidizes the only bus route operating between midnight and 6 a.m. in the county in which SFO is located, San Mateo County, to accommodate the employee commute during hours that most public transportation routes are not in operation. The route is operated by SamTrans, the public transportation operator serving San Mateo County.

The review and interviews indicated that:

- All of the airports in this study are subject to regulations and commitments for which ECOs programs are either required or are a logical course of action for the airport operator. The review indicated the benefits of the ECO programs extend beyond satisfying such requirements, resulting in shifts to higher occupancy modes from the single-occupant commute, a reduction in vehicle trips generated by employees and the associated environmental benefits, and the provision of viable options to the drive-alone commute for airport employees.
- Airport operators in this study employ and have influence over 5% to 8% of the airport employee population. Each ECO program had elements that were available to all airport employees and elements that were available exclusively to employees of the airport operator.
- The airport operators knew of some airport employers that offered ECO programs; however, they were not aware of the number of employers offering such programs or the details of most of the programs.
- The largest ten employers at three of the case study airports employed between 40% and 51% of workers. Therefore, ECO programs provided by a few of the largest airport employers have the potential to cause a significant reduction in the number of airport employee vehicle trips generated. Data are not readily available to understand the extent to which this is already occurring.

- Airport employee surveys are conducted at four of the airports on a regular basis to understand employee commute patterns:
  - Massport and BAA Stansted have collected information for all airport employees.
  - At LAX and PDX, employee commute surveys are administered exclusively to employees of the airport operator.
  - The employee commute surveys at LAX, PDX, and STN have been administered in a consistent manner, allowing the identification of changes in employee commute patterns over time.
- The airport operators interviewed were missing some data that would assist them in furthering their ECO programs. They were not aware of:
  - The number of employees without security badges that work at their airport. The count from the airport security badge file does not provide the total airport employee count.
  - The proportion of employees that work within walking distance of the airport terminal area. This information is necessary to understand the number of employees that have access to scheduled HOV options serving the terminal area, as well as the number of employees that cannot be accommodated by such services.
  - The number of vehicle trips or the percentage of airport vehicle trips generated by employees. This information would help airport operators understand the impacts of employees commuting to the airport, as well as measure progress with their ECO programs.
  - The number of employee parking spaces provided by tenants through leases.
- The U.S. airport operators largely indicated that funding for additional elements of their ECO program is not available.
- At some of the study airports, the monthly cost to the employee for parking is less than the cost of public transportation, particularly if the use of public transportation is not subsidized by the employer.
- LAWA, and a representative from the Dulles Area Transportation Association (DATA), Washington Dulles International Airport (IAD), indicated the availability of options to the single-occupant commute may help with airport employee recruitment and retention. DATA was not included as a case study because during the data collection phase of this study there was not a comprehensive ECO program in place for employees. Suggested research as a result of this study includes:
- Development of a guidebook to assist airport operators and airport employers in creating an airport-wide employee commute program. This would include interviewing airport employers on what they currently offer and their level of interest in being part of a collective effort with other airport employers to influence the employee commute; a review of TMAs to determine what may be applicable in the airport environment; development of a template for evaluating ECO program elements based on potential changes in mode share compared with economic, environmental, and quality of life factors; and guidelines on measuring program progress.
- Development of a benchmark airport-wide employee survey instrument and data collection methodology. The review indicates it is not common for U.S. airports to conduct a survey of the total airport employee population, which also indicates that airports collectively have little experience with employee surveys. This would involve developing a survey, market-testing it at an airport, and analyzing the results. The survey and analysis methodology and lessons learned would be presented in a manual. This would also include developing methods to determine the number of vehicle trips generated by employees so airport operators may understand their contribution to airport traffic.

## CHAPTER ONE

**INTRODUCTION****BACKGROUND**

Many commercial airport operators in the United States devote time and resources to providing improved ground access choices for air passengers, yet devote seemingly little attention to the need for or the provision of viable alternatives to the drive-alone commute for airport employees.

Airport employees must be on site before the first scheduled flight and until after the last flight, which for most medium and large hub U.S. airports, translates to round-the-clock staffing, 365 days per year.

Public transportation typically accommodates the traditional weekday commuter, to accommodate work start times between approximately 7:30 a.m. and 9:30 a.m. and work end times between approximately 4:30 p.m. and 6:30 p.m., Monday through Friday, with a convergence of service in the central business district or other major employment centers. The service hours of the public transportation system and the location of the airport in relation to the public transportation network often do not satisfy airport employee commute requirements, resulting in the need for airport employees to drive to work. Furthermore, for an individual without access to a private automobile, working at the airport may not be an option.

Employees' vehicle trips to and from the airport impact air quality and traffic conditions on airport property, in the communities surrounding the airport, and in the region. The availability (or lack of) commute options also has an impact on the quality of life for employees, and has implications for hiring and retention. In addition, commute trips made by personal vehicles affect the airport operator, who must establish and pay for employee parking and shuttle buses.

This ACRP Synthesis evaluates airport employee commute patterns and modes, programs offering alternatives to the airport commute by single occupant auto, how progress of such programs is measured, what is known about the effectiveness of airport ECO programs, the challenges for providers of such programs, and some ECO programs offered by non-airport employers that may be adaptable to airports.

**METHODOLOGY**

A literature search was undertaken to establish what types of programs are being offered by airport operators, airport transportation management associations (TMAs), and TMAs that

serve airports and non-airport employers; and to assist with identifying potential candidates for case studies. Inquiries concerning candidates were also directed to Airports Council International, the American Association of Airport Executives, the Association for Commuter Transportation, the Director of the Transportation Demand Management (TDM) Program at the Center for Urban Transportation Research at the University of South Florida, and a Professor of Transport Policy in the Transport Studies Group at Loughborough University in the United Kingdom (U.K.).

The airport is an employment center with dozens of employers, which often requires employee coverage 365 days per year, up to 24 hours per day. In addition, some do not have direct access to public transportation options that provide reasonable travel times in relation to commuting by automobile, such as a subway, light rail, or bus rapid transit system. The literature search also included a review of employee commute options programs being offered at select nonairport employment centers that may offer program elements that are applicable to the airport environment.

The goal of the survey was to interview six to eight airport operators, airport TMAs, or TMAs that include an airport with robust ECO programs that would serve as the basis for the development of case studies. To the extent possible the sample was to include airports with both good and limited public transportation access and one airport in the U.K. as a national mandate requires major U.K. airports to produce surface access strategy. The scope of this study did not include conducting interviews with airport employers such as airlines, concessionaires, rental car companies, or federal agencies.

Table 1 lists 19 potential interview candidates that was developed based on the consultant's knowledge of what is being offered at U.S. airports, inquiries about airport operators that might offer comprehensive ECO programs, suggestions by the Topic Panel, and information obtained in the literature search. From the 16 airport operators and three TMAs that were interviewed, it was determined that although some airport operators offer benefits or provide information to encourage commuting by modes other than the single-occupant vehicle, six airports had comprehensive ECO programs. Case studies were completed for five of the airports, each of which is considered to have good public transportation access. Insufficient information was available at the time

TABLE 1  
LIST OF COMMERCIAL AIRPORTS CONSIDERED FOR INTERVIEW SAMPLE SELECTION

Organization Contacted	Airport	Comprehensive Employee Commute Program	Candidate for Interview Sample	Interview Completed
City of Atlanta Department of Aviation	Hartsfield–Jackson Atlanta International Airport (ATL)	No. There was a TMA in the past, but it is not currently active.	No	Not applicable
Massachusetts Port Authority	Boston Logan International Airport (BOS)	Yes	Yes	Yes
The BWI Business Partnership, Inc., a TMA that includes BWI	Baltimore/Washington International Thurgood Marshall Airport	No. They felt they weren't ready to be interviewed (August, 2011). The work by the TMA as it applies to BWI is emerging, but it is not a comprehensive program.	No. Potential candidate for a future study.	Not applicable
Port Authority of New York and New Jersey	Newark Liberty International Airport (EWR)	No	No	Not applicable
Broward County Aviation Department	Fort Lauderdale– Hollywood International Airport (FLL)	Unlikely. One representative did not think so. Researcher was referred to another representative who could not be reached.	No	Not applicable
Dulles Area Transportation Association (DATA), a TMA that includes IAD	Washington Dulles International Airport (IAD)	No. They felt they weren't ready to be interviewed (August, 2011). DATA administered an employee travel survey to IAD employees in September/October of 2011 to use as the basis to develop program initiatives for IAD employees.	No. Potential candidate for a future study.	Not applicable
City of Houston	George Bush Intercontinental Airport (IAH)	Unknown. Did not respond to inquiries.	No	Not applicable
Port Authority of New York and New Jersey	John F. Kennedy International Airport (JFK)	No	No	Not applicable

TABLE 1  
(continued)

Organization Contacted	Airport	Comprehensive Employee Commute Program	Candidate for Interview Sample	Interview Completed
Los Angeles World Airports	Los Angeles International Airport (LAX)	Yes	Yes	Yes
Port Authority of New York and New Jersey	LaGuardia Airport (LGA)	No	No	Not applicable
Metropolitan Airports Commission	Minneapolis–St. Paul International Airport (MSP)	No	No	Not Applicable
Port of Portland	Portland International Airport (PDX)	Yes	Yes	Yes
Port of Oakland	Oakland International Airport (OAK)	No	No	Not applicable
Los Angeles World Airports	Ontario International Airport (ONT)	Yes. Have 6 vanpools, 7 carpools, and only one transit rider, since limited transit access.	Yes.	No. Insufficient information available by the interview deadline.
City of Phoenix Department of Aviation	Phoenix Sky Harbor International Airport (PHX)	No	No	Not applicable
Airport Corridor Transportation Association (ACTA), a TMA that includes PIT	Pittsburgh International Airport (PIT)	No. PIT is a member of the TMA, but ACTA does not currently (August, 2011) work with them. ACTA did not believe there was an active employee commute program at PIT.	No	Not applicable
City and County of San Francisco Airport Commission	San Francisco International Airport (SFO)	Yes	Yes	Yes
County of Orange	John Wayne Airport (SNA)	No	No	Not applicable
St. Louis Airport Authority	Lambert–St. Louis International Airport	No	No	Not applicable
Hillsborough County Aviation Authority	Tampa International Airport (TPA)	No. Have tried various initiatives, but low employee participation.	No. May be a candidate in the future, at such time a planned bus transfer facility is built on airport property.	Not applicable

(continued on next page)

TABLE 1  
(continued)

Organization Contacted	Airport	Comprehensive Employee Commute Program	Candidate for Interview Sample	Interview Completed
BAA Stansted	London Stansted Airport (STN)	Yes	Yes	Yes
Tucson Airport Authority	Tucson International Airport (TUS)	Unknown. Did not respond to inquiries.	No	Not applicable
Total Airport Operators: 16 Total TMAs: 3	Total Airports: 22		Total Sample Size: 6	Total Completed Interviews: 5

Prepared by DMR Consulting (Nov. 2011).

of report submission to complete the sixth case study. The case study response rate was 83%.

The five airports that are included in this study are:

- Boston Logan International Airport (BOS)
- London Stansted Airport (STN)
- Los Angeles International Airport (LAX)
- Portland (Oregon) International Airport (PDX)
- San Francisco International Airport (SFO).

## ORGANIZATION OF REPORT

This chapter concludes with a definition of terms. The remainder of this report includes the following:

- Chapter two includes summary information on the case studies, comparison tables, and detailed case studies for each of the five airports.
- Chapter three presents ECO strategies that may have applicability to the airport community, with examples of how they have been applied at airports and at other large employers or employment centers.
- Chapter four summarizes challenges to providing ECO programs at airports, with potential solutions or actions to resolve them.
- Chapter five presents the study conclusions and suggestions for further research.
- Appendix A describes the literature search.
- Appendix B includes the interview form.

## DEFINITION OF TERMS

**Airport employee population:** the total number of employees reporting to work on airport property. There are typically dozens of employers located at a commercial airport, includ-

ing the airport operator, airlines, concessionaires, rental car companies, cargo companies, the FAA, and the TSA.

**Airport employer:** An employer that is located on airport property and/or that has employees working at the airport for airport-related work.

**Airport tenant:** Employers that are located on airport property that have lease agreements with the airport operator.

**Employee Commute Options (ECO) program:** A program offered by an employer or a TMA offering incentives, information, and services to encourage employees to commute to work using alternatives to driving alone in a private vehicle. It is also referred to as an employee TDM program or as an employee trip reduction program.

**Scheduled high-occupancy vehicle (HOV):** A bus, van, bus rapid transit (BRT), light rail, subway, train, or ferry that provides scheduled passenger service.

**Single-occupancy vehicle (SOV):** Travel undertaken by a person driving alone in a private vehicle.

**Terminal area employee:** Airport employees within walking distance of the terminal area. Walking distance is defined as up to one-half mile from the terminal area (Schlossberg 2007), if infrastructure is in place to allow for a safe walk.

**Transportation Management Association (TMA):** A group of employers in a certain geographic area that work together to solve common transportation issues and pool resources to offer commute services and benefits to member employees (Online TDM Encyclopedia 2011).

## CHAPTER TWO

**AIRPORT CASE STUDIES**

This chapter begins with a summary of the highlights of the ECO programs being provided at each airport, and is followed by comparison tables. Detailed case studies are then presented for each of the five airports.

The Massachusetts Port Authority (Massport) has developed initiatives to make the use of public transportation attractive to the total BOS employee population, such as the provision of deep discounts on the four regional nonstop express bus routes it operates, called the Logan Express; and through the purchase of vehicles and provision of an annual operating subsidy for the bus rapid transit (BRT) route operated by the regional transportation operator, the Massachusetts Bay Transportation Authority, that travels between the terminal area and one of the intermodal transportation centers in downtown Boston. Massport also funds two shuttle bus routes, the Sunrise Shuttle, which provides early morning trips, prior to the start of public transit service, to employees residing in East Boston and Winthrop, two communities surrounding BOS. Massport conducts airport-wide employee surveys approximately every five years, to understand the commute patterns and mode-share distribution of BOS employees.

Massport founded the Logan TMA in 1997 that is currently managed by MassRides, the Massachusetts Statewide Travel Options Program. Massport offers its own employees a transit subsidy, and employees may pay for their portion of the cost with pre-tax earnings.

BAA Stansted is committed to reducing commute trips of all airport employees. It actively promotes its ECO program through an Airport Commute Centre with dedicated staff for assisting the total airport employee population with trip planning and rideshare matching. Airport-wide employee surveys are conducted every two years to monitor progress.

Stansted funds elements of the ECO program with monies generated from a portion of employee and passenger parking fees, referred to as the Passenger Transport Levy (PTL) fund. Uses of the PTL include the incubation of new HOV transportation services for up to three years.

BAA–Stansted serves as a regional transportation hub for scheduled bus and rail service. Airport employees may travel between on-site work locations every 15 minutes by means of scheduled HOV service and an on-airport employee shuttle service.

Los Angeles World Airports (LAWA) has dedicated Rideshare staff at LAX to provide hands-on assistance in determining commute options and benefits for airport employees. Staff is located in two Rideshare offices, which are open to LAWA employees and other airport employees. LAWA sponsors a vanpool program, with 65 vans, as well as transit and ridesharing subsidies for LAWA employees. Rideshare staff provides trip planning and rideshare matching for all LAX employees. LAWA has also worked on the development of bike lanes in the vicinity of LAX. LAWA offers deep discounts to all LAX employees on its LAX Fly-Away routes, four regional nonstop express bus routes operated by LAWA serving LAX air passengers and employees.

The Port of Portland contributed financially to the extension of the light rail system into PDX, and worked with the provider of the light rail system to ensure that light rail service would be available to employees reporting to PDX in the early morning. The Port of Portland has provided bicycle lanes that connect the airport to a regional network of bicycle trails, this includes a dedicated multi-use path with direct access to the passenger terminal. The Port of Portland subsidizes transit passes for its employees, provides discounted carpool spaces in the parking garage for Port of Portland employees, and provides secure bicycle storage, a bicycle repair area with tools, a locker room, and a gym at its administrative headquarters at PDX.

The City and County of San Francisco Airport Commission (Airport Commission) has a Trip Reduction Rule with goals for reducing the SFO employee trip generation rate every year compared with 1994 levels. They subsidize the only bus route operating between midnight and 6 a.m. that is provided by the public transportation operator in the county in which SFO is located. This bus accommodates the employee commute during hours that most public transportation services are not in operation. To meet the objectives of the Trip Reduction Rule, the Airport Commission requires employers with at least 20 employees to put some ECO measures in place to encourage commuting through ridesharing or public transportation. Airport Commission employees may purchase transit vouchers with pre-tax earnings.

Tables 2 through 6 provide comparisons among the case study airports of the employee population, employee parking supply, employee commuting costs, transportation services, and key elements of their ECO programs.



TABLE 2  
CHARACTERISTICS OF AIRPORT EMPLOYEE POPULATION, CASE STUDY AIRPORTS

	BOS	LAX	PDX	SFO	STN
Employees <sup>1</sup>					
Total	13,950	47,000	10,000	19,300	10,200
Airport operator	825	3,500	759	1,500	Unavailable
Percentage of Total Employees					
Airport operator	5.9%	7.5%	5.4%	7.8%	Unavailable
Ten largest employers	44.2%	Unavailable	50.5%	39.5%	Unavailable
Largest employer	9.5%	Unavailable	18.6%	13.0%	Unavailable

Prepared by DMR Consulting (Oct. 2011).

<sup>1</sup>At U.S. airports, this number represents employees with security badges only.

TABLE 3  
EMPLOYEE PARKING SUPPLY CHARACTERISTICS, CASE STUDY AIRPORTS

	BOS	LAX	PDX	SFO	STN
Dedicated Employee Parking Spaces Operated by Airport Operator	4,149	7,928	2,826	6,644	3,550
Employee Parking Permits Issued	Unavailable	15,000 <sup>1</sup>	8,600	10,700	13,490
Parking Spaces per Employee	0.30	0.47	0.33	0.62	0.26

Prepared by DMR Consulting (Oct. 2011).

<sup>1</sup>15,000 permits are issued for two remote employee lots with 7,060 spaces.

TABLE 4  
MONTHLY COST COMPARISON: EMPLOYEE PARKING VERSUS PUBLIC TRANSPORTATION.  
CASE STUDY AIRPORTS

	BOS	LAX	PDX	SFO	STN
Annual Financial Performance of Airport Operated Parking Supply <sup>1</sup>	Deficit	Deficit	Cost Recovery	Cost Recovery	Unavailable
Monthly Cost of Parking					
Airport operator employees	\$0	\$0	\$0, \$20, \$80	\$0	£17 <sup>4</sup>
Other airport employees	\$0, \$100, \$140	\$30, \$45, \$50	\$35, \$50, \$80	\$68, \$75	£17 <sup>4,5</sup>
Monthly Cost of Public Transportation Pass <sup>6</sup>					
Airport operator employees	\$30–\$165 using pre-tax Income	\$0–\$150 using pre-tax income	\$3 <sup>2</sup>	Same as cost for general public, but with pre-tax income. BART discount applies. <sup>7</sup>	£42–£106 <sup>8</sup>
General Public	\$59–\$265	\$75–\$260	\$84 <sup>2</sup>	SamTrans: \$64–\$165 BART and Caltrain <sup>3</sup>	£42–£106 <sup>8</sup>

Prepared by DMR Consulting (Oct. 2011).

<sup>1</sup>Revenue from employee parking fees less costs of parking operation including shuttle bus operation.

<sup>2</sup>The Port of Portland subsidizes annual employee transit stickers that are valid for unlimited trips on the public transportation system; the employee pays the Port of Portland \$35 for the sticker. As of September 1, 2011, the annual adult all-zone pass price was \$1,012.

<sup>3</sup>BART fares are per trip and distance-based. The monthly cost for an employee who commutes 20 times per month is greater than the monthly cost for an employee parking permit. The cost of a Caltrain monthly pass varies by distance. The cost of each monthly pass plus the cost to transfer to BART at the Millbrae station exceeds the monthly cost of an employee parking permit.

<sup>4</sup>£ = \$1.5557. Source: www.WSJ.com, Nov. 23, 2011.

<sup>5</sup>The annual cost for employee parking at Stansted is £200.

<sup>6</sup>Ranges represent distance-based pricing.

<sup>7</sup>There is a \$2.50 per one-way ride discount on BART with use of the SFO Employee BART Discount Card.

<sup>8</sup>This is the cost of the annual pass divided by 12 months. This is a 17% discount compared with purchasing a monthly pass.

TABLE 5  
SCHEDULED HOV SERVICES AND VANPOOL PROGRAMS AVAILABLE AT  
CASE STUDY AIRPORTS

Scheduled HOV Services and Vanpool Programs	BOS	LAX	PDX	SFO	STN
<i>At or Adjacent to Airport Terminal Area</i>					
Rail, Rapid Transit or BRT Station Adjacent to Airport Terminal Area	√		√	√	√
Express Bus Service Sponsored by Airport Operator	√	√			
Public Transportation Service (buses)	√			√	√
Privately Operated Scheduled Bus and Van Service	√	√		√	√
Employee Bus Service Sponsored by Airport Operator	√				
Employee Vanpool Program		√		√	
<i>Shuttle Service Provided to Access Terminal Area</i>					
Shuttle Bus to Off-Airport Rail, Rapid Transit or BRT Station	√	√			
Shuttle Bus to Public Transportation Service (buses)		√			
Shuttle Bus to Scheduled Water Transportation Service	√				

Prepared by DMR Consulting (Oct. 2011).

TABLE 6  
KEY PROGRAM ELEMENTS OF EMPLOYEE COMMUTE OPTIONS PROGRAMS  
PROVIDED BY AIRPORT OPERATOR, CASE STUDY AIRPORTS

Program Elements	BOS	LAX	PDX	SFO	London Stansted
Full-Time Employee Equivalents Devoted to ECO Program	Less than 1	4.5	Less than 1	Less than 1	2.25
Office Location for Employee Assistance	√ (limited hours)	√			√
Airport Employee Survey Total employee population Employees of airport operator	√	√	√	√	√
Public Transportation Monthly Pass Subsidy (airport operator employees only)	√	√	√		
Employee Portion of Public Transportation or Rideshare Costs with Pre-Tax Earnings	√	√		√	
Dedicated Funding Source for ECO Program Elements					√
Employee Bus Service Sponsored by Airport Operator	√				
Airport Operator Sponsored Express Bus System, with Employee Discounts	√	√			
Funds Portion of Scheduled HOV Operating Costs	√			√	√
Employee Vanpool Program		√			
Carpool Program	√	√	√	√	√
Work Schedule Flextime Compressed work week Telecommute	√	√	√	√	√
Guaranteed Ride Home for: Carpools/vanpools Public transportation All alternatives to driving alone	√	√	√	√	√
Bicycle Purchase Program					√
Bicycle Parking	√	√	√	√	√
Contribution to Bicycle Path Infrastructure		√	√	√	√
Showers and Lockers		√	√	√	√

Prepared by DMR Consulting (Oct. 2011).

All program elements are offered to employees of the airport operator; some program elements are available to all airport employees.

## BOSTON LOGAN INTERNATIONAL AIRPORT (BOS)

Boston Logan International Airport (BOS), which is owned and operated by the Massachusetts Port Authority (Massport), processed 27.4 million air passengers in 2010. BOS operates 24 hours a day, with daily commercial flight activity from approximately 5:00 a.m. to 1:00 a.m. As a result, many BOS employees need to report to work by 4:00 a.m.

