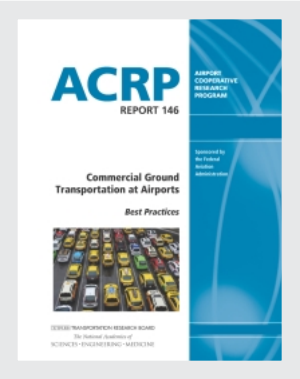

Commercial Ground Transportation at Airports: Best Practices

DETAILS

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LeighFisher Inc., Tennessee Transportation and Logistics Foundation, GateKeeper Systems, and Merriwether & Williams Insurance Services; Airport Cooperative Research Program; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP REPORT 146

Commercial Ground Transportation at Airports

Best Practices

LeighFisher Inc.
Burlingame, California

IN ASSOCIATION WITH

Tennessee Transportation and Logistics Foundation
St. Louis, Missouri

GateKeeper Systems
Eagan, Minnesota

Merriwether & Williams Insurance Services
San Francisco, California

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AIRPORT COOPERATIVE RESEARCH PROGRAM

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). ACRP carries out applied research on problems that are shared by airport operating agencies and not being adequately addressed by existing federal research programs. ACRP is modeled after the successful National Cooperative Highway Research Program (NCHRP) and Transit Cooperative Research Program (TCRP). ACRP undertakes research and other technical activities in various airport subject areas, including design, construction, legal, maintenance, operations, safety, policy, planning, human resources, and administration. ACRP provides a forum where airport operators can cooperatively address common operational problems.

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) 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 Academy of Sciences formally initiating the program.

ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

Research problem statements for ACRP are solicited periodically but may be submitted to TRB by anyone at any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

Once selected, each ACRP project is assigned to an expert panel appointed by TRB. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including airport professionals, the intended users of the research products. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, ACRP project panels serve voluntarily without compensation.

Primary emphasis is placed on disseminating ACRP results to the intended users of the research: airport operating agencies, service providers, and academic institutions. ACRP produces a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties; industry associations may arrange for workshops, training aids, field visits, webinars, and other activities to ensure that results are implemented by airport industry practitioners.

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CRP STAFF FOR ACRP REPORT 146

Christopher W. Jenks, *Director, Cooperative Research Programs*
Michael R. Salamone, *ACRP Manager*
Theresia H. Schatz, *Senior Program Officer*
Terri Baker, *Senior Program Assistant*
Eileen P. Delaney, *Director of Publications*
Maria Sabin Crawford, *Editor*

ACRP PROJECT 10-16 PANEL
Field of Operations

Angela Shafer-Payne, *San Diego County Regional Airport Authority, San Diego, CA* (Chair)
Fred Baer, *Fred Baer Consulting, Brooklyn, NY*
Larry Bowers, *Salt Lake City Department of Airports, Salt Lake City, UT*
Donald Eames, *The Airport Shuttle, Columbia, MD*
Brian D. McKeehan, *Gresham Smith and Partners, Tampa, FL*
Rebecca Ross, *Fort Wayne-Allen County (IN) Airport Authority, Fort Wayne, IN*
Paul Lo, *FAA Liaison*
Christopher J. Oswald, *Airports Council International - North America Liaison*
Jennifer L. Weeks, *TRB Liaison*

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The research team would like to express its gratitude to the members of the project panel for their support and insightful comments throughout this research project. The research team would also like to thank the many airport staff who took the time to share their insights, experience, and opinions with the research team and to respond to follow-up queries.

FOREWORD

By Theresia H. Schatz
Staff Officer
Transportation Research Board

ACRP Report 146: Commercial Ground Transportation at Airports: Best Practices is a guidebook that describes best management practices (best practices) that can be used by airport operators and other stakeholders to ensure the provision of safe, comfortable, easy-to-use, and efficient commercial ground transportation service at a variety of types and sizes of airports. Commercial ground transportation services include taxicabs, limousines, shared-ride services, transportation network companies, courtesy vehicles, buses, and vans. The guidebook reviews the ground transportation industry, potential solutions (best practices) to challenges airport operators frequently face, how to select a solution, and how to implement the selected best practice.

Practices include all elements of operations, oversight, procurement, reporting, and regulatory structure. The guidebook addresses models that help deliver high quality customer service, generate airport revenues, are easy to implement, and provide good economic value to the providers. It provides examples of airports where the best practices have been implemented that vary by geographical region and airport size. It presents critical factors of success and limitations from airport, provider, and customer perspectives and includes methods of setting and collecting airport cost recovery and other fees. The guidebook also addresses standards for vehicles and drivers; types of provider business practices and their effects on the airport's ability to regulate ground transportation service; and types of regulations and methods used by airports to assure compliance and enforcement of all aspects of ground transportation. Available technologies that can benefit the airport, providers, and the customers; guidelines to ensure the flexibility to accommodate unforeseen changes in airport and commercial ground transportation operations and demands; external factors impacting different operating practices; metrics to assist airports and providers in assessing level of service; environmental initiatives; and common challenges encountered by providers are also addressed.

Managing and controlling commercial ground transportation is a challenge faced by most airports, regardless of their size and location, and the nature of this challenge is changing. Airport operations and traditional transportation services are attempting to adjust to the service offered by transportation network companies. Customers and elected officials are demanding higher quality service and are no longer willing to tolerate poor or overpriced service that can create a negative impression of a community. Community leaders are also becoming increasingly sensitive to the environmental implications of commercial ground transportation services, including opportunities for increased use of alternative fuel vehicles and reductions in unnecessary trips. New technologies are available to improve customer service, monitor trips and operations, and simplify the management of commercial ground

transportation services. Airport staff must attempt to balance the frequently conflicting needs and expectations of customers, commercial vehicle drivers, business owners, local regulatory authorities, and other parties, while also controlling airport curbsides and roadways and managing commercial vehicle staging areas. The amount of airport staff time spent addressing these challenges is often out of proportion to the volume of passengers served. Furthermore, as local authorities reduce the resources available to the regulatory staff that has traditionally overseen and enforced these transportation services or relax long-standing standards, airport staff are encountering increased responsibilities and time commitments. Also, the ground transportation service providers need a workable model within the same rules and requirements to effectively compete with the other stakeholders and be successful. Understanding that ground transportation is a reflection of the environment the providers operate in, this is a current resource that provides information for airport operators to determine which ground transportation practices are best suited for their airport.

Under ACRP Project 10-16, research was conducted by LeighFisher in association with GateKeeper Systems, Tennessee Transportation and Logistics Foundation, and Merriwether & Williams Insurance Services. Surveys and interviews were conducted to determine business practices, operational models/methods, strategies, procurement methods, facility configurations, rules and regulations, fees, supporting technologies and other programs used by airport operators to provide, monitor, control, regulate, and enforce commercial ground transportation services.

CONTENTS

Note: Photographs, figures, and tables in this report may have been converted from color to grayscale for printing. The electronic version of the report (posted on the web at www.trb.org) retains the color versions.

CHAPTER 1

Overview of the Guidebook

This Guidebook on Ground Transportation at Airports describes best practices for managing commercial ground transportation services used successfully by the operators of airports of varying types and sizes throughout the United States, supplemented with a few Canadian examples. These best practices have helped airport operators improve the airport customer experience, support the efficient and effective operation of airport facilities, enhance airport revenues, and achieve other relevant management objectives.

Purpose of the Guidebook

This guidebook is intended to allow airport management to compare and contrast the programs used successfully by other airport operators to improve the management and provision of commercial ground transportation services. It is expected to be particularly helpful to the airport landside and ground transportation staff responsible for the day-to-day control of commercial ground transportation operations. The information provided herein may be used to evaluate and select best practices applicable to both individual types of service and airport-wide commercial ground transportation services.

The information contained in this guidebook is applicable to the operators of all commercial service airports regardless of their location, passenger volumes, customer demographics, physical configuration, legal and political environment, governance structure, and financial resources. The guidebook can be used by the managers of all airports regardless of their goals and objectives. As such, it presents a broad range of best practices, not all of which are applicable to every airport. The best practices are organized by type of commercial ground transportation service with supporting programs and technologies that are applicable to multiple ground transportation services described separately.

What Is a Best Practice?

As used in this guidebook the term best practices refers to those practices which, when implemented, help achieve or support the relevant goals of airport management. Best practices include a broad range of:

- Standards
- Strategies
- Rules and regulations
- Business practices
- Procurement methods
- Fees
- Operational models/methods
- Facility configurations
- Supporting technologies
- Other programs used by airport operators to provide, monitor, control, regulate, and enforce commercial ground transportation services.

Particular emphasis in this guidebook is given to innovative and creative practices, which have been successfully implemented at U.S. and Canadian airports and have helped airport managers achieve or support their relevant goals concerning commercial ground transportation services.

When evaluating and selecting potential best practices, airport staff should consider the unique characteristics of their airport and the policies and goals established by airport management. This is because the best practice beneficial to one airport may not be applicable at another due to the variety of airport sizes, locations, configurations, governance structures, financial resources, and other characteristics. This guidebook describes best practices applicable to a wide variety of airports but does not preclude or prejudge practices that may not be readily implemented at some airports.

Characteristics of Commercial Ground Transportation Services at Airports

As used in this guidebook, commercial ground transportation includes the following:

- Taxicabs
- Limousines
- Ride-booking services such as transportation network companies
- Shared-ride vans
- Courtesy vehicles and courtesy shuttles
- Scheduled vans and buses
- Charter vans and buses
- Flight crew vehicles

Each of these transportation services is described in a subsequent section of this chapter and may operate on a prearranged, on-demand, or scheduled basis. This guidebook does not address measures or programs to manage private vehicles, rental cars, public transit, or airport-operated shuttles.

The following paragraphs describe the types of commercial ground transportation services common to airports and the key operating characteristics of these services. The precise, legal definition for each of these services, along with the minimum requirement to provide these services, can be found in the local or state regulations governing its operations.

Taxicabs

The traditional on-demand taxicab is a licensed sedan or van providing door-to-door, on-demand transportation for five or fewer people. Taxicabs are licensed by the regulatory agency or commission of an individual city or state, which also establishes minimum standards for vehicles and drivers. Fares, regardless of the number of passengers transported, are calculated based on the length of the trip and travel time as recorded by a taximeter. The regulatory agency or commission typically sets the meter rate. However, some communities have established zone fares or flat rate fares for trips between the airport and downtown or other major destinations. A customer desiring a taxicab typically boards the first vehicle in a queue at the terminal curbside (Figure 1-1). Thus, unlike taxicab drivers working in a downtown environment who obtain fares from street hails or company dispatches, drivers at airports obtain fares by waiting in queues. In most major cities, taxicab service is provided by drivers who are independent contractors—rather than employees of the taxicab company—who either lease a vehicle from the company or own a vehicle (owner/operators). As discussed in subsequent chapters of this guidebook, the ability of airport operators to manage and control taxicabs is affected by whether the drivers are employees or independent contractors.

In addition to traditional on-demand taxicab services, the following taxicab services are frequently available at airports (or are provided to manage taxicabs).

Prearranged Taxicabs

An airline passenger may make a prior arrangement to hire or be picked up by a specific taxicab driver or company (e.g., a customer with a voucher for a specific company). This prearranged service is provided in licensed taxicabs with fares charged according to the established metered rate. Generally, while waiting for arriving customers, prearranged taxicabs park in a separate location from on-demand taxicabs.

Suburban Taxicabs

Generally only taxicabs licensed by the city owning the airport (or in which the airport is located) can pick up on-demand customers at an airport. If an airline passenger prefers to hire a taxicab licensed by another city, and has made prior arrange-

Figure 1-1. Taxicab queues at Charles de Gaulle Airport (CDG) and Bill and Hillary Clinton National Airport (LIT).

ments for this taxicab service, the taxicab from the other city (also called a "suburban taxicab" or "belled-in" cab) would operate like a prearranged taxicab, that is, the taxicab would park in an assigned area and drive to the terminal curbside when authorized by the curbside taxicab dispatcher.

Shared-ride Taxicabs

During peak periods of demand or when there are insufficient waiting taxicabs, customers may be asked to share a taxicab with another passenger. At some airports, passengers have the option to share a taxicab at all times, not just during peak periods. At these airports there may be two passenger queues—one for passengers willing to share a ride and a second for those preferring to ride alone.

Service for Transportation of Disabled Passengers

Taxicabs capable of transporting passengers in wheelchairs are available on an on-demand basis. These vehicles and other types of vehicles (e.g., vans or SUVs) capable of transporting a large party or passengers with large pieces of baggage (e.g., skis or golf clubs) are available on special request, but may not be immediately available at the airport. As a result, the wait time for these special requests may be longer than the wait for a standard vehicle.

Short Trip

A short trip is a low-fare taxicab trip to a destination near the airport as defined by distance or time. As discussed in subsequent sections of this guidebook, some airports allow drivers returning to the airport after taking a short trip to proceed to the head of the taxicab queue in order to reduce their wait times and discourage drivers from refusing to accept low-fare trips. Other airports implement minimum fares with this same purpose.

Limousines

A limousine is a licensed sedan, town car, SUV, or luxury vehicle providing door-to-door, prearranged transportation, generally for five or fewer people (Figure 1-2). However, limousine service can be provided in vans or customized vehicles (i.e., stretched) having more seats. Limousine companies and vehicles are licensed by the regulatory agency or commission of an individual city or state, which also establishes the minimum standards for vehicles and drivers. Typically fares are a flat rate or pre-negotiated regardless of the number of passengers transported. Customers seeking limousine service contact a limousine company which assigns the trip to an individual driver, or the customer may call a driver directly. Limousine drivers are typically independent contractors rather than employees. Historically, airline passengers hired a limousine service before they boarded their flight, but today passengers may hire a limousine when they land at an airport using their cellphone, smartphone, or other device. Thus the time interval associated with the term "prearranged" can be as little as a few minutes, although some communities have established rules requiring longer minimum times.

Another type of limousine service available at some airports is on-demand limousine service. On-demand limousine service is a licensed limousine providing door-to-door, on-demand transportation for five or fewer people. Fares for the use of the entire vehicle are flat fares. At the airports offering these services, customers can select from on-demand taxicab service or on-demand limousine service, with the key differences being the vehicle and the fare.

Ride-booking Services

A ride-booking company is an automated dispatch service using an online-enabled platform (typically a smartphone application) to link passengers with drivers (Figure 1-3). The customer receives an estimated pickup time, a description of

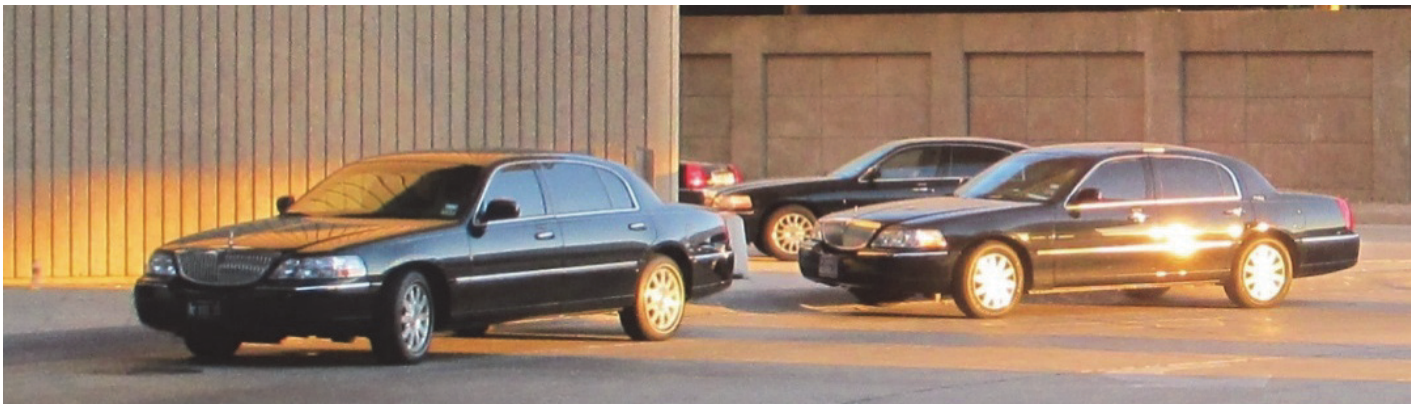


Figure 1-2. Limousines at Bush Intercontinental Airport in Houston.

(PhotoBy Praiselightmedia (Own work) [CC BY-SA 4.0 (http://creativecommons.org/licenses/by-sa/4.0)], via Wikimedia Commons).

Figure 1-3. A transportation network company vehicle.

the arriving vehicle, and an image of the driver. At the destination, the app often can calculate the fare automatically and charge it to the customer's credit card.

The primary difference between a ride-booking service and a traditional limousine service is how the customer hires and pays for the service and whether the vehicle is licensed as a limousine or not. There are two types of ride-booking services, both of which provide on-demand, door-to-door transportation.

Service Provided Using Drivers and Vehicles Licensed for Commercial Use

These services use standard taxicabs or limousines licensed by local regulatory authorities and maintain the insurance required by these regulators. UberBlack is an example of this service.