As of December 2010, there were 13,950 employees with security badges, and approximately 825 of them, or 6% of BOS employees with security badges, worked for Massport. Massport estimates that 95% of BOS employees have security badges and that approximately two-thirds of these employees work in the airport terminal area.

Approximately 44% of employees with security badges work for ten employers, five of them airlines. The TSA is the largest employer, responsible for nearly 10% of BOS employees.

For more than 20 years, Massport has developed initiatives to make the use of public transportation attractive for the total BOS employee population. Massport provides deep discounts on the four Logan Express buses it operates; offers free shuttle service between the Logan Airport Massachusetts Bay Transportation Authority (MBTA) subway station and the terminal area for air passengers and employees; and encourages private transportation providers of scheduled bus and van routes to offer fare discounts to airport employees. Massport purchased the vehicles and provides an annual operating subsidy for the MBTA Silver Line BRT route that travels between the terminal area and an intermodal transportation center in downtown Boston. Massport also funds the Sunrise Shuttles, two bus routes serving employees residing in the two communities surrounding BOS, providing a few trips prior to the start of transit service. Massport surveys a sample of all employees approximately every five years to track commuting habits. In 1997, Massport founded the Logan TMA, which is currently managed by MassRides, the Massachusetts Statewide Travel Options Program. The TMA provides information to member employers and employees, assists employees with trip planning and rideshare matching, administers the Sunrise Shuttle, and provides information on discounted transportation services. All airport employers are members of the TMA, which allows them to take advantage of many of these benefits. Massport offers its own employees as much as \$100 per month to subsidize up to 50% of their cost to commute by scheduled high-occupancy transportation. Employees may pay for their portion of the cost with pre-tax earnings.

### Regulatory Environment

The provision of commute options for Massport employees and all BOS employees has been influenced by the Logan Airport Parking Freeze regulations and project mitigation measures imposed as part of the West Garage project's Final Environmental Impact Report, Section 61.

### *Logan Airport Parking Freeze*

Massport manages the BOS air passenger and employee parking supply in accordance with the Logan Airport Parking Freeze, which is a regulatory restriction on the parking supply in accordance with Commonwealth of Massachusetts and federal air quality regulations that became effective in 1975. As part of the Logan Airport Parking Freeze (Ricondo & Associates, Inc. 2010):

- There is a limit on the total number of on-airport parking spaces that may be supplied for air passenger and airport employees.
- The on-airport employee parking supply cannot be increased.
- The air passenger (commercial) parking supply may be increased only through the permanent conversion of employee parking spaces to air passenger parking spaces.

Some of the on-airport employee parking spaces were relocated to a garage in the adjacent community of Chelsea in the 1990s to allow Massport to increase the on-airport commercial parking supply for air passengers.

### *West Garage Mitigation*

As part of the environmental approval to construct the West Garage, an air passenger parking facility in the terminal area, Massport was required to provide the following mitigation measures toward airport employee trip reduction, as prescribed in the final environmental impact report (Massachusetts Executive Office of Environmental Affairs #9790) published in 1995:

- Establish an employee TMA
- Enhance existing HOV services (including Logan Express)
- Enhance water transportation services, including expanded docking capacity
- Provide new HOV services, including the introduction of a fourth Logan Express service.

### Transportation Environment

This section provides information on the employee parking supply, public transportation options and privately operated scheduled buses and vans available at BOS, and the BOS employee mode-share distribution. A map of BOS is shown in Figure 1.

### *Parking Inventory*

Massport operates 4,149 employee parking spaces, with approximately 63% located on airport property, and 37% located in a garage in the neighboring community of Chelsea.

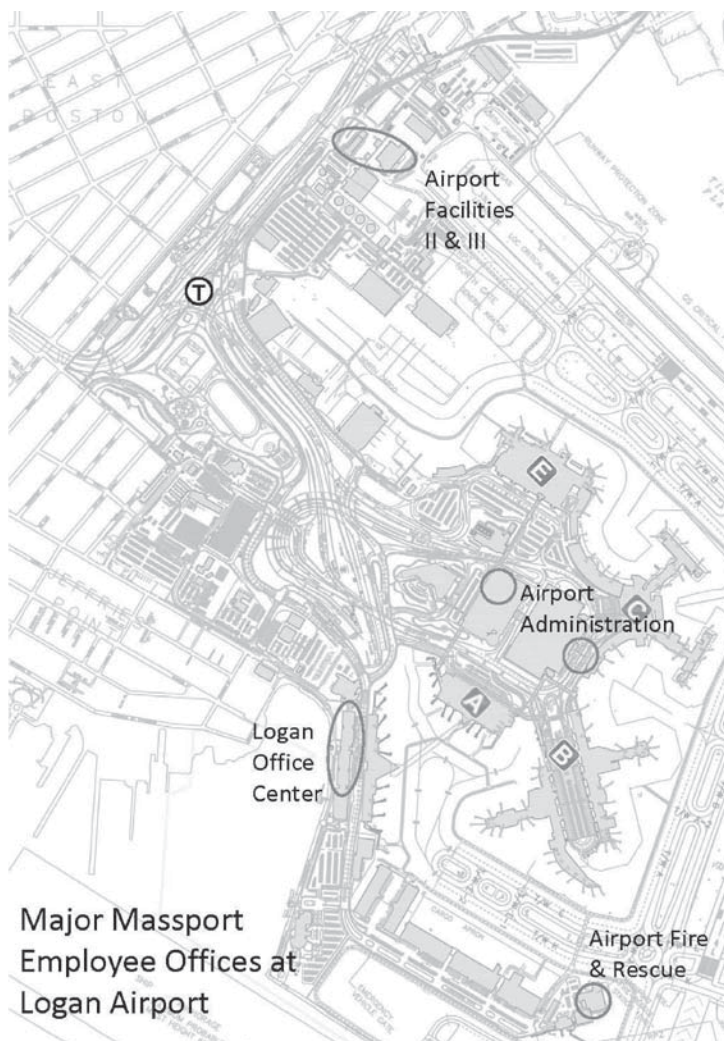


FIGURE 1 Map of Boston Logan International Airport.  
 Source: Lourenço Dantas, Massachusetts Port Authority, Nov. 28, 2011.

The off-airport employee parking garage is served by a round-the-clock Massport shuttle bus that travels to the terminal area and other airport employment areas.

On-airport employee parking is used by employees who work within walking distance of the parking areas. Forty-three percent of the on-airport employee parking spaces are provided in parking structures.

Massport employees and some non-Massport employees are not required to pay a parking fee. As of the summer of 2011, other employees parking in the on-airport spaces operated by Massport paid \$140 per month. The monthly fee for parking in the off-airport employee parking garage is \$100.

Massport pays a significant amount of annual rent for the off-airport employee garage, which amounts to double the annual costs to operate the shuttle bus between the garage and the airport. Although the revenue from employee parking fees covers the cost of the bus operation, the remote

employee parking garage is operating at a financial loss because of the rent payment.

Employee parking is also provided at the four Logan Express terminals free of charge for Massport employees and for \$40 per month for all other BOS employees.

The number of vehicle trips generated by BOS employees is unknown, and cannot be estimated from the 2007 employee survey. An airport-wide employee survey was completed in November 2011. Massport will be able to estimate the number of employee vehicle trips generated from the data.

#### *Public Transportation*

BOS is located approximately two miles from downtown Boston. It is well served by the public transportation system, the Logan Express, and scheduled HOV services provided by private operators.

The public transportation system serving the greater Boston area is operated by MBTA. It includes a subway system, BRT routes, local and express bus routes, a commuter rail system, and water transportation. The MBTA Rapid Transit and Key Bus Routes map, which includes BOS, is provided in Figure 2. BOS is served by a subway line, a BRT route, and water transportation, although the subway line and the water transportation services do not serve the terminals directly. The cost of a monthly MBTA pass (www.mbta.com 2011) is \$59 for unlimited use of the subway and bus system within the geographic area that the subway system serves. The cost of monthly passes for use of the entire system,

including commuter rail and water transportation, is based on geographic zones, with the most expensive being \$265.

- The BOS station for the MBTA Blue Line, the rapid transit line that travels between downtown Boston and communities north of BOS, is on airport property, approximately three-quarters of a mile from the terminal area. The Blue Line connects to other lines on the rapid transit system in downtown Boston, where passengers may also connect to the commuter rail system, Amtrak, MBTA buses, and privately operated buses. The first trips of the day arrive at BOS between 5:30 and



FIGURE 2 MBTA Rapid Transit/Key Bus routes map. Source: [http://www.mbta.com/schedules\\_and\\_maps/subway/](http://www.mbta.com/schedules_and_maps/subway/) [accessed Nov. 25, 2011].

6:00 a.m. Monday through Saturday, and between 6:15 a.m. and 6:30 a.m. on Sundays, running at frequencies between 5 and 13 minutes. The last trains depart BOS between 12:45 a.m. and 1:00 a.m. daily (www.mbta.com 2011). Because the station is not within walking distance of the terminal area, Massport offers passengers a complimentary shuttle bus service between the station and the terminal area.

- The MBTA Silver Line Route 1 BRT line travels between South Station, one of the intermodal transportation centers in downtown Boston, and all of the terminals at BOS. At South Station there are connections to the subway system, commuter rail lines traveling west and south of Boston, Amtrak, MBTA buses, and privately operated buses. The hours of operation are similar to the Blue Line, and it travels at frequencies of between 8 and 12 minutes (www.mbta.com 2011). Massport purchased the eight vehicles for this service and provides the MBTA with an operating subsidy for this route, which is partially offset with the revenue collected from fares of Silver Line customers traveling from the airport.
- There are two MBTA water shuttle routes serving BOS. One travels to downtown Boston, and then to a community south of Boston, seven days a week. It offers shorter service hours, fewer trips, and lower frequencies than the Blue Line or the Silver Line. The other route travels between BOS and another community in the Boston area and provides a few trips on weekdays. Massport provides a complimentary shuttle bus service between the ferry dock and the terminal area.

Massport operates a system of nonstop buses, the Logan Express, between the airport terminals and four park-and-ride locations in the greater Boston metropolitan area. Each of the locations offers a terminal with a waiting area and secure parking for air passengers and employees. The Logan Express terminals are located between 14 and 24 miles from the airport. Three of the four Logan Express routes provide daily service approximately 20 hours per day, with the first trip arriving at BOS before 4:00 a.m., accommodating the early morning schedules of both air passengers and employees. The majority of service is provided every half-hour. The fourth service operates daily, and provides service every 60 to 90 minutes with approximately half as many trips as offered on the other three routes.

There are also numerous private operators providing scheduled bus and van service between the airport terminals and locations in Massachusetts and New Hampshire.

#### *Transportation Utilization*

Massport conducts an airport-wide employee survey approximately every five years, to understand BOS employee commute patterns and mode choice. The most recent survey with available results was conducted in March and April of 2007. At

the time of that survey, there were approximately 11,000 BOS employees. Approximately 9,600 survey forms were distributed, and approximately 1,700 survey forms were completed (Dantas 2008). Surveys were distributed at employment locations, on the Logan Express, and on the shuttle serving the remote employee parking lot in Chelsea. This distribution method resulted in some employees receiving more than one survey form; therefore, the actual response rate is unknown.

The survey asked respondents about their typical commute to BOS, and the main mode used in each of their previous five trips to work, but did not account for days in which respondents were not working. The survey results do not provide a mode-share distribution because of the survey distribution method and because it is not representative of an average time period. The primary commute mode is defined as the most often used commute mode to BOS based on the mode taken during the previous five commute trips. As shown in Table 7, 26% of respondents indicated their primary commute mode was by scheduled HOV, almost 4% participated in a carpool, and another 2% walked to work.

From 2001 to 2010, airport employee ridership on the Logan Express increased in all but two years. The share of employees riding the Logan Express in 2010 nearly doubled over that of 2001 (see Table 8).

#### **Program Details**

Massport demonstrates its commitment to reducing the number of vehicle trips generated by the total BOS employee population and its own employees by offering a variety of services and incentives.

#### *BOS Employee Population*

Airport employees are offered incentives to consider alternatives to the drive-alone commute through the following program elements:

TABLE 7  
2007 BOS EMPLOYEE PRIMARY COMMUTE MODE,  
MARCH/APRIL 2007

Mode	Percentage of BOS Employees
Drive Alone	64.2
Drop-off (private auto)	3.9
Taxi	0.3
Carpool	3.6
Logan Express	11.4
MBTA Rapid Transit	10.5
MBTA Bus	3.8
Water Taxi/Ferry	0.5
Walk	1.8
Total	100.0

Source: 2007 Logan Employee Commute Survey: Final Report, Lourenço Dantas and Scott Grannemann, Massport Economic Planning and Development Department, Feb. 20, 2008, Exhibit 3. The results in the table do not represent a mode-share distribution, since they are not representative of an average time period.

TABLE 8  
LOGAN EXPRESS ANNUAL RIDERSHIP STATISTICS, 2001–2010

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employee Ridership	236,387	326,707	400,132	408,297	397,660	410,529	404,222	432,761	448,601	467,020
Annual Change		38%	22%	2%	-3%	3%	-2%	7%	4%	4%
Total Ridership	1,104,402	1,182,339	1,208,467	1,265,827	1,234,694	1,307,384	1,201,752	1,121,434	1,085,448	1,111,432
Employee Share of Total Ridership	21%	28%	33%	32%	32%	31%	34%	39%	41%	42%

Prepared by DMR Consulting (Oct. 2011).

Source: Logan Express Ridership by Fare Cat, 1998–2011.xls, provided by Lourenço Dantas, Massport to DMR Consulting, through e-mail, Oct. 13, 2011.

- Massport founded the Logan TMA in 1997 as a way to strengthen and formalize its efforts to reduce the single-occupant employee commute, encourage public transportation use, improve transportation options, reduce the need for employee parking, and provide a forum for employers to work together to address common employee transportation concerns. The Logan TMA is administered by MassRides, which is funded by the Massachusetts Department of Transportation (DOT). As of the summer of 2011, all BOS employers belonged to the Logan TMA free of charge. A membership fee was previously required, but in recent years, the collection of membership dues had declined, partly because some employers offer their own employee commute programs and did not believe the Logan TMA provided added value; and partly because there are not many employee benefits that are exclusive to TMA membership. The TMA offers the following services:
  - Rideshare matching.
  - Trip planning by alternative modes.
  - Provision of information to employers on transit benefits and public transportation options.
  - Operation of the Sunrise Shuttle, an early morning shuttle service that travels in East Boston, the community adjacent to BOS, where a large concentration of BOS employees resides. It operates every half hour between 3 a.m. and 5:30 a.m., which is the period prior to the start of MBTA service. Massport funds the Sunrise Shuttle, which costs approximately \$59,000 per year to operate. The service is contracted to a private concern that operates the service and provides the vehicles. The net operational cost is \$51,500 after employee fares. Employees pay \$1 per trip and other users pay \$2 per trip. The TMA also sells ticket booklets for the Sunrise Shuttle.
  - Massport began operation of a second Sunrise Shuttle route, serving another part of East Boston and the adjacent town of Winthrop in October 2011. The route was developed based on employee survey data and residence locations from the security badge file. Massport and the Logan TMA received an FTA Job Access Reverse Commute (JARC) grant, which will subsidize service on a sliding scale for three years. The total cost of the project over the three-year period is approximately \$200,000, and the JARC grant is for \$93,000. Transportation projects that provide public transportation options for low-income employees to and from jobs, for employment-related activities, and for reverse commuting are eligible to compete for JARC funding [“Job Access and Reverse Commute Program (5316)” 2011].
    - Emergency rides home through MassRides up to four times per year by taxi or rental car. Employees who commute at least twice per week by ridesharing, public transportation, bicycling, or walking are eligible if their company partners with MassRides.
    - Three priority parking spaces for ridesharing in the West Garage, located in the central terminal area.
    - A new program called NuRide, where commuters register on a website, and earn points for trips taken by alternatives to driving alone. Commuters earn rewards in the form of restaurant gift cards, tickets to shows, retail discounts, and raffle entries. Some of the discounts are offered just for registering on the website. The value of rewards may be as much as \$300 per year. Additional information is available at [www.nuride.com](http://www.nuride.com).
    - Staffing of a Logan TMA Transportation Store in the central terminal area that is open approximately two hours per week. The office is provided by Massport. (Prior to the MBTA’s implementation of smartcards for monthly passes, the Transportation Store provided the service of selling monthly transit passes to employees.)
- Massport provides Logan Express trips that accommodate early morning work schedules, with trips departing each Logan Express terminal at 3:00 a.m. and/or 3:15 a.m.
- BOS employees may commute using the Logan Express for deeply discounted fares and parking fees. As of October 2011, employees may purchase a book of 44 bus tickets for \$75, and a monthly parking pass for \$40, or a monthly pass for use of the bus and parking combined for \$100. Massport is effectively subsidizing employee trips by offering the discounts. The one-way full fare for the Logan Express is \$12, and the daily parking rate is \$11.
- Massport provides an annual operating subsidy of \$2 million for air passengers and BOS employees on the MBTA Silver Line serving BOS. In addition, Massport purchased the eight buses that are used on the route.

- For a number of years, BOS employees have been offered discounts to commute on many of the privately operated scheduled buses and vans. Massport encouraged the private operators to offer the employee discounts.
- Massport offers bicycle racks at one air passenger terminal and at the Logan Office Center, which is where the Massport administrative offices are located. In response to employee requests, additional bicycle racks are planned.

### *Massport Employee Population*

Massport offers the following benefits for Massport employees:

- Transit pass subsidies for 50% off the price of the transit pass up to \$100. This discount also applies to Logan Express ticket booklets and the fare on the privately operated scheduled bus and van services. Employees may pay their portion using pre-tax earnings.
- Massport employees may park at the Logan Express terminals free of charge.
- Some Massport employees may telecommute or may take advantage of flextime.

Among the airport employers that Massport and the TMA believe offer subsidized transit passes are the TSA, Signature Flight Support, and some of the other concessionaires.

The cost to Massport of offering commuter passes to its employees to commute by MBTA, the Logan Express, and other scheduled HOVs was \$89,619 in FY2011. Between 165 and 170 Massport employees participated. Massport also spends \$65,000 each year to fund the TMA, most of which is used to operate the Sunrise Shuttle. In 2010, Massport also spent a net amount of \$2 million on the MBTA Silver Line and approximately \$2.4 million on the shuttle between the terminal area and the MBTA Airport Station. MassRides currently provides approximately 10% of the resources of one full-time employee to administer the TMA, which is funded by the state of Massachusetts DOT. Massport employees in the Planning, Ground Transportation, and Human Resources Departments spend part of their time working on the BOS employee commute program.

### **Program Elements That Have Been Considered But Not Implemented**

Massport has considered the potential for a car-sharing service, such as Zipcar, to allow BOS employees who do not drive to work to rent an automobile for a short period of time for the occasional personal trip they may need to take during the workday. Along these lines, with the implementation of a bike-sharing program in Boston, an opportunity may arise to include BOS as a location for a bike-share station.

### **Program Elements That Have Been Offered in the Past**

In 2007, the Logan TMA offered participants who shifted from driving alone to work to commuting by carpool, public transportation, walking, or bicycling, a commuter cash incentive of \$3 per day for up to 90 days. This was in addition to any transit subsidy or other incentives offered by their employer. The program was discontinued because of low participation.

### **Information Dissemination**

Massport provides information on commuter benefits such as the MBTA pass subsidy in its human resources handbook for employees.

The Logan TMA communicates with member employees and employers through e-mail messages.

MassRides uses social media as one form of communication; however, it is not targeted to BOS employees.

### **Targets/Goals/Measurement**

Massport monitors the transit mode choice of all BOS employees through the surveys it conducts approximately every five years. Because the survey sampling methodology and the survey questions have not been consistent among surveys, a trend analysis is not possible. Massport compares annual employee ridership on the Logan Express buses, and keeps ridership statistics for the Sunrise Shuttle.

### **Challenges and Lessons Learned**

There are many public transportation options and privately operated scheduled high-occupancy buses and vans that serve BOS, but they do not provide 24-hour service; therefore, they do not serve employees whose shifts start or end in the early morning. The Logan TMA was formed as a mitigation measure, but its purpose was not clearly defined and it did not have concrete goals. Many employers did not see the value in paying a membership fee to belong, particularly since some offered their own commute benefits programs. Massport offered Logan Express employee discounts and encouraged private bus operators to offer employee fare discounts several years prior to formation of the TMA. The TMA has primarily been serving as an information source for employees, because many of the other functions provided by the TMA may also be obtained elsewhere. For example, the value on MBTA passes may be increased electronically, and the Logan parking violations office sells discounted Logan Express tickets and passes. Massport is now faced with the challenge of developing a TMA that will be viewed as offering value to employers and employees.



At one point the TMA had collected membership dues. It was problematic, and perhaps would work better if dues were simply incorporated as part of lease/contract agreements with tenants and employers.

For employees living within a certain radius of Boston, MBTA passes are less expensive than employee parking (\$59 versus \$100 or \$140). The savings realized from commuting by public transportation rather than parking is even greater for those employees who receive a transit subsidy from their employer. For other employees, the cost to commute by public transportation is greater than the cost to park. Although Massport provides its employees with transit subsidies and allows employees to purchase transit passes with pre-tax earnings, the cost of public transportation is still greater than the cost of employee parking, since Massport does not charge its employees a parking fee.

The number of vehicle trips generated by BOS employees is unknown, and cannot be estimated from the 2007 BOS employee survey. An employee survey was completed in November 2011, providing data that will allow Massport to estimate the number of employee vehicle trips generated.

### Future Plans

At the time this study was conducted, the Logan TMA, in partnership with Massport, anticipated introducing a new Sunrise Shuttle route in October 2011. It began service in October 2011, serving another part of East Boston, and the adjacent town of Winthrop. This will be the second early morning bus service for airport employees residing in East Boston who need to arrive at BOS prior to the start of regular MBTA transit service.

The Logan TMA will be reorganized to get more employers involved and to refine its mission.

The Logan TMA will conduct in-person meetings with all BOS employers to inform them of NuRide and the new Sunrise Shuttle route.

Massport conducted an airport-wide employee survey in November 2011, and is currently analyzing the data. This will include developing an estimate of vehicle trips generated by BOS employees.

### Advice Provided by the Airport Operator to Other Airports Beginning a New Program or Enhancing an Existing Program to Reduce Single Occupant Employee Commute Trips

One piece of advice provided by Massport staff was to research the needs and preferences of the employee market that the employer or TMA is trying to serve, and develop an ECO program accordingly based on an investigation of

industry best practices. This includes addressing the question employers may ask: “What benefit do I get from the TMA?” The answer lies in some combination of the carrot-and-stick between restrictions by the airport operator and benefits from the TMA.

Staff also suggested it is important to demonstrate a regular presence of an ECO program through communication, such as sending weekly or monthly e-mails with travel information to employers and employees.

### Interview Information

The information for this case study was provided by the following individuals during the summer and fall of 2011:

Lourenço Dantas, Senior Transportation Planner, Massachusetts Port Authority  
 Stewart Dalzell, Deputy Director, Environmental Planning and Permitting, Massachusetts Port Authority  
 Craig Leiner, Deputy Director, Surface Transportation, Massachusetts Port Authority  
 Doug Wheaton, Transportation Contract Manager, Massachusetts Port Authority  
 Donna Smallwood, Deputy Director, Programs, MassRIDES, Massachusetts Department of Transportation

### LONDON STANSTED AIRPORT (STN), LONDON, ENGLAND

London Stansted Airport (STN), which is owned and operated by BAA Stansted (also referred to as Stansted Airport Limited), processed 18.6 million passengers in 2010. It is a 24-hour operation. In 2011, there were approximately 10,231 employees working at Stansted, reporting to 181 companies. Fifty-seven percent of the employees worked in the terminal area (*2011 London Stansted Airport Employee Travel Survey Analysis, Final Report 2011*). The percentage of employees working for BAA Stansted was not available.

As part of its long-term surface access strategy, BAA Stansted is committed to reducing the number of single-occupant vehicle (SOV) trips to and from Stansted. The BAA Stansted Travel Plan (*Planning the Way Forward, Travel Plan Strategy for Stansted 2008–2015*) describes its employee commute program, including program elements that are offered, program goals, and progress toward the goals. BAA Stansted reviews its Travel Plan every two years to measure progress and determine what strategies need to be adjusted or introduced to continue to achieve its goals.

BAA Stansted’s airport employee commute program has received awards in the U.K. and internationally.

BAA Stansted belongs to the Stansted Area Transport Forum, which was founded in 1999 to determine ways to

improve ground transportation to and from Stansted in a region-wide context. Members include various public sector entities, public transportation operators, airport tenants, local businesses, and other interested parties. It is comprised of a steering group that oversees six working groups. One of the six, the Travel Planning Working Group, has the following goals:

- Review current Airport Travel Plan every two years
- Review and recommend targets for the Airport Travel Plan
- Recommend to the Bus and Coach Working Group potential route enhancements to encourage employees to switch to public transportation
- Monitor employee mode share and employer travel plan activity
- Review and recommend best practice for travel planning
- Report and make recommendations to the Stansted Area Transport Forum Steering Group.

London Stansted provides a comprehensive ECO program, and most of the benefits are available to all STN employees. London Stansted provides an Airport Commuter Centre staffed with two full-time employees to provide the airport employee population with commute trip planning services, including carpool matching and information on public transportation options. Employees may also purchase public transportation passes in the Airport Commuter Centre.

To encourage the use of public transportation and ride-sharing, and increase available public transportation options for air passengers and employees, BAA Stansted introduced a passenger transfer levy (PTL) in 1999, which is approximately 31p (100 p = £1, £1 = \$1.5557 (*Source: www.WSJ.com, Nov. 23, 2011*) from every passenger car parking transaction and £10 from every annual staff car park pass issued. This equates to between £600,000 and £800,000 per year that can be invested in public transportation development, transportation marketing, and other activities that increase the use of public transportation. London Stansted employees may also purchase a tax-free bicycle through the airport, and pay for it in installments through payroll deduction. Additional program elements are described under Program Details.

### Regulatory Environment

BAA Stansted has developed its employee transportation strategy in accordance with numerous government policies (*Planning the Way Forward, Travel Plan Strategy for Stansted 2008–2015*), including:

- The United Kingdom's Transport Strategy as articulated in the White Paper, *A New Deal for Transport—Better for Everyone 1998*, which emphasized the importance of developing an integrated transportation policy that considers all modes, the environment, the economy, and land-use planning. It required major U.K. airports

to form an airport transport forum and produce an airport surface access strategy.

- Planning Policy Guidance 13 (PPG 13) was published in 2001. It called for airport operators to develop travel plans for airport employees through the transport forums.
- In 2003, *The Future of Air Transport White Paper*, which directs the strategic development of aviation in the U.K. until 2030, called for easy and reliable access for passengers to minimize environmental, congestion, and other local impacts.
- East of England Development Plan and Regional Transport Strategy (RTS) 2001/21 is the transportation strategy that is included in RSS 14, the Regional Spatial Strategy for the eastern part of England. The RTS includes a policy to ensure that airport surface access plans support a shift to more sustainable forms of travel. There is also a policy indicating that a growth in housing in Harlow, a community approximately 17 miles northwest of STN, should enable more STN employees to reside there and commute by public transportation.
- The following local plans also placed an emphasis on mobility, reducing congestion, improving public transportation use, improving air quality, or improving the quality of life:
  - Essex County Council, Local Transport Plan (2006–2011)
  - Hertfordshire County Council, Local Transport Plan (2006–2011)
  - Uttlesford Local Plan, 2001.

### Transportation Environment

This section provides information on the employee parking supply, public transportation options available at Stansted, and the Stansted employee mode-share distribution. A map of STN was not available for inclusion in this report.

#### *Parking Inventory*

There are about 3,550 employee parking spaces at STN, and BAA Stansted controls the majority of them. Four of the parking facilities provided by BAA Stansted are served by a shuttle bus. The cost to employees for an annual parking pass is £200. The ratio of employee parking passes to parking spaces is approximately 3.8.

There are no preferential parking spaces offered to managers of BAA Stansted or other airport employers; however, there are 150 spaces available for carpools at Enterprise House, the main administrative building. Employee parking is not provided in any of the air passenger parking areas.

The number of vehicle trips generated by employees is unknown.

The Central Terminal area of Stansted is designated as a regional transportation node in the RTS. The bus, coach, and

rail stations, referred to as the Public Transport Interchange (PTI), are located there. The rail station is located beneath the terminal. The bus and coach station is adjacent to the rail station and the terminal, and connected by tunnel portals, escalators, and elevators. Transportation services at PTI provide regional connections to the terminal. Local connections to the PTI serve the terminal, employee work locations on the north and south sides of the airport, and travel between airport locations.

Rail services are provided by two companies that were awarded franchises by the government. A map of the rail network serving STN is shown in Figure 3. The services provide connections to London, eastern England, and the Midlands. The Stansted Express provides service every 15 minutes between Stansted and London (Stansted Express Timetable 2011), where passengers may connect to the London Underground (subway system). The trains operate daily for approximately 19 hours per day, with the first train arriving at Stansted at 4:30 a.m. during the week and 5:00 a.m. on the weekend. The National Express East Anglia [May 2011 Timetable 2011] also provides hourly service between Stansted and London, Monday through Saturday, for approximately 19 hours per day, with the first train arriving at 5:15 a.m. during the week and 5:25 a.m. on Saturdays. Two bus trips serve the Stansted market area early in the morning, providing service to employees with a 4 a.m. shift start time. Trains to eastern England and the Midlands run hourly, seven days a week, and connect to trains serving points north and in Scotland.

There are six express coach routes traveling between Stansted and London at frequencies between 10 and 60 minutes. Two of the express coaches to London offer 24-hour service. There are several express coach routes traveling between Stansted and numerous locations throughout the U.K., and two of them offer 24-hour service; most operate at two-hour frequencies.

There are also a variety of local bus routes. Several of the local routes operate 24 hours a day, providing employees with access at all hours, 365 days a year. In addition to serving the PTI, the local routes serve key employment centers at the airport that are outside of the terminal area, with up to eight buses per hour for employees to choose from. In addition, London Stansted offers a shuttle service that operates every half-hour between the terminal area and employment areas on the north side of the airport.

The cost for a Travelcard, the public transport pass, ranges from £500 to £1,270 per year, depending on where the employee lives.

### *Transportation Utilization*

Every two years, BAA Stansted conducts an employee travel survey of a representative sample of the total airport

employee population, to understand employee commute modes and commute patterns, measure trends, and develop and refine strategies to reduce employee vehicle trips to and from the airport.

Table 9 presents the mode-share distribution of Stansted employees between 2002 and 2011. The most recent employee travel survey was conducted in May and June of 2011. In 2011, 70% of employees drove alone to work, compared with 88% in 2002/2003. Nearly 20% of employees commuted by bus or rail in 2011 compared with 7% in 2002/2003. In 2011, another 7% of employees were passengers in a carpool, compared with 4% in 2002/2003.

Thirty-one percent of employees arrived at Stansted from 7:00 a.m. to 10:00 a.m., which is considered to be the traditional a.m. peak period. Thirty-three percent of employees departed Stansted during the traditional p.m. peak period from 4 p.m. to 7 p.m. (*2011 London Stansted Airport Employee Travel Survey Analysis, Final Report 2011*).

### *Program Details*

BAA Stansted offers a range of program elements designed to make the employee commute to the airport by alternatives to the single-occupant vehicle appealing, which include provision of benefits and services, working with public transportation providers for improved service, and information dissemination. Program elements include (*Planning the Way Forward, Travel Plan Strategy for Stansted 2008–2015*):

- Two full-time staff at the Airport Commuter Centre provide airport employees with information on commute alternatives, provide trip planning and rideshare matching services, and sell public transportation passes. The Airport Commuter Centre opened in 2007; between 2001 and 2007 information was provided to employees on a website and over the telephone.
- The Airport Car Share Scheme provides carpool matching services for STN employees. Participants may register at the Airport Commuter Centre, online ([www.airportcarshare.co.uk](http://www.airportcarshare.co.uk)), by telephone, or by filling out a brochure. Carpool participants are eligible for designated carpool spaces in close proximity to Enterprise House, where the majority of staff park their vehicles (the number of available spaces is adjusted to accommodate demand); and a guaranteed ride home when needed.
- Airport employees are offered significant savings on rail, express coach, and local bus service by purchasing a monthly or annual Airport Travelcard, which offers unlimited travel on bus, coach, and rail services serving STN. The price of the annual Airport Travel Card is equivalent to the price of ten monthly cards, which is effectively a 17% discount. BAA Stansted employees may apply for an interest-free loan to purchase the

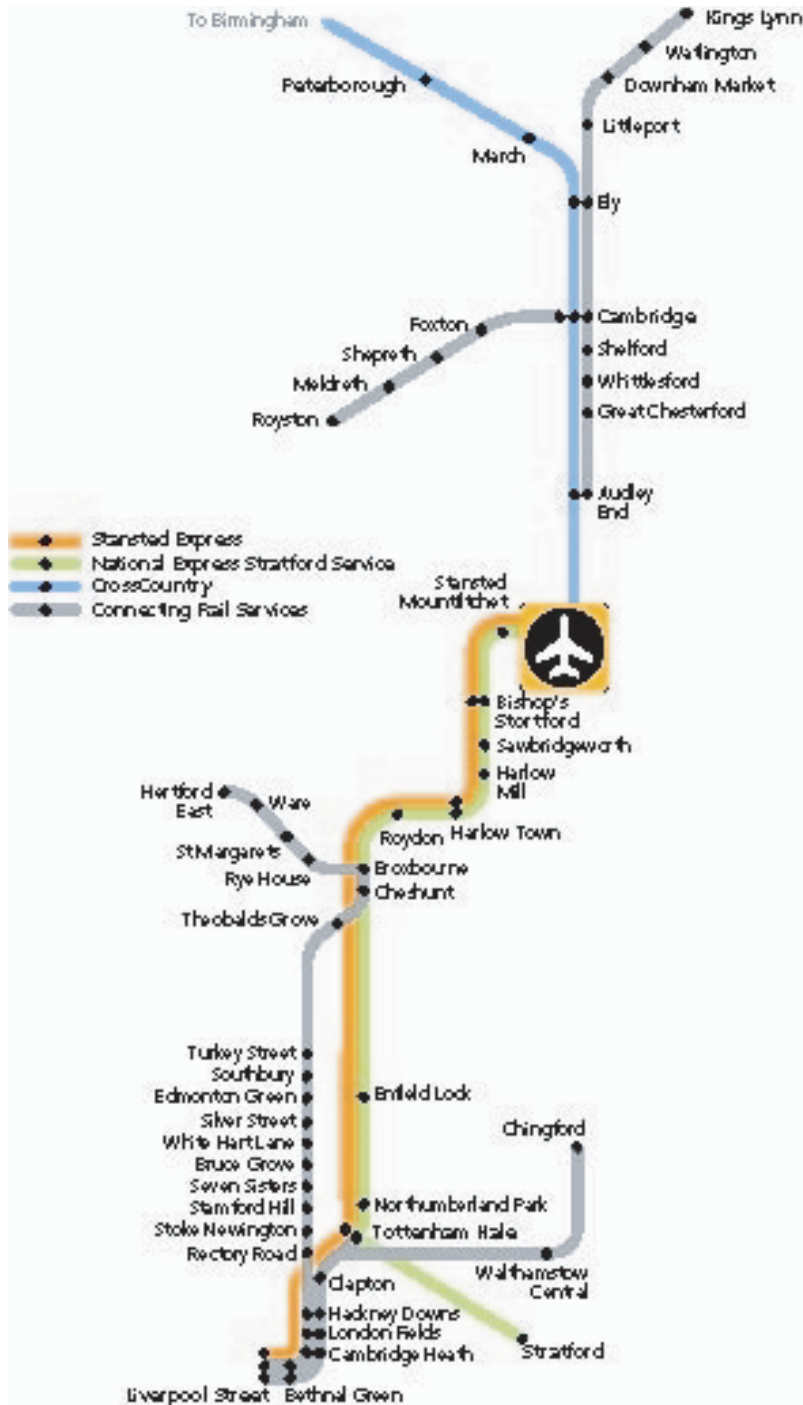


FIGURE 3 Rail network serving STN. Source: *Planning the Way Forward: Travel Plan Strategy for Stansted 2008–2015* (n.d.)

annual Travelcard. Airport Travelcards may be purchased at the Airport Commuter Centre, online (<http://www.airport-commuter.co.uk/stansted/index.html>) or over the telephone.

- In 2008, BAA Stansted published a strategy for working in partnership with transportation providers to improve local bus and coach services for air passengers and airport employees. It includes expectations for quality

of service, customer service, frequency, and operating hours for connections to Stansted. For example, the first trip serving STN should allow employees to arrive at Stansted by 3:45 a.m. and to depart as late as 1:00 a.m.

- BAA Stansted has worked with the providers of bus service to encourage them to provide operating hours and trip frequencies that better accommodate employee schedules. This has resulted in favorable schedule changes,

TABLE 9  
STN EMPLOYEE MODE SHARE DISTRIBUTION, 2002/2003 TO 2011

Mode	2002/03	2005	2007	2009	2011
Car Driver	87.6%	78.6%	73.1%	71.7%	69.9%
Car Passenger	4.1%	5.5%	6.3%	6.4%	7.1%
Motorcycle	0.1%	0.5%	0.7%	1.0%	0.7%
Taxi	0.3%	1.4%	1.5%	1.0%	1.0%
Public Bus or Coach	2.7%	7.3%	10.0%	12.6%	12.2%
Rail	4.3%	5.2%	6.4%	5.7%	7.6%
Walk	0.1%	0.3%	0.8%	0.2%	0.6%
Bicycle	0.0%	0.1%	0.3%	0.4%	0.2%
Works Bus/Other Company Transport	0.7%	0.4%	0.7%	0.7%	0.6%
Other	0.1%	0.5%	0.2%	0.3%	0.1%
Total	100.0%	99.8%	100.0%	100.0%	100.0%

Prepared by DMR Consulting.

Source: 2011 London Stansted Airport Employee Travel Survey Analysis, Final Report, Sep. 2011, Halcrow Group Limited.

including an increase in local buses and express coaches offering 24-hour service.

- BAA Stansted has worked with both rail companies to get them to increase early morning and late evening service to better accommodate air passenger and employee schedules.
- BAA Stansted has funded 10 to 15 new bus services since 2001 for up to a three-year period. The funding is provided to incubate the service, with the goal of commercial viability within three years. All but two of the services are now operating commercially.
- PTL funds are used toward the Stansted Area Transport Forum, supporting the Airport Commuter Centre, funding new bus services for up to three years, supporting additional hours of service on local public transportation routes, provision of employee shuttles, the Airport Car Share Scheme, administration of the Airport Travel Card, development of an iPhone/Android application, and marketing. The PTL is an assessment on passenger and employee parking fees that generates £600,000 to £800,000 per year.
- BAA Stansted offers a shuttle service that operates every half-hour between the terminal area and the north side of the airport to other airport centers of employment.
- BAA Stansted has invested in numerous improvements to the PTI, including:
  - Provision of a new bus and coach station, with ticketing, waiting, and refreshment facilities. It has a capacity of 5 million passengers per year.
  - Enhanced passenger information and wayfinding.
  - Bicycle parking facilities adjacent to the PTI.
- To promote bicycle use:
  - BAA Stansted offers the “Ride to Work Cycle Scheme” for BAA Stansted employees. This is the result of a government program that allows employers to provide bicycle and safety equipment to their employees as a tax-free benefit. The program reduces the price of the bicycle to the employee by as much as 50%. The employer pays for a bicycle selected by the employee from one

of the 1,700 participating bicycle shops, and leases it to the employee through payroll deduction until the price of the bicycle, less sales tax, is paid off. The employer is eligible to apply for the tax rebate on the bicycle. Cyclescheme is one of the companies that employers may use to provide this benefit. Additional information may be found at <http://www.cyclescheme.co.uk/>.

- BAA Stansted prepared a cycling and walking strategy to identify routes that could be developed to connect Stansted to the local network.
- BAA Stansted partnered with the Essex County Council and the Hertfordshire County Council to develop several bicycle routes.
- Bicycle and motorcycle parking is provided at several locations, and showers are available at one location.
- A company called Dr. Bike provides free bicycle maintenance for employees during promotional events at Stansted, such as Cycle to Work Week and the Annual Health Fair.
- Some BAA Stansted employees are eligible for telecommuting.
- BAA Stansted offers video conferencing facilities for its own employees and for use by other airport employers to reduce the need for business travel.

The STN ECO program is operated by the two full-time employees in the Airport Commuter Centre, and also requires approximately 20% of time of the BAA Stansted Public Transport Development Manager and 5% of the time of the head of Transport, Planning and Policy. BAA Stansted spends approximately £150,000 each year of the PTL on the employee commute program, which includes operation of the Commuter Centre, management of the Travelcard, and other related activities.

Some of the tenant companies pass along the costs of parking to employees, which provides the employees with added incentive to consider using public transportation to commute to Stansted.

BAA Stansted participates in a number of partnerships to improve ground access to and from STN, including:

- Stansted Area Transport Forum, which is a public–private partnership comprised of representatives from local authorities, regional and national government, transportation operators, airport tenants, other local businesses, and interested parties, and has more than 70 members. It addresses transportation issues in an area-wide context, and is one of the largest public–private partnerships in the United Kingdom. An annual Transport Forum conference is held to review achievements.
- National Business Plan Network is an organization that enables members to share best practices in reducing the negative impacts of employee commuting. Its website, <http://www.nbtn.org.uk/>, provides information on how to develop a travel plan, initiatives and information on alternatives to the single-occupant commute, case studies from member businesses, notices of upcoming training and events, and related news items.

#### **Program Elements That Have Been Offered in the Past**

Two bus services that were funded by BAA Stansted for a two- to three-year period did not become economically viable and were discontinued.

London Stansted offered a pool of bicycles for on-site travel by operational teams, to reduce the number of automobile trips around the airport. Because of the layout of the airport, the bicycles were not utilized and the program was discontinued.

#### **Information Dissemination**

London Stansted provides new airport employees with a travel pack containing information on alternatives to driving to work alone. In addition, an employer travel pack is provided to new airport employers.

BAA Stansted has developed several brochures for all airport employees that explain travel services and incentives. They are available at the Airport Commuter Centre, in the reception areas at some employment locations, and at the employee restaurant. Information on commuting options is also provided in the Stansted Airport employee newsletter.

The Airport Commuter Centre offers a wealth of information to airport employees, including trip planning, rail and bus timetables, maps, information on the Travelcard, the Car Share Scheme, and Ride to Work Cycle Scheme.

BAA Stansted holds marketing campaigns and promotional events several times each year, providing information on alter-

natives to the single-occupant vehicle commute. Marketing campaigns provide information on billboards near employee parking facilities, and in employee restaurant and lounges. Promotional events include Car Free Day, Annual Health Fair, Cycle to Work Week, and Change Your World Day.

Social media are not used to communicate with employees.

#### **Targets/Goals/Measurement**

London Stansted measures progress by comparing results of employee travel surveys that are conducted every two years, through the Travel Plan Working Group of the Transport Forum, monitoring the number of employees participating in the Car Share Scheme and purchasing Airport Travelcards, and through Quality Management surveys of public transportation services.

The share of employees commuting by single-occupant automobile decreased from 96% to 70% between 1997 and 2011. At the time of this report, Airport Travelcard sales were more than 1,400 per month, and there are 1,300 active members of the Car Share Scheme.

London Stansted recently revised the airport employee mode-share target to “reduce employee private car use to no more than 70% by the time the Airport reaches 35 million passengers per year.” In 2010, 18.6 million air passengers passed through STN.

The 2008–2015 Travel Plan Strategy reported on targets achieved, existing targets, and new targets. Among the targets achieved, STN:

- Provided secure parking for bicycles and motorcycles at several locations.
- Increased Airport Travel Card sales by 10% each year.
- Increased the number of carpool participants by 10% over the 2004 baseline.
- Introduced dedicated carpool parking spaces in all parking facilities and major leased areas by 2005.
- Set up a bicycle user group.
- Increased the number of London Stansted employees using video conferencing for meeting participation by 10% in 2006.
- Developed a personalized trip planning scheme for new and existing employees by the end of 2006.
- Launched a travel awareness campaign to airport tenants with four travel-to-work road shows during 2006.

Existing targets were related to increasing bicycle commuting use and telecommuting for non-shift employees.

New targets were related to reducing the percentage of employees driving alone to work, increasing the number of employees commuting by carpool, increasing the percentage

of employees commuting by bicycle, increasing the share of airport tenants participating in the Airport Travel Plan, and increasing employee awareness of commute options.

### Challenges and Lessons Learned

The cost of parking for employees, which is between 16% and 40% of the annual cost of the Airport Travelcard, is much less than the cost to use public transportation.

### Future Plans

London Stansted is considering offering the Airport Travel Card in a smartcard format, which may allow coordination with smartcards for the London Transport System.

### Interview Information

The information for this case study was provided by the following individuals during the summer and fall of 2011:

Julia Gregory, Head of Transport, Planning and Policy,  
Stansted Airport Limited

Steve Mills, Public Transport Development Manager,  
Stansted Airport Limited

### LOS ANGELES INTERNATIONAL AIRPORT (LAX)

Los Angeles International Airport (LAX), a large hub airport, served 59.1 million air passengers in 2010. LAX is one of the busiest airports in the United States, and operates 24 hours a day. LAX is owned and operated by Los Angeles World Airports (LAWA), which is the department of the city of Los Angeles that is responsible for two commercial airports and a general aviation airport. In 2011, there were approximately 47,000 employees working at LAX, and 3,500 of them, or 7% of total LAX employees, were employed by LAWA. The percentage of employees working in the terminal area is unknown.

LAWA is committed to reducing the number of employee vehicle trips generated, and has dedicated staff to assist its employees in finding carpools, vanpools, and transit options to commute to LAX. This program, referred to as the LAWA Rideshare Program, began in 1990. LAWA provides subsidies to its employees for commuting using ridesharing and transit options. As a result, 45% of LAWA employee commute trips at LAX did not occur by means of SOV during the peak period in June 2011. All LAX employees may take advantage of LAWA's ride-matching services and are eligible to participate in a vanpool on a space-available basis.

There are other airport employers that provide benefits to their employees to encourage them to choose alternatives

to the SOV commute; however, LAWA does not have detailed information on all employers offering such programs, or the extent of their benefits. It is known that the TSA offers a \$50 monthly transit subsidy, Delta Airlines offers a \$15 monthly transit subsidy and parking cash-out, and Federal Express has seven vanpools operated by independent employee drivers.