Service Provided Using Drivers' Own Personal Vehicles

These services are provided by drivers using their own personal vehicles, typically licensed and insured for personal use rather than commercial use (i.e., transporting paying customers). These transportation services are commonly defined and licensed as Transportation Network Companies (TNCs). At the time this guidebook was prepared many states and cities were developing laws and policies to regulate these services. These services include UberX, Lyft, and Sidecar, among others.

Shared-ride Vans

Shared-ride service is a licensed van providing door-to-door, multi-stop transportation between an airport and individual destinations (i.e., residences, hotels, businesses) for up to 12 passengers who share the van (Figure 1-4). (Smaller vehicles are frequently used at some airports.) Shared-ride vans are licensed by the regulatory agency or commission of an individual city or state, which also establishes the minimum standards for vehicles and drivers. Shared-ride vans group airline passengers going to (or from) a similar geographic destination and then drop them off (or pick them) individually, making multiple enroute stops, depending on the number of passengers being transported.

Passengers are charged a flat fare per passenger, although discounts may be offered for round-trip fares or larger parties. Shared-ride van fares are less than taxicab fares because customers share a vehicle with others. Customers seeking shared-ride service from an airport either (a) contact the shared-ride company via telephone or internet, with the company assigning the trip to a driver, or (b) walk to the terminal building curbside or company counter and request service from a dispatcher/company customer service representative or driver. Shared-ride drivers are often independent contractors and pay the shared-ride company fees for the company provided dispatches, insurance, and other services.

Most shared-ride services provide door-to-door transportation for airline passengers between an airport and a downtown, suburban or other popular destination located less than an hour from the airport. However, some "long-haul" services provide shared-ride transportation to more distant destinations. Typically they transport passengers between an airport and established stops (e.g., a hotel) and often operate on a fixed schedule. Long-haul shared-ride services differ from scheduled bus/van services in that they do not follow a fixed route and may skip a stop if there are no passengers waiting to board or alight at a stop.

Figure 1-4. A shared-ride van at San Francisco International Airport.

Courtesy Vehicles or Courtesy Shuttles

Courtesy vehicles or shuttles are vehicles providing door-to-door transportation to/from an airport offered by businesses as an amenity (Figure 1-5). Service may be offered on an on-demand or scheduled basis. Courtesy vehicle service is provided by rental car companies, parking lot businesses, hotels/motels, casinos, training centers, and other businesses located on or off an airport. A variety of vehicle sizes are used to provide courtesy vehicle service ranging from eight-passenger vans (e.g., serving hotel/motels) to full-size buses (e.g., serving rental car companies), and also including 12 to 30 passenger cutaways, and 20 to 35 passenger minibuses. Unlike other airport ground transportation services, courtesy vehicle service is offered at no direct charge to the passenger. This is because the cost of providing transportation is incidental to the primary business (e.g., charging for the use of a rental car, parking space, or hotel room) and is included in the price charged customers for this service. Courtesy vehicles must be licensed by the state motor vehicle department, and depending on the weight of the vehicle the drivers may be required to obtain a commercial license. Courtesy vehicle drivers are normally employees of the business providing the service.

Scheduled Vans and Buses

Scheduled vans and buses provide transportation at fixed departure times and operate along fixed routes between an airport and one or more established stops. In some cities these scheduled services are referred to as airporters. Service is provided in a variety of vehicle sizes ranging from eight-passenger vans to motor coaches (having a baggage hold beneath the passenger cabin) as well as cutaways, minibuses, and transit buses. Scheduled buses/vans are licensed by state and federal agencies which establish safety standards for the vehicles and drivers.

Riders are charged a flat fare per passenger, although discounts may be available for round-trips, children, and senior citizens. Most scheduled bus/van operators recommend that passengers reserve their tickets, as seats may be limited, but walkups are allowed. Passengers purchase their tickets from either the bus/van driver or from a company agent located at a counter/kiosk in the baggage claim area or bus door.

The privately operated scheduled bus/van services described herein comprise most of the scheduled services available at airports; however, several other types of scheduled bus/van services are frequently found at airports.

Public Transit Services

These are traditional multi-stop, fixed-route, scheduled bus services operated by a local, not-for-profit transit agency (Figure 1-6). The airport may serve as the terminus or an intermediate stop. Riders are charged a flat fare per passenger (i.e., per seat). Most public transit service at an airport is provided using full-size transit 30 to 40 passenger buses, but some transit agencies operate 60-passenger articulated buses. The buses used by public transit agencies provide limited space for storage of large bags. Most publicly operated buses stop frequently (e.g., every few blocks or multiple times between the airport and the city center), but there are some express or semi-express services which make a limited number of stops (e.g., the 28X Airport Flyer route connecting Pittsburgh International Airport with downtown Pittsburgh).

Figure 1-5. Courtesy shuttles at Hartsfield-Jackson Atlanta International Airport.

Figure 1-6. A public transit bus stop at San Jose International Airport.

Publicly and Privately Operated Express Bus Services to/from Off-site Terminals

These are fixed-route, scheduled, non-stop bus services (i.e., express bus services) connecting an airport and an off-site terminal, typically more than 20 miles away from the airport. Service is provided in 8-passenger vans and motor coaches with under-the-floor baggage storage. These off-site terminals operate much like a commuter park-and-ride lot as they offer inexpensive parking as well as enclosed buildings with seating and other amenities. Airport operators (e.g., those serving Boston and Los Angeles) operate and subsidize express bus services and off-site terminals in order to reduce on-airport roadway traffic volumes and parking requirements. Private businesses operate similar express bus services between privately owned off-site terminals and the airports serving San Francisco (e.g., Marin Airporter), Hartford, and Newark/New York City (e.g., Connecticut Limousine). *ACRP Report 35: Planning for Off-Site Terminals* provides more information about off-site terminals and the supporting express bus services.

Charter Vans and Buses

Charter buses/vans provide door-to-door, prearranged transportation for groups of people (i.e., a charter party) (Figure 1-7). A variety of vehicles are used to provide this service ranging in size from vans to motor coaches, but including cutaways and minibuses, and even school buses. Charter buses/vans are also referred to as tour buses and cruise ship buses. Charter bus operators are licensed and regulated by state and federal agencies which establish safety standards for the vehicles and drivers (e.g., limits on the maximum driving hours per day by a driver).

Figure 1-7. A charter bus drops off passengers at the terminal curbside.

Passengers are charged a pre-negotiated flat fare that is typically based upon the length of time for which the vehicle is hired, regardless of the number of passengers transported. Passengers contact a charter bus/van company to hire a bus/van and its driver. Tour groups may also hire "greeters" who assist deplaning airline passengers and escort them to the correct bus.

Most of the charter bus/van services available at an airport operate as described herein. However the additional charter or prearranged ground transportation frequently exist at major airports as described in the following paragraph.

Flight Crew Vehicles

A flight crew vehicle provides transportation for airline flight crews between the airport and their hotel (Figure 1-8). Often these vehicles, typically 8 to 15 passenger vans, are oper-

Figure 1-8. A flight crew vehicle at San Francisco International Airport.

ated by a charter van operator specializing in this service. Some airlines, particularly foreign flag carriers, hire a flight crew van operator to provide transportation when their crews are staying in hotels located in the city center or other locations where hotel/motel courtesy vehicle service is not available. Some airports waive the established commercial ground transportation fees for vehicles that exclusively transport flight crew vehicles since these fees are passed onto and are the responsibility of the airline.

Transportation Services Not Addressed in the Guidebook

This guidebook does not address rail transportation, including commuter rail, light rail, or other forms of public transit operating on track or automated people mover systems, as these services are not considered commercial ground transportation services. Best practices concerning these services are available in the following reports:

- **Rail transit and public transit access to airports.** Information about the best practices for providing rail and other forms of public transportation service to airports can be found in *ACRP Report 4: Ground Access to Major Airports by Public Transportation*, *TCRP Report 62: Improving Public Transportation Access to Large Airports*, and *TCRP Report 83: Strategies for Improving Public Transportation Access to Large Airports.*
- **Airport automated people mover systems.** Information about the best practices for planning and designing automated people mover systems at airports can be found in *ACRP Report 37: Guidebook for Planning and Implementing Automated People Mover Systems at Airports* and *ACRP Report 37A: Guidebook for Measuring Performance of Automated People Mover Systems at Airports.*

This guidebook does not address shuttle buses operated on behalf of the airport linking the terminal building with on-airport public and employee parking facilities, or shuttle buses linking the terminal building with a consolidated rental car center. These on-airport shuttle bus services are not considered commercial ground transportation services.

Airport Business Arrangements with Ground Transportation Companies

Airports generally require that all companies wishing to conduct business on the airport, including commercial ground transportation companies, obtain the prior approval of the airport sponsor. Any commercial ground transportation company picking up passengers on the airport is considered to be conducting business and is generally required to obtain and sign an airport permit. By signing the permit, the company formally indicates that it has agreed to abide by all applicable airport rules and regulations (e.g., rules governing the use of airport roads and curbside areas), comply with standards governing the company's vehicles and drivers, and pay applicable airport fees. The permit is evidence that the company and the airport have entered into a business agreement since it stipulates the responsibilities of both parties, that is, the airport sponsor agrees to allow the company access to the airport and its passengers, and the company agrees to abide by airport regulations.

There are three basic types of business arrangements (or models) that airport sponsors use with commercial ground transportation companies. These models, which are described in greater detail in subsequent sections of this guidebook, are: open access, exclusive access, or a hybrid of these two. Airports use an open access model for their business relationships with all courtesy vehicles, prearranged limousines, TNCs, scheduled vans/buses, and charter van/buses. Airports may use either an open or an exclusive (or semiexclusive) model for their business relationships with taxicabs, shared-ride vans, and on-demand limousines.

Each model has its advantages and disadvantages. The key differences are (a) the airport's ability to control the customer experience and operations, including vehicle and driver standards, (b) the amount of staff effort required to implement and oversee operations, and (c) the amount of competition among companies.

Open Access

With an open access system, any vehicle having a valid permit issued by the local regulatory agency may serve the airport. This allows for greater competition among operators. This competition is the key benefit of an open system—all licensed companies have the opportunity to serve the airport. However, an open system frequently leads to an oversupply of taxicabs or shared-ride vans at the airport. As described in subsequent sections of this guidebook, an oversupply of vehicles leads to reduced driver income, reduced motivation for the drivers to properly maintain their vehicles, and reduced customer service. As a result, an open system requires increased effort by airport staff to ensure that drivers and their vehicles comply with the airport's minimum standards and its rules and regulations. Enforcement requires greater staff effort because (a) penalties are limited to monetary fines or service suspensions, and (b) staff, particularly those at large airports, must oversee the operation and compliance of hundreds of drivers and their vehicles. Airport staff may also need to implement measures, described in subsequent chapters of this guidebook, to balance the supply of taxicabs with customer demand for service.

Exclusive Access

With an exclusive (or semi-exclusive) system the airport awards a contract to one or several companies and only this company may pick up customers at the airport. These contracts are awarded through a competitive bid or proposal process. The selected concessionaire(s) is responsible for day-to-day operations, ensuring the balance between customer demands and the number of waiting vehicles, and ensuring that service is provided using vehicles and drivers that meet or exceed the standards set forth in their proposal. Compared to an open access contract, enforcement requires significantly less effort because (a) the airport has a contractual business relationship with the ground transportation provider, rather than a regulatory one, and (b) the airport is interacting with a single concessionaire (or typically fewer than three concessionaires) rather than hundreds of individual drivers. Customer service is enhanced because companies competing for the concession contract are incentivized to propose levels of service that exceed the airport's minimum standards.

The major disadvantage of an exclusive or semi-exclusive access model is that some properly licensed companies will not be selected and these companies will be precluded from conducting on-demand business at the airport, and thus denied a business opportunity. A second disadvantage is that if one company is awarded the contract, when there is a recompete for the contract, the incumbent will have a perceived advantage over its competitors, assuming the incumbent has been performing satisfactorily.

Typically companies that are awarded semiexclusive concession contracts allocate the customers using a predetermined method (e.g., based upon the number of authorized taxicabs). However, at some airports, individual taxicab contracts are awarded by terminal building or terminal curbside, and individual shared-ride van services may be awarded by geographic area.

Another practice to allow greater opportunities for small or disadvantaged businesses is to award contracts to a driver collective or consortium, where multiple smaller independent owner/operators agree to work collaboratively together as one group, creating a fleet large enough to serve the airport. Other measures to increase opportunities for small and disadvantaged businesses are discussed in Chapter 7.

Hybrid Arrangements

Concession contracts are competitively awarded to the company proposing to pay the airport the highest amount (i.e., a bid) or to the company deemed to offer the best customer service (e.g., a proposal). A hybrid arrangement incorporates components of both processes. For example, an airport may choose to award a contract based upon a competition of the proposed customer service and the fees to be paid to the airport. Alternatively, a negotiated process can be used whereby the company is selected based upon the proposed service quality with the fees negotiated separately.

Another hybrid arrangement is to award a contract to a company that assumes responsibility for the management and control of the commercial ground transportation service (e.g., taxicabs) but does not operate this service. Instead the management company is required to subcontract to others (e.g., owner-operators) who furnish the service and to ensure the service is provided in accord with established customer service and safety standards. Raleigh-Durham Airport Authority employs such a hybrid model.

The basis for selecting a company will vary from airport to airport with each placing differing emphasis on customer service, proposed fees, and the company's experience, reflecting their individual goals and policies.

Methodology

The information contained in this guidebook was gathered by identifying airports that have implemented programs, procedures, and facilities considered to be examples of best practices. These airports were identified based upon the research team's familiarity with large- and medium-hub U.S. airports and the results of a web-based survey sent to the ground transportation staff at 146 of the 200 largest U.S. airports. Responses were received from 61 airports (about 42% of the surveyed airports). In depth telephone or in-person interviews were conducted with the staff of 67 airports. In total, 112 airports participated in the research, responding either through the web-based surveys, the interviews, or both. Table 1-1 shows the breakdown of participating airports by size.

In addition interviews were conducted with several transportation regulators, industry group representatives, and technology providers. The information gathered through the interviews was supplemented by a comprehensive literature search. Both the literature search and a list of the airports that participated in the research are summarized in appendices to this guidebook.

Table 1-1. Airport survey respondents by size.

Airport Type	Number of Participants
U.S. Large Hub	27
U.S. Medium Hub	22
U.S. Small Hub	41
U.S. Non-Hub	19
Canadian Airport	3

The information contained in this guidebook relies upon the surveys of airport staff and the information they provided. Most of the identified best practices were developed and implemented by airport staff using internal resources. There is little if any documentation on the value of the staff time or direct expenses incurred during the development and implementation of these practices. As a result, limited or no data are available on the implementation costs and value of the benefits resulting from many of the best practices described in this guidebook.

Finally, the information contained in this guidebook is current as of summer 2014, with the exception of information on TNCs, which is accurate as of spring 2015. After completion and publication of this guidebook, it is expected that (1) additional best practices and innovative technologies not described or anticipated will be introduced, (2) additional airport staff will implement and improve some of the listed best practices, (3) some of the best practices in use at airports mentioned in this report may be discontinued, and (4) changes will occur in how airports regulate and permit ride-booking services due to the evolving nature of these regulations at the time this guidebook was prepared.

Organization of the Guidebook

This guidebook contains three sections which provide an overview of commercial ground transportation at airports, describe best practices for managing commercial ground transportation, and suggest how to implement these practices.

Understanding the Industry and Potential Solutions

The first section of the guidebook is intended to help airport staff better understand ground transportation services and the nature of the challenges facing airports, airport passengers, and the providers of commercial ground transportation. It describes relevant policies and regulations, the general expectations of ground transportation customers and providers, and the operations of commercial ground transportation services.

Selecting the Appropriate Solution

The second section of the guidebook describes the best practices, organized by type of ground transportation service, that were documented through the research conducted as part of this project. This section also describes supporting programs and technologies applicable to multiple ground transportation services, measures to support environmental and economic development goals and initiatives, and standards for vehicles, drivers, and customer service. This section also provides guidance on how to select the appropriate solution.

Selling and Implementing the Solution

The third section provides guidance on how to explain the merits of the proposed solution to airport senior management, local elected officials and airport boards, and commercial ground transportation providers and drivers. It also describes the processes used to award and oversee concession contracts and other business arrangements.

CHAPTER 2

Establishing Goals and Policies for the Airport's Ground Transportation Program

This chapter provides an overview on how airport staff document their relevant goals and policies and describes the metrics that can be used to evaluate the performance of the best practices described in this guidebook.

Documenting Management Goals and Policies

When identifying and evaluating potential best practices, it is beneficial to first confirm and define the relevant goals of airport management. The goals for each airport are unique and reflect management's vision for the airport, its mission statement, and its specific values. To achieve these goals, management may have a strategy or long-term plan of action consisting of new policies and programs, rules and regulations to support these policies and programs, as well as supporting technologies and revenues.

The five goals shown in Figure 2-1, portions of which overlap, are frequently cited by airport management:

Enhance the Experience of the Airport Customer

Airport managers seek to ensure that while traveling to and from the airport, airline passengers are transported safely, securely, and comfortably. This implies the use of commercial vehicles meeting applicable and current local, state, and federal regulations, which are properly maintained and insured. They require that these vehicles are operated by drivers who know the relevant airport rules and regulations, have received customer service training, are familiar with the local region, and can communicate clearly with their customers.

A comfortable experience relates to the quality of the vehicles. Airports promote the use of vehicles that all can easily step into and out of (e.g., vehicles having low floors and wide doors) and vehicles providing adequate seating, functioning heating and air conditioning systems, adequate baggage storage, modern communication technologies, and equipped with standard safety and emissions control equipment. To ensure that airline passengers using commercial ground transportation services are provided safe and secure transportation, airport managers aim to have customers only board properly licensed vehicles operated by authorized commercial ground transportation providers.

Comfortable and convenient service also implies the availability of facilities for passengers boarding and alighting commercial vehicles. These are facilities located within or near the terminal building (i.e., a short walking distance) that minimize the need to use elevators or escalators, are easy to find and clearly signed, and offer seating and weather protection for waiting passengers.

Airport managers believe passengers should be offered a variety of safe, reliable, and comfortable commercial ground transportation services to major regional destinations at a range of reasonable fares and levels of convenience. These transportation services should be available at all times including when there is an irregular flight operation/unscheduled aircraft arrival, when there is a demand for service late at night, or during periods of inclement weather. Passengers should be able to choose either exclusive transportation or shared-ride transportation services offered on an on-demand or scheduled basis. The available transportation services should provide for airline passengers with special needs including those who are transportation disabled, senior citizens, those who are traveling in large groups or with large pieces of baggage, those who wish to pay using a credit card, or those who have other special needs.

Minimize Required Staff Time and Airport Resources

Airport managers seek to use their available staff and facility resources efficiently. They strive to operate in a fiscally prudent manner by attempting to minimize the costs of regulating, providing, operating, and enforcing commercial ground

Figure 2-1. Common airport management goals.

transportation services and the costs of providing and maintaining the facilities which they use. They establish policies and regulations which minimize the airport staff resources needed to oversee, control, and enforce commercial ground transportation services while supporting other goals of airport management. For example, to reduce operating costs they may apply technologies which (a) restrict access to authorized commercial vehicles, (b) monitor the volume of commercial vehicle trips and the time these vehicles remain on airport roadways, and (c) minimize staff efforts required to collect airport fees. To better utilize staff resources and reduce operating costs, some airport managers utilize contract employees or third-party contractors to manage commercial ground transportation.

Airport managers promote the efficient use of terminal building curbside space because of the competing demands for this space, the limited amounts of curb space normally available, and security regulations imposed by the Transportation Security Administration prohibiting unattended vehicles at the curbsides. Typical supporting policies include (a) allowing commercial ground transportation vehicles to remain at the curbsides only while actively picking up and dropping off passengers, and (b) preventing ground transportation operators from lingering at the curbsides to market their services or attract customers. When allocating curb space, airport staff consider the competing needs of private vehicles, the various forms of commercial ground transportation, and the ability of staff to effectively control the curb space. Airports provide supporting facilities such as hold lots to support the efficient use of curb space and to better control and accommodate commercial vehicles waiting to pick up airline passengers. Airport managers attempt to balance the size of the hold lots, considering the competing needs for areas located near the terminal. They seek to provide facilities with the flexibility to accommodate the industry's future needs and changes in operations, volumes, services, and other characteristics.

Support Airport and Regional Environmental and Sustainability Objectives

Airport sponsors seek to be good neighbors, to support regional environmental and sustainability objectives, and operate in a "green" manner. Such a policy might call for an airport operator to provide high quality, efficient, and safe access to air transportation that is delivered in a socially responsible manner, is inclusive of environmental and community interests, and does not compromise the needs of future generations.

This policy could result in environmental and sustainability goals related to the following five goals:

1. Providing for the safe movement of passengers and vehicles.
2. Reducing the consumption of gasoline and vehicle-related emissions.
3. Building new ground transportation facilities in a sustainable manner.
4. Balancing the financial return of transportation providers with the needs of the traveling public.
5. Establishing long-term relationships with key stakeholders.

These environmental and sustainability goals are described in greater detail in the following paragraphs.

Providing for the Safe Movement of Passengers and Vehicles

Airports and regions seek to ensure the safety of pedestrians and motorists. With respect to commercial ground transportation, they do so by providing a safe environment for passengers, particularly in the passenger boarding and alighting areas and in roadway crosswalks. They may do so by discouraging jaywalking, providing clearly marked and well lit pedestrian pathways and crosswalks, and ensuring the sidewalks adjacent to boarding and alighting areas are properly sized to accommodate waiting passengers and the transverse movement of passengers carrying baggage (to avoid their having to step into the roadway to bypass others).

Reducing the Consumption of Gasoline and Vehicle-Related Emissions

The amount of vehicle miles traveled on airport is directly related to fuel consumption and vehicle-generated air emissions. Airport managers discourage vehicle miles of travel by:

1. Promoting the use of public transit and privately operated shared-ride transportation services by minimizing the airline passenger and employee dependency on the use of vehicles transporting a single party (e.g., private vehicles, taxicabs, and limousines). This objective can be achieved by (a) ensuring the availability of reliable, convenient, and inexpensive public transit and privately operated scheduled buses/vans and shared-ride services, (b) allocating the most convenient boarding areas for these transit services, and (c) making airline passengers aware that these services are available by displaying signs and information regarding these services throughout the airport and on the airport website. They may prioritize transit services and facilities (i.e., a "transit first" policy), offering discount fares on public transit services and privately operated scheduled bus services.
2. Reducing the number of commercial vehicle trips. Airport managers may discourage unnecessary commercial vehicle trips by penalizing those operators making excess trips, promoting the use of consolidated courtesy vehicles and rental car shuttles, placing a cap on the number of annual or monthly vehicle trips a commercial ground operator may make, levying fines on commercial ground transportation operators whose vehicles remain at the boarding area for excessive lengths of time or operate at unnecessarily short headways, and discouraging "deadhead" trips by taxicabs and other vehicles.
3. Encouraging the use of alternative fuels. Airport managers may require commercial vehicle operators to use alternative fuels (e.g., compressed natural gas, propane, or electric/hybrids) or provide incentives to those operators using alternative fuels. These incentives may include grants to pay for engine conversions, reduced airport fees, or construction of Compressed Natural Gas (CNG) fueling stations.

Building New Facilities in a Sustainable Manner

There are many guides available on how to build a sustainable building. These include Leadership in Energy and Environmental Design (LEED) and the Sustainable Aviation Guidance Alliance (SAGA), among others. The common aspect of all of them is the incorporation of long-term operational and maintenance costs into the design decisions for the building. It is important to define the correct lifecycle prior to the design of a new facility, incorporate facilities in the building that will meet the needs of the building's users over that lifecycle, and make equipment and design decisions that reflect the entire lifecycle of the building.

Balancing Financial Returns of Providers and Customers

There are many factors beyond fares that determine the overall financial return of transportation providers. For example, controlling the supply of transportation providers affects profitability, as does establishing vehicle standards. Business decisions by the airport should contemplate the potential impact on the financial return of transportation providers and the ability of the drivers to earn a fair wage.

Establishing Long-term Relationships

These relationships include those with the regional transportation agencies as well as the transportation providers.

Relationship with the Metropolitan Planning Organization. The key regional agency responsible for environmental and sustainability goals is likely the metropolitan planning organization (MPO) or regional planning agency. This agency is responsible for the Transportation Improvement Plan which prioritizes regional investments in transportation infrastructure. The local MPO is also responsible for documenting the local goals and policies governing these priorities including those related to the environment and sustainability.

Airport staff, including those responsible for airport ground transportation, can benefit from maintaining open and frequent communication with MPO staff. It is helpful to review with MPO staff the unique characteristics of airport ground transportation, including commercial ground transportation. Examples of these unique characteristics include:

- **Definition of High Occupancy Vehicles.** Regional planning agencies typically consider a High Occupancy Vehicle

(HOV) to be any vehicle transporting more than one or two people. Since most vehicles entering and exiting an airport have two or more occupants (e.g., taxicabs or private vehicles dropping off or picking up a single airline passenger), the standard HOV definition may not be applicable for airport transportation planning and operations. Some airport managers encourage the use of public transit, scheduled buses/vans, and shared-ride vans rather than vehicles transporting a single airline passenger. These vehicles may be defined as "multi-passenger vehicles" rather than HOVs.

- **Role of public parking on an airport.** One method used by city and regional planning agencies to encourage the use of public transit and reduce reliance on single occupant vehicles is to limit the amount of parking available in a city center or at a retail, residential, or office development. Some regional and environmental planners have proposed limiting the amount of parking available on an airport in order to achieve these same objectives—reduce airport traffic and increase airline passenger use of public transit. However, limiting the amount of airport parking has been shown to actually increase airport traffic. This is because when airport parking is not available, most airline passengers who previously parked at the airport for the duration of their trip prefer to be dropped off/picked up by friends, taxicabs, or limousines, with fewer than 10% choosing to use public transit instead. Passengers who park at the airport for the duration of their trip generate two vehicle trips (i.e., one inbound and one outbound trip), while passengers who are dropped off/picked up generate four vehicle trips (i.e., one inbound and one outbound trip when dropping off plus one inbound and one outbound when picking up the passengers).
- **Employee use of parking and public transportation.** To reduce single occupant vehicle trips regional and local planning agencies frequently encourage major employers to reduce the volume of trips generated by their employees through the use of car pools, transit subsidies, flexible work hours, increased parking costs, and other programs. Some regional and environmental planners have airport operators use similar programs to reduce the volume of trips generated by employees working on an airport including those working for the airport sponsor, the airlines, and other tenants. However, such programs have proven less successful when implemented at an airport. Factors contributing to the lack of success of these employee trip reduction programs include (a) the large number of employers—few of the persons working on an airport are employed by the airport sponsor, (b) the employees' work hours, which often start before or end after normal commute hours, when little transit service is available, (c) the discrepancy between employee places of residence and the areas well served by public transit, and (d) the availability of low-cost and free or heavily subsidized employee parking provided under labor agreements.
- **Opportunities for use of public transportation.** Public transportation is used by fewer than 15% of all airline passengers at all but six U.S. airports and by fewer than 10% at most U.S. airports. This includes the use of all forms of public transportation including bus, rail, and shared-ride services. At those airports served by rail, fewer than 10 percent of all airline passengers use this service, with the exception of Washington Reagan National Airport. Thus, while airport managers promote the use of public transit by airline passengers and airport employees, it is helpful for regional planners to have a realistic expectation of the volume of airline passengers who are likely to use public transportation if made available. *ACRP Report 4: Ground Access to Major Airports by Public Transportation* provides detailed information about the use of public transportation at airports and the factors affecting its use by airline passengers and employees.
- **Jurisdictional responsibilities for airport access facilities.** Airport sponsors may develop and operate roadways and other transportation facilities located on the airport property but are prohibited by the Federal Aviation Administration (FAA) from developing or operating roadways or other transportation facilities located outside of an airport unless these facilities are used exclusively by airline passengers, airport employees, or air cargo handlers. Thus the ability of an airport sponsor to affect the travel patterns of airline passengers or airport employees is limited, since only a small portion of a passenger's or employee's trip occurs on airport property. For example, a transit passenger's experience is affected by the stations at both ends of their trip, not just the station on the airport.

Relationship with commercial ground transportation providers. Many transportation providers dedicate their entire careers to providing transportation needs, and airport staff recognize that there is a benefit to establishing a long-term relationship with the management and staff of these companies. Responsible treatment includes ensuring strong public communication of policies and regulations, provision of equitable and rational policies, and that transportation providers are meeting the needs of external stakeholders.

Establish an Environment Allowing Drivers to Earn a Fair Wage and Other Business Owners to Receive a Reasonable Return on their Investment

Airport sponsors (e.g., the city, county, or authority which owns and operates the airport) seek to ensure that the access to the airport is open to all properly qualified and licensed commercial ground transportation operators, and that all such operators are afforded the opportunity to compete on fair and reasonable terms, consistent with their other goals

(e.g., promoting the use of public transit and other high occupancy services).

Airport managers recognize that providing drivers the opportunity to earn a fair wage and the ability of owners to receive a reasonable return will enhance the experience of airport customers and the quality of the transportation they are provided. Drivers and owners who are able to earn a fair wage are more likely to maintain their vehicles properly and less likely to refuse short trips, overcharge customers, or engage in other improper activities. When attempting to improve the incomes of drivers and owners, airport management seek to balance the fares charged to passengers with their other objectives. For example, excessively high fares will discourage the use of commercial ground transportation services and encourage the use of single occupant vehicles and rental cars. Policies concerning fares charged for airport ground transportation services, especially taxicab fares, must be coordinated with the policies of the governing municipal authority. Often airport managers attempt to improve driver income (i.e., the number of daily trips made) by limiting the number of vehicles (e.g., waiting taxicabs) allowed to pick up passengers at the airport, thereby reducing the time drivers spend waiting for passengers.

Airport goals and policies attempting to influence driver and owner income by regulating the number of authorized drivers or vehicles should recognize that the objectives of the companies controlling taxicab and shared-ride services are not always aligned with the goals of the individual drivers, regardless of whether the drivers are employees or owner/operators. For example, limiting the number of authorized vehicles may benefit the drivers authorized to serve the airport but not the companies attempting to lease vehicles to drivers. Limiting the number of authorized vehicles may increase the value of airport permits, allowing permit holders to sell their permits to others for a profit, if allowed to do so by airport management.

Recognizing that some aspects of ground transportation may not have always been accessible to women, minorities, veterans, and other historically underutilized businesses, and to meet varying state, local, and federal inclusion policies, airport managers have also adopted policies and practices that build the capacity of small and disadvantaged contractors and/or identify particular opportunities for these firms.

Recover Costs, and to the Extent Possible, Increase Airport Revenues Consistent with the Above Goals

Commercial service airports are required to be financially self-sufficient by the FAA. Airport operators consistently attempt to increase their non-airline revenues, a portion of which are generated by the fees paid by the operators of commercial ground transportation businesses. As such, airport sponsors establish policies supporting the charging of appropriate and equitable fees that (a) reflect the business benefits derived by the various classes of commercial ground transportation operators, (b) encourage the efficient allocation of the limited airport ground transportation facilities among such operators, and (c) generate revenues for the airport operator that allow them to recover the costs of providing, operating, maintaining, and enforcing the airport facilities benefiting commercial ground transportation businesses. Airport sponsors establish commercial ground transportation policies and fees in a manner that is consistent with their other objectives.

Each airport operator places different emphasis on these five goals (and the subsets of these goals described above), reflecting the unique characteristics of their airport. The unique characteristics guiding management's policies may include the airport's location, passenger volumes, customer demographics, physical configuration, legal and political environment, governance structure, financial resources, type of commercial ground transportation services available, and the airport's business relationships with the operators of these services. Few airport operators seek an equal balance among these five goals (i.e., a point in the exact center of Figure 2-1), with most operators emphasizing one or two goals above the others. For example, some airports have established a "transit first" policy and promote the use of public transit and scheduled buses/vans, and may even subsidize express bus services to off-airport terminals, thereby foregoing potential revenues. Other airport managers seek to improve the experience of airport customers by providing supplemental curbside staff (e.g., passenger service agents or guest services representatives) or exceptionally high quality passenger waiting and boarding areas despite the increased operating and capital costs. Some airports promote environmental policies at the expense of decreased revenues and increased operating costs. Airports with multiple airline terminals will have differing priorities from peer airports of a similar size having a single terminal.

Evaluating the Accomplishment of Management Goals and Objectives

Airport management should have a clear vision of its relevant goals and policies concerning commercial ground transportation to guide its selection and evaluation of best practices. These goals and objectives should be consistent with the overall goals and objectives of the airport sponsor. With an established foundation of goals and objectives, airport management can then evaluate and select the best practices that support these objectives and the information needed to measure whether they have proven successful.

Numerous departments within an airport organization are affected by or influenced by commercial ground transportation operations. These include landside operations, parking management, airport security/police, legal, accounting/

audit, public and community relations, facility maintenance, planning and engineering, environmental affairs, information technology, finance, risk management, and properties and concessions (depending upon the business relationships with the operators). Input from these departments should be sought when establishing and prioritizing the goals and policies. By doing so, and by considering the needs and constraints of each of these departments, the resulting process of evaluating and selecting best practices can reflect the goals and policies of the entire organization.

Benchmarking

Airport staff frequently review the commercial ground transportation programs used at peer airports when evaluating the possible implementation of similar programs at their airport. As applied to airport commercial ground transportation, benchmarking is the process of comparing fees, types of available transportation services, the airport's business relationship with the operators of these services, passenger boarding/alighting area facilities, airport rules and regulations, enforcement procedures, insurance requirements, and other aspects of an airport's commercial ground transportation operation.