LAWA was a founding member of Best Workplaces for Commuters, which is open to employers that meet the National Standard of Excellence in commuter benefits developed by the National Center for Transit Research and the EPA. Criteria for eligibility include ensuring a minimum level of employee participation, offering a choice of commuter benefits, offering an emergency ride home, and providing a central point of contact for employee benefits. LAWA has won a number of regional and national awards for its rideshare program ("About" 2011).

### Regulatory Environment

LAWA is subject to South Coast Air Quality Management District (AQMD) Rule 2202, which was adopted in 1995. AQMD is the air pollution control agency for four counties in Southern California including Los Angeles County, where LAX is located. Rule 2202 replaced Regulation XV, which was adopted in 1987. Rule 2202 (South Coast Air Quality Management District *Rule 2202—On Road Vehicle Mitigation Options Employee Commute Reduction Program Guidelines* 2004) requires employers with at least 250 employees per work site to conduct annual employee surveys and take steps to reduce employee commute trips made by LAWA employees during the peak commute period. Rule 2202 trip reduction targets vary by geographic area. LAWA is required to reduce 33% of the total commute trips based on the total number of LAWA employees working at LAX. Companies that do not meet their AQMD target may purchase emissions credits to offset their employees' commute trips or choose to pay \$60 per employee per year towards AQMD Air Quality Improvement Programs.

One of the objectives of LAWA's sustainability program is to reduce single-occupancy trips to, from, and within LAWA airports for air passengers and LAWA employees. The LAWA Sustainability Improvement Program was developed by LAWA in 2007 in response to a Los Angeles City Council Motion in 2006 called Greening LAX, and a subsequent executive directive from the mayor of Los Angeles in 2007 for all city departments to develop a sustainability program.

### Transportation Environment

This section provides information on the employee parking inventory, as well as public transportation and other HOV transportation options available to LAX employees. It also

provides information on the mode-share distribution for LAWA employees. A map of LAX is shown in Figure 4.

### Parking Inventory

As of November 2011, LAWA operated 7,060 remote parking spaces for LAX tenants and service providers in two surface parking lots. Shuttle buses transport employees between the remote lots and the central terminal area (CTA). The monthly parking fee for approximately 72% of the spaces is \$30, and the monthly fee for the remaining spaces is \$45. Approximately 15,000 employees purchase permits to park in the remote parking lots, which is a utilization rate of 2.12 employees per remote parking space. In other words, there are approximately 0.47 remote parking spaces per employee.

LAWA also provides 868 surface parking spaces for LAWA employees near its two administration buildings. The Administration East building is in the CTA, and the Administration West building is on the western side of the airport, approximately six miles from the CTA. Parking is provided free of charge to LAWA employees.

There is another remote structure with 2,054 parking spaces that tenants, service providers, and the public may use for \$50 per month. It is located approximately one mile from the first terminal at the CTA, and shuttle service is not provided.

Approximately 3,000 LAX employees working for the federal government and law enforcement agencies, as well as airline station managers, park for free in the public garages in the CTA. As of September 2011, employee parking was not constraining passenger parking in the CTA.

In 2010, the LAWA employee parking program operated at a deficit, when considering the cost of maintaining employee parking facilities and operating the shuttle bus routes, less the revenue from employee parking permits.

### Public Transportation

Buses and rapid transit are provided by local and regional transit providers, and offer stops in the vicinity of LAX, but none of them travels directly into the LAX terminal area. The regional public transportation provider serving Los Angeles County is the Los Angeles County Metropolitan Transportation Authority (Metro). A light rail line, the Metro Green Line, and certain bus routes stop at Aviation Station, which is approximately 2.5 miles from the CTA. The Green Line connects to additional light rail lines serving the LAX market area, as well as Metrolink, the commuter rail system. A map of Metrorail and Metrolink is provided in Figure 5. LAWA offers a free shuttle connection between Aviation Station and the CTA. There are also several bus lines that

stop at the bus depot area of one of the remote passenger parking lots owned by LAWA, which is approximately one mile from the first terminal at LAX. Passengers then board a free shuttle service provided by LAWA to travel to the terminal area.

The Green Line begins eastbound service from Aviation Station at 4:00 a.m., with the last train departing at midnight. Trains from the west arrive at Aviation Station beginning at 4:30 a.m., with the last one arriving at 1:15 a.m. Frequencies range from 7 to 20 minutes apart (Metro Green Line 2011). The hours of operation and frequency of other public transportation services vary by route.

The cost of a monthly transit pass (EZ Regional Transit Pass) ranges from \$75 to \$260, depending on the services needed. The \$84 EZ Regional Transit Pass allows customers to ride the Metro buses and light rail system, along with many other local public transportation providers in Los Angeles County. The higher priced passes cover a larger geographic area.

LAWA operates a network of regional nonstop express buses, called the LAX FlyAway, that serve four destinations in the LAX market area, including Union Station, the primary transportation hub in Los Angeles with connections to Metrorail, Amtrak, Metrolink commuter rail services, and a variety of bus routes. The FlyAway buses serve all LAX terminals. Two of the routes operate 24 hours a day, at half-hourly frequencies for the majority of the schedule. The price of a monthly FlyAway pass for LAX employees is \$120.

There are also privately operated bus routes that serve destinations in Los Angeles County and surrounding counties, and stop at all of the LAX terminals.

### Transportation Utilization

LAWA conducts an annual survey of LAWA employees working at LAX to ensure that it is complying with AQMD Rule 2202. Table 10 provides the mode-share distribution for LAWA employees commuting to LAX in the peak period during a week in June for the years 2007 through 2011. Between 2007 and 2011, the share of LAWA employees commuting by vanpool during the peak period increased from 14% to 20%.

In 2011, approximately 56% of LAWA employees commuted to LAX between 6 a.m. and 10 a.m., and 45% of employee commute trips to LAX during this time were not made by means of a SOV.

LAWA employees represent 7% of the total LAX employee population. Mode-share distribution data are not available for the total LAX employee population, since an airport-wide employee commute survey is not administered. In addition, distribution of total LAX employees commuting



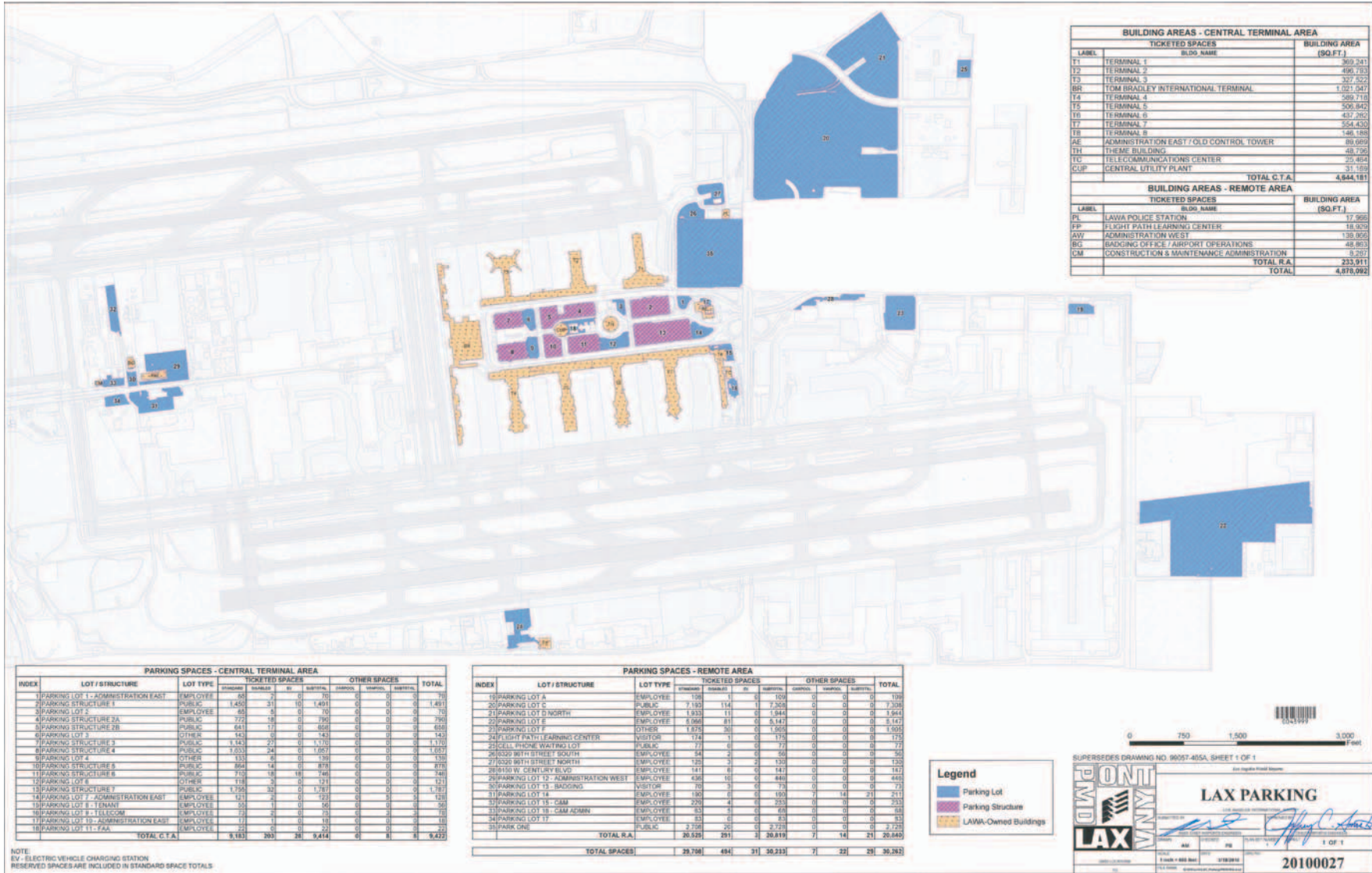


FIGURE 4 Map of LAX. Source: Calvin Lew, Los Angeles World Airports [accessed Nov. 14, 2011].



FIGURE 5 Los Angeles Metrorail and Metrolink Map. Source: www.metro.net [accessed Nov. 20, 2011].

TABLE 10  
MODE-SHARE DISTRIBUTION OF LAWA EMPLOYEES COMMUTING TO LAX  
DURING 6 A.M. TO 10 A.M. FOR FIVE-DAY PERIOD IN JUNE 2007 TO 2011

Mode	2007	2008	2009	2010	2011
Drive Alone	58.2%	55.0%	55.8%	56.7%	54.7%
Carpool, 2-3 Persons	10.3%	8.6%	8.7%	8.5%	8.9%
Vanpool, 4-8 Persons	14.4%	16.8%	16.9%	18.2%	19.7%
Motorcycle	1.1%	1.2%	1.1%	0.9%	0.4%
Bus/Rail	7.0%	8.8%	7.9%	7.2%	7.6%
Bike/Walk	0.4%	0.6%	0.4%	0.3%	0.5%
Trips Not Taken Due to Compressed Work Schedule	8.6%	9.0%	9.2%	8.2%	8.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Prepared by DMR Consulting.

Source: Lax Historical Mode Split 2011.Xls, Provided to Diane Ricard by Devon Deming of LAWA via e-mail on Nov. 15, 2011.

to LAX by time of day is unknown, as well as the percentage of airport vehicle trips generated by LAX employees.

### Rideshare Program Details

LAWA dedicates four full-time and one half-time employee positions to the Rideshare Program. They are located in two offices that hold regular hours for LAX employees, providing assistance with trip planning, an explanation of available benefits, and rideshare matching services. The Rideshare Program is part of the Human Resources Division of LAWA.

There is not an LAX TMA. The LAWA Rideshare Manager is on the Board of Directors of the South Bay Westside TMA (SBWTMA), which covers a geographic area that includes LAX. It is a TMA with employer members that hosts quarterly transportation update meetings, with speakers representing local transit agencies, vanpool leasing companies, or other programs or services that may be utilized to improve commuter benefits programs. The information provided in the quarterly meetings provides valuable input to the continued development and improvement of the LAWA Rideshare Program. The SBWTMA also provides transit pass purchasing services for some members, not including LAWA. No other LAX employers are currently members of the SBWTMA.

LAWA utilizes outside resources to provide incentives to employees for use of alternatives to the SOV commute, including incentives offered by Metro, and a ride-matching website, [www.ridematch.info](http://www.ridematch.info), including a 511 telephone number. It covers five counties, including Los Angeles County, and is a joint effort between Metro, Orange County Transportation Authority, Riverside County Transportation Commission, San Bernardino Associated Governments, and Ventura County Transportation Commission.

LAWA Rideshare staff provides, administers, or offers information on the benefits and services available to the LAX employee population or exclusively to LAWA employees as described in the following sections. Program costs are provided in Table 11.

TABLE 11  
LAX RIDESHARE PROGRAM DIRECT COSTS

Program Element	FY 2012 Budget <sup>1,2</sup>
Free/Discounted Transit Passes	\$200,000
Emergency Ride Home	2,500
Fuel for Vanpools	343,000
Leasing Costs, Vans for Vanpools	360,000
Total	\$905,500

Source: LAWA LAX Human Resources Expense Summary Detail Review, Fiscal Year 2012.

<sup>1</sup>Does not include salaries.

<sup>2</sup>Vanpool expenses are gross expenses. Metro seat subsidies are not included.

### LAX Employee Population

LAX employees are offered incentives to consider alternatives to the SOV commute through the following program elements:

- Trip planning assistance is provided to help current and prospective employees determine what transit options are available to them.
- Carpool and vanpool matching is provided in the Rideshare office.
- All LAX employees may purchase a monthly pass to ride on the FlyAway buses for \$120. This is equivalent to a 57% discount for the employee who commutes to LAX using the FlyAway 20 days per month at the \$14/day round-trip full fare, and a 43% discount for the employee who commutes to LAX by FlyAway 15 days per month. Employees with an LAX Security Badge and a \$172 EZ Regional Transit Pass (Zone 4) may also ride the FlyAway.
- LAWA leases 65 eight-passenger vans and charges the vanpool participants a monthly fare based on mileage traveled less the subsidies they are eligible for. LAWA provides a \$60 per month vanpool subsidy to LAWA employees, which is reflected in their monthly fee. In addition, Metro, the regional transit operator, offers a \$50 per seat monthly subsidy for vanpools based in Los Angeles County that are 70% occupied and open to the public. The resulting monthly fare for each vanpool participant ranges from \$24 to \$157, for those who are eligible for one or both subsidies; and \$134 to \$207 for LAX employees who do not qualify for either subsidy. The driver of the van participates free of charge in return for driving and managing the vehicle. LAWA employees pay their monthly vanpool fare with pre-tax earnings. In June 2011, there were 502 employees participating in the 65 vanpools, a 97% occupancy rate; and 55 of the 65 vanpools were eligible for the Metro subsidy. Although the vanpools are open to all LAX employees, approximately 95% of the participants are LAWA employees.
- LAWA and Metro jointly administer a guaranteed ride home program for all LAX employees who participate in carpools or vanpools or use transit to commute to work. The program is offered by the five county transportation agencies that sponsor [www.ridematch.info](http://www.ridematch.info). LAWA employees may use a LAWA fleet vehicle or a taxicab for this purpose, and all other LAX employees may use a taxicab.
- For employees commuting by bicycle, there are bicycle racks at Terminal One and the Tom Bradley International Terminal. Southwest Airlines employees primarily use the bicycle racks at Terminal One.
- LAWA and the Los Angeles DOT have installed bicycle lanes on two roads in the vicinity of LAX.
- LAWA and Metro have installed bus stops on Imperial Highway and World Way West, the roads leading to the Administration West building, specifically to accommodate LAX employees.

### LAWA Employees

LAWA employees are offered incentives to consider alternatives to the SOV commute through the following program elements:

- Preferential carpool and vanpool parking is provided.
- Employees who participate in a carpool at least 50% of their workdays each month are provided a voucher for one free carwash per carpool per month. The cost to LAWA is \$10 per voucher.
- Free or discounted transit passes are offered for up to a discount of \$110 per month, or a reimbursement in lieu of a subsidy of \$110 per month.
- LAWA provides reimbursement of up to \$60 per month for commuting in privately operated buses or vans, or a van pool.
- LAWA employees may park for free at the Van Nuys FlyAway terminal.
- There are bicycle lockers at the LAWA administration buildings, and showers and lockers for bikers and walkers at the maintenance and police facilities.
- LAWA holds Rideshare fairs to promote the Rideshare program to its employees, and offers prizes at the fairs.
- LAWA employees, depending on the nature of their job duties, may have the option of compressed work weeks, working 80 hours over nine days, 40 hours over four days or 36 hours over three days; flextime; or staggered shifts.
- LAWA also has a Superpooler program for employees who commute by carpool. Each employee who commutes by carpool for 75% of his/her workdays per month is entered into a monthly drawing for a \$50 gas card. Five employees are chosen each month. Each employee entered eventually wins, because a winning employee is not eligible again until all employees entered have won.

### Program Elements That Have Been Considered But Not Implemented

LAWA researched providing a secure, indoor bicycle parking facility, similar to a Bikestation™ facility that would accommodate 100 bicycles in the CTA, and include a shower facility in an adjacent passenger terminal. Employees would have had 24-hour access to the facility using radio frequency identification technology. However, the project became too expensive because of the cost of the showers.

LAWA has also researched car-sharing options, where a fleet of vehicles would be available for rentals by employees who have a need for a vehicle for a short period of time. This provides employees who commute by transit or ridesharing the option to use a vehicle from time to time during the workday. The company that had been providing this service, Flexcar, was bought out by another company, Zipcar, which is focusing on the provision of service in Southern California at universities.

LAWA has considered offering more of the incentives it offers exclusively to LAWA employees to all LAX employees, but is unable to for budgetary reasons.

### Information Dissemination

LAWA informs LAWA employees about the Rideshare program through a new employee orientation, employee fairs, and a newsletter. All LAX employees may learn about the Rideshare program through the Rideshare page on the LAWA website.

The LAWA Rideshare office currently hosts or participates in four to six events per year, including Bike to Work Week, the LAWA Education Fair, LAWA Health Fair, LAWA Employee Appreciation Fair, California Rideshare Week, and a Haunted Halloween Open House called Ride-SCARE. Prizes are offered to employees who attend the fairs, and have included caps, messenger bags, reusable bags, water bottles, and pens.

The LAWA monthly employee newsletter, the *Aerogramme*, includes three to four stories per year related to the Rideshare program. It is distributed by e-mail to all LAWA employees, posted on the LAWA intranet, and distributed to various work locations. Articles are also posted in the Department of Human Resources quarterly newsletter and the monthly Environmental Services newsletter. Each is sent to LAWA employees by e-mail and posted on the intranet. The LAWA Rideshare office also posts at least one story or link per month on InsideLAWA News, available on the intranet.

Social media are not used to communicate with employees because employees cannot access those websites through LAWA computers.

### Targets/Goals/Measurement

LAWA measures the progress of its program through the administration of an annual employee survey to determine how many trips are being made to LAX during the peak period (the hours when more than 50% of LAWA employees are commuting to LAX) and when the peak period occurs.

As part of AQMD Rule 2202, LAWA must take steps to reduce employee commute trips destined for LAX during the peak period by 33% of total employee trips. To meet that requirement, LAWA must achieve the AQMD goal of at least 1.5 employees per vehicle trip during the peak period. LAWA met the LAX AQMD trip reduction targets for the six years from 2006 through 2011. During 2011, the number of LAWA employees per vehicle commuting to LAX during the peak period was 1.61. Annual progress reports are submitted to AQMD.

One of the targets in the Sustainability Improvement Program was to increase employee participation in the Rideshare Program to 30% by 2010. Participation in the Rideshare Program is defined as the percentage of LAWA employees actively enrolled in the commuter benefits program, and commuting by carpool, vanpool, or public transportation at least 50% of their workdays. Most LAWA employees participating in the program are commuting using alternatives to the SOV nearly 100% of their workdays. As of the fall of 2011, program participation is just over 26%. This is significantly higher than the 14% minimum employee mode share by modes other than SOV that employers who are members of Best Workplaces for Commuters agree to achieve within 18 months of becoming a member (Standard of Excellence 2011).

LAWA also keeps statistics on the number of vanpool and carpool participants, the number of transit passes distributed, savings in vehicle-miles traveled, savings in vehicle trips, environmental benefits, and the amount of fuel saved by participants in the Rideshare Program. According to a May 24, 2011, LAWA press release, “Los Angeles World Airports Rideshare Program Wins 15th Prestigious Diamond Award in 13 Years,” the LAWA Rideshare program saves more than 1,400 vehicle trips per day, more than 7 million annual vehicle miles, and one-half million gallons of gasoline per year; and eliminates more than 7.9 billion pounds of air pollutants each year.

### Challenges and Lessons Learned

Additional funding is not available to increase the Rideshare percentage through the provision of additional vans. Employees often wait several years to become part of an existing vanpool. As of August 2011 there were more than 100 people on the waiting list.

LAWA’s Administration West building is located approximately six miles from the CTA. LAWA does not run a shuttle between the two locations, and the public transportation connections between the CTA and the Administration West building are not conducive to commuting, because they add too much time to the trip.

LAWA employees are not charged for parking in LAWA lots, and these lots are often full. LAX tenant employee parking permits cost from \$30 to \$50 per month, which is often less than the cost to the employee to commute by public transportation or by vanpool.

LAWA would like to achieve cost recovery on the employee parking operation.

### Future Plans

Owing to budgetary constraints, there are no new financial incentives being planned at this time, but the Rideshare staff

constantly looks for opportunities to improve the Rideshare program by stretching existing resources or by working with outside organizations. Staff actively participates in the planning of regional transportation initiatives, such as the proposed Metro Green Line Extension to LAX, the proposed Crenshaw/LAX light rail line, the Los Angeles Bicycle Master Plan, and the ExpressLanes congestion pricing demonstration project. LAWA is also seeking to enhance its communication of existing and future transportation options with LAX tenant employees, including an improved Tenant411 website, and an initiative to distribute Rideshare information to all employees who pass through the Security Badge Office.

### Advice Provided by the Airport Operator to Airports Beginning a New Program or Enhancing an Existing Program to Reduce Single Occupant Vehicle Commute Trips

When asked what advice the LAWA Rideshare manager had for other airport operators on the development or enhancement of airport commute management programs, the response included a suggestion to determine what existing services are offered in the region through transit agencies, local cities, counties, clean air advocacy groups, and other organizations that may be incorporated into the airport ECO program. Often, there are services that are low-cost or free of charge, allowing airport resources to be used for additional program elements. For example, LAWA participates in the Metro Vanpool Program, which provides each rider in a qualifying van with an additional \$50 discount off their monthly fare. This program has boosted vanpool seat use from around 82% to 99%, including employees who work swing shifts and graveyard shifts. The Guaranteed Ride Home program, which ensures a ride home in an emergency to employees who rideshare, is another example of a service that is not funded by LAWA or by participating employees.

Monitoring progress is essential to understanding the success of various program elements. Airport operators should track their costs and program participation to assess their return on investment, so they may compare how much a saved SOV trip costs versus the cost of providing a parking space.

An ECO program helps with airport employee recruitment and retention. LAWA Rideshare staff often provides trip planning services for individuals who are considering employment at LAX and are concerned about available commute options.