Benchmarking, if applied correctly, can help airport staff understand how their commercial ground transportation operations rank or compare with other airports using a particular metric or indicator (e.g., number of permitted taxicabs). Benchmarking can also increase senior management's and airport board members'/elected officials' awareness of the programs and fees in place at other "peer" airports. Thus airport staff frequently conduct benchmarking analyses when seeking the approval of senior management or board members/elected officials.

A key step in a benchmarking analysis is the selection of the peer airports. Airport staff should determine whether the characteristics of a potential peer airport provide a reasonable and unbiased comparison with their airport. Some of the defining characteristics influencing benchmarking comparisons of commercial ground transportation programs at airports are described in the following paragraphs. These factors are not listed in order of priority, as the priorities will vary from airport to airport.

Passenger volumes. Airport staff frequently compare their airport with airports serving similar volumes of scheduled commercial airline passengers. Ideally, the comparison is based upon annual originating and terminating airline passengers since these passengers are the customers who may use the commercial ground transportation services at the airport. Since over 50% of the passengers at some large hub airports may be connecting passengers, it is best to use originating and terminating passengers as the basis of the comparison when defining peers. However, since most medium, small, and nonhub airports serve few connecting passengers, the number of enplaned and deplaned or total airline passengers can be used to define peers at these airports.

Passenger volumes are also a good indicator of the potential volume of commercial ground transportation customers, and thus the potential business opportunities. Because of the larger volume of potential customers, large hubs can support a wide choice of transportation options including more scheduled bus/van and on-demand shared-ride door-to-door services than a small hub. Similarly, increased numbers of potential taxicab customers increases the likelihood that there will be taxicab service available at all times.

Proximity. Airport staff (as well as senior management and airport boards/elected officials) frequently compare their operations with those of nearby airports, particularly those of a similar size. Nearby airports are likely to have passengers with similar demographic characteristics (e.g., trip purpose and household income), population densities, weather conditions, and may be subject to the same state laws.

Distance to downtown. The airport's distance from downtown and other major destinations will influence the cost of taxicab fares as well as the fares of shared-ride vans, limousines, and other commercial ground transportation services. This distance also affects the round-trip time of taxicab drivers (i.e., how long they need to return to the airport after dropping off a fare), and thus the time needed to replenish the waiting queue during peak periods. This factor influences the number of taxicabs, for example, required to serve an airport.

Physical configuration or layout. The number of airport terminals, and the distance from the hold lots to the terminal(s) will adversely affect the costs of operations and customer service for both the airport and commercial ground transportation providers.

- **Operating costs.** Larger airports, particularly those with multiple terminals, will have higher operating costs as more personnel are needed to oversee curbside and commercial ground transportation operations. The operators of courtesy vehicles and scheduled buses/vans will have higher operating costs if they must travel longer distances between terminals and make multiple stops on the airport when dropping off or picking up passengers.
- **Customer service.** At airports with many terminal buildings, passengers in courtesy vehicles and scheduled buses/vans may spend more than 30 minutes traveling from terminal to terminal before they exit the airport or arrive at their terminal. It is also more difficult to ensure an adequate supply of taxicabs (or other vehicles) at each terminal and to do

so in an equitable manner (e.g., avoid having "orphaned" taxicab drivers waiting at a terminal where there are few customers when there are many customers seeking service at another terminal). The travel time/distance between the hold lot and curbside affects the time required to replenish the vehicle queue at the boarding area and the amount of curb space that must be reserved for taxicabs.

- **Competing needs for sites near the terminal.** The location of a commercial hold lot affects many aspects of airport ground transportation services, including the amount of curbside that must be allocated to taxicabs, for example. At airports having physically constrained terminal areas or sites, it may be difficult to find an adequately sized hold lot near the terminal building. This is because there is apt to be competing demands for every parcel in or near the terminal area, resulting in limitations on the location and size of the commercial vehicle hold areas. Undersized hold areas can result in poor customer service, as it may make replenishing the vehicle queue at the boarding area more difficult.

Business relationship with commercial vehicle operators. As described in greater detail in subsequent chapters of this guidebook, some airport operators award exclusive or semi-exclusive concession contracts to the operators of taxicabs and/or shared-ride vans, while other airports allow all properly licensed and authorized taxicabs and/or shared-ride vans to pick up airline passengers. An airport operator's ability to control the quality of service, minimize staff resources, promote the use of alternatively fueled vehicles, generate revenues, and achieve other goals and objectives differs dramatically depending on the type of business relationship and the terms of the concession contract. While it may be helpful to use an airport with different business relationships during a benchmarking comparison, care should be used in reviewing the results.

Customer demographics. Ideally the selected airport serves a similar mix of airline passengers in terms of trip purpose (business versus non-business travelers), place of residence (local residents versus visitors), type of airline (domestic versus international, or legacy versus low-cost carriers), proportion of passenger traffic occurring during the peak season, and the proportion of passengers traveling to/from locations concentrated in the downtown versus being dispersed throughout the surrounding suburbs. Other factors affecting the use of commercial ground transportation and individual transportation services include the average household income in the region, automobiles per household, density of development, and availability of parking in the urban core. These factors influence the characteristics of the airline passengers choosing each type of commercial ground transportation service. For example, an international business traveler unfamiliar with the community is more likely to select a taxicab or limousine, while a local university student may be more likely to select a scheduled bus or shared-ride van.

Legal and political environment/governance structure. Airport management's ability to implement new programs, particularly those affecting the business opportunities or revenues of an existing class of ground transportation companies or its drivers, may be influenced by the extent to which elected officials participate in establishing airport policies and overseeing the airport's affairs. For example, it may be more challenging to introduce new policies, fees, or business programs if these must be approved by a board comprised of elected officials as opposed to the board members of an independent authority, not directly influenced by elected officials. The extent of "political" influence and independent authority varies widely between these broad categorizations (e.g., elected officials and board members of independent authorities).

Financial and staff resources. The available financial resources and staff resources also differentiate one airport from another. An airport with an experienced landside manager and supporting staff will have different capabilities than an airport where the management of commercial vehicles is the part-time responsibility of a duty manager, for example.

CHAPTER 3

Expectations of Customers, Airport Management, Providers, and Other Stakeholders

This chapter describes the expectations of those using, providing, and regulating commercial ground transportation, as well as those of other stakeholders. In general each of these groups desires to enhance the experience of the airport customer by (1) providing safe, secure, and efficient commercial ground transportation, (2) ensuring the use of well-maintained and properly licensed vehicles, and (3) affording customers a choice of ground transportation services available at a range of costs and levels of convenience. However, these groups have differing expectations and priorities. The following paragraphs describe the typical expectations of each group.

Expectations of the Customers

The airport customers include airline passengers, airport visitors, and employees working at the airport, all of whom are potential customers for commercial ground transportation. These customers may take transportation safety and security for granted, but they are keenly aware of the convenience and costs of the services available. With respect to commercial ground transportation, convenience implies:

Conveniently located boarding and alighting areas. Customers expect that they will be dropped off and picked up within a short walk and on the same level as their ticket counters/baggage claim areas. Passengers at a large hub airport expect to have to walk further and encounter more level changes than do those at a small or non-hub airport.

Clear signage. Customers expect to be provided clear signs guiding them from their aircraft gate to the point where they board their selected commercial ground transportation service. They expect to find information listing the hotel/motels providing courtesy service, the fares and destinations served by scheduled services, and examples of taxicab fares.

Minimum waiting time. Regardless of the hour of the day, the weather conditions, or ongoing events/conferences, deplaning passengers expect to find taxicabs waiting at the curbside. Passengers using scheduled service expect the vehicle to be on time and to exit the airport immediately after they board it. Customers who regularly travel through large airports expect the same level of convenience at small airports, despite the potential inability of the ground transportation providers at smaller airports to financially support equivalent service levels.

Choice of transportation options. Airline passengers prefer to have a range of commercial ground transportation service options available and be able to easily find accurate information about the fares, schedules, and destinations served by each of these transportation service options.

Weather protection. Waiting customers, especially those waiting for scheduled ground transportation services and courtesy vehicles, desire weather protection and a temperature controlled environment, preferably in an enclosure having seating and providing a view of the boarding area and waiting vehicles.

Clean, modern vehicles. Customers expect that their vehicle will be clean (i.e., free of ripped or stained seats, debris on the floor or in the baggage storage area). They expect the vehicle to be free of odors or fumes. They expect to find technologies for accepting credit cards in a secure manner and for providing the driver with directions to their destination if they are unfamiliar with the area. When boarding buses, passengers prefer low-floor vehicles with wide doors.

Well-trained drivers. Customers expect their drivers to present a professional appearance, be able to clearly communicate with their customers, and be familiar with the local street network and the communities surrounding the airport. They expect the driver to charge them the correct fare and to provide a receipt if requested.

Reasonable prices. Customers expect to find ground transportation options that are reasonably priced for the level of service offered. For example, they expect an individual trip in a taxicab to cost more than a trip in a shared-ride van that makes multiple stops enroute to the passenger's destination and requires the customer to share the vehicle with strangers.

Direct routes. Passengers expect to be transported to their destinations using the most direct route. If sharing a vehicle, customers expect the other passengers to be going to similar geographic locations and for the driver to use the most efficient route to reach all destinations. They expect the driver to make only prescribed stops.

Though customers may take safety and security for granted, airport managers seek to deliver safe and secure commercial ground transportation by ensuring that only authorized commercial ground transportation businesses pick up airline passengers.

Expectations of Airport Management

Airport management, including the staff responsible for day-to-day control of commercial ground transportation, expect the providers of commercial ground transportation to operate in a business-like and professional manner including (1) providing an adequate supply of properly maintained and licensed vehicles, (2) assuring their drivers are properly licensed and have been trained in safe driving, airport regulations and operations, and customer service, and (3) timely payment of airport fees and submission of required insurance certificates and other information. They expect these companies to provide fair wages for their employees and opportunities for owner/operator subcontractors to earn a fair wage. They also expect these companies to oversee and control the service provided by their employees and representatives, and to take appropriate actions when the expectations of their customers and airport management are not met.

At many airports, some commercial ground transportation providers do not operate in a business-like and professional manner. The effort airport management must devote to overseeing and controlling these few providers is out of proportion to the volume of airline passengers they transport or their contributions to the airport. However, airport management recognize that this effort must be made, as a customer's perception of the airport can be damaged by a few poor quality ground transportation providers.

Airport management also seek to ensure that all commercial ground transportation companies picking up airline passengers agree to obey airport rules and regulations, including using licensed vehicles and drivers, maintaining their vehicles properly, maintaining required insurance, and paying airport fees. This is because, to the extent that one company or ground transportation service avoids the costs of operating properly, it obtains an unfair advantage over its competitors, thus encouraging its competitors to operate in a similar manner (e.g., avoiding the costs of maintaining its vehicles properly or purchasing insurance). For this reason airports seek to prevent the illegal solicitation of airline passengers, particularly by unlicensed drivers.

Expectations of Local Elected Officials/Airport Commissions and Board Members

The expectations of local elected officials and board members vary widely region by region, and by size of the airport. However, generally they expect customers of the airport to be offered high quality, convenient, comfortable, safe, and reasonably priced ground transportation services. Thus many of their expectations are similar to those of the airline passengers. They may be more sensitive to quality of service provided by taxicabs and limousines as many of these officials/board members and the persons they encounter on a day-to-day basis are more likely to use these forms of airport transportation services than scheduled buses/vans or shared-ride vans.

Local elected officials expect that commercial ground transportation providers and drivers be treated professionally with minimal interference, unless these companies and drivers are shown to be providing the airport customers with unacceptable service or hindering their drivers' ability to earn a fair wage and receive expected benefits. In particular they are likely to listen to the operator's concerns about the costs of doing business on the airport and ability to access their customers. For example, board members are likely to be sensitive to the operator's complaints about airport fees, airport established vehicle standards, or their pickup/drop-off areas. Board members are also sensitive to complaints from drivers, who may be recent immigrants to the United States. For example, board members are likely to be sensitive to the driver's or owner/operator's complaints about their ability to earn a fair wage, the hours they must work or limitations on the days they may work, or how they are perceived by (their relationships with) airport operations staff and enforcement officers. If elected officials understand the concerns of airport staff and legitimate ground transportation operators with the improper solicitation of airline passengers, they are likely to support legislation prohibiting these acts.

Expectations of Ground Transportation Service Providers

The providers of commercial ground transportation services at airports expect to be able to earn a fair return on their investment. Many commercial ground transportation

providers (and drivers) derive most of their customers and much of their revenues from airports, leading to intense competition both among companies offering the same or comparable services at similar fares, and among the drivers of these services whose incomes rely upon fares or tips. To increase their market shares and revenues, ground transportation providers compete aggressively for curb space, visibility, direct access to customers, and other factors that provide a competitive advantage.

As a result of this competitive attitude, ground transportation service providers expect airport management to provide a "level playing field" and not favor certain companies. They expect airport management to offer all authorized companies the same access to airline passengers as their competitors, whether their competitors are providing the same service or similar service (e.g., shared-ride van companies view not only other van companies but also taxicabs as competitors). They expect to have unimpeded access to the airline passengers, including being able to remain at the curbside for extended periods. They expect the airport to (1) charge them minimal fees (or fees which they believe are justified), (2) provide the curbside pickup areas, ticket counters, vehicle hold lots, and other facilities needed to conduct their business, (3) control illegal or improper solicitation of customers, and (4) not interfere with their business relationships with their owner/operator drivers or employees (e.g., not regulate lease rates/gate fees or other charges, or require that they provide health insurance or other benefits).

Expectations of Commercial Vehicle Drivers

Drivers of commercial ground transportation services expect to be able to earn a fair income. Drivers working for businesses providing courtesy vehicles, scheduled buses/vans, or charter buses who are typically employees have fewer concerns about their ability to earn a fair income since their wages are not based on the number of passengers they transport. Their primary concerns are the ability to assist their customers, the amount of curb space available, their ability to maneuver into and out of the allocated curb space, and having access to waiting areas/hold lots.

The group of commercial vehicle drivers with the greatest concerns with airport operations are those employee and independent owner/operator drivers working for taxicab and shared-ride van companies, who derive most if not all of their income from their airport trips. Drivers consider themselves to be professionals and expect to be treated as professionals by the airport enforcement officers and the airport staff who interact with them. Drivers expect all ground transportation providers to be treated fairly and express concerns when they perceive that other drivers are receiving an advantage (e.g., more lucrative trips) or being favored by airport staff, dispatchers, or airport enforcement officers. They expect to be able to operate independently, working the hours they prefer with little interference from the company owners or airport staff. In an effort to maximize their income they expect to be able to pass on to passengers any increases in fuel costs, airport fees, or other charges. When waiting in airport hold lots they expect to find clean restrooms and, depending on the length of their wait and the location of the airport, a driver's lounge.

Expectations of Other Stakeholders

The operators of local hotel/motel and visitor/convention bureaus expect the airport ground transportation services to create a positive impression of their communities. Regional transportation and environmental planners expect that airport ground transportation services will be operated and provided in a manner that is consistent with the region's transportation, environmental, and sustainability goals.

CHAPTER 4

Operations of Commercial Ground Transportation in General

This chapter provides an overview of commercial ground transportation operations including the responsibilities of the agencies regulating these services and the basic business models used by commercial ground transportation service providers. It also describes the relationships between the companies and their drivers, with particular emphasis on the differences between drivers who are employees versus those who are independent contractors.

Roles, Responsibilities, and Resources of Non-Airport Regulatory Authorities

Non-airport regulatory authorities include those at the federal, state, and local levels. These authorities establish regulations, ordinances, and operating procedures regarding commercial ground transportation carriers. There are two types of ground transportation regulations—economic regulations and safety regulations. Economic regulations include, but are not limited to, carrier entry, exit, fares, routes, finances, and operating procedures, while safety regulations pertain primarily to the vehicle conditions and driver qualifications.

In general, the economic and safety regulations of many taxicab, limousine, and van services are local in character and thus have local regulations pertaining to their authority to operate, insurance requirements, vehicle safety, number of vehicles permitted, and driver qualifications. Most state legislatures consider taxicabs, limousines, and van services to be local issues and have delegated responsibility for their regulation to local communities.

Buses, however, due to their nature of traveling among cities within a state, were economically regulated at the state level for many years and only deregulated by many states beginning in the 1970s when other modes of interstate and intrastate transportation such as trucking lines, railroads, and airlines were also deregulated from economic regulations. A small number of states still regulate buses, vans, limousines, and some taxicab and TNC operations. States regulating buses, minibuses, and vans include California, Colorado, Nevada, Pennsylvania, and Washington. Colorado, Nevada, and Pennsylvania also regulate some taxicab operations within their respective states. TNCs are regulated by the state in California, Colorado, Pennsylvania, and Virginia. Other states were in the process of developing regulations for TNCs at the time this guidebook was prepared. The state agency most likely to be vested with this regulatory authority is the state's Public Utilities Commission (PUC) or a similarly named authority.

Should any ground transportation carrier, whether a taxicab, limousine, or bus, cross a state line during normal operations, they are considered interstate carriers and require federal motor carrier operating authority. At the federal level, however, the regulations are primarily safety regulations pertaining to operating authority, vehicle standards/operating procedures, recordkeeping, driver qualifications or licensing, and hours of service for drivers.

Each of these levels of economic and safety regulations by federal, state, and local authorities are discussed more fully herein.

Federal Regulations

Federal safety regulations pertaining to buses, minibuses, and passenger vans with nine or more passengers including the driver are administered by the Federal Motor Carrier Safety Administration (FMCSA). This agency is responsible for granting operating authority and inspecting vehicles and companies for compliance with FMCSA safety regulations.

Due to the large number of these vehicles that may operate at an airport, airport staff should be familiar with the federal regulations pertaining to bus, limousine, and van passenger carriers with capacity between 9 and 15 passengers and their drivers. The agency's website (www.fmcsa.dot.gov) provides general information regarding the agency and its activities. While it is helpful for airport staff to be familiar with FMCSA

regulations and this information may be referenced in an airport's rules and regulations, it is not the role of the airport to enforce these regulations, other than making sure that any vehicle operating on the airport's roadways is properly registered with FMCSA if its route of travel may involve interstate commerce.

The Federal U.S. Department of Transportation (DOT) regulation of most concern to airport staff as it pertains to limousine services is the Motor Carrier Act of 1980. Seeking to eliminate the duplicative registrations that some limousine companies had to undergo when they sought to serve multiple airports and communities in different states, this bill was passed by the federal government to require states, cities, and other political subdivisions such as airports to recognize the registration, and in some cases the inspection, of these vehicles that other states had already provided. The act does permit airports to charge user fees for the use of airport facilities and a business license fee for conducting business on airport property.

State Regulations of For-Hire Passenger Motor Vehicles

As previously mentioned, some states continue to regulate buses, commercial for-hire passenger vans, and taxicabs. California, for example, regulates required insurance levels and company and driver entry into the shared-ride van industry by requiring that these companies obtain a PUC license to operate and that individual drivers obtain permits to drive the vans. The PUC's responsibilities include:

- Regulatory and safety oversight of for-hire passenger carriers (limousines, airport shuttles, and charter and scheduled bus operators), moving companies, railroads, light rail transit agencies, and rail crossings.
- Authority over intrastate air carriers, for-hire vessel carriers, interstate passenger and household goods carriers, and intrastate private carriers of passengers is limited to registration of operations and filing evidence of liability insurance.

Entry into the passenger transportation industry in California, however, is not restricted. Individuals, as well as companies, can apply for PUC operating authority. It is common in California for individual van owners operating as independent contractors or franchisees of an airport shuttle company to apply for and receive their own PUC operating authority. Thus, California airport staff seek to ensure that all companies involved in transportation of individuals to and from their airports hold approved authority from the California PUC and that drivers are in possession of an approved driving permit. In general, while minibuses and vans are regulated primarily for safety by the FMCSA, there may also be safety requirements established by individual states that these operators must comply with to obtain operating authority within the state.

New to the ground transportation industry are regulations pertaining to peer-to-peer TNCs. California was the first state to recognize and regulate these smartphone application based carriers. At the time this guidebook was completed, several companies had received licenses to operate as a TNC in California, Colorado, and several other states, and the regulation of these services was still evolving. Chapter 8 Section C provides additional information on TNC regulations.

County or City Regulations

By far the most common form of regulation of taxicabs, vans, and other commercial vehicles serving airports are those regulations emanating from the cities or counties. If an airport is located within city limits, city regulations generally govern which companies and drivers are permitted to operate at the airport. For airports located outside city boundaries there may or may not be county regulations regarding who can enter the market and what standards these companies, their drivers, and vehicles must adhere to. Several airports (e.g., Piedmont Triad, Minneapolis-St. Paul International, and Washington Reagan National Airports) are served by taxicabs, limousines, and vans from multiple surrounding jurisdictions, each having its own regulations. In several cases, there may be multiple local jurisdictions such as several cities and/or counties from which taxicabs, limousines, and vans may be attempting to serve the airport. Such multiple jurisdictions often present additional service and compliance issues for airport staff and must be considered when airport staff draft the airport's own ground transportation rules and procedures.

Generally, local regulations by a city or county, or in some cases both, include operating authority for the taxicabs and, to a lesser degree, limousines. Typical local taxicab regulations are economic regulations covering entry into a market, fares, financial reporting, vehicle age and conditions, and driver qualifications. Cities and counties will typically restrict entry into the market by limiting the number of participating companies and vehicle permits in order to aggregate sufficient demand per vehicle so as to make it financially attractive for taxicab drivers to enter the industry. In return for these restrictions on entry into the industry, the on-demand taxicab industry is required to engage in actions which limit the revenues a company may earn such as charging only set rates, providing service at all times, accepting credit cards as well as cash, and being available to all areas of the city and/or county.

Prearranged services such as limousine and van services are typically not economically regulated in the same manner

as taxicabs. Entry into these markets by limousine companies is generally not restricted by local regulations, but many jurisdictions mandate minimum fares for chartered limousines or chartered vans to help distinguish these services, which are considered to be higher quality products than taxicabs.

Therefore, it is important for airport staff to become familiar with local regulations governing taxicabs and limousines. This is because these local ordinances may serve as a basis from which to develop the airport's ground transportation rules and operating procedures. Because of this, as regulations are updated or developed, it is also important for the airport to be involved in the regulatory process.

Roles and Responsibilities of Companies/Providers

The following paragraphs describe the roles and responsibilities of the various commercial ground transportation companies (or providers) commonly found at airports.

Taxicabs

In most communities, taxicab companies own few vehicles and employ few if any drivers, but instead rely upon owner-operators who provide and drive taxicabs or upon drivers who lease company-owned vehicles. Frequently the drivers, not the companies, are responsible for obtaining the required permit or medallion from the local regulatory authority. To benefit their affiliated drivers, taxicab companies provide (1) dispatching services, which may be considered less valuable if drivers serve a large volume of airport passengers or street hails, (2) marketing and advertising to potential customers including major employers, (3) discount or umbrella insurance policies to the drivers, and (4) vehicle maintenance. Few of these businesses are affiliated with taxicab companies located in other cities—that is, it is unusual for an individual or business to own taxicabs in multiple cities.

Limousines

Limousine companies range from individual owner-operators to companies owning large fleets employing many drivers. Some companies, using franchises, operate on a global basis while others are strictly locally based. Individual drivers attempt to develop their own customers (i.e., "personals") while at the same time serving trips booked through a larger limousine company with whom they are affiliated. Many limousine companies own only a few luxury sedans/SUVs and vans and rely upon the vehicles owned by their affiliates to supplement this fleet when they book a large party or require additional vehicles.

Transportation Network Companies

TNCs have dispatch offices but do not own any vehicles, instead relying upon owner-operators to provide and drive their own personal vehicles. TNCs range from small local companies to national and global companies. The companies are responsible for marketing and promoting their services and maintaining the software platform that connects prospective customers and available drivers.

Shared-ride Vans

Shared-ride van companies vary from national brands (e.g., SuperShuttle and GOAirportShuttle) to local owners having a fleet composed of fewer than five vehicles. The shared-ride van companies are responsible for assigning trips to individual drivers, obtaining permits from airports and other regulatory authorities, and marketing the company. The owner-operators of some companies' vans are considered franchisees of the national brand. The national company or a local affiliate provides these franchisees dispatching, discount insurance, marketing and promotions, and other services. Owner-operators affiliated with other companies have similar, if less formal, relationships.

Courtesy Vehicles

Courtesy vehicles include vans, minivans, and large buses owned and operated by rental car, hotel/motel, and off-airport parking companies. The operator of the courtesy vehicles is responsible for vehicle maintenance and licensing, establishing headway schedules, and other aspects of customer service. Typically the business operating courtesy vehicles will have a fleet of fewer than six vehicles. In some locations hotels/motels outsource the operation of their courtesy vehicles to a third party.

Scheduled Vans/Buses and Charter Buses

Scheduled vans/buses may include long-haul buses and vans or public transit buses. Most scheduled buses and vans are operated by a local transit agency, but a few private companies also operate scheduled bus services. These buses include over-the-road coaches having underfloor baggage storage, full-size buses, minibuses, cutaways, and standard vans. Most frequently the charter bus operator owns the bus fleet and employs the drivers. Some charter bus operators do not obtain airport permits for each bus they own, assuming that only a small proportion of their fleet will serve the airport. Private operators are responsible for vehicle maintenance, marketing, and overall operations and scheduling.

Competition Among Providers

As one might expect there is considerable competition among providers for deplaning airport passengers who have not chosen a ground transportation alternative before their arrival at the airport. Where available, these passengers may select an on-demand taxicab, an on-demand limousine, a shared-ride van, summon a prearranged taxicab or limousine service or a TNC by calling or using their transportation app, or board a scheduled bus/van service.

This competition for arriving airline passengers may result in providers taking one of several actions to gain a competitive edge. One primary area of competition is positioning on the airport curbside. Both on-demand taxicabs and shared-ride van concessionaires want to be front and center outside the doors from baggage claim so they are visible and easily accessible to potential customers. If taxicabs, limousines, or shared-ride van providers are located next to each other at the curb, airport personnel often need to be present to ensure that customers are not improperly solicited from their preferred service by a competitor. In the case of the on-demand taxicab line, airport staff or a third-party presence is typically needed to ensure that drivers do not turn down short trips, telling passengers to take the next taxicab in line instead.

Some prearranged limousine drivers attempt to attract customers by offering transportation to passengers who have not made prior arrangements. This solicitation, which is considered illegal, typically occurs inside or near the baggage claim of the terminal building. Arriving passengers may be asked if they need transportation and those answering positively are ushered out of the terminal baggage areas to a waiting limousine.

There is also price competition among the various ground transportation carriers. Shared-ride vans compete on the basis of price with other ground transportation options—often being 60% of the cost of a taxicab to the same destination. Taxicabs are generally more expensive than shared-ride alternatives but less than limousine services. Thus, the airline traveling public will have several commercial ground transportation options available to them at a range of costs and service levels at most airports.

Relationships Between Companies and Drivers

In commercial ground transportation businesses, there are two primary relationship structures between the companies providing the transportation and their drivers or other key staff:

- Ground transportation providers who hire drivers as employees
- Ground transportation providers who engage independent contractors to provide ground transportation services

The relationship between companies and drivers as either employees or independent owner-operators greatly impacts the cost and business structure of ground transportation services. An employer is required to provide their employees with certain benefits which vary depending if the employee works on a full-time or part-time basis and the state and city in which the business is located. These benefits may include contributions to Medicare, social security, unemployment insurance, and at larger companies, health insurance and time off for holidays and vacation. Many commercial ground transportation businesses now use independent contractors to drive their taxicabs, limousines, and vans rather than employees. In this case, the independent contractor, not the employer, is responsible for the cost of providing insurance and other benefits.

Several states and federal agencies (e.g., the National Labor Relations Board) have issued rulings defining what constitutes an employee versus an independent contractor. Thus airport staff must consider the employer-employee relationship to stay in compliance with state and federal laws and regulations and the policies of the airport board/local elected officials regarding the living wages/minimum wages and health benefits to be provided to persons working at the airport. These policies have an impact on both the structure of and the opportunities provided to commercial ground transportation services.

If a driver, for instance is found to be an employee, certain laws dictate how he or she must be compensated. These laws and regulations exist at the local, state, and federal level. Decisions impacting the determination of these relationships, and thus the costs associated with the service, are found in case law, statutes, codes, and regulations impacting the services. Set forth are a few general considerations and some of the recent cases and administrative decisions related to the employer-employee relationship in ground transportation.

There are many factors that contribute to the legal definition of whether a driver is an employee or an independent contractor. The terms and conditions upon which service providers are compensated and managed greatly inform their status as employers/employees. Factors which impact the determination of whether an operator is considered to be an employee include:

- Hiring party's right to control the manner and means by which the product is provided
- Skill required
- Source of the instrumentalities and tools
- Location of the work

- Duration of the relationship between the parties
- Whether the hiring party has the right to assign additional projects to the third party
- The extent of the hired party's discretion over when and how long to work
- The method of payment
- The hired party's role in hiring and paying assistants
- Whether the work is part of the regular business of the hiring party
- The provision of employee benefits
- Tax treatment of the hired party

While airport ground transportation staff is not usually in a position to impact decisions related to whether or not drivers for ground transportation providers are employees of a company or independent contractors, it is important for staff and decision makers to understand the issues related to this question for several reasons:

- Whether a driver is an employee or an independent contractor impacts the cost structure of the services available to passengers. Utilizing independent contractors enables the provider to make services available at a lower cost to customers (and provide greater profit to the company owner), but the drivers themselves may have a difficult time making a decent wage when they are responsible for all of the costs of providing a vehicle as well as insurance, maintenance, driver training, and equipment.
- Company owners have a more difficult time managing independent contractors than they would employees because of the nature of an independent contractor relationship. The airport must make sure it retains a measure of control over the ground transportation provider and enforce rules, regulations and standards so that it can ensure the level of service, including dependability, convenience, and safety, expected by customers.
- If the airport utilizes companies which use independent contractors, the airport may make the resources of its small or Disadvantaged Business Enterprise (DBE) business support or economic development staff available to help small business owners gain access to business development resources such as low-cost loans, affordable health care, and other insurance and business marketing services.
- It is important for airport staff to understand the differences in employer-employee vs. independent contractor relationships as they may impact the structure, content, or goals of a Request for Proposals (RFP) or RFQ for commercial ground transportation services.

The most visible court case involving employer-employee relationships was *Kairy v. SuperShuttle* (U.S. District Court in Northern California) which was signed in November 2014 (Order Granting Plaintiffs' Motion for Final Approval of Class and Collective Action Settlement). As a result of this class action settlement, it was agreed:

- By SuperShuttle to pay $12,000,000 into a gross settlement fund as well as pay other fees, and that its contractual documents and operational policies and practices determine that its operators are independent contractors. As a result of this case, SuperShuttle made changes to its franchise operations and provided new franchise agreements and modifications to the existing agreements. The new franchise agreements and modifications establish a system that enhances the operators' entrepreneurial opportunities and independent status.
- By the Operators to an independent contractor status meaning that SuperShuttle is not required to pay minimum wage, overtime, meal period pay, reimbursable business expenses, or health care.

The next phase in the employee vs. independent contractor conversation is the case *O'Conner v. Uber Technologies*, also a class action suit, which at the time this report was completed was moving through the court system. Uber Technologies requested to dismiss the case by a motion for summary judgment stating that Plaintiffs are independent contractors as a matter of law. On March 15, 2015, the United States District Judge signed an Order Denying Uber Technologies' Motion for Summary Judgment.

The argument for denial is based on the ruling that Uber drivers are presumptive employees, and the distinction is a matter of fact whether the drivers are independent contractors or employees and therefore for jury determination. Further, the court's ruling included an opinion that (1) the traditional test of employment is insufficient when viewed under a "sharing economy" model, and (2) the legislature or appellate courts may eventually be required to refine or revise a test of employment particular to the sharing economy depending on additional cases or this case.

Basis of Compensation for Companies and Drivers

Compensation for the three primary commercial ground transportation companies and their drivers depends upon the relationships noted in the previous section.

Taxicabs

Generally, all taxicab drivers are compensated directly from the fares and tips they receive from their customers. As independent contractor drivers or owner-drivers of their own taxicab, they are typically small business individuals or

entities that pay a fee for the lease of their taxicab operating authority, insurance, dispatch service, and any marketing support the taxicab company provides. The lease fees they pay to the taxicab company provide the compensation earned by the taxicab company.

Shared-ride Vans

Airport shared-ride van concessions are performed with either independent contractors who own their own van or with employees of the shared-ride van company. In the case of independent contractors, the driver typically pays the van company for the vehicle lease, insurance, and other fees. The driver must reconcile these costs of operation from the total amount of revenues generated by their vehicle. Thus, the independent contractor's compensation is the residual from van earnings after all the fees are paid to the company.

Shared-ride van services that have employee drivers would operate as any other employee business. The company collects all fares paid by users of the service and pays the driver an hourly rate, regardless of the number of passengers conveyed. Hourly wages vary from company to company but generally shared-ride van drivers receive considerable compensation in the form of gratuities from passengers so their total compensation may be 20% or more than their stated hourly rates.

Limousines

Limousine companies use both full and part-time employees and some make use of independent contractor drivers when there is prearranged work for them. Unless there is an on-demand limousine concession at the airport, most limousine drivers are paid as either employees or independent contractor drivers.

Transportation Network Companies

TNC drivers are typically independent contractors who use their own personal vehicle to provide transportation services. The company retains a portion of each fare for providing and maintaining the TNC app and connecting customers to the drivers. Drivers choose when to work, whether full-time, part-time, or only occasionally, and may drive for multiple TNCs during the same day, operating through whichever app first connects the driver to a passenger.

Courtesy Vehicles

The drivers of courtesy vehicles are typically employees of the primary business providing the courtesy shuttle service. Compensation for rental car, hotel, and off-airport parking shuttle drivers is typically in two forms, an hourly rate and gratuities (tips) paid by airport customers. In many shuttle operations, the hourly rate is often minimal but the amount of income earned from tips is considerable.