### Interview Information

The information for this case study was provided by the following individual during the summer and fall of 2011:

Devon Deming, Rideshare Program Manager, Los Angeles World Airports

## PORTLAND INTERNATIONAL AIRPORT (PDX)

Portland International Airport (PDX) accommodated 13.2 million air passengers in 2010. It is a medium hub airport, owned and operated by the Port of Portland that operates 24 hours per day. PDX is located in close proximity to the Washington border, and PDX employees reside both in the greater Portland area and in Clark County, Washington, which includes Vancouver, Washington. There were approximately 10,000 employees with security badges working at PDX as of September 2011, and 759 of them, or approximately 8%, were employed by the Port of Portland. The percentage of employees working within walking distance of the terminal area is unknown, and the Port of Portland does not have information on the number of PDX employees who do not have security badges.

Based on a security badge distribution from May 2009, 50% of badged PDX employees worked for ten employers at PDX, with the TSA being the largest employer. There were 16 employers with at least 100 employees, representing 58% of badged PDX employees. However, the Port of Portland has indicated that the employee population has changed significantly since 2009, as a result of changes in airline staffing and the consolidation of port facilities to a new headquarters building on airport property.

The Port of Portland offers its employees subsidized transit passes, preferential parking for carpools, a secure indoor bicycle storage facility, and a shower facility adjacent to the bicycle storage facility. The Port was one of the parties responsible for the 5.5 mile extension of the Metropolitan Area Express (MAX) light rail line serving PDX that opened in 2001, by contributing approximately \$38 million toward the capital costs. The Port has an operating agreement with TriMet, the operator of the light rail system, which includes an agreement for TriMet to provide light rail service early enough to accommodate the early morning shift start time. As of October 2011, the first train currently arrives at PDX at 4:44 a.m.

### Studies Related to the Provision of Employee Commute Options

In 1999, a bicycle and pedestrian plan was developed by the Port of Portland, with input from the city of Portland DOT and the Oregon DOT. Many of the capital improvements recommended in the study have been implemented.

In 2002, the Port of Portland commissioned a study, *PDX Transportation Demand Management (TDM) Program Study*, to consider ways in which to reduce the airport-wide employee vehicle trip generation rate. It included outreach to a sample of tenants to understand what TDM programs they were offering to their employees, what they believe the barriers are to their employees for using alternatives to the SOV, and their willingness to participate in a collective effort, such as a TMA, among airport employers to work on reducing the

employee vehicle trip generation rate. It was comprised of four elements:

1. Review of existing conditions—a summary of the employee TDM programs provided and being planned by the Port of Portland for its PDX staff.
2. Interviews with and outreach to PDX Employers—interviews with a sample of other PDX employers to develop an understanding of TDM programs offered, constraints to offering TDM programs and shifting employees from commuting by SOV, and their receptiveness to participating in a collective forum such as a TMA. Executives from 13 businesses were interviewed in May and June of 2002, and included a variety of businesses, located both within walking distance of the terminal area and away from the terminal area. Most of the businesses interviewed had more than 50 employees working at PDX. Important themes from the interviews include:
  - The belief that MAX is not available to or feasible for a large percentage of PDX employees because:
    - The first scheduled arrival of the train is later than the start of the morning work shift; or
    - The additional time it takes the employee to transfer from the terminal area to transportation links that serve work locations that are not within walking distance of the terminal area. There are work areas outside of the terminal area that are not conducive to walking or biking owing to poor links from the terminal area. Many employees live within five miles of PDX, in areas that may not be served well by transit. They would have the option to bicycle to work if there were bicycle lanes and facilities to park their bikes and shower when they arrive at work.
  - The employers interviewed provided the following employee commute benefits:
    - Most of the employers paid for their employees to park free.
    - Two businesses offered incentives for employees to carpool.
    - Four businesses offered transit passes to their employees; another four discontinued offering transit passes because of a lack of interest by employees.
  - Employers estimated that 30% to 45% of their employees live in Clark County, which is north of PDX in Washington State. Direct transit service is not available between Clark County and PDX, and unless transit is offered, these employees must either drive to work or carpool.
  - Most of the employers believed it would be beneficial to be part of a collective effort of PDX employers to address employee commute issues. They had varying opinions on what the responsibilities of the group should be.
  - None of the employers believed that the provision of limited ECOs was adversely impacting their businesses.

3. **TMA feasibility**—considered the TMA structure that has the most potential for success in the PDX environment. The employers interviewed believed that the Port of Portland was in the best position to initially lead a collective effort among PDX employers, and that a TMA should focus exclusively on PDX issues rather than encompass a larger geographic area that included non-airport-related employers who do not understand the unique employment environment at an airport. Between 1999 and 2001 there was a TMA called the Columbia Corridor Association (CCA), which served a variety of businesses in the corridor including PDX. It was funded with a Congestion Management and Air Quality (CMAQ) grant. About half of the businesses interviewed were aware of the CCA, and believed that the programs it offered were not applicable to PDX employees. The CCA was disbanded in 2001 because the area businesses were not able to support it financially beyond the CMAQ grant. At that time many of the businesses believed that MAX was sufficient to serve employee commute needs.

Since the employers interviewed in this part of the study had different ideas about what a TMA would provide and what participation would entail, the study recommended formation of a stakeholders group to evaluate the feasibility of a TMA.

4. **PDX Employer TDM Program**—provided recommendations on TDM elements for the Port of Portland to consider offering Port employees and all airport employees. It included potential program costs and a recommended schedule for implementation. Study recommendations included:

- The Port of Portland could encourage other PDX employers to pass along parking charges to employees, so employees would be forced to consider whether their money was best spent on driving to work and parking, or pursuing alternatives to the SOV commute.
- Apply a percentage of any increase in employee parking fees to a PDX area TDM fund.
- Reexamine the feasibility of a new bus service provided by the public transportation service provider in Clark County, C-TRAN, and subsidized by the Port of Portland and PDX tenants traveling between Clark County in Washington State and PDX. This had been explored by the Port prior to September 11, 2001, and has been put on hold since because of economic conditions.
- Explore the feasibility of a PDX TMA.
- Establish a transportation store where Port employees and other tenant employees could receive assistance in planning commute trips by ridesharing and using public transportation, purchase transit passes, and learn about other available benefits.

- Introduce a car-sharing service that would allow Port employees and potentially other employees who commute in modes other than the SOV to rent or borrow a car on an hourly basis for occasional personal trips during the workday.

### Regulatory Environment

Under the State of Oregon Department of Environmental Quality (DEQ) Employee Commute Options (ECO) rules, all employers with more than 100 employees reporting to a work site must provide incentives for employee use of commute options that have the potential to reduce auto commute trips to the work site by 10% over a three-year period, compared with an established baseline obtained through administration of an employee survey. The ECO Rules were formally adopted in 1996, and revised in 2007. Employers must:

- Conduct an initial survey to determine employee commute methods,
- Prepare and submit a plan to DEQ detailing what commute options incentives the employer will offer to meet the target reduction, and
- Perform follow-up surveys every other year to measure progress toward the trip reduction goal.

Employers must demonstrate a good-faith effort toward the trip reduction goal. Employers are not penalized for not meeting the trip reduction goal, but they may be fined if they do not submit and implement a reasonable trip reduction plan or if they do not measure progress by conducting biennial surveys.

An employer is only required to submit an updated commute options plan if the original plan does not achieve and maintain the 10% trip reduction over the baseline. Based on the May 2009 PDX security badge file, 16 PDX employers, responsible for 58% of badged employees, were subject to the ECO rules, including the Port of Portland.

#### *Port of Portland*

The Port of Portland has been complying with the rule through preparation and submission to DEQ of an auto trip reduction plan, and employee surveys to measure progress. The most recent auto trip reduction plan, dated April 1, 2011, details all of the incentives provided by the Port of Portland. They are described in the Program Details section of this case study.

#### *PDX Tenants with More Than 100 Employees*

In September 2011, only two of the PDX tenants with more than 100 employees had submitted a plan to DEQ. United Airlines proposed to meet the 10% reduction by promoting

carpooling, investigating the provision of financial incentives for public transportation use, promoting commuting by bicycling and walking, and compressed work week or telecommuting opportunities. It also provides an emergency ride home to program participants. The other tenant, Huntleigh, indicated its employee schedules are unpredictable and do not easily lend themselves to ridesharing or public transportation. The only incentive it proposed was the provision of information on transit options to its employees.

Under an earlier version of the ECO rules, employers were not required to submit a trip reduction plan if the biennial surveys demonstrated they were meeting the trip reduction goal, or that their employee automobile trip rate was lower than the average for the work site area.

DEQ was aware of four additional airport employers with more than 100 employees that provide subsidized transit passes to their employees.

### Transportation Environment

This section provides information on the employee parking supply, public transportation options, and the employee mode-share distribution at PDX. A map of PDX, which denotes the employee parking supply, is shown in Figure 6.

### Parking Inventory

As of September 2011, the Port of Portland provided 2,826 dedicated employee parking spaces for the approximately 8,600 PDX employees that have parking permits. The resulting parking utilization rate is three employees per space or 0.33 spaces per employee.

Eighty-five percent of the parking supply is provided in a surface lot located approximately two miles from the terminal area, with shuttle bus service provided between the lot and the terminal area. There were approximately 1,800 total vehicle trips generated by this lot on Monday August 22, or 0.65 vehicle trips per space. Port of Portland employees may park in this lot free of charge, and all other PDX-based employees pay \$35 per month. Nondomiciled flight crew members pay \$50 per month to park there. The remaining 15% of the inventory is in a surface lot located within walking distance of the Port of Portland Administration building and available to Port of Portland employees for \$20 per month. A portion of the terminal garage parking is also available to Port of Portland staff and certain employees working for the airlines, concessionaires, and the federal government. The monthly fee for Port of Portland employees to park in the garage is \$80. The allocation of spaces for employee parking is not currently displacing air passengers from the parking garages.



FIGURE 6 Map of Portland International Airport. *Source:* Jason Gately, Port of Portland, Nov. 18, 2011.



Employee parking fees cover the costs of operating the employee parking facilities, including the cost to operate the shuttle buses to the remote lot.

### *Public Transportation*

TriMet provides bus, light rail, and commuter rail service in the Portland metropolitan area. The MAX light rail system consists of four lines serving the region. One of the light rail lines, the Red Line, has been serving PDX since 2001; its Portland International Airport station is located near the baggage claim area on the arrivals level at PDX, and there are two other stations on airport property. The other three MAX lines connect to the Red Line, which means employees that reside in the MAX market area have at most one transfer to commute to PDX. A map of the MAX light rail system is shown in Figure 7. As of October 2011 (MAX Red Line 2011), the first train was scheduled to arrive at PDX at 4:44 a.m. on weekdays, largely with 15-minute headways, and the last train was scheduled to arrive at 11:08 p.m. Saturday and Sunday schedules are similar to the weekday schedule. On weekdays, the first train is scheduled to depart PDX at 4:58 a.m. and the last train is scheduled to depart PDX at 11:49 p.m.; the weekend schedules are similar.

TriMet bus routes no longer serve PDX since the introduction of airport MAX service.

Public transportation is provided in Clark County by C-TRAN, including some express bus routes to and from downtown Portland, and limited service to some MAX stations. C-TRAN does accommodate commuters working in downtown Portland with traditional weekday work schedules, but it does not provide sufficient service hours or geographic coverage to accommodate the PDX worker. Most C-TRAN service to Portland is provided during peak commuting hours on weekdays. Trips that offer connections to PDX offer travel times that are significantly longer than the commute by automobile. For example, the C-TRAN website trip planner indicated a time of 74 minutes to travel by public transportation between the Salmon Creek Park and Ride and PDX. The same trip by automobile would take approximately 20 minutes, according to Googlemaps.com.

### *Transportation Utilization*

A survey of Port of Portland employees commuting to PDX was conducted over a one-week period in June 2010. The mode-share distribution is presented in Table 12. Information on previous surveys is included in the *Targets/Goals/M Measurement* section.

Thirty percent of Port employees who responded to the survey commuted using alternatives to the SOV, and another 3% did not make trips to PDX choosing to telecommute or work a compressed work week.

### **Program Details**

The Port of Portland offers the following benefits to its employees to encourage alternatives to the SOV, and to reduce the employee vehicle trip generation rate.

- Promotes ridesharing by:
  - Encouraging employees to utilize CarPoolMatch NW.org, a ride-matching website available to Oregon residents. It allows users to find a regular carpool, a carpool for a one-time trip, or record trips to keep track of monetary and environmental savings incurred using alternative commute modes. It is sponsored by the metropolitan planning organization, Metro, TriMet, South Metro Area Regional Transit, the city of Portland Bureau of Transportation, and the Rogue Valley Transportation District. A similar website exists for residents of Clark County, [www.clarkcommute.org](http://www.clarkcommute.org).
  - Providing reserved parking stalls in the parking garage for employees who carpool regularly. The monthly parking rate is \$20 for the designated carpool lead, which is 25% of the employee rate for garage parking, and equivalent to the monthly rate for the Port of Portland employee parking lot. The other employees in the carpool are required to pay for monthly use of the employee parking lot, to use on days when they are not participating in the carpool. As of November 2011, approximately ten carpools were using the reserved carpool spaces.
- Promotes transit use by:
  - Subsidizing transit passes. The Port of Portland provides annual transit stickers to employees for \$35 per year, which was a 96% subsidy of the September 1, 2011, annual purchase price of the adult all-zone pass of \$1,012. To encourage transit use, the Port of Portland purchases the annual transit stickers from TriMet for all employees that TriMet determines are eligible to participate in the program. It pays for the passes based on the number of employees that actually use them, which is determined using the transit mode share from the employee survey (Port of Portland Headquarters Auto Trip Reduction Plan 2011).
  - Employees with a transit pass are eligible for TriMet's Emergency Ride Home program, which provides a free taxi ride in the event of family emergencies, illness during the workday, and unscheduled work hours.
  - Hosting an annual transit and benefit fair during the summer, providing information on transportation alternatives.
- Telecommuting, flextime, and compressed work week schedules are offered to some employees based on work responsibilities, managerial approval, and performance reviews.



FIGURE 7 TriMet rail system. Source: TriMet website, <http://trimet.org/maps/railsystem.htm> [accessed Nov. 7, 2011].

TABLE 12  
MODE SHARE DISTRIBUTION OF PORT OF  
PORTLAND EMPLOYEES COMMUTING TO PDX,  
JUNE 2010

Mode	Percentage of PDX Employees <sup>1</sup>
Drove Alone	67
Carpool	8
Vanpool	0
Bus/Max	19
Bike/Walk	3
Telecommute	1
Compressed Week	2
Total Weekly Trips	100

Source: Port of Portland Employee Commute Options Survey, June 7–11, 2010.

<sup>1</sup>There were 368 responses out of 440 employees, which was an 84% response rate.

- Promotes bicycle use in the following ways:
  - Planning and the provision of dedicated bicycle trails and bicycle lanes, including a multi-use path to the terminal that is separated from the auto lanes. It extends away from the terminal about 1.25 miles to the North Frontage Road, where there is a sidewalk for pedestrians and a shared roadway for bicycles. The Port also built a multi-use path that essentially connects the North Frontage Road and the Cascades Station retail area with Marine Drive to the north of PDX, which has cut a considerable amount of travel time for some bicyclists.
  - Provision of bicycle storage facilities including a secure indoor bicycle storage facility for more than 50 bicycles at the Port headquarters building, covered bicycle parking areas adjacent to the north and south end of the arrivals curb, and a fenced parking area available to airport employees with security badges. The storage facility at the Port headquarters building includes a bicycle repair and assembly station and tools. Shower and locker facilities are adjacent to the storage facility.
  - Provides a bicycle resources page, [http://www.portofportland.com/pdx\\_bcycl\\_trnsprtn.aspx](http://www.portofportland.com/pdx_bcycl_trnsprtn.aspx), on its website. It includes an area map of bicycle routes, information on bicycle facilities, and links to other local and regional websites that provide information for bicycle users. One of the links allows the user to access a website, <http://www.ridethecity.com/portland#1623414>, that provides point to point bicycle route information, including segment details on whether the link is part of a dedicated bicycle path, a bicycle lane, or mixes with traffic.
- Provides amenities that decrease the need for trips during the workday. There is a fitness center and a drop-off and pickup dry cleaning service located at the Port of Portland headquarters. There are a variety of restaurants and shops in the terminal area, which is within walking distance of headquarters. The distance between the terminal area and Port headquarters is one-eighth mile and

can be accessed through an underground tunnel with moving sidewalks.

- A parking pricing structure that makes the use of public transportation more attractive. The most convenient parking options cost Port of Portland employees \$960 per year for covered parking underneath headquarters, and \$240 per year for surface parking, compared with \$35 per year for a transit sticker. Approximately 23% of employees are parking in the garage, another 1% are parking in the carpool spaces in the garage, and 75% are parking in the surface lot. The only free parking offered to Port employees is located two miles from the terminal. With shuttle bus service provided every six to eight minutes during peak periods and every 15 minutes during off-peak periods, and a bus trip that takes approximately 9 minutes, employees must allow for ten to 23 minutes from the time their vehicle is parked to their arrival at the terminal area. Only 1% of Port employees choose the free parking.

Staff resources for providing the employee commute benefits are provided as part of the job responsibilities from staff in the planning, environmental, human resources, and operations departments. The Port of Portland spent approximately \$78,000 for transit passes for employees during the period from September 2010 to August 2011.

As described earlier, the Port of Portland relies on resources offered by TriMet, the city of Portland, and the organizations that provide the ride-matching services to assist in providing incentives to employees to commute using alternatives to the SOV.

#### Program Elements That Have Been Considered But Not Implemented

Prior to September 11, 2001, the Port of Portland explored with C-Tran and PDX tenants the possibility of providing transit service between Clark County and the PDX terminal area during peak hours as a public transportation alternative for the estimated 30% to 45% of PDX employees who live in Clark County. Some portion of the service would have been funded by PDX employers. Owing to economic conditions following September 11, 2001, the service was never implemented.

In 2002, as part of the Port of Portland's Transportation Improvement Plan, the Port Commissioners approved a bus that would circulate between the terminal area and PDX employment areas away from the terminal area that are not served by MAX to encourage employee transit ridership. The bus was not implemented as a result of funding constraints.

The Port also explored the possibility of a PDX TMA as a result of the 2002 PDX Employee TDM Study. Results of the study were presented to Port of Portland management, but because of the general financial condition of the airline industry, there was no motivation to approach the airlines

on the topic. In subsequent years, with rising fuel prices and airline service cuts, there continued to be little justification to approach the airlines. A collective effort among airport employers may be a future topic of a new citizen's advisory group that was formed in 2011, resulting from the *PDX Airport Futures* master planning process.

### Information Dissemination

The Port of Portland informs its employees of commute benefits at the annual transit and benefits fair. In the Trip Reduction Plan submitted to DEQ in April 2011, it committed to providing information to employees on at least a quarterly basis.

The Port produces a monthly electronic newsletter, PDXaminer, for all PDX employees. Members of the public may also subscribe to it. The May 2011 through October, 2011 issues did not include information on ECO (PDXaminer 2011).

### Targets/Goals/Measurement

The state of Oregon's Employee Commute Options (ECO) Rules require employers in the Portland metropolitan area, including the Port of Portland, to measure progress toward the goal of reducing employee automobile trips by 10% over required baseline employee commute surveys. For the purposes of the ECO Rules, survey results are administered and analyzed by TriMet. The Port conducted its initial baseline survey in 1995, and follow-up surveys have been conducted every one to two years since then to measure progress toward the trip reduction goal. The automobile trip rate is calculated by dividing the number of auto commute trips by the num-

ber of employee trips in all modes over a one-week period. Beginning in June 1998, survey results indicated that a 10% or greater reduction in the baseline automobile trip rate was achieved annually through June 2008.

The Port of Portland's main office was located in downtown Portland until the spring of 2010, when the administrative offices were consolidated at a new headquarters building at PDX, located 12 miles away. The airport headquarters building is adjacent to the short-term public parking garage in the passenger terminal area. A new baseline survey was conducted in June 2010 to capture commute patterns at the new Port headquarters building. A revised automobile trip reduction plan was submitted in April 2011, with a new baseline auto trip rate of 71%, compared with the original baseline of 76%. The new target auto trip rate is 64%, which, if achieved, will be a 10% reduction over the 2010 baseline auto trip rate.

TriMet produces a report for employers that includes the most recent survey results, and compares the results with prior surveys, so the employer may measure progress and adjust strategies accordingly. Table 13 provides the Port of Portland employee automobile trip rate based on all of the surveys conducted between the original baseline year and the most recent survey.

### Challenges and Lessons Learned

A major concern is that there is a need to reduce the number of employee trips, but limited ways to achieve a reduction. PDX has limited public transportation options for employees because it is located at the end of a 5.5 mile light rail spur, and there are no other public transportation options serving

TABLE 13  
PORT OF PORTLAND EMPLOYEE AUTO TRIP RATE, 1995 TO 2010

Survey Timeframe	Auto Trip Rate	Notes
Baseline: 4/1995	76%	PDX and Lloyd Center results combined
Followup #1: 9/96	76%	
Followup #2: 7/97	76%	
Followup #3: 6/98	55%	
Followup #4: 6/99	61%	
Followup #5: 6/01	44%	Port of Portland administrative offices relocated from Lloyd Center to Old Town/Chinatown. PDX and administrative office results combined
Followup #6: 6/02	46%	
Followup #7: 6/03	50%	
Followup #8: 6/04	46%	
Followup #9: 6/06	45%	
Followup #10: 6/08	44%	
Baseline: 6/10	71%	Port of Portland employees consolidated at new headquarters at PDX

Source: Based on Port of Portland HQ Auto Trip Reduction Plan, Submitted April 1, 2011, Exhibit B.

The annual survey results combine the auto trip rate for all Port of Portland employees, which were in multiple locations until the Spring of 2010.

the airport. Many employees live in Washington State and are therefore unable to commute by MAX.

Funding is not currently available to provide public transportation options that will accommodate employees working in Clark County and those working away from the terminal area.

The Port of Portland's efforts to accommodate employees by allowing alternative work schedules and, in some cases, telecommuting options helps reduce trips generated, as well as emissions. A flexible schedule is often considered an incentive for attracting and retaining employees.

### Interview Information

The information for this case study was provided by the following individuals from the Port of Portland during the summer and fall of 2011:

Jason Gately, Aviation Planner and Project Manager  
Scott King, Senior Transportation Planner

### SAN FRANCISCO INTERNATIONAL AIRPORT (SFO)

San Francisco International Airport (SFO), a large hub airport, is owned and operated by the City and County of San Francisco (CCSF), referred to as the Airport Commission. In 2010, SFO transported 39.1 million air passengers. SFO operates 24 hours a day, and therefore requires employees to be at SFO around the clock to support the operation.

SFO is the largest employer in San Mateo County. As of the summer of 2011, there were 19,300 employees with security badges working at SFO, and 1,500 of them, or 8% of SFO employees, were employed by the Airport Commission. Forty percent of badged employees at SFO worked for ten employers, with United Airlines being the largest. The number of employees that work at SFO who do not have a security badge is unknown, but is probably several thousand. The percentage of employees working in the terminal area is unknown.

In 1993, the Airport Commission adopted the Transit First Policy, which promotes the use of public and private HOV transportation by SFO air passengers and airport employees. The Airport Commission encourages its own employees to consider commute alternatives to the SOV through information dissemination, the provision of programs, and through partnerships with other agencies and organizations such as the local and regional public transportation providers. This includes an Airport Commission subsidy of the only San Mateo County Transit District (SamTrans) bus route operating between midnight and

6 a.m., to ensure around-the-clock transit access for SFO employees.

### Regulatory Environment

As a result of the Bay Area Air Quality Management District's Regulation 13, a Trip Reduction Rule was added to the SFO Rules and Regulations in 1993 that includes an employee trip generation reduction goal compared with 1994 trip levels. The Trip Reduction Rule requires airport tenants with at least 100 employees to appoint an Employee Transportation Coordinator (ETC) and prepare a tenant trip reduction plan with strategies and measures for its employees to meet the Airport Commission's trip reduction goals. In 2009, a Commuter Benefits Program Requirement was added to the Trip Reduction Rule that pertains to tenants employing at least 20 employees, to be consistent with a CCSF requirement for employers of similar size located in San Francisco. This is described under Program Elements.

The reduction of trips generated by SFO employees is also an important part of SFO's Climate Action Plan (SFO Climate Action Plan 2010), which was developed in 2009, and has a goal of achieving carbon neutrality for SFO by 2020. This is in support of San Francisco Ordinance No. 81-08, Climate Change Goals and Action Plan, which was adopted in 2008. It mandates the achievement of greenhouse gas emission targets by 2017, 2025, and 2050 compared with 1990 levels by each department of the CCSF.

### Transportation Environment

This section provides information on employee parking, public transportation and scheduled HOV transportation options, and the employee mode-share distribution at SFO. A map of SFO is shown in Figure 8.

#### *Parking Inventory*

As of September 2011, the Airport Commission provided 6,644 employee parking spaces for approximately 10,700 SFO employees, which was a utilization rate of 1.6 employee parking permits per space. Three parking areas, which account for 64% of this inventory, have shuttle bus service to places of employment. Another 22% of the employee parking is provided in three of the public garages. Although the allocation of spaces for employee parking is not currently displacing air passengers from parking, according to Airport Commission staff, it is challenging to manage the peak parking demand of passengers and employees in the garages.

Airport Commission employees do not pay a parking fee. The fee is \$75 per month for all other SFO employees to use parking facilities with shuttle bus service, and \$68 per

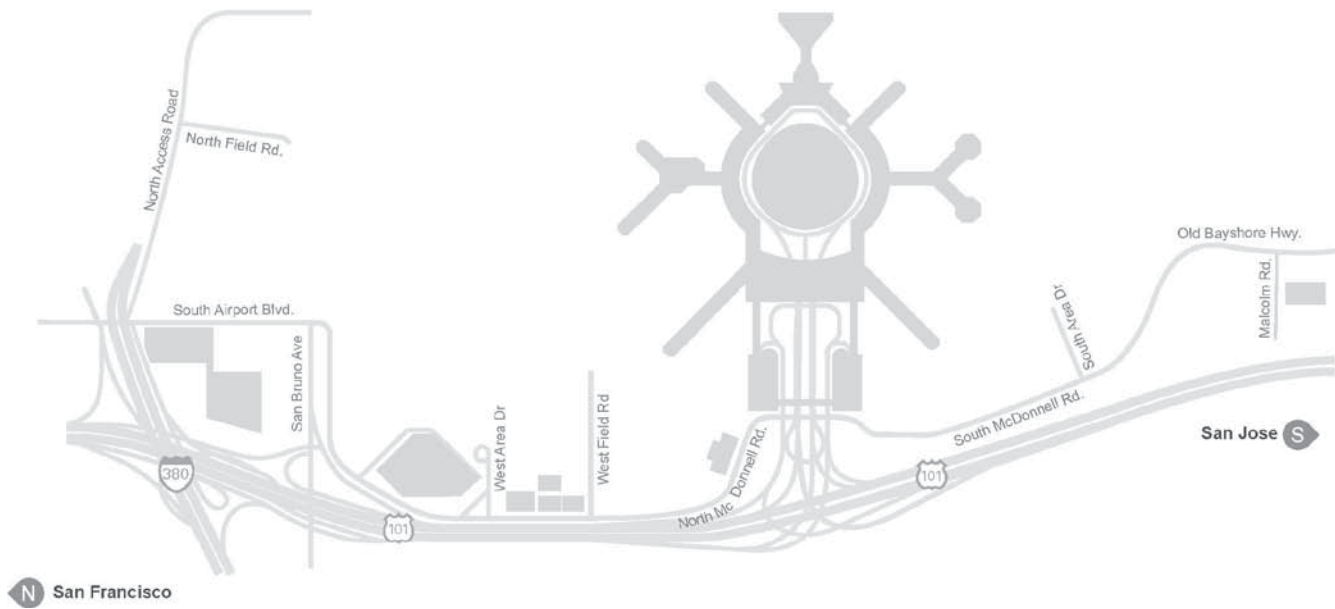


FIGURE 8 Map of San Francisco International Airport. *Source:* San Francisco Airport Commission, Nov. 30, 2011.

month to use parking facilities without bus service. Employees parking in the public garages are assessed a quarterly fee of \$336. Employee parking fees cover the cost to the Airport Commission to operate the employee parking facilities, including the cost to operate the shuttle buses, so it is a cost-neutral operation.

The number of employee parking spaces provided by airport tenants is not known, but United Airlines and American Airlines both lease land that includes employee parking.

#### *Public Transportation*

The Bay Area Rapid Transit (BART) System connects passengers between the international terminal at SFO, San Mateo County, San Francisco, and the East Bay. A map of the BART system is provided in Figure 9. Caltrain commuter rail service is provided between San Francisco and Gilroy, and provides service to the Millbrae Transit Center, where SFO passengers and employees may transfer to BART, although the connection to SFO on BART involves two transfers for a significant portion of the service schedule. In the past, BART provided direct service between the Millbrae station and SFO during all operating hours, but the amount of direct service has been reduced because of low demand and to lower operating costs. BART operates from 4 a.m. to midnight on weekdays, 6 a.m. to midnight on Saturdays, and 8 a.m. to midnight on Sundays (“Schedules by Station” 2011).

SamTrans provides three bus routes serving the airport terminal complex, including Route 397, which is the only route operating between midnight and 6 a.m. in San Mateo County.

Since BART, Caltrain, and the other two SamTrans bus routes serving SFO did not provide sufficient service hours to serve the commuting needs of SFO employees, the Airport Commission worked with SamTrans to provide a bus route offering service to SFO between midnight and 6 a.m. Initially the route traveled only between downtown San Francisco and SFO. It has been expanded to travel the length of San Mateo County, including a transfer point with Santa Clara Valley Transportation Authority (VTA) Route 22. Route 22 is the overnight route serving Santa Clara County, which is adjacent to San Mateo County.

The unrecovered operating expenses on Route 397 are subsidized by the Airport Commission, based on the percentage of total trips generated by the airport. In 2009, approximately 20% of ridership on the route was generated by the airport. This is a decrease of 20% from when the service started, indicating its increasing popularity throughout the county. Overall ridership on Route 397 increased 58% between 2002 and 2009.

The fare to ride BART is based on distance, and there is no discount for riding on a monthly basis. There is a discount of approximately 6% for multi-ride BART tickets with a value of \$48 and \$64, which are sold for \$45 and \$60. For the employee who is commuting 20 days per month, the cost to ride BART will exceed the cost of a monthly employee parking permit, as will the monthly cost to ride commuter rail and transfer to BART. The cost of a SamTrans monthly pass for service within San Mateo County is less than the cost of a monthly parking permit. The cost of a monthly SamTrans pass for service beyond the county limit is more expensive than the cost of monthly parking permit.



FIGURE 9 BART System. Source: BART website, Oct. 12, 2011.

There are also several private operators providing scheduled bus service between the airport terminals and various locations in the region and other parts of the Bay Area. Many offer reduced fares for frequent riders, which are often used by airport employees.

#### Transportation Utilization

From time to time, the Airport Commission conducts a survey of the total SFO employee population, which includes employees with and without security badges. All tenants are expected to participate in the survey. Tenants who do not participate may be assessed a fine. The last survey was conducted in 2005 (San Francisco International Airport 2005 Employee Commute Survey 2005). Table 14 provides the mode-share distribution of SFO employees from this survey. Forty-one percent of employees do not commute to SFO by SOV as a result of ridesharing, transit, walking and biking, flexible work schedules, and days off.

During the 2005 survey period, approximately 62% of employees commuted to SFO between 4:00 a.m. and 10:00 a.m., Monday through Friday, with another 13% commuting between 2:00 p.m. and 4:00 p.m. On Saturday and

Sunday, approximately 46% of employees commuted to SFO between 4 a.m. and 10 a.m., and approximately 18% commuted between 2:00 p.m. and 4:00 p.m. Peak departure times were from 1:00 p.m. to 6:00 p.m., and 10:00 p.m. to midnight.

In January 2011, the San Francisco Department of the Environment conducted a survey of Airport Commission staff (San Francisco International Airport Transportation Survey Analysis 2011), which was part of a survey of all CCSF employees. The survey was administered by computer, which excluded Commission employees who do not use a computer as part of their job responsibilities. For the period from January 3 to January 9, 2011, 80% of Airport Commission staff trips made to SFO were made by SOV, and the remaining 20% were made by vanpools, carpools, public transportation, walking, biking, or telecommuting. Unlike the 2005 survey, days off were not incorporated into the mode-share distribution.

As part of the Trip Reduction Rule, tenants are required to conduct surveys of employee commuting behavior every other year, or participate in a survey conducted by the Airport Commission; however, this has not been enforced since sometime after September 11, 2001, for reasons described under Challenges and Lessons Learned.

TABLE 14  
MODE-SHARE DISTRIBUTION OF BADGED AND  
NON-BADGED SFO EMPLOYEES COMMUTING TO  
SFO MONDAY THROUGH FRIDAY COMBINED,  
WEEK OF SEP. 19–SEP. 25, 2005

Mode	Percentage of SFO Employees
Drive Alone	55
Carpool	8
Dropped Off	3
Vanpool	5
BART	4
SamTrans	2
Caltrain	0
Private Transit	0
Club Bus	0
Motorcycle	1
Bicycle	0
Other	0
Day Off	18
Work at Home/Telecommute	0
Flex Schedule Day Off	4
Business Travel	0
Total	100

Source: San Francisco International Airport 2005 Transportation Survey.  
There were 8,250 responses, which was a 56% response rate.

### Program Details

The Airport Commission offers benefits to its own employees to encourage them to commute to SFO by ridesharing and public transportation, to meet the trip reduction goals that are part of the Trip Reduction Rule. It also offers benefits that are available to all SFO employees.

In addition, airport tenants must make efforts to meet the goals of the Trip Reduction Rule (Rules and Regulations, San Francisco International Airport 2011) in the following ways:

- Tenants with at least 100 employees must appoint an ETC to work with the Airport Commission's TDM manager; and prepare a tenant trip reduction plan with strategies and measures for its employees to meet the Airport Commission's trip reduction goals. The Trip Reduction Rule includes an extensive menu of program elements that the tenant may consider including in its program, such as incentives for transit use, ridesharing, bicycle use, walking, compressed work schedules, and telecommuting.
- Tenants with at least 20 employees must provide one of three Commuter Benefits Programs to their employees: (1) a pre-tax option for transit pass purchase; (2) an employer-paid benefit with a minimum monthly value of \$72, which is the value of a San Francisco Muni 'A' Fast Pass, or reimbursement for equivalent vanpool privileges; or (3) an employer-provided shuttle.

The Airport Commission does not currently have full-time staff dedicated exclusively to the TDM program. Staff in the Landside Operations Department, including interns,

spend time working on program elements and working with airport tenants to monitor progress on their plans.

### SFO Employee Population

The following program elements are offered to all SFO employees to encourage them to commute by ridesharing, public transportation, and other privately operated HOV services.

- Carpool matching, vanpool matching, and public transportation trip planning is provided for travelers within the nine-county San Francisco Bay Area through a service called 511. Information on traffic conditions and for bicyclists is also provided. It is sponsored by an extensive list of public agencies, and led by the Metropolitan Transportation Commission, the California Highway Patrol, and the California DOT. It is available to the public by dialing 511 within the nine bay area counties or by Internet at [www.511.org](http://www.511.org). The Airport Commission subsidizes SamTrans Route 397, which is the only route in San Mateo County operating from midnight to 6 a.m. Since BART and Caltrain do not provide sufficient service hours to meet the commuting needs of SFO employees, the Airport Commission worked with SamTrans to provide a bus route with all-night service that serves SFO. It now runs from downtown San Francisco, travels the length of San Mateo County, and connects to the overnight route in Santa Clara County. The unrecovered operating expenses on Route 397 are subsidized by the Airport Commission, based on the percentage of total trips generated by the airport. In 2009, approximately 20% of ridership on the route was generated by the airport.
- Since the BART extension to SFO opened in 2003, airline employees have been offered a 25% fare discount on trips beginning or ending at SFO, but all other airport employees were not eligible for the discount. As a result of fare surcharges, the fare to ride BART to SFO is higher than riding it to the nearby Millbrae BART station. Over the ensuing years, the Airport Commission officially requested several times that BART offer the discount to all SFO employees. In 2009, BART increased the surcharge to the one-way fare between the Millbrae station and SFO by \$2.50. To avoid having employees pay the additional surcharge, and to encourage employees to use BART, the Airport Commission instituted a free shuttle bus service between the Millbrae BART station and SFO. The Airport Commission operated the shuttle bus for almost 18 months before BART agreed to waive the additional \$2.50 surcharge for all nonairline SFO employees. The Airport Commission discontinued the shuttle bus, and paid for the start-up costs associated with creating and implementing the new discount program for nonairline SFO employees. Airline employees retained their original 25% discount off the total fare, including surcharges.



- The Clipper Card is a universal fare card for public transit in the region. SFO is a location where the general public may add value to the Clipper Card. All Bay Area transit agencies are eliminating or have already eliminated paper passes in favor of the Clipper Card. This is a convenience for airport employees and air passengers.
- The privately operated scheduled bus operators offer commuter discounts to SFO employees. The Airport Commission encouraged the private bus operators to offer discounts to SFO employees using their services to and from SFO, and to accept Commuter Checks.
- The Airport Commission developed bicycle lanes on McDonnell Road, where some places of employment outside of the terminal complex are located. The project involved realigning the traffic lanes of the existing road to accommodate bicycle lanes.
- Bicycle racks are provided for SFO employees and the general public in the terminal complex, the rental car center, and the Domestic Terminal parking garage.

#### *Airport Commission Employees*

The following program elements are provided to Airport Commission employees only:

- The CCSF allows for its employees to purchase transit passes, tickets, tokens, and vanpool vouchers with pre-tax income. The vanpool vouchers are treated like regular checks when deposited at the bank. Debit cards may also be loaded remotely with pre-tax dollars to purchase transit passes and load the SFO employee BART Discount Cards to combine discounts. The BART Discount Cards are what airline employees use to receive their 25% discount on adult fares at the SFO station, and all other employees use to receive the \$2.50 discount on the adult fare (offsetting the additional fare surcharge).
- The Airport Commission provides six preferential carpool and vanpool parking spaces for its employees working in an office building outside the terminal complex.
- Airport Commission employees who do not drive alone to work are entitled to a guaranteed ride home by transit, taxi, or rental car up to four times per year if an emergency or unexpected overtime prevents them from getting home by their regular commute mode. They are reimbursed up to \$200 per trip. This is a benefit that is available to all CCSF employees.
- A limited number of Airport Commission employees are offered flexible work hours or compressed work weeks, depending on their job requirements, and the needs of management. However, reporting times are generally not flexible for positions related to airport operations.

SFO employers and employees have access to the benefits offered by the Peninsula Traffic Congestion Relief Alliance, the TDM agency for San Mateo County. Its mission is to reduce the number of SOV trips traveling within, to, and through San Mateo County. It is funded by the City/County Association of Governments of San Mateo County, the San Mateo County Transportation Authority, the Bay Area Air Quality Management District, and the Metropolitan Transportation Commission. It offers numerous incentives to employees to commute by public transportation or ridesharing, such as a limited number of free transit tickets, rebates for half the costs of the first three months of vanpooling, a fuel gift card for all new carpool participants, and subsidization of 75% of the employer's cost for a guaranteed ride home.

The partnerships with the Peninsula Traffic Congestion Relief Alliance and 511 have helped to stretch limited Airport Commission resources for encouraging ridesharing and public transit use. Both organizations use funding and grants that the Airport Commission may not qualify for, or may not have the expertise and time to pursue.

The state of California has a parking cash-out law, and all SFO tenants leasing employee parking spaces and providing them to employees at no charge, or for a fee lower than what the employer is paying, are required to adhere to this policy. If an employee is receiving parking as a benefit and does not want to use the space, the employer is required to pay the employee the value of the benefit. This does not apply to Airport Commission employees since the commission owns the parking spaces. However, the commission is currently considering implementing a voluntary parking cash-out program for employees who give up their parking space.

Employee commute benefits offered by SFO tenants include:

- United Airlines offers preferential vanpool parking at the United Maintenance Facility, a ridesharing program, and employee purchase of transit passes with pre-tax earnings. It offers the pre-tax transit pass benefit nationwide. United Airlines is currently working on implementing a nationwide parking cash-out program.
- Virgin America has a comprehensive commuter benefits program.
- Delta Airlines offers a parking cash-out program to its employees.

#### **Program Elements That Have Been Considered But Not Implemented**

It has been suggested that the Airport Commission charge its employees for parking to provide a disincentive for commut-

ing by SOV; however, it has not been implemented. Commission employees are currently offered parking free of charge, because SFO is located outside the CCSF, which is viewed as being an inconvenience for CCSF employees because of the limited transportation options offering competitive travel times compared with the SOV commute.

#### **Program Elements That Have Been Offered in the Past**

Prior to September 11, 2001, the Airport Commission sponsored an advertising campaign using print, radio, and television to encourage air passengers and employees to use high-occupancy and shared-ride modes to travel to SFO. A similar effort focused solely on reducing SOV trips to SFO has not been repeated because of funding constraints. SFO's Marketing Department now has a general SFO promotion program that includes partnering with public transit agencies.

The Airport Commission used to participate in annual Rideshare Week by holding an employee fair, but did not have sufficient staff resources to continue offering it.

#### **Information Dissemination**

The Airport Commission provides information to new employees on the Trip Reduction Rule and regional commuting options as part of employee orientation. This information is also provided in the employee benefits handbook. The annual Airport Commission Employee Appreciation Fair includes a table with commute information, and representatives from BART, SamTrans, the Peninsula Congestion Relief Alliance, and CCSF Department of the Environment are invited to attend. Information is also provided on a website for Airport Commission employees called SFO Connect.

Information is communicated to other SFO employees in a variety of ways. For instance, the Airport Commission provides information on commute options in the shuttle buses serving remote employee parking. The commission recently opened an employee cafeteria for SFO employees, and intends to post information on a bulletin board that will encourage tenant employees to ask their employers about the benefits they offer to encourage ridesharing and public transportation use. Notices are also sent to tenants through U.S. mail and by e-mail.

The Airport Commission does not currently use social media for communicating commute information to employees.

#### **Targets/Goals/Measurement**

The Airport Commission has established a goal for reducing employee commute trips as part of the Trip Reduction

Rule, and it applies to commission employees and airport tenants. It calls for continuous attainment of a reduction in average weekday trips per employee of 0.005 per year compared with 1994 baseline levels. The baseline in 1994 was 0.64 weekday trips per employee, and the goal for 2011 is 0.55 weekday trips per employee. A periodic employee survey is the primary tool for measuring progress. The last survey was conducted in 2005, and the number of weekday trips per employee was 0.61.

#### **Challenges and Lessons Learned**

Prior to September 11, 2001, the Airport Commission monitored tenant programs for compliance with the Trip Reduction Rule, and conducted airport-wide employee commute surveys on a regular basis. Until recently, it has not been active in enforcing the Trip Reduction Rule with regard to tenants because of staffing reductions; the rule was also considered an undue burden because of the economic impacts on the airline industry of the combined effects of September 11, 2001, the severe acute respiratory syndrome (SARS) outbreak, the implosion of the "dot-com" bubble in the Bay Area, and the more recent economic downturn. With the implementation of the Commuter Benefits Program requirements in 2009, the Airport Commission has resumed monitoring tenant progress on compliance.

However, the commission has limited resources for monitoring tenant compliance; in addition, it is sometimes difficult to get tenants to respond to commission requests related to the Trip Reduction Rule. Tenants often do not respond to requests unless they are accompanied by a letter signed by the Airport Director. It is also challenging to maintain a current tenant contact list, since the tenants and contacts change frequently.

The Landside Operations Department used to have a larger staff with additional support for the planner who was the part-time TDM manager. Because of budgetary constraints, the functions are now divided among several staff members and interns who spend part of their time working on the TDM program.

SFO employees working outside of the terminal complex are facing what is sometimes referred to as the "last mile" problem, with transit serving the general vicinity, but not pausing close enough to get them to and from work. BART serves the terminal complex only, and there is not a shuttle bus system that travels throughout the entire airport campus. Two SamTrans bus routes serve the terminal complex and McDonnell Road, where other places of employment are located, including the United Maintenance Facility. However, the bus cannot stop at one of the Airport Commission

buildings because the road is too narrow, and SamTrans does not think the demand warrants a stop.

The operating hours and geographic coverage of public transportation serving SFO limit the number of employees that may use it for commuting to SFO, yet SFO is the biggest employer in San Mateo County.

Often the time it takes for an SFO employee to commute to work by public transportation is significantly longer, and public transit costs greater, than commuting by automobile, which discourages employees from using public transportation. For example, travel on the local bus between San Francisco and SFO typically takes between 60 and 90 minutes, whereas the same trip by personal vehicle may take 30 minutes or less.

The monthly cost for SFO employees to use most public transportation options serving SFO exceeds the cost of a monthly parking permit.

#### **Future Plans**

The Airport Commission will be implementing a bike-share system during the summer of 2012, as one solution to the “last mile” problem for commission employees.

The Airport Commission is meeting with SamTrans to request that it reinstate airport-bound bus routes serving communities adjacent to SFO. Such routes were discontinued when BART was extended to SFO.

The Airport Commission is also updating its Transit First Policy.

#### **Advice Provided by the Airport Operator to Other Airports Beginning a New Program or Enhancing an Existing Program to Reduce Single-Occupant Employee Commute Trips**

SFO staff advised airport operators to assign at least one full-time person to be responsible for all programs and policy development related to TDM. This person might also be the airport operator’s contact with the local transit agencies, since TDM and transit services are linked. It is important that operators hold regular meetings with the tenant’s ETC, and require that tenants report changes in ETCs to the airport operator’s Transportation Demand Manager immediately. In addition, partner with other airport operator departments to make the implementation of TDM programs a shared responsibility and to provide TDM with more visibility within the airport.

Provide adequate funding for TDM programs, including full-time staffing. Use outside resources for desired services that already exist (i.e., the Peninsula Congestion Relief Alliance, 511, CCSF Department of the Environment) to avoid reinventing the wheel and to stretch limited resources.

Incorporate the tenant TDM requirements into the airport operator’s rules and regulations (or equivalent), including fines for noncompliance. This requires full support from the airport operator’s governing body. In addition, include the TDM program as part of an airport’s guiding environmental policies. Consider including TDM requirements in tenant leases.

#### **Interview Information**

The information for this case study was provided by San Francisco Airport Commission staff during the summer and fall of 2011.