Scheduled and Charter Buses/Vans

Scheduled and charter bus/van drivers are typically employees of the bus/van company. Scheduled operators derive their revenues from the fares charged customers, while charter operators are paid for the cost of leasing the entire vehicle, regardless of the number of customers transported.

Capital/Operating Expenses for Companies and Drivers

Taxicabs

Capital and operating expenses in the airport taxicab industry are commonly borne entirely by the driver, but not in all cases. Some taxicab companies provide the vehicle and lease it to a driver. In this case, the capital employed in the vehicle and its annual operating expense is borne by the company with the driver paying only for fuel used.

Capital costs of taxicab vehicles used in an open airport system are low in comparison to taxicabs used as part of an airport concession agreement. Many airport taxicab drivers or taxicab companies that lease cabs to the drivers purchase only used vehicles with limited mileage (less than 100,000 miles) on the vehicle. Therefore the cost of these vehicles rarely exceeds $10,000 dollars and often is less.

Used state police cars traditionally were a favorite vehicle for taxicabs since they were inexpensive, built for heavy street use, and were comfortable for all day driving. However, when the cost of gasoline passed $4.00 per gallon, it motivated taxicab drivers and taxicab fleet managers to move away from these heavy vehicles in favor of more fuel efficient smaller vehicles. A favorite vehicle of the airport oriented independent owner-operator has been the front wheel drive Chrysler/Dodge minivan due to its large passenger and cargo area and utilization of a more fuel efficient smaller engine. Unless there is an airport taxicab concession requiring newer vehicles, the average capital cost of these used vehicles for airport taxicab service is typically in the $6,000 range, with replacement by another used vehicle every 3 to 4 years. If these vehicles are utilized in airport service only, no other capital costs may be necessary other than equipping the vehicle with a "taxicab package" which consists of painting, a taxicab meter, a credit card reader, and communication equipment, all of which can be accomplished for less than $1,000 per vehicle. [Note: These costs represent 2014 values.]

The primary daily operating expense for the airport taxicabs is fuel—primarily gasoline, but with a quickly changing

landscape to other fuels such as CNG, propane, and hybrid vehicles such as the Prius. Fuel costs can range from as high as $50 to $60 per day for the traditional retreated police car to as low as $20 per day for the fuel efficient Prius, depending upon fuel prices and distances traveled.

Limousines

Limousine capital costs are initially more than that of a taxicab, but operating costs are similar to that of a large sedan used in taxicab work. Sedan type limousines can be purchased new for around $30,000 per vehicle or slightly less when purchased at fleet sale prices. However, since a limousine travels considerably less miles that a taxicab each year (30,000 miles vs. 60,000 miles) their useful life as a commercial vehicle can be up to 12 years.

In limousine services, it is common for the limousine company to assume all variable costs of operation, including fuel, and to compensate the driver as a percentage of revenue received while the driver was operating the vehicle.

Transportation Network Companies

Since TNCs operate using a driver's own personal vehicle, some drivers may not have any initial capital costs if they already own a vehicle that meets the TNC's operating requirements. The primary operating expense for TNC drivers is fuel. Since drivers may work for a TNC as little as several hours per month or may choose to drive full-time, the mileage put on the vehicle in addition to personal miles driven can vary considerably.

Shared-ride Vans

Capital costs in the shared-ride van industry are borne by the drivers if the carrier is using owner-operators and by the company if drivers are employees. Vehicle costs for the vans usually range from $15,000 to $25,000 depending on accessories and size—for example, 9 vs. 15 passenger vans. Operating costs for the vehicles are relatively high given the low fuel efficiency and high annual mileage of these vehicles. It is not uncommon for shared-ride vans to operate 90,000 or more miles per year. Thus, the useful life of a shared-ride van is typically 5 years or less.

Other External Factors Affecting Ground Transportation Operations and Operating Procedures

One of the more significant external factors affecting ground transportation operations and operating procedures at airports is that the airport is typically the largest single generator of commercial passenger trips for taxicabs, limousines, and shared-ride vans in the region, and therefore all drivers and companies want to serve the airport. Thus, it is the responsibility of airport management to provide operating rules and regulations that respond to the airport's goals of providing the desired customer experience, operating their facility efficiently, meeting regional environmental and sustainability goals, preserving airport revenues, and achieving other management objectives.

In most cities airport roadways are considered "private roadways" open to the public under the rules, operating procedures, and fees set forth by the airport sponsor rather than as public roadways accessible to all motorists on an equal basis. When they operate outside of the airport, commercial ground transportation vehicles and drivers use the same roadways as private vehicles and generally must obey the same laws as private vehicle drivers. However, when operating on an airport, commercial vehicle drivers must obey additional or different rules than the drivers of private vehicles. This is because it is in the traveling public's interest that they be treated differently for traffic, safety, environmental, economic, and other reasons.

Local Political Interests

In many communities, local political interests focus on (1) customer service and serving visitors, and (2) meeting the needs of the taxicab and limousine industry, which is often composed of small businesses and drivers who are recent immigrants. These groups typically have direct access to elected officials and a large amount of influence relative to the number of customers they serve. When airports propose changes that the taxicab or limousine industry perceives as negatively affecting their income and businesses, they may lobby the elected officials by citing personal examples of hardship, which may be more effective and influential than the information and recommendations provided by airport staff.

Public Transit Proponents and Operating Agencies

Airport staff should coordinate with local transportation agencies when a project the airport is undertaking may impact a transit agency, regardless of whether the agency's approval is required. Conversely, ground transportation staff should be involved in efforts to extend public transit services to the airport or improve existing service. Buses serving airport passengers typically have different requirements than public transit buses serving only downtown areas. These differences should be clearly communicated to public transit agencies, and may include peak period service hours that differ from traditional commute hours, reduced vehicle capacities

due to passengers with luggage, and the resulting need for increased frequency of service.

Environmental Regulatory Agencies

Airport sponsors may establish programs or develop plans to reduce emissions from traffic generated by the airport, including commercial ground transportation vehicles. Coordination with federal, state, and local environmental agencies is important when seeking to implement these types of environmental programs, as the staff of these agencies may have experience with similar projects and be able to provide guidance to airport staff. Occasionally grant opportunities may also be available through these agencies, or they may have knowledge of other funding opportunities for emission reduction programs. Chapter 8 Section H discusses best practices for supporting local and regional environmental goals.

CHAPTER 5

Operations of Commercial Ground Transportation at Airports

Airport operators attempt to ensure that deplaning airline passengers desiring commercial ground transportation are offered a menu of ground transportation options available at a range of levels of convenience and cost. Airport operators also attempt to ensure that these ground transportation services are offered safely, securely, and in a manner which is consistent with airport policies, rules, and regulations. This chapter describes the techniques and programs airport staff use to manage and control commercial ground transportation services. It describes common access processes and controls, the use and control of commercial vehicle curbside boarding areas and hold lots, types of commercial vehicle fees, and an airport's relationships with airport ground transportation services provided by public agencies and scheduled commercial airlines.

Access Processes and Controls

Many if not most airports require that commercial ground transportation providers seeking to do business at an airport (i.e., pick up airline passengers) agree to abide by airport rules and regulations, and prohibit vehicles which have not done so from stopping on airport property to pick up customers. Typically the airport's rules and regulations govern the use of the airport roadways and other property, designate areas where vehicles can drop off and pick up passengers, and require compliance with environmental, safety, security, insurance, and other regulations. The rules may also require the payment of certain airport fees, which are described later in this chapter.

Enforcement of these rules and regulations is typically the responsibility of airport staff and police (licensed enforcement officers or LEOs). The airport staff may include ground transportation or landside operations staff, airport duty officers, and/or traffic control officers (TCOs). The responsibilities of each type of enforcement personnel are described in further detail in Chapter 6.

Use of Dispatchers/Starters

Managing and controlling taxicabs, limousines, and shared-ride vans requires greater effort than controlling courtesy vehicles or scheduled bus or van services. To manage and control taxicabs and other vehicles many airports employ dispatchers or starters who are either airport staff or contract staff. At airports that have awarded an exclusive or semi-exclusive concession contract to provide on-demand taxicab service, the dispatcher is likely to be an employee of the concessionaire. At airports that allow all authorized taxicabs to provide on-demand service, (i.e., on-demand taxicab service is provided on an open or nonexclusive basis) the dispatcher is likely to be an employee of the airport or a third-party contractor retained by the airport. Additional information about open and exclusive taxicab contracts is provided in Chapter 8 Section A of this report. Additional information about taxicab boarding areas and taxicab hold lots is presented later in this chapter.

Taxicab Dispatchers

At airports where there are large volumes of taxicab customers, the taxicab dispatcher may be stationed at the taxicab boarding area of each terminal during all hours when deplaning passengers are expected, with supporting personnel stationed in the hold lot to monitor and control waiting taxicab drivers. At airports serving fewer taxicab customers, a taxicab dispatcher may be stationed at the boarding area, but none in the hold lot. At these airports drivers are instructed to proceed from the hold lot to the terminal via dispatcher-activated or, during off-peak periods customer-activated signal lights or bells, or via mobile phones or two-way radios. Alternatively, vehicle detection systems can be used to summon vehicles from the hold lot by detecting when a taxicab has left the boarding area through the use of gate arms (e.g., Hartsfield-Jackson Atlanta International) or in-pavement detectors (e.g., Toronto Pearson International). At small airports there may

be no dispatcher, particularly if taxicab drivers wait in an area that allows them to observe the end of the taxicab boarding area queue (e.g., Evansville Regional Airport), or if drivers exiting the boarding area notify waiting drivers that they may proceed to the terminal using mobile phones or radios. More information on dispatching technologies is included in Chapter 9.

Typically taxicab dispatchers at airports are responsible for:

- Ensuring the proper sequence or queuing of taxicabs waiting to pick up arriving passengers (i.e., first-in, first out) whether the vehicles are queued in a remotely located hold lot or at the terminal curbside.
- Dispatching waiting taxicabs from the hold lot to the passenger boarding area and indicating how many vehicles should exit the hold lot at any one time. At airports having multiple terminals, dispatchers are responsible for directing taxicabs to a specific terminal. At some airports with multiple passenger terminals, under the direction of a dispatcher, taxicabs are allowed to migrate from a terminal having little or no customer activity to a busy terminal in order to balance driver waiting times and customers/fares fairly among all waiting taxicabs.
- Briefly inspecting the appearance of taxicab vehicles and drivers to ensure that they comply with airport rules and have required airport-issued permits or licenses.
- Greeting customers and assigning them to a vehicle. At some airports this task may include determining a customer's destination, the party size, and any special needs a customer may have. Examples of special needs include requests for a vehicle that can transport a large party or large pieces of baggage (e.g., skis or golf clubs), a vehicle/driver that can accommodate a disabled passenger, a driver with specific language skills, or a specific taxicab company.
- Confirming that the driver is in the correct sequence and has paid the required airport fees. At some airports this is accomplished by collecting tokens or sequentially numbered tickets from the taxicab drivers. At other airports this confirmation is completed automatically using Radio Frequency Identification (RFID) tags or other technologies described in this report.

Limousine Dispatchers

Airports with large volumes of prearranged limousine customers and limited curb space available to accommodate waiting limousines are more likely to require that limousine drivers wait in a hold lot until their customer arrives at the curbside and is ready to exit the airport. At these airports a dispatcher or ground transportation coordinator may be responsible for notifying waiting limousine drivers when they can proceed to the terminal curbside. Airports with smaller volumes of prearranged limousine customers are more likely to allow limousines to wait at the curbside. These airports are less likely to use a dispatcher or ground transportation coordinator to control the movement of limousines and more likely to allow limousine drivers to determine when to proceed to the curb.

A dispatcher overseeing limousines at an airport may be responsible for:

- Confirming that the limousine drivers have a valid waybill, have required airport-issued permits or licenses, and that the vehicle and driver comply with airport rules
- Ensuring that the limousine drivers remain with their vehicles, if required to do so by airport rules
- Notifying limousine drivers when they can exit the limousine hold lot and proceed to the curbside boarding area

Shared-ride Van Dispatchers

The responsibilities of a shared-ride van dispatcher vary depending on whether the shared-ride services are provided in an open environment or in an exclusive or semi-exclusive environment.

In an open environment the shared-ride van dispatcher is typically employed by the airport operator or by a third-party contractor retained by the airport operator. In such an environment the dispatcher's responsibilities typically include:

- Monitoring and controlling vans waiting in the hold lot and indicating/announcing which van(s) should proceed to the terminal.
- Authorizing vans waiting in the hold lot to proceed to the terminal, and indicating the number of required vans, either in total or by company. At airports with multiple terminals, dispatchers are responsible for directing vans to a specific terminal.
- Briefly inspecting the appearance of vans and drivers to ensure that they comply with airport rules and have required airport-issued permits or licenses.
- Greeting potential customers, confirming they are seeking shared-ride service, their destination, and whether the customer prefers a specific company or has prior reservations for a specific company.
- Assigning passengers to the appropriate vehicle. At some airports this may be simply the next vehicle waiting in line, or at other airports it may require customers to wait in a specific zone where they are grouped with other customers wishing to travel in a specific company, or going to a similar geographic area or destination.
- Ensuring that drivers exit the airport within the prescribed time. At many airports, shared-ride van drivers are required to exit the airport within 20 to 30 minutes after the first customer has boarded the van.

At airports with exclusive or semi-exclusive concession contracts, the shared-ride van dispatcher (or customer service representative) is typically an employee of the concessionaire. In such an environment the dispatcher's responsibilities typically include:

- Communicating with the company dispatcher via radio, wireless tablet, or other means to indicate when additional vans are required. As the company dispatcher is responsible for coordination of all vans in a city or region, he/she may not be located on the airport but rather at the company's offices or base yard. The company dispatcher determines which van drivers should exit the hold lot, when they should do so, and to which terminals they should proceed.
- Greeting potential customers, asking them if they want shared-ride van services, their destination, and whether they have a prior reservation.
- In accord with the instruction of the company dispatcher, the curbside dispatcher (customer service representative) is responsible for showing customers which vehicle to board, typically the next vehicle going to the customer's geographic destination.
- Ensuring that drivers exit the airport within the prescribed time.

Use of RFID and Other Access Control Technologies

As noted, most airports restrict which commercial ground transportation vehicles may stop and pick up passengers and the location of the curbside or other boarding areas where they may do so. Airport operators use a variety of access controls to restrict vehicle access to the designated boarding areas. The type of control depends on whether or not access to these boarding areas is controlled by a gate.

Access controls also allow an airport to monitor how often authorized vehicles enter the curbside or other boarding area (i.e., volume of trips) and how long they remain in the area (i.e., dwell times). As described in subsequent sections the number of trips and length of dwell times are frequently used to calculate commercial vehicle fees.

Access Controls at a Gated Facility

A gated facility allows the airport operator to prevent unauthorized commercial ground transportation vehicles or private vehicles from entering the designated boarding areas. This separation has several advantages including:

- Promoting safer traffic operations as drivers unfamiliar with the airport are segregated from professional drivers who regularly use the airport
- Allowing authorized commercial ground transportation operators to provide better customer service and potentially attract additional customers in contrast to those operators who have not obtained an airport permit and thus cannot stop at the designated boarding area

To gain access to the boarding areas at a gated facility, drivers of authorized commercial ground transportation vehicles must activate the gate-control mechanism using an access card or other media recognized by the reader controlling the gate arm. The most commonly used media are proximity cards and RFID transponders or tags. Because a proximity card must be placed in close proximity (e.g., within several inches of a reader), a driver must stop, open their window, present the card in front of the reader, and wait for the gate arm to raise before proceeding. In contrast an RFID tag may be recognized by an RFID reader from a distance of up to about 18 feet, and while a vehicle is in motion. Thus, at a gated facility controlled by a ground transportation management (GTM) system using RFID, the driver must simply slow down or stop to wait for the gate arm to rise before proceeding. Some airports have gate arms at both the entrance and exit of the curbside area, with the exit gate controlled either by a proximity card, RFID tag reader, or more commonly a vehicle "presence" detector embedded in the pavement.

Vehicle queues may form at the entry gate lanes, which have a capacity of about 400 to 450 vehicles per hour per lane. To safely accommodate any vehicle queues that may form in front of the access gate due to the time required to activate the gate, a queuing area or lane should be provided that allows other traffic to bypass these queues, with the length of the queuing lane determined by the volume of peak hour commercial ground transportation vehicles entering the boarding area and the type of access control technology.

Enforcement at a gated facility is as follows. Vehicles without an active RFID tag or proximity card cannot gain access to the boarding area. Moreover, the airport operator may deny access to a commercial ground transportation operator or vehicle that is no longer authorized to serve the airport (whether as a result of having violated airport rules or for other reasons) by simply deactivating or turning off the RFID tags or proximity cards. Airports have found that denying curbside access and thus adversely affecting the ground transportation operator's ability to conduct business is a strong incentive for the operator to avoid similar violations in the future, including addressing late payments or lapsed insurance coverage.