## CHAPTER THREE

## EMPLOYEE COMMUTE OPTIONS STRATEGIES AND THE AIRPORT ENVIRONMENT

This chapter includes a description of ECO program strategies that have the potential to shift airport employees from the commute by SOV to modes that generate fewer vehicle trips per employee. Some of the strategies are being applied at the five case study airports included in this study (BOS, STN, LAX, PDX, and SFO), and some are being used by non-airport employers and employment centers that were reviewed for this study. In general, a program with one strategy will not make much of an impact on influencing commute choices; however, a combination of strategies tailored to the employee population being targeted has the potential to reduce the employee trip generation rate.

The strategies included in this chapter are being applied at an airport in which the airport operator was interviewed for this study, unless otherwise noted.

The Categorized Bibliography, in the section *Guidance on Employee Commute Options Program Development or Measurement of Benefits* of Appendix A, lists some documents on the development of an ECO program and measuring program benefits.

### INCENTIVES

There are a variety of strategies that provide incentives for employees to commute by alternatives to the SOV, many of which reduce the cost to the employee of commuting by other modes.

### Subsidies

Employers pay all or part of the employee cost to commute by public transportation, privately operated scheduled HOV modes, ridesharing, or bicycle.

#### Subsidy of Alternative Commute Modes

Children's Hospital & Regional Medical Center, Seattle, Washington, fully subsidizes the employee commute by all modes that are alternatives to the single-occupant commute, including the Seattle Water Taxi and rollerblading. Staff who drive alone to work must pay for parking, and park in one of the hospital's remote park & ride lots (Best Workplaces for Commuters<sup>SM</sup> Success Stories 2011).

### Provision of Vanpools

Vans are provided by the airport operator, program sponsor, vendor, or partner organization, for employee vanpooling to work. The leasing and maintenance costs, insurance, and sometimes the fuel costs are paid for by the airport operator, program sponsor, or partner organization, and participating employees pay a monthly fee, which may be subsidized by the employer. Ride-matching services are provided to the employee, as well as information on related benefits such as subsidies, preferential parking, and a guaranteed ride home.

#### Provision of Vanpools

Los Angeles World Airports (LAWA) leases 65 eight-passenger vans and charges the vanpool participants a monthly fare based on mileage traveled less the subsidies they are eligible for. The driver of the van participates free of charge in return for handling driving responsibilities and managing the vehicle. LAWA provides a \$60 per month vanpool subsidy to LAWA employees. In addition, the regional transit operator, Los Angeles County Metropolitan Transportation Authority (Metro), offers a \$50 per seat monthly subsidy for vanpools based in Los Angeles County that are 70% occupied and open to the public. LAWA employees pay their monthly vanpool fare with pre-tax earnings. In June 2011, there were 502 employees participating in the 65 vanpools, which is a 97% occupancy rate, and 55 of the 65 vanpools were eligible for the Metro subsidy.

### Pre-Tax Earnings

Employees may pay their portion of the cost to commute by public transportation, privately operated scheduled HOV modes, or vanpools with pre-tax earnings.

#### Pre-tax Earnings, Transit Subsidy, Guaranteed Ride Home

The Massachusetts Port Authority provides transit pass subsidies for its employees for 50% off the price of the transit pass up to \$100. This benefit also applies to ticket booklets for the Logan Express, the Boston Logan International Airport regional express bus system, and to the fares on the privately operated scheduled bus and van services. Employees may pay their portion using pre-tax earnings. Massport employees commuting by alternatives to the single-occupant auto are eligible for an emergency ride home.

### Transportation Discounts

Airport employees are provided a discount from the full fare on public transportation services or privately operated scheduled vans or buses.

### Parking Cash-Out

Rather than the employer's subsidizing parking, the employee is provided the equivalent amount of cash to pay for parking or to take an alternative to the single-occupant commute. Some employees will choose an alternative mode over parking if it is in their financial best interest.

### Work Schedules

For employees who do not need to be at their place of employment every day or at specific times of the day, work schedule options provide an opportunity for eliminating vehicle trips or reducing trips at certain times of the day.

### Telecommuting

For each day the employee who commutes by SOV is able to work from home, two one-way vehicle trips are eliminated at the airport.

### Compressed Work Week

Employees conduct their weekly duties in longer shifts over fewer days, resulting in fewer commute trips to the airport. Common variations of the compressed work week are working 80 hours over nine days in a 14-day period, or 40 hours over four days in a seven-day period.

#### Compressed Work Week

Sixty percent of the 150 Orange County employees working at John Wayne Airport (SNA), in Orange County, California, work 80 hours over a nine-day period, which eliminates one out of ten round-trip journeys to the airport compared with the traditional schedule of 80 hours over a ten-day period (personal communication, Maria Pope, Airport Environmental Engineer, County of Orange, Aug. 2011).

### Flextime

The employee may report to work later than the traditional start time and leave later, or start earlier and leave earlier. This would serve to shift the trips to another time of the day rather than reduce trips; however, the option of flextime may improve the possibilities for the employee being matched into a carpool or a vanpool. Flextime may also make public transportation more appealing if a different shift start or end time is a better match for public transportation service. In the

airport environment, there are many shift workers for which flextime is not a possibility.

### Rewards

There are a number of ways employees may be rewarded for commuting using alternatives to the SOV, including cash, vacation days, gift certificates, or raffles.

#### Cash

Employees are paid a cash bonus for using an alternative mode to commute. The terms of the payment may be structured in a number of ways, such as a payment for each day an alternative commute mode is chosen, or a monthly payment for commuting a minimum number of days in an alternative mode.

#### Cash Reward

In 2007, the Logan TMA at Boston Logan International Airport offered participants who shifted from driving alone to work to commuting by carpool, public transportation, walking, or bicycling, a commuter cash incentive of \$3 per day for up to 90 days. This was in addition to any transit subsidy or other incentives offered by their employer.

### Paid Leave

Employees earn a certain amount of additional vacation time based on the number of times an alternative commute mode was used over a period of time (Best Workplaces for Commuters<sup>SM</sup> Success Stories 2011).

#### Paid Leave

Aetna US Healthcare in San Ramon, California, provides the opportunity for employees who commute using alternatives to the single occupant auto to earn up to five vacation days per year. In addition to the vacation bonus, Aetna offers free bus passes, free shuttle rides, a guaranteed ride home, preferred parking, bicycle parking, showers, and lockers (Best Workplaces for Commuters<sup>SM</sup> Success Stories 2011).

### Goods and Services

Employees commuting by alternatives to the SOV earn points that may be redeemed for goods and services.

### Drawings

Employees are entered into a periodic drawing for prizes based their level of participation (Best Workplaces for Commuters<sup>SM</sup> Success Stories 2011).

### Prize Drawings

The employee commute options program provided by Nike Inc., located in Beaverton, Oregon, is called Traveling Responsibly via Alternative Commuting (TRAC). Employees commuting by alternatives to the single-occupant auto are entered in monthly and quarterly drawings for prizes with a value between \$20 and \$400. There are approximately 15 winners each month and 70 winners each quarter (Best Workplaces for Commuters<sup>SM</sup> Success Stories 2011).

## SUPPORTING STRATEGIES

The strategies in this category improve the viability of commuting by modes other than the SOV by providing alternatives or solutions to some of the circumstances for which the employee needs to drive alone to work.

### Ride-Matching Services

Employees are matched for carpools and vanpools, either through services provided by the airport operator, the ECO program sponsor, or by an outside organization. At a minimum, the airport operator or program sponsor promotes the ride-matching program to employees, and provides the employee with information on related benefits such as subsidies, preferential parking, and a guaranteed ride home.

### Guaranteed Ride Home/Emergency Ride Home

Employees commuting by alternatives to the SOV are provided with a ride home by taxicab or rental car, or reimbursement for transportation home, under circumstances in which the employee needs to depart the airport later or leave earlier than the normal departure time and cannot be accommodated by his/her regular commute option. There may be a limit on the number of times per year the employee is eligible for this benefit, or the amount of money spent on each trip.

### Guaranteed Ride Home

All City and County of San Francisco employees who do not drive alone to work, including Airport Commission employees working at San Francisco International Airport, are entitled to a guaranteed ride home by transit, taxi, or rental car up to four times per year if an emergency or unexpected overtime prevents them from getting home via their regular commute mode. They are reimbursed for the cost of the guaranteed ride home up to \$200 per trip.

### Preferential Parking for Carpools and Vanpools

Parking is provided for carpools and vanpools at a more desirable location in relation to the workplace than the overall employee parking supply. It may also be offered free or at a discount compared with the parking fee for the SOV.

## Transportation for Midday Trips

Employees may choose to drive alone to work because they need to make trips in the middle of the work day for business or personal reasons. To mitigate this, the employer may make transportation available for these trips.

### Business

The employer provides vehicles or bicycles for employees to use as needed for business-related trips during the workday.

### Personal

A car-sharing service is provided at the airport for employees to rent vehicles for the occasional short trip during the workday, such as a doctor's appointment. The employer may subsidize all or part of the service for employees based on their use of alternatives to the drive-alone commute. Alternatively, the employer may allow use of company automobiles for personal trips. The employer may also provide bicycles for short personal trips during the workday.

### On-Site Amenities

The provision of on-site amenities such as a dry cleaner, a gym, or a childcare facility allows the employee to accomplish some daily tasks on-site, eliminating the need for an automobile for certain tasks.

### Commuting by Bicycle

The provision of a bicycle infrastructure that allows a safe and comfortable commute by bicycle will serve as an incentive to employees who live within a certain distance of the airport. The employer may also subsidize bicycles for employees. This includes:

- Bicycle parking, such as bicycle racks and secure bicycle parking facilities
- Routes that are safe for bicycling on and in the vicinity of airport property
- Shower and locker facilities at the employment site
- Financial assistance for the purchase of a bicycle.

### Bicycle Parking, Repair, Locker and Shower Facilities

The Port of Portland provides its employees with a secure indoor bicycle storage facility for more than 50 bicycles at the Port headquarters building at Portland International Airport (PDX), covered bicycle parking areas adjacent to the north and south end of the PDX arrivals curb, and a fenced-in parking area available to all airport employees with security badges. The storage facility at the Port headquarters building includes a bicycle repair and assembly station and tools. Shower and locker facilities are adjacent to the storage facility.

### Discounted Bicycle Purchase

BAA Stansted employees may purchase a tax-free bicycle through BAA Stansted, and pay for it in installments through payroll deduction. This is the result of a government program that allows employers to provide bicycle and safety equipment to their employees as a tax-free benefit. The program reduces the price of the bicycle to the employee by as much as 50%. The employer pays for a bicycle, and leases it to the employee through payroll deduction until the employee has paid the price of the bicycle less taxes. The employer is eligible to apply for the tax rebate on the bicycle.

### DISINCENTIVES

Disincentives identified are related to the provision of employee parking. Because the fee for employees to park at a U.S. airport is typically free or lower compared with what an employee would pay to park in the downtown area, and often lower than what the employee would pay to use public transportation, there is no financial incentive to use public transportation or other alternative modes. An adjustment to the price to park, or to the parking location in relation to the workplace that costs the employee more money or time to drive alone to work, may cause the employee to reconsider commuting by alternative modes.

### Parking Pricing

U.S. airports often charge employees a monthly fee to park that is less than the cost to operate the parking space. The monthly fee to the employee could be increased to achieve cost recovery, or by an even greater amount, to discourage employees from commuting by SOV. One approach would be to set the monthly price of parking equal to or greater than the average cost of a monthly transit pass (Online TDM Encyclopedia 2011).

### Parking Location

The employee parking supply for SOVs is located so that there is a longer travel time between the parking space and the place of employment, compared with the time it takes to get

### Parking Location

Port of Portland employees have a choice of three places to park at Portland International Airport (PDX), with the most convenient location to the Port of Portland headquarters building being the most expensive for employees driving alone to work, as shown in the table below. The driver of a carpool is eligible to pay \$20 per month to park in the public parking garage versus the \$80 fee the SOV driver is assessed. Passengers in the carpool must purchase a monthly permit for the nearby surface lot, to use on days when they are not carpooling.

### Port of Portland Employee Parking Options

Facility	Distance to Headquarters	Monthly Parking Fee, SOV	Monthly Parking Fee, Carpool Participants
PDX Employee Surface Lot	2 miles	\$0	\$0
Port of Portland Employee Surface Lot	Walking distance	\$20	\$20 (passengers)
Public Parking Garage	Adjacent	\$80	\$20 (driver)

to the place of employment from parking spaces designated for carpool and vanpools or from the public transportation boarding and alighting point. For example, rideshare parking spaces are adjacent to the work site, and spaces for single-occupant commuters are located in a lot that requires a shuttle ride to the work site.

### MARKETING

A critical element of a successful ECO program is the provision of information on a regular basis that allows employees to understand what is available, how it benefits them, and how to participate. Information may be distributed in a number of ways:

- Printed materials such as brochures and posters on display in public places, including bulletin boards in places where employees congregate, in elevators, and in lobby areas.
- Employee newsletters that include topics related to alternative commute modes in every issue. These could be distributed in hard copy or electronically.
- Orientation materials for new employees.
- Campaigns to encourage employees to commute by alternatives to the SOV. Incentives or a slogan may assist in generating employee interest.
- Holding events to promote ridesharing, public transportation use, walking, and biking. They may be held as separate events or as part of an event that has a related theme, such as health, the environment, or bicycling.
- A website that provides information on alternatives to driving alone to work, with information on incentives and links to relevant resources, such as a trip planner provided by the regional public transportation authority or a carpool matching website.

- E-mail messages as needed to remind employees of what is available to them, to describe new benefits, or to alert them to promotions and events.
- The use of social media such as Facebook or Twitter to develop an online community for ECOs.

#### Campaign Slogan

In Columbus, Ohio, the Defense Finance & Accounting Service teamed up with the regional ridesharing organization to try to increase its 14% employee rideshare participation. They jointly launched a campaign called “Skip a Trip for Cleaner Air,” to increase awareness in the rideshare program (Best Workplaces for Commuters<sup>SM</sup> Success Stories 2011).

#### Marketing Strategy

Los Angeles World Airports (LAWA) informs LAWA employees at LAX about the Rideshare program through a new employee orientation, employee fairs, and an employee newsletter that is sent by e-mail, posted on the LAWA intranet, and distributed in hard copy to various work locations. The Rideshare office also posts articles in other LAWA newsletters. In addition, all LAX employees may learn about the Rideshare program through the Rideshare page on the LAWA website.

The LAWA Rideshare office currently hosts or participates in four to six events per year, including Bike to Work Week and a Haunted Halloween Open House called RideSCARE. Prizes are offered to employees who attend the fairs.

### PROGRAM MANAGEMENT

This includes the provision of dedicated staff, or a collective effort among employers responsible for an ECO program, to develop and adjust strategies, conduct outreach to employees, and monitor progress. Designated staff may be available at a location during certain hours to provide information to employees on commute options.

#### Dedicated Staff Provided by Employer

The provision of dedicated staff to provide employees with information, plan and administer program elements, develop partnerships with outside agencies, track employee commute patterns, and monitor progress ensures that there is a commitment to the program. Dedicated staff may also provide trip planning and ride-matching services. Designated staff of the airport operator may also conduct outreach to other airport employers to provide them with guidance on how to provide their employees with commute options, or to inform them of benefits that are available to their employees such as a regional ridesharing program.

### Collective Involvement Among Airport Employers

Often there are more than 100 employers located at medium and large hub airports. Their employees will face some of the same commute characteristics and challenges. Collective efforts among airport employers to encourage employees to commute using alternatives to the SOVs could yield better results than each employer working alone. Examples of such efforts could include the exchange of ideas on a formal or informal basis, pooling resources to develop initiatives and marketing materials, securing outside resources such as grants, or developing a mechanism for employees to communicate to form carpools and vanpools.

One structure for collective involvement is a TMA, typically a group of employers in a certain geographic area that work together to solve common transportation issues and pool resources to offer commute services and benefits to member employees (Online TDM Encyclopedia 2011). The individual employers may also offer some benefits to their employees in addition to the TMA. In the airport environment, this could be a TMA exclusively for airport employers or a TMA covering a larger geographic area that includes the airport.

#### Central Location

An office is provided where employees may obtain information on the ECO program. Other activities may include trip planning, ride-matching, and the distribution or sale of public transportation passes.

#### Dedicated Staff and Central Location

BAA Stansted provides an Airport Commuter Centre at London Stansted Airport (STN), where two full-time employees provide STN employees with information on commute alternatives to the single-occupant auto, provide trip planning and rideshare matching services, and sell public transportation passes.

### PROVISION OR ENHANCEMENT OF SCHEDULED TRANSPORTATION SERVICES

The airport operator or program sponsor works with transportation providers to arrange additional scheduled publicly or privately operated transit service for the airport employee commute, which may include encouragement of new or enhanced services, financial assistance for a new or existing service, the provision of a new service, or a link to the transit system.

#### Communication

The airport operator or program sponsor works with existing transportation operators to encourage them to make schedule changes, increase service frequency, or add routes to better



accommodate airport employee schedules. The transportation operator may also be asked to expand the service area of a bus route to accommodate other airport employment areas in addition to the passenger terminal area.

### *Subsidies*

The airport operator or program sponsor provides a subsidy to a public transportation operator or a private scheduled HOV operator for the provision of additional service hours or frequency on an existing route, or for a new service to accommodate airport employees. The airport operator may see additional benefit in providing the subsidy if the service will accommodate both airport employees and air passengers.

#### **Subsidy of Public Transportation Route**

The San Francisco Airport Commission subsidizes the only bus route that operates between midnight and 6 a.m. in San Mateo County, where San Francisco International Airport (SFO) is located. Several years ago, the Airport Commission requested the local transit operator, SamTrans, to provide a bus route with all-night service to accommodate the SFO employee commute. As a result, SamTrans Route 397 now travels the length of San Mateo County. The Airport Commission subsidizes the unrecovered expenses on Route 397, based on the percentage of total trips generated by the airport. In 2009, approximately 20% of ridership on the route was generated by SFO.

### *Initiating New Service*

The airport operator or program sponsor may initiate new service if existing transportation operators are unable or unwill-

ing to do so, or to customize the route for airport employees. The service may function as a connection between the airport and a station served by the existing transportation system, a route serving neighborhoods with a large concentration of airport employees, or transportation between the terminal area and other airport employment sites.

#### **New Service**

**Employee Shuttle Bus to Supplement Public Transportation Service**—The Massachusetts Port Authority provides funding for the Sunrise Shuttle, an early morning shuttle service that serves an area in East Boston, which is the community surrounding Boston Logan International Airport (BOS), where a large concentration of BOS employees reside. The shuttle provides service every half hour between 3 a.m. and 5:30 a.m., which is the period prior to the start of public transportation service. It serves as a public transportation option for employees with early morning work start times. Employees pay \$1 per trip and other users pay \$2 per trip. During 2010, there were between 500 and 750 passengers per month riding the Sunrise Shuttle. Massport launched a second route in another part of East Boston and the adjacent community of Winthrop in October 2011.

**Shuttle Bus to Transit Station**—The Georgia Power/Southern Company in Atlanta, Georgia, provides an employee shuttle between the work location and the nearest transit station (Best Workplaces for Commuters<sup>SM</sup> Success Stories 2011).

**Employee Bus System**—Google, located in Mountain View, California, operates a system of buses to transport its employees between home and work. During 2007 Google operated 32 buses, each with a capacity for 37 passengers, providing 132 trips per day. At the time, the system served more than 12 cities, located up to 54 miles from Google (Helft 2007).

## CHAPTER FOUR

## CHALLENGES IN THE PROVISION OF AIRPORT EMPLOYEE COMMUTE OPTIONS PROGRAMS

This chapter examines the common challenges to providing viable alternatives to the commute by SOV for airport employees, with potential program elements or actions that may mitigate the challenges. These are the challenges the airport operators and airport area TMAs contacted for potential inclusion in this study are faced with in providing ECO programs unless otherwise noted.

### PUBLIC TRANSPORTATION SYSTEM

Public transportation options serving the airport may

- not provide sufficient hours of operation to accommodate employee schedules,
- not provide the geographic coverage for locations where airport employees reside,
- only provide service for employees that work within walking distance of the terminal area, or
- not offer travel times that are competitive with commuting by automobile.

Table 15 presents the challenges associated with providing public transportation to airport employees, and a menu of potential solutions.

### EMPLOYEE PARKING SUPPLY

At many airports, employees are being provided with free or low-cost parking, which serves as a disincentive for the employee to consider commuting using alternatives to the SOV. This includes instances where the out-of-pocket cost to the employee to use public transportation is greater than the out-of-pocket cost of employee parking.

Furthermore, airports appear to have a sufficient amount of employee parking to accommodate the single-occupant commute. In late 2008 and early 2009, operators of eight large hub, five medium hub, and two small hub airports were interviewed as part of ACRP 10-06, *A Handbook to Assess Impacts of Constrained Airport Parking*. The few airport operators who experienced a constrained employee parking supply reported that the problems were primarily resolved by adding capacity (Ricondo & Associates, Inc. 2010).

The fee the airport operator charges for employees to park in employee facilities often results in a revenue stream that

does not cover the cost of the operation when considering the full cost to provide parking, including capital, maintenance, and operating costs of the parking facility, and the cost to run associated shuttle bus service. There are a variety of reasons for the airport operator to charge fees that are lower than cost recovery, including:

- Airport employers located at more than one U.S. airport tend to compare the cost of parking between airports, putting pressure on the individual airport operator to keep prices low.
- Employers may believe that many employees drive to work because public transportation alternatives may not be viable. Therefore, higher parking fees may financially penalize the employee who has no reasonable alternatives to the driving alone. Low wage earners who have the choice between working at an airport, working in a downtown area with a variety of public transportation options, or working at a location with free parking, may be deterred from working at an airport with expensive employee parking.
- Airport operators may not be aware of the full cost of providing employee parking based on how their accounting cost centers are structured.
- Employee parking spaces or rates may be included in the terms of certain tenant leases.

An additional problem is that employers at the airport may subsidize parking for their employees. In some instances, the provision of employee parking may be included in collective bargaining agreements.

In addition, at many U.S. airports, a certain amount of parking is provided to employees in the public parking areas adjacent to the terminal area, which reduces capacity for air passengers and lowers revenue potential. Potential solutions include:

- Raising the price of parking to the point where alternatives to the SOV become more attractive to employees. For example, the price of parking would be greater than or equal to the cost of a monthly transit pass.
- Offering free or low-cost conveniently located parking spaces for rideshare employees.
- Locating employee parking farther from employment locations to increase travel time to the workplace for the SOV commuter.

TABLE 15  
CHALLENGES AND POTENTIAL SOLUTIONS FOR THE PROVISION OF PUBLIC TRANSPORTATION  
TO AIRPORT EMPLOYEES

Challenge	Potential Solutions										
	Carpools	Vanpools	Dedicated Bus/Van Service <sup>1</sup>	Link to Public Transportation	Telecommuting	Compressed Work Week	Bicycle <sup>2</sup>	Walk <sup>2</sup>	Increase Service Frequency <sup>1</sup>	Provide Bus/Van Service to Reduce Transfers <sup>1</sup>	Extend Existing Services to Other Employment Locations <sup>1</sup>
Employees Reside Outside of Public Transportation Area, Residences Widely Dispersed	√	√			√	√	√	√			
Employees Reside Outside of Public Transportation Area, Cluster of Residences in a Defined Area	√	√	√	√	√	√	√	√			
Public Transportation Hours of Operation Do Not Serve Work Schedules, Residences Widely Dispersed	√	√			√	√	√	√			
Public Transportation Hours of Operation Do Not Serve Work Schedules, Cluster of Residences in a Defined Area	√	√	√		√	√	√	√			
Commute Time by Public Transportation Is Significantly Longer Than by Private Auto Because of Low Service Frequency	√	√			√	√			√		
Commute Time by Public Transportation Is Significantly Longer Than by Private Auto Because of the Number of Transfers	√	√			√	√				√	
Public Transportation Does Not Serve Employment Locations Away From the Terminal Area	√	√	√		√	√	√				√

Prepared by DMR Consulting, Nov. 2011.