Access Controls at An Ungated Facility

At many airports, particularly those with older roadway layouts, it is not practical to install a physical barrier or entry

gate on the curbside roadway due to a lack of parallel entry lanes for private vehicles and/or space for vehicle queues and a gate arm mechanism. At airports without entry barriers, airport staff must carefully monitor and enforce the curbside areas to prevent private vehicles or unauthorized commercial vehicles from stopping in the areas allocated to commercial vehicles. If the curbside areas designated for their use are occupied by unauthorized vehicles, commercial vehicles may have to double park to pick up waiting customers or may be unable to exit the curbside area after picking up customers. Both of these situations are undesirable as they reduce customer service and safety.

To help identify unauthorized vehicles, most airports require authorized commercial vehicles to display airport-issued decals and many, even those without access gates, require that they have vehicle-mounted RFID tags or transponders. The decals allow staff to readily confirm that a commercial vehicle operator has a current airport permit. The RFID transponders allow passing vehicles to be detected, even if they do not stop, and the commercial vehicle trip volumes to be monitored and vehicle dwell times recorded. Enforcement may be supplemented by portable RFID readers. Additional information about RFID and GTM systems is provided in Chapter 9.

Managing Oversupply and Undersupply of On-Demand Taxis and Other Services

Ideally the supply and demand for transportation service would be perfectly matched, i.e., there would be a waiting taxicab available to serve each airport customer as he or she arrives at the curbside boarding area, and that vehicle would have arrived at the curbside only moments beforehand. In reality this ideal situation rarely, if ever, occurs, and typically there is instead an oversupply or undersupply of taxicabs or other vehicles.

The following paragraphs address the oversupply and undersupply of taxicabs because this is the transportation service that is most likely to have an imbalance between supply and demand, particularly at smaller airports and at airports where any taxicab having a city license can obtain an airport permit and wait for customers at the airport (i.e., an open system). However, there also may be an imbalance between the supply and demand of shared-ride vans or other types of commercial vehicles when these on-demand services operate in an open access environment.

Oversupply

A large oversupply is undesirable as it results in taxicab drivers having long waits for customers. At airports that have attempted to balance supply and demand, taxicab drivers may wait 2 hours or less for a customer. At airports with a significant oversupply of taxicabs, drivers may wait 4 hours or more for customers, particularly during off-peak periods. Such waits are more common in cities where the airport customers represent the largest volume of on-demand taxicab business in the community and where there is an open system.

Long waits between airport customers limit the number of customers a driver can serve and the income the driver can earn. A driver's earnings depend upon their ability to make sufficient trips to cover their fixed costs (e.g., fuel, vehicle lease, vehicle maintenance, and dispatch fees). Drivers who are unable to cover their costs on a regular basis are more likely to attempt to reduce their costs or increase their income by deferring vehicle maintenance, refusing low-fare trips, overcharging customers, or otherwise engaging in improper or prohibited actions. At airports where drivers have long waits, airport staff devote more effort to inspecting drivers and vehicles and enforcing rules and regulations than the staff at airports where drivers have the opportunity to earn a higher income—either due to the wait times or the fares per trip.

Chapter 8 Section A4 describes examples of best practices used to manage an oversupply of taxicabs. As noted, these include limits on (1) the number of taxicabs allowed to serve an airport each day (e.g., a rotation system), (2) the size of the hold lot to force drivers to either wait elsewhere or seek customers in other parts of the community, and (3) the number of authorized taxicab vehicles or companies. Chapter 8 Section A also describes measures to address trip refusals, including short trip procedures.

Undersupply

An undersupply is also undesirable as it results in customers having long waits for an on-demand taxicab. Long waits typically occur when (1) there is a high demand for taxicabs elsewhere in the community due to conventions or on rainy or snowy days, (2) there are unexpected demands due to flight delays or flight diversions at hours when normally there are few airline passengers seeking taxicab service, and (3) drivers prefer not to work, particularly at smaller airports, such as during dinner hours, on holidays, or when there are slippery roads.

Airport staff manage an undersupply by alerting drivers and companies that there is a need for taxicabs, requesting that customers share a cab, diverting potential customers to other transportation services, mandating that drivers work a minimum number of hours or days, or using other procedures and technologies described in Chapter 9.

Schedule/Headway Management

Airport staff monitor scheduled bus/van schedules to ensure customers are provided the service advertised by a provider.

They may also monitor headways of courtesy vehicles to encourage efficient use of curbside areas.

Oversight of Scheduled Services

Customers expect scheduled buses and vans to depart the airport at the times shown in published schedules. Airport staff may receive customer complaints if a scheduled ground transportation company provides unreliable service including delayed airport departures/arrivals or trip cancellations, particularly if the provider does not provide adequate advance notice or does not attempt to provide alternative transportation. A GTM system can be used to monitor an operator's schedule adherence and provide data to support allegations that an operator is performing unsatisfactorily.

Oversight of Courtesy Vehicle Headways

At some airports the operators of off-airport parking and rental car courtesy vehicles attempt to maintain a constant presence at the arrivals curbside (e.g., a bump and run operation) or operate their courtesy vehicles at very short headways. These businesses do so to attract new customers and enhance their revenues by promoting customer awareness and increasing visibility of their service, and to some extent minimizing customer wait times. Some airport staff refer to this type of courtesy vehicle operation as "moving billboards." However, this practice results in inefficient curbside use by these courtesy vehicles as, rather than just stopping when actively boarding passengers, they occupy valuable space for much longer than necessary. As described in subsequent chapters, some airports have implemented rules encouraging the use of consolidated courtesy vehicles, prohibiting bump and run operations, or limiting the number of trips each company is allowed to make.

Curbside Boarding Areas

At most airports commercial ground transportation vehicles stop and wait for arriving customers on the curbside roadway located adjacent to the baggage claim area. The curbside area may be located adjacent to the terminal building or along a raised island separating an inner and outer roadway. Most frequently the commercial vehicles are stopped parallel to the curbside, but other airports use creative boarding areas, which are described in Chapter 8 Section I. *ACRP Report 40: Airport Curbside and Terminal Area Roadway Operations* provides detailed information about curbside layouts and operations.

Operational Needs

Vehicles require a curbside space that is longer than the vehicle's total length (i.e., bumper-to-bumper) in order to provide adequate room for maneuvering into and out of a parallel curb space. For example, because of their limited turning radii a 40-foot bus or coach may require a 60 ft-long space while a 16-ft long car may require 22 to 25 feet. Typically professional drivers require less space than do the drivers of similarly sized private vehicles.

The areas reserved for taxicab boarding generally provide sufficient space for at least two or three taxicabs. The actual number of spaces required depends on the number of customers needing a taxicab during the peak period. Three cabs require about 55 to 60 linear feet since the vehicles generally exit in a sequential manner. A longer space (e.g., 75 feet) may be required if exiting taxicabs frequently need to bypass other vehicles (e.g., those stopped while a driver places a customer's baggage in the trunk). The amount of space required may be affected by the time required by taxicabs to travel from the hold lot to the boarding area, the volume of taxicabs dispatched during the peak hours, and the type of taxicab operation (e.g., an open system may require more space than an exclusive/semi-exclusive system due to less efficient operations).

The area reserved for shared-ride vans will depend on whether the service is operated using an open or exclusive/semi-exclusive system. The operator of an exclusive/semi-exclusive system may only need space for two vehicles per company. Space for more vehicles may be warranted depending on the volume of passengers and destinations served.

The amount of space allocated to other commercial ground transportation services will depend on the goals of airport management and the space available (see Chapter 2).

Planners generally prefer a 20-foot wide sidewalk adjacent to the boarding area to provide sufficient space for waiting customers and their baggage, and to allow other passengers walking along the curbside in opposite directions to bypass the waiting customers. Airports may provide benches or passenger shelters at the areas where passengers are more likely to encounter long waits for vehicles (e.g., scheduled buses or hotel/motel courtesy vehicles).

Typical Curbside Allocation Considerations

Frequently the demand for curbside space exceeds the usable space available (the space available for use after omitting the space devoted to crosswalks, reserved for disabled passengers or airport vehicles, or obstructed by columns or other obstructions). As a result airport operators must prioritize the location and amount of space allocated to the various vehicles and services desiring access to the curbsides. Typically airport staff allocate curb space in a manner reflecting the relevant goals of airport management. These goals and their priorities vary from airport to airport, but some of the goals considered when allocating curb space typically include:

- *Provide a safe environment for pedestrians and motorists* by providing sufficiently wide sidewalks, allocating adequate

space for vehicles to maneuver into and out of assigned passenger boarding areas, minimizing the volume of passengers who must cross an active roadway, separating private and commercial vehicles, and enforcing limits on the length of time a motorist may linger at the curbside.
- *Address customer expectations* by locating ground transportation services that customers normally expect to find at an airport curbside (e.g., on-demand taxicabs) in a visible location.
- *Encourage the use of public transportation/efficient airport access* modes by providing convenient boarding areas for scheduled buses/vans and public transit services, with some airport operators assigning these services to the curbside areas immediately adjacent to the terminal.
- *Consider revenues received from each class of service* by allocating the more visible and convenient curbside spaces to those transportation services that generate significant airport revenues (e.g., on-airport parking and rental car shuttles).
- *Recognize competition among ground transportation* providers by (1) separating competing operators (e.g., on-demand taxicabs, shared-ride vans, and limousines) while attempting to provide them with equivalent access to deplaning airline passengers, and by (2) distinguishing between airport and off-airport operated public parking courtesy vehicles.
- *Provide adequate space for large buses and coaches* recognizing the space required by these vehicles to maneuver into and out of a space as described in the above paragraphs.
- *Facilitate ability to control and enforce* by separating private vehicles from commercial ground transportation vehicles, and if space is available, by clearly designating separate boarding areas for differing classes of commercial ground transportation service.

Other considerations may include giving priority to vehicles using alternative fuels, prioritizing public transportation vehicles, or considering the ratio of passengers transported to linear feet of curb space required.

Commercial Vehicle Hold Lots

A hold lot is a designated area where commercial ground transportation vehicles and their drivers are required to wait until they are authorized to proceed to the passenger boarding area adjacent to the baggage claim area or other location. Taxicabs are the primary users of hold lots but they may also be used by limousines, TNCs, shared-ride vans, chartered buses/vans, and scheduled buses/vans. An alternative to the hold lot, more often used at smaller airports, is a taxicab chute or mini-queue, where the waiting taxicabs are in sight of the end of the taxicab boarding area.

Taxicab drivers typically proceed from the hold lot to the curbside boarding area in a first-in, first-out manner unless there is a special request for a vehicle or van capable of transporting a large party or a disabled passenger, a specific company (e.g., a customer with a company voucher), or other special needs. Airport staff often require taxicab drivers to park in a single file (i.e., nose-to-tail) or in a group of parallel nose-to-tail queues to allow them and other drivers to more easily monitor the correct sequencing of vehicles. Other types of vehicles typically park in designated spaces in the hold lot.

Purpose of a Hold Lot

Hold lots help airport operators monitor the supply of waiting taxicabs and ensure there are sufficient waiting vehicles to respond to the needs of airport customers without occupying terminal curb space that is best used for active loading and unloading of airline passengers. They also allow an airport operator to inspect waiting vehicles, collect required fees, and respond promptly and efficiently to the needs of customers having special requests. Hold lots enable waiting drivers to access toilets, a waiting area or lounge, and food/beverage concessions, if these facilities are provided at the airport, and also provide an opportunity for drivers to socialize with their peers.

Determining the Size of a Hold Lot

At a minimum, a hold lot should provide adequate space to store the vehicles that will be needed to serve the number of airport customers seeking on-demand taxicab service during the peak hours of a typical busy day. These demands should be adjusted to allow for (1) the time required to replenish the hold area (i.e., the time required for a taxicab to travel from the airport to downtown or other popular destination and back to the airport), (2) unusual but regularly occurring peak periods (e.g., those coinciding with conferences, conventions, or other events), (3) forecast increases in customer demand, and (4) space for waiting limousines, shared-ride vans, and scheduled and chartered buses and vans.

Other considerations include the size of available sites and airport policies. Ideally the site should be located near and have an uncongested travel path to the terminal curbside (in order to minimize travel time and line jumping by drivers enroute to the terminal), located on level ground, screened from public view, and readily accessible from the regional roadway network.

Airport policies may affect the minimum hold lot size as taxicabs and other commercial ground transportation services operated under exclusive/semi-exclusive concession contract typically require a smaller hold lot than those operated under an open system due to the more efficient operations associated with a concession contract. In order to reduce driver waiting time and encourage drivers to serve other parts of the community, some airports limit the capacity of the hold lot, in an attempt to force drivers to wait or work elsewhere.

Some airports have implemented a "staging" lot in addition to a hold lot when a significant number of vehicles are present on the airport at the same time and space is not available at one location to handle all of the waiting vehicles. In this situation, vehicles are moved (manually or by technology) from the staging area to the hold lot as they are needed to maintain a nearly full hold lot.

Amenities for Commercial Vehicle Drivers

The airport-provided amenities in the hold lot for the drivers of taxicabs and other commercial ground transportation services vary by airport size. Chapter 8 Section A10 provides details on the amenities provided in the hold lot.

Commercial Ground Transportation Fees

Most airport operators require that commercial ground transportation businesses picking up airline passengers on the airport agree to abide by airport rules and regulations and enter into a formal business relationship with the airport sponsor confirming their willingness to do so. These business relationships are described in a document often referred to as an airport permit. The airport operator's rules may regulate the operations of commercial ground vehicles and drivers while they are on the airport including requiring the use of properly licensed vehicles and drivers, assuring drivers and other employees are trained in the use of airport roadways and other facilities, and that the business maintains required amounts and types of insurance.

Types of Airport Fees

U.S. airport operators are legally required by the FAA to be as financially self-sufficient as possible (i.e., to operate in a "breakeven" manner). Thus, airport operators have the right to charge commercial ground transportation companies doing business on the airport (i.e., picking up airline passengers) fees to preserve existing sources of revenue and generate additional revenue consistent with management's relevant goals. The airport permit may require a commercial ground transportation business to pay certain fees, which are described in the following paragraphs.

Airport Permit Fees

By signing the permit, the commercial vehicle operator confirms that they will abide by the airport's rules and regulations. Typically the airport operator charges a fee that at a minimum recovers the airport operator's costs of issuing and administering the permits. These fees are commonly referred to as permit fees. These permit fees are normally calculated on a per-vehicle or per-company basis. At some airports, all commercial ground transportation operators pay exactly the same fee, while at other airports operators pay permit fees that vary according to the type of ground transportation service provided, the size or type of vehicle used, or the size of the ground transportation business.

Cost-Recovery Fees

Many airport operators require that commercial ground transportation operators doing business at the airport pay fees that allow the airport sponsor to recover all or a portion of the costs it incurs in (1) providing and maintaining the facilities used directly by commercial ground transportation operators, and (2) monitoring and enforcing these ground transportation services. These facilities include the roadways, passenger curbside boarding areas, and vehicle hold lots, and the equipment used to monitor and enforce operations.

Cost-recovery fees are established by comparing an airport sponsor's costs of providing, maintaining, and enforcing the facilities used directly by commercial ground transportation operators with the use of these facilities by the providers. Most commonly this implies comparing the annual or budgeted costs of the airport operator with the annual volume of commercial vehicle trips. As such, these cost-recovery fees are often referred to as "per-trip" fees. These trips may be established using data obtained from an existing GTM system or estimated based upon surveys of commercial vehicle activity. The amount of these per-trip fees may vary by the type of ground transportation service, vehicle size or capacity, type of fuel used, or other measures reflecting the use (or lack of use) of some facilities. For example, courtesy vehicle providers would not be allocated the costs associated with taxicab hold lots and taxicab dispatchers as they are not used by courtesy vehicles.

Dwell Time Charges or Fees

Airport operators seek to provide desired levels of customer service and to efficiently manage roadway traffic and minimize roadway congestion on terminal area curbside roadways. To help achieve such goals numerous airport operators limit the length of time commercial ground transportation vehicles may remain standing (or dwelling) at the curbside roadway or passenger boarding area and levy fees on the operators of vehicles whose dwell times exceed the established maximum time limits. These fees, often referred to as dwell time fees or charges, may vary according to the vehicle size and type of commercial vehicle service. For example, full-size charter buses or coaches are allowed to dwell at the curbside longer than courtesy vehicles, reflecting the larger number of boarding

passengers and large volume of baggage. On-demand taxicabs are normally exempt from dwell time limits since they are expected to remain at the curbside area waiting for deplaning airline passengers.

GTM systems are often used to monitor the length of time each commercial ground transportation vehicle remains on the curbside roadway and, when necessary, provide a basis for calculating the dwell time fees. Dwell time fees may vary depending on the airport management's policy and the estimated fee required to discourage excessive dwell times. However, dwell time fees are often three to five times the equivalent cost per minute of the established cost-recovery fee.

Privilege Fees

As noted, airport operators are legally required to be as financially self-sufficient as possible, and have the right to charge fees to commercial ground transportation companies doing business on the airport. Companies that are doing business at an airport and therefore benefiting from the presence of the airport are frequently required to pay for these benefits. Many airport operators require that commercial ground transportation operators pay fees that reflect the overall business benefit or privilege that the commercial ground transportation operators receive as a result of the presence of the entire airport and their access to the traveling public. Such fees, referred to as privilege fees, are calculated based on the volume of airport-related business conducted by each commercial ground transportation operator. Businesses operating on- and off-airport rental car companies and off-airport parking facilities are frequently charged privilege fees. On-airport parking businesses operated by or for the airport sponsor are not charged such fees since it would not make sense for the airport operator to pay a fee to itself.

These fees can be calculated in a variety of ways including (1) using indirect measures of a ground transportation operator's volume of airport-related business (e.g., a fee per taxicab vehicle permit, per deplaning passenger, per courtesy vehicle, per trip, per parking space, per rental car vehicle in the fleet, or by another measure), or (2) more commonly a direct measure of the company's airport-related business (e.g., a percentage of the operator's airport-related gross revenues). Since privilege fees reflect the business benefit a commercial ground transportation operator receives from the presence of the entire airport, these fees differ from per-trip fees, which allow an airport operator to recover all or a portion of the costs incurred in providing and maintaining just the roadways and other facilities used directly by commercial ground transportation operators.

When establishing the amount of a privilege fee, airport operators commonly review the privilege fees paid by other similar businesses, other companies doing business on the airport, the estimated revenues resulting from imposition of the fee, and the fees charged by other airports to establish a rational basis for the establishment of the fees.[1] A business such as an off-airport rental car business may be required to pay both a privilege fee and a cost-recovery fee, or alternatively be allowed to credit one fee against the other, thus only paying the larger of these two fees.

Demand Management Fees

Some airports have instituted measures to limit the volume of courtesy vehicle trips on airport roadways. These restrictions are implemented to (a) reduce traffic congestion on airport roadways, (b) improve air quality by reducing vehicle-generated emissions, and (c) discourage operators from making non-essential trips—particularly those operators seeking to advertise or market their services by circulating repeatedly past the terminal buildings. Among the restrictions on courtesy vehicle trips that may be used to achieve these objectives are (1) a cap on the number of courtesy vehicle trips made by each courtesy vehicle operator (e.g., 1,500 trips per month per hotel/motel operator), and (2) limits on the minimum time interval between courtesy vehicles serving a business (e.g., there must be 15 minutes or more between successive courtesy vehicles operated by the same company). Both types of restrictions require the use of GTM systems to monitor the volume of courtesy vehicle trips and/or the time between successive courtesy vehicles, and, when necessary, provide a basis for calculating fines or penalties. Chapter 8 Section E1 provides additional information about demand management fees.

Legal Considerations

Additional information regarding the legal basis for the above commercial ground transportation fees can be found in *ACRP Legal Research Digest 3: Survey of Laws and Regulations of Airport Commercial Ground Transportation.* This document provides a listing of federal, state, and local commercial ground transportation rules with extensive examples of each. The report examines the commercial ground transportation regulatory systems at each of the nation's busiest airports. It also provides citations for the relevant statewide regulations and applicable case histories. While federal and state courts have repeatedly upheld the right of an airport operator to charge the fees described above, the specific legal basis or technical requirements may vary by jurisdiction.

[1] The current commercial vehicle fees charged at other airports can be obtained by contacting peer airports, referring to the most recent Airport Ground Transportation Association (AGTA) Fees and Fares Survey, or from other sources listed in the bibliography (see Appendix C).

Implementation Challenges

Opposition from commercial ground transportation businesses represents the key challenge to establishing commercial ground transportation fees. Since many peer airports can be shown to have already implemented such fees, and since the courts have repeatedly upheld the rights of an airport to impose such fees, these businesses often use political methods to oppose or delay implementation.

When implementation of proposed fees requires approval of an appointed airport board or the elected members of a city council or other agency, airport management can benefit from meeting with the members to explain the reasons for imposing such fees, how the fees will affect the airport and its customers, and the arguments that will be provided by ground transportation businesses who oppose the fees. Comparing the fees with those paid by other similar businesses at the airport and those charged at other airports may be helpful. Members of the Legal Affairs Committee of Airport Council International-North America and similar organizations may provide useful advice.

Airport Transportation Services Provided by Public Transportation Agencies

Scheduled bus and rail service, and occasionally ferry service to and from an airport, is frequently provided by a municipal or regional public transportation agency. Normally such transit services consist of traditional service (i.e., multistop, scheduled, fixed-route service) which is an extension of the agency's local bus and/or rail network, and are available at much lower fares than scheduled express or limited stop service that may be offered by private operators.

Generally airports do not require public transit agencies to pay commercial ground transportation fees because (1) they are public, not-for-profit agencies, and (2) the transit agency and airport may be operated by the same or sister agencies. Airport operators typically seek to encourage and promote use of public transportation by their customers and employees. Extensive literature is available documenting relevant best practices, strategies and techniques (e.g., *ACRP Report 4*).

Key considerations include prioritizing the location, amount, and use of curb space allocated to public buses. For example, the curb space allocated to public transit should be convenient but should be used solely for passenger pickup and drop-off. Airport operators typically discourage the use of terminal area curb space by transit agencies wishing to store out-of-service buses while drivers are on breaks, or buses parked for long periods to allow for transfers between bus routes. The weight and height of the buses may be an additional consideration at airports having multilevel curbside roadways.

Airport Transportation Services Provided by the Airlines

Occasionally airlines provide ground transportation to their customers. For example, airlines regularly charter buses, vans, and/or taxicabs to transport customers to nearby airports when the customer's flight has been delayed, diverted, or incurred other irregular operations. Some international airlines (e.g., Etihad, Gulf, Qatar, Qantas, and Virgin Atlantic) offer limousine service to and from the airport to customers traveling in first or business class.

Typically these ground transportation services are provided by businesses having valid airport permits and who pay airport fees, but there may be unusual circumstances where this is not the case because an airline has arranged for the transportation service. For example, there have been instances where taxicab drivers who received vouchers from customers or directly from an airline believed that, because they were being compensated by an airline, they did not need to pay an airport exit or trip fee. There have also been instances where a prearranged limousine company passed on its airport fines to the international airline which had originally arranged for the limousine services, with the airline claiming unsuccessfully that it should be exempt from such fines. Historically some international airlines have attempted to avoid all airport ground transportation fees, arguing that these costs are included in the airport landing fees, rental rates, and other charges they already pay.

CHAPTER 6

Regulation and Enforcement of Commercial Ground Transportation Services on Airports

This chapter describes the typical responsibilities of airport ground transportation staff with respect to the control and management of commercial ground transportation services. It describes how these staff typically coordinate with the staff of other airport departments and how they enforce existing rules and regulations.

Typical Responsibilities of Airport Ground Transportation Management and Staff

The duties and responsibilities of airport ground transportation managers and their staff vary considerably. Even the titles for the manager of these functions will vary. While the most common title is Director/Manager/Supervisor of Ground Transportation, airports also refer to this position as Landside Manager. In most articles and publications these terms are used interchangeably. At smaller airports these ground transportation functions and tasks are often performed by an individual having a title such as Operations Director or Supervisor.

As shown in the Figure 6-1, almost all ground transportation managers and their staffs are responsible for rules enforcement, contracts, day-to-day operations, and fee collection. Other common duties include access planning, parking, and roadway management.

Coordination with Properties/ Concessions, Finance, and Other Airport Departments

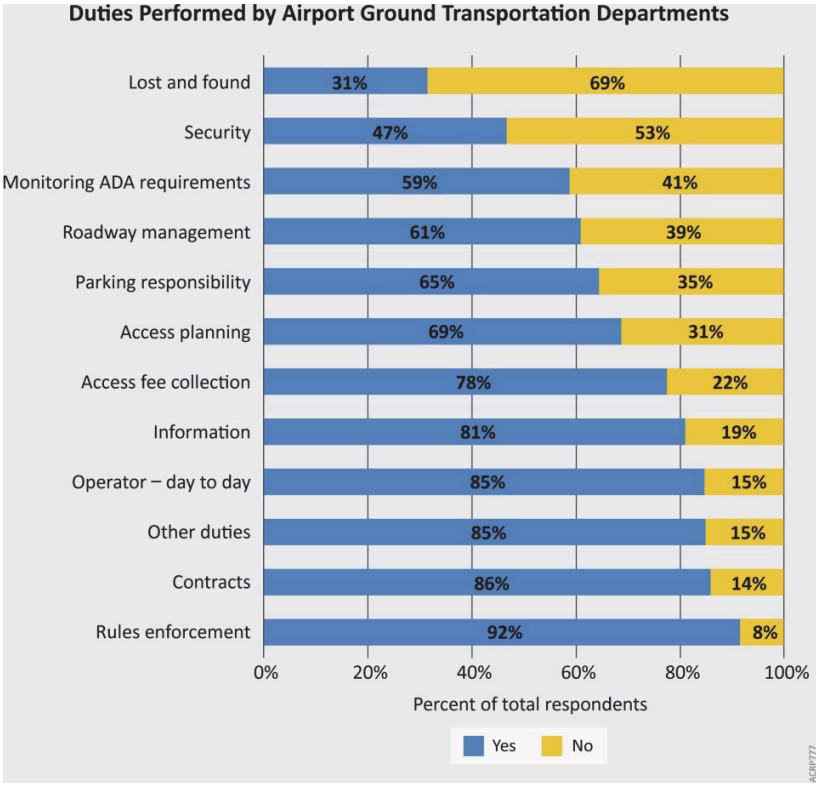
In addition to the functions and tasks enumerated herein, the manager of the airport ground transportation department of an airport usually has the responsibility of coordinating with the other departments within the airport. It is the responsibility of the ground transportation manager to ensure that the staff of the properties department (or similarly named department), for example, are aware of any pending changes in roadway use or facilities being used by ground transportation. At some airports the properties department is responsible for the award of contracts to ground transportation concessionaires, third-party contractors responsible for oversight of commercial ground transportation services, or counter leases.

Ground transportation contracts which are competitively bid must include the specifications and background information compiled from the procurement department of the airport and approved by legal staff. Responding to questions about an RFP for commercial ground transportation services also involves coordination with the procurement department. Coordination with the finance department regarding the collection of fees, transmittal of revenue, and dunning notices to those companies that are tardy in the payment of the required fees are also examples of expected coordination.

Frequent coordination between concession administration and the airport's legal department is often required of the ground transportation manager as questions arise during the life of the contract concerning proposed changes to existing regulations or guidance on the enforcement of these regulations including questions about appeals and imposition of fines or penalties. The airport's risk management department can provide guidance on the types and amounts of insurance a commercial ground transportation company should be required to maintain, and information on the types of insurance carriers who are considered acceptable.

Enforcement Procedures and Legal Provisions

Airports may establish rules and regulations to govern the operation of commercial ground transportation companies and drivers. However these measures will not be effective unless they are properly enforced. Proper enforcement requires the active and consistent enforcement of the established rules and regulations by an adequate number of qualified officers. Prior to the airport adopting new commercial ground transportation



Source: LeighFisher, based on data from the 2013 AGTA Airport Landside Management Survey, 2015.

Figure 6-1. Duties performed by airport ground transportation departments.

policies, rules, or regulations it is incumbent upon staff to first (1) ensure that these rules are legally enforceable, (2) develop the procedures to be used to enforce the new rules, and (3) determine the extent of the required staff and supporting resources. Enforcement of violations of airport rules and regulations may be in the form of fines or penalties including suspensions, vehicle impoundment, or revocation of operating privileges.

At smaller airports a single department or section (typically airport police) is responsible for enforcing commercial ground transportation operations. At larger airports, the responsibility for enforcing commercial ground transportation operations is frequently divided between (1) staff responsible for enforcement of airport rules (e.g., failure to have a valid permit or driver ID, non-compliance with standards concerning vehicle or driver appearance, or improper use of passenger boarding areas) and (2) staff responsible for enforcement of city or state laws (e.g., speeding, reckless driving, operating under the influence, fights between drivers, or solicitation).

At large airports the enforcement of airport rules is typically the responsibility of airport staff including ground transportation staff, duty officers, or third-party contractors retained by the airport (e.g., ground transportation agents) or TCOs. Enforcement of city and state laws is typically the responsibility of sworn police officers or LEOs. Larger airports prefer to use TCOs to enforce commercial ground transportation services as these officers are able to give their full attention to these tasks, while police officers may also be required to perform other duties.

Some airports use a sliding scale system, where a small fine or penalty is imposed for the first offense, a moderate penalty for the second, with the penalty increasing in severity with each additional offense, often leading to hefty fines, long-term suspension, or removal of airport operating privileges. Monterey Regional Airport charges a fine of $250 for the first offense, $500 for the second, and $1,000 for the third. A common practice for tracking these offenses is developing a point system. At Savannah/Hilton Head International Airport drivers accrue points for noncompliance with airport rules and regulations. The penalties incurred for accruing a set number of points over a given time frame are shown in Table 6-1.

Citations given at airports are typically civil penalties. The Port Authority of New York and New Jersey worked to change illegal solicitation from a civil penalty to a criminal offense,

Table 6-1. Savannah/Hilton Head International Airport's point system.

Points Accrued	Time Frame	Penalty
4	1 year	One week suspension
6	1 year	One month suspension
8	2 years	Airport badge revoked

Source: LeighFisher, based on data provided by Savannah Airport Commission, 2014.

creating a greater disincentive for drivers to solicit passengers and easier prosecution of offenders in the states of New York and New Jersey. Similarly, with the support of San Francisco International Airport, the State of California adopted Assembly Bill 1885 which provides airport police with the enforcement authority needed to reduce illegal solicitation by limousine drivers (i.e., arresting drivers and impounding their vehicle). (A special bill was required because the airport is operated by the City and County of San Francisco but is located in San Mateo County.)

Often times, citations given at the airport may be difficult to prosecute due to a lack of witnesses available or willing to testify. Although it varies by jurisdiction, many times a witness such as the citing officer needs to testify during the court hearing for the citation to be enforced. To minimize the time police who issued citations are required to be away from the airport, the Metropolitan Washington Airports Authority has an arrangement with the courts where any cases from either Dulles International or Reagan National Airport are processed at one time. Additional information about this practice is provided in Chapter 8 Section B3. Examples of enforcement procedures are listed in the following paragraphs.

Use of LEOs, TCOs, and Contract Staff

Airport officials can utilize LEOs, TCOs, or contract staff for enforcement. Each of these options has both positive and negative aspects. By far the most powerful of the three is the LEO. These officers can issue citations, write tickets, and arrest individuals if necessary. However, writing parking tickets or citations for burned out taillights may not be viewed as real police work by many licensed officers. In addition these officers may not be under the control of the airport but instead controlled by the city police department and only assigned to the airport. Thus, when greater emphasis is to be placed on one issue or another, this lack of control may limit the airport's ability to uniformly enforce some of its regulations.

For greater control of the day-to-day curb, airports use TCOs to move traffic through the terminal and also to write tickets for rules and traffic violations. In this way the airport has greater control over how commercial vehicle operator rules are enforced on the airports roadways. However these agents have no police powers to arrest or restrain any unruly behavior. Should there be trouble, the TCO would have to call a police officer to keep the peace and make any necessary arrests.

An airport may also utilize contract staff to manage the traffic and cite taxicab drivers for rules violations. The use of a contractor reduces the airport head count and associated personnel costs and gives the airport more control over their actions. Similar to TCOs, the enforcement powers of these contractors are limited to citing taxicabs and other commercial vehicles for violation of airport rules.

Use of Mystery Shoppers

Depending on the jurisdiction, the citation does not need to be written by a licensed enforcement officer, removing the need for an officer to attend court to have a fine imposed. Salt Lake City International contracts with a mystery shopping service who routinely evaluates the various modes of ground transportation. The results of these "shops" can be used to impose fines for any violations that occurred during the trip. As the fines for each individual can be cumulative if multiple rules or regulations were violated, the resulting citations can be costly—up to $11,000. These citations are distributed to both the driver and the company, which receives a report on any mystery shops performed on their company operated vehicles, whether or not a citation was issued.

Focused Enforcement or "Stings"

Stings are one method of enforcing rules and regulations in a manner that will quickly garner the attention of any potential violators. Enforcement staff will conduct stings in the commercial vehicle hold lot or limousine parking lots and impound any vehicles found in those areas that are not authorized to serve the airport, whether due to lack of an airport permit, waybill, or other violation. These stings typically result in multiple citations and serve as a warning to potential violators that the airport's rules and regulations need to be followed or consequences will be incurred.

Curbside Inspections

Regular checks by curbside enforcement or dispatching staff and staff in the commercial vehicle hold lot are also effective means of enforcing airport regulations. At Dallas/Fort Worth International Airport each taxicab is visually inspected and checked for one random item when the driver enters the taxicab queue. At Denver International, Reagan

Table 6-2. Common commercial ground transportation airport violations.

	Lack of airport permit	Vehicle age/