<sup>1</sup>Funded by public transportation operator, airport funding source, other public entity, or grants. Potential airport funding sources include: the airport operator, airport employers, or airport employees.

<sup>2</sup>For shorter commutes.

- Working with airport employers to encourage them not to subsidize parking.
- Offering a parking cash-out program, where employees are provided the cost of parking to use for either parking or alternatives to the SOV.

**EMPLOYEE PARTICIPATION**

An ECO program may experience low employee participation. Potential reasons may be that employees are not aware of the program, the program elements offered are

not viable for the employees being targeted, or insufficient incentives or disincentives are being offered to induce employee mode shift.

To boost employee awareness, information may be disseminated in the variety of ways outlined in chapter three, under Information Dissemination in each case study.

Information from employee travel surveys will assist the airport operator or TMA in developing program elements that accommodate airport employees based on their needs, and in

the development of program incentives and disincentives. Data from periodic surveys will also help with developing goals and measuring progress. Information from employee focus groups may be helpful as supplementary information. Employee surveys and focus groups are described further in this chapter under Availability of Data.

### **AIRPORT EMPLOYER PARTICIPATION**

In the United States, the airport operator typically employs less than 10% of the airport employee population. Although a comprehensive ECO program offered by the airport operator to its employees may result in a high percentage of employees commuting by alternative modes and a significant reduction in average vehicle trips generated by employees, it will have a smaller impact on the average vehicle trip rate generated by the total airport employee population.

Some airport employers offer incentives to their employees to commute by alternative modes, and these efforts contribute to a reduction in the average airport employee vehicle trip generation rate. The airport operators interviewed in this study were able to identify some but not all of the employers offering ECO programs, and they were generally not aware of the details of their programs.

For the airport operator that would like information on the extent to which commute options programs offered by all airport employers are reducing the airport employee vehicle trip generation rate, communicating with the various airport employers to determine what they are offering, and how they are measuring progress, may be helpful.

If the goal is for a reduction in the airport employee vehicle trip generation rate by all airport employees, the airport operator may choose to make airport employers aware of what it offers to its own employees and encourage them to offer similar options. This would include information on programs that are available through other organizations, such as regional ride-matching services. Or the airport operator may choose to explore the potential for forming a collective effort among airport employers, with optional or mandatory participation. There are many ways in which the collective effort could be organized; for example, information-sharing at airline station managers' meetings or airport tenants' meetings, or through formation of a TMA.

### **AVAILABILITY OF DATA**

The airport operator may not have key pieces of information to use in the development of, or as justification for, an ECO program. Such information is also important for the development of goals and measurement of progress.

#### **Total Airport Employees**

At most airports, a percentage of employees do not have security badges. If the airport operator is interested in reducing

the trip generation rate of the airport employee population, an employee count is vital. This information may be obtained through requests from each airport employer. By collecting the information on the number of employees with and without security badges, the information on the number of employees may be crosschecked with the information from the security badge file maintained by the airport operator.

#### **Employee Demographics and Commute Characteristics**

These are obtained through the administration of a periodic airport employee survey, ideally of the airport employee population, including employees with and without airport security badges. Key pieces of information include commute mode by day for a certain timeframe (minimum of seven days), work start and end times, vehicle occupancy, location of residence, employment location, and employer and employment classification by relevant airport employment categories. This includes, at a minimum, a distinction between flight crew members, office personnel, operations personnel, and shift personnel. Additional useful information includes employer commute benefits provided, whether parking is subsidized, trips made during the workday, vehicle ownership, salary, and employee overtime requirements. The employee commute survey will provide useful information for evaluating employee needs in relation to available public transportation options, and for the development of program elements to motivate employees to choose alternatives to driving alone to work. This information includes employee mode share, employee trip origins, employee work locations, and the percentage of airport employees that commutes on a daily basis. The information on commute mode by day of the week, along with work start and end times, allows an analyst to estimate the number of employee vehicle trips generated by the airport by day of the week and by time of day.

#### **Employee Commute Preferences**

Information from focus groups may provide useful information for development of questions to be included in an employee travel survey, or as helpful supplementary data to the employee travel survey, for the formulation and refinement of program elements for an ECO program. Groups of approximately six to ten employees would be asked questions about their commute preferences, the reasons they do or do not use alternatives, and what types of incentives or services would cause them to choose alternatives to the commute by SOV.

#### **Vehicle Trips**

Airport employees generate a significant number of vehicle trips to the airport on a daily basis. Information on the number of vehicle trips and the percentage of airport trips generated by airport employees for a period of time, such

as an average day, or an average weekday over a one-week period in a typical or peak month, will provide the airport operator with information on employee traffic impacts. This information may help to justify (or not) development or enhancement of an ECO program. This information may be estimated from an airport employee commute survey, or may be estimated with traffic counts near employee parking facilities.

### **Parking Spaces Provided by Airport Employers**

An inventory of parking spaces provided by employers through leasing arrangements is useful if the airport operator wishes to encourage or mandate airport employers to reduce vehicle trips generated by their employees.

### **Employee Commute Options Programs Offered by Airport Employers**

As mentioned in the previous section, if the airport operator is interested in a reduction in the trip generation rate by all airport employees, it will need information on programs being provided by all airport employers, and how progress is measured.

## **FUNDING**

The airport operator may not place priority on allocating funds, or may not have funds to support elements of an ECO program, such as subsidized public transportation passes, a vanpool program, supplemental transportation services, or promotional materials.

Potential solutions to providing funding and program resources include:

- Explore resources that are available from other local, regional, state, and federal organizations that may be incorporated into the airport ECO program. Examples include ride-matching services, availability of promotional materials, and one-time or ongoing subsidies for using alternative commute modes.
- Apply for grants to fund program elements from local, regional, state, and federal sources. One example is a Job Access and Reverse Commute grant (JARC), offered through the FTA. Transportation projects that provide public transportation options for low-income employees to and from jobs, for employment-related activities, and for reverse commuting are eligible to compete for JARC funding (“Job Access and Reverse Commute Program” 2011).
- Develop or identify a guaranteed funding source for the ECO program. An example of a potential funding source is the revenue from an increase in employee or air passenger parking rates.

By comparing the broader economic impacts of the estimated financial and nonfinancial costs of not providing program elements with the estimated financial and nonfinancial costs and savings that may be realized by providing a program, the airport operator will have more information for determining the level of priority that is placed on its ECO program. Nonfinancial costs include vehicle trips generated, air quality impacts, fuel consumption, and the impacts to the local community of airport-generated traffic. Nonfinancial benefits include contributing to employee well-being, goodwill in the local community, and a reduction in vehicle trips generated, air quality impacts, and fuel consumption.

### **Grants**

The Dulles Area Transportation Association (DATA), which is a TMA located in a 160-square mile area that includes Washington Dulles Airport (IAD), used a grant from the Virginia State Department of Rail and Public Transportation to conduct an airport-wide employee survey at IAD. The survey was conducted from September through October of 2011. DATA will analyze the survey results to determine IAD employee commute patterns, and develop program elements for an airport employee commute options program. This will include planning a transportation service for IAD employees that is eligible for a FTA Jobs Access and Reverse Commute (JARC) grant, since some of the IAD businesses have employee retention problems due to poor public transportation access at IAD (personal communication, Doug Pickford, DATA, Sep. 2011 and July 2012).

### **Guaranteed Funding Source**

To encourage the use of public transportation and ridesharing and increase available public transportation options for air passengers and employees, BAA Stansted introduced a Passenger Transport Levy (PTL) fund at London Stansted Airport in 1999, which utilizes approximately 31p from every passenger car park transaction and £10 from every annual staff car park pass issued. This equates to between £600,000 to £800,000 annually, that is currently used for supporting the Airport Commuter Centre, funding new bus services for up to three years, supporting additional hours of service on local public transportation routes, providing employee shuttles, administering ride-matching and public transportation passes, developing an iPhone/Android application, and marketing.

### **Funding Source for Public Transportation Use**

Merck & Co. employees located in Boston are subsidized for their entire cost of commuting by public transportation with the revenue raised from on-site parking garage fees. Sixty percent of employees commute by public transportation (Profiles of Employer Sponsored Transportation Programs 2011).

## CHAPTER FIVE

**CONCLUSIONS**

The purpose of this study was to determine what is known about airport employee commute patterns and commute modes, what programs are being offered to airport employees to encourage them to use alternatives to the drive alone to commute to work, how progress is measured, what is known about the effectiveness of airport employee commute options (ECO) programs, what the challenges are for the providers of such programs, and to review some ECO programs offered by non-airport employers for program elements that may have applicability in the airport environment.

**SUMMARY OF FINDINGS**

The literature search and review conducted in developing the sample for this study confirmed that very few U.S. airport operators provide comprehensive ECO programs for their employees. From the 16 airport operators and 3 transportation management associations (TMAs) that were contacted as potential candidates for case study development, it was determined six airports had comprehensive employee commute options programs.

The airports operators interviewed for this study are subject to regulations and commitments for which employee commute options programs are either required or are a logical course of action for the airport operator. The review and interviews indicated the benefits of the ECO programs extend beyond satisfying such requirements, resulting in shifts to higher-occupancy modes from the single-occupant commute, a reduction in vehicle trips generated by employees and the associated environmental benefits, and enabling airport employees to choose not to drive alone to work by providing them with more viable options for commuting.

The airport operator is directly responsible for a small proportion of total airport employees. Employees of the four U.S. airport operators interviewed as part of this study represented between 5% and 8% of the airport employee population. Therefore, although airport operators with active, ECO programs may be successful in making a significant reduction in the average vehicle trips generated by their own employees, the programs are responsible for a smaller reduction in the average vehicle trips generated by the total airport employee population.

The largest ten employers at three of the case study airports employed between 40% and 51% of employees.

Although there are airport employers that offer ECO benefits or programs, no airport operator interviewed was aware of all the employers based at its airport that offered ECO benefits. When airport operators were aware of employers that offered such benefits, they were not aware of the specifics of their programs.

- Airport employee surveys are conducted at four of the airports on a regular basis to understand employee commute patterns.
  - The operators of Boston Logan International Airport (BOS) and London Stansted Airport (STN), Massport and BAA Stansted, respectively, collect information for all airport employees.
  - At Los Angeles International Airport (LAX) and at Portland International Airport (PDX), employee commute surveys are administered exclusively to employees of the airport operator.
  - The employee commute surveys at LAX, PDX, and STN have been administered in a consistent manner, allowing for the identification of changes in employee commute patterns over time.

The airport operators interviewed were missing some data that would assist them in furthering their employee commute options programs. They were not aware of:

- The number of employees without security badges who work at their airport. The count from the airport security badge file does not provide the total airport employee count.
- The proportion of employees that work within walking distance of the airport terminal area. This information is necessary to understand the number of employees that may be accommodated by scheduled HOV options serving the terminal area, as well as the number of employees that cannot be served by such commute options.
- The number of vehicle trips or the percentage of airport vehicle trips generated by the airport employee population.
- The number of employee parking spaces provided by tenants through leases.

The ECO programs from the five case study airports incorporate resources from outside organizations that offer

assistance with ride-matching, promotional materials, or provide some financial resources and human resources.

At the U.S. airports interviewed, ECO programs are not expanding as a result of funding constraints.

All of the airport operators interviewed are subsidizing or providing scheduled HOV service to the airport that benefit airport employees:

- Massport and the City and County of San Francisco Airport Commission, which operates San Francisco International Airport (SFO), supply operating subsidies to a scheduled HOV route serving the airport that is provided by the regional transit operator.
- BAA Stansted provides funds for up to three years to enhance existing scheduled HOV services or start new ones.
- Massport funds an early morning shuttle service to BOS to transport employees in two surrounding communities to work before the start of the public transportation system.
- The Port of Portland provided a contribution to the cost of extending the MAX light rail line into PDX.
- Massport and Los Angeles World Airports operate express bus systems that provide nonstop service between the airport and communities in the airport market area.

Los Angeles World Airports sponsors a vanpool program with 65 vans that has a 97% occupancy rate.

BAA Stansted has a fund that is used to pay for elements of the employee commute options program, the Passenger Transport Levy (PTL), which is generated by a portion of passenger and employee parking revenue. One of the program elements the PTL is used for is the subsidization of existing and new scheduled HOV services.

The U.S. airport operators interviewed indicated public transportation services provided to and from the airport may not offer sufficient hours of operation to accommodate employee schedules, may not provide the geographic coverage for locations where airport employees reside, may supply service that accommodates only the employees that work within walking distance of the terminal area, or may not offer travel times that are competitive with commuting by automobile.

At some of the case study airports, the cost of employee parking is less than cost of public transportation if the airport operator or airport employer does not offer a sufficient public transportation benefit. Furthermore, at some of the airports, the revenue the airport operator collects from employee parking fees is not sufficient to cover the costs of the employee parking operation and shuttle buses.

The availability of options to the single-occupant vehicle (SOV) commute for airport employees may help with employee recruitment and retention.

- LAWA Rideshare staff members receive inquiries from potential LAX employees who are exploring their commute options before accepting a job at LAX. This suggests that some prospective employees might not work at LAX if viable alternatives to the commute by SOV were not available.
- The Dulles Area Transportation Association (DATA), the TMA located in a 160-square mile area that includes Washington Dulles Airport (IAD), indicated that some of the IAD businesses have employee retention problems because of poor public transportation access at IAD. DATA intends to analyze IAD employee commute survey data to develop initiatives to address this problem.

#### SUGGESTIONS FOR FURTHER RESEARCH

- Prepare a Guidebook on How to Develop an Airport-wide Employee Commute Program

Building upon information in this study, collect additional information and conduct research to prepare a guidebook on how to develop an airport-wide employee commute program, establish program goals, determine available resources, generate airport employer and employee interest, estimate benefits, and measure progress.

Interview a sample of airport employers about what information and incentives they offer their employees to shift to alternative commute modes, a sample of airport employers that do not offer employee commute programs to determine why, and airport employers in both categories with operations at multiple airports. Determine what would motivate airport employers to offer more employee commute options strategies to their employees, or to work jointly with the airport operator and other airport employers to reduce the number of airport-wide SOV commute trips. Interview some airport operators to determine what would motivate them to participate in a cooperative effort with airport employers. Use this information as the basis to explore models for airport employer involvement in cooperative efforts such as a TMA. This would include interviewing representatives from a sample of TMAs outside of the airport environment. In addition, research successful cooperative efforts among airport employers, such as a green initiative or a customer service program, that offer experience on how airport employers have worked collectively in ways that may have applicability to the organization and operation of an airport-wide employee commute program with

participation by multiple employers. Provide information in the guidebook to assist airport operators and employers in understanding the financial and non-financial impacts of an ECO program, including the development of a template for evaluation of program elements based on potential changes in mode share compared with economic, environmental, and quality of life factors.

- Develop a Benchmark Airport-Wide Employee Survey Instrument and Data Collection Methodology

Findings from this study indicate it is uncommon for U.S. airports to conduct a survey of the total airport employee population, which means airports collectively

have little experience with airport-wide employee surveys. A benchmark airport-wide employee survey would be useful to airport operators who would like to develop or enhance an employee commute options program. This would involve development of a benchmark employee survey, market-testing at an airport, and analyzing the results to determine employee commute patterns at the airport. The survey instrument, survey administration and analysis methodology, and lessons learned would be presented in a manual.

This would include development of methods on how to determine the number of vehicle trips generated by employees so airport operators may understand their contribution to airport traffic.



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## APPENDIX A

### Literature Search

An online literature search was conducted using TRIS and the Google search engine. The consultant also contacted representatives at Airports Council International, the American Association of Airport Executives, the Association for Commuter Transportation, the TDM program at the Center for Urban Transportation Research, University of South Florida, and the Transport Studies Group, Department of Civil and Building Engineering at Loughborough University in the United Kingdom.

The search was primarily focused on airport employee commute programs and transportation management associations, with a secondary search on commute programs provided by non-airport employers. Pertinent results are included in the bibliography. The bibliography is presented in two ways:

1. Alphabetical order
2. By the following categories:
  - Airport Related
  - Employee Commute Programs and Strategies, Not Specific to Airports
  - Guidance on Employee Commute Options Program Development or Measurement of Benefits
  - Public Transportation Related
  - Regulatory

Since employee commute programs and transportation management associations are well documented, there are a limited number of entries included in the bibliography.

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## **APPENDIX B**

### **Interview Form**



Airport Operator Interview Form  
August 2011

ACRP Synthesis 11-06-03: Exploring Airport Employee Commute  
and Parking Strategies

**Conducted by:**



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## I. Employee Population

Number of airport employees employed by airport operator

Total number of airport employees (including tenants and vendors)

What is the source for this count?

Who are the largest employers at the airport?

Approximately what percentage of total airport employees are issued security badges?

What percentage of total airport employees work in the terminal area, or within walking distance of the terminal area?

## II. Employee Mode Share and Demographic Information

Are surveys conducted by the airport operator or another entity to determine how employees commute to the airport, work schedules, and residence locations?

If so, is the survey for the entire employee population or for employees of the airport operator?

How was the survey conducted?

What was the sample size?

When was the survey conducted, and what was the impetus for conducting the survey?

How often are employee surveys conducted?

**Please provide a copy of the survey instrument. Please also provide a copy of the survey results, if available.**

If an employee commute survey is not conducted, have you ever considered conducting one?

Please provide the mode share distribution of the total airport employee population or employees of the airport operator [for example, drive alone, carpool/vanpool, transit (bus, train, etc.), bike/walk, other]. If data are not available, please provide us with an estimate.

How was this information obtained?

What are the operating hours of the airport, and approximate hours that (all) employees are staffed at the airport?

Please identify the approximate timeframe that the most employees are working at the airport. Approximately what percentage of the employee population is working at the airport during this timeframe?

Do you have information on the geographic distribution of all employee residences? (It is not necessary to provide it.)

If so, how was this information obtained?



### III. Commute Ordinances or Goals

Is there any kind of regulation or ordinance imposed by a regulatory body that requires the airport operator to monitor, report on, or offer programs to reduce employee vehicle trips generated to the airport/workplace (or increasing employee transit mode share)?

If so, please describe.

Please provide contact information for the regulatory body so we may obtain further information.

Does the airport operator have its own goal for:

- Reducing employee vehicle trips or employee VMT generated to the airport
- Increasing employee transit mode share
- Reducing emissions or greenhouse gases
- Eliminating employee parking spaces or permits?

If so, please describe.

### IV. Employee Commute Programs

The following table includes a menu of programs and incentives that may be provided by employers to encourage employees to commute by means other than the single occupant auto. For each that applies, please fill in as many columns as possible.

Program	Program Sponsor (i.e., airport operator, TMA, etc.)	Available to Employees of Airport Operator	Available to Other Airport Employees (please identify: for example, all; airlines; terminal workers)	Program Description (if necessary, please elaborate outside of the table)	Cost to Employee	Cost to Airport Operator	Cost to Others
Transportation Management Association							
Carpool Matching (please describe method)							
Preferential Carpool Parking							
Other Incentives for Carpooling (please describe)							
Vanpool Matching							

Program	Program Sponsor (i.e., airport operator, TMA, etc.)	Available to Employees of Airport Operator	Available to Other Airport Employees (please identify: for example, all; airlines; terminal workers)	Program Description (if necessary, please elaborate outside of the table)	Cost to Employee	Cost to Airport Operator	Cost to Others
Preferential Vanpool Parking							
Provision of Vans							
Vanpool Subsidies							
Guaranteed Ride Home							
Free or Discounted Transit Passes							
Reimbursement for Transit Passes							
Discounted Fares on Privately Operated Vans or Buses							
Transportation Options Provided for Employees							
Availability of Autos During Workday (i.e., Zip Car, airport fleet)							
Bike or Walk Subsidies							
Bicycle Racks							
Bicycle Lockers							
Showers/Lockers for Bikers and Walkers							
Bicycle Facilities and Improvements							
Nonmonetary Incentives (drawings, extra vacation, etc.)							

Program	Program Sponsor (i.e., airport operator, TMA, etc.)	Available to Employees of Airport Operator	Available to Other Airport Employees (please identify: for example, all; airlines; terminal workers)	Program Description (if necessary, please elaborate outside of the table)	Cost to Employee	Cost to Airport Operator	Cost to Others
Improvements to Transit or Private Services Specifically for Employee Commute							
Telecommuting							
Compressed Work Weeks							
Flextime							
Staggered Shifts							
Initiatives with Non-airport-Related Employers in the Vicinity							
Other—Please Describe							
Other—Please Describe							
Other—Please Describe							

Approximately how much money in total is spent by the airport operator on an annual basis to offer these programs?

How many FTEs are working on these programs?

If you do not offer some of the programs above to the total airport employee population, have you considered doing so?

Do you have an employee commute program operating plan or business plan? (Could you share it with us?)

How do you make employees aware of these programs?

Is social media used to reach out to employees in this context?

How do you measure participation in and success of these programs?

Are you happy with participation in these programs?

What has been tried in the past to encourage employees to commute by modes other than the single occupant auto? Why was it discontinued?

What has been considered but not implemented? What are the reasons it has not been implemented?

Is anything being considered for the future?

Are there resources available from outside agencies or organizations that assist you in providing employee commute options (regional ridesharing organization, TMA that covers a larger boundary than the airport, MPO, etc.)?

Please identify any airport employers (airlines, rental car operators, TSA, etc.) you are aware of that are offering programs or incentives for employees to commute by means other than the single occupant auto.

**V. Airport Operator Concerns**

What are your challenges and concerns with regard to offering commute programs to employees?

What are your concerns about the employee commute (trips generated, emissions, employee retention, parking supply, financial, etc.)

Are there lessons learned that you would like to share?

**VI. Parking Supply**

Total number of employee parking spaces controlled by airport operator (locations with at least 100 parking spaces):

Facility Name/Location	Surface or Structure	Employee Population (specific employers, work location, etc.)	Employee Space Count	Transportation to Workplace Required (i.e., Shuttle, APM)	Exclusively for Employees?	Employee Fees
<b>Total Space Count</b>						

What is the approximate number of employees (in aggregate) that are allowed to park in the inventory described in the table?

Considering the costs to operate and maintain the inventory described in the above table, including the costs of operating shuttle operations between the facilities and places of employment, plus revenue received from employee parking fees, what is the net cost to the airport operator of the employee parking operation?

If any of the above parcels of land are desirable for a more economically productive use, please elaborate.

Is any employee parking accommodated in air passenger parking facilities?

If so, approximately how many employees, what types of employees, and what are they paying?

Are they displacing air passengers from parking in the facility?

What are your challenges in the provision and management of the employee parking supply?

Number of airport employee parking spaces controlled by other entities (tenant leases, etc.).

## **VII. Vehicle Trips Generated**

Approximately how many vehicle trips are generated per day by the total airport employee population? (What timeframe was this for?—i.e., time of year, average day, average weekday, etc.)

What percentage of total vehicle trips generated by the airport does this represent?

How was this information obtained?

## **VIII. Other**

Please provide the most recent air passenger mode share for origin and destination passengers.

How was this information obtained?

## Abbreviations used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI-NA	Airports Council International-North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation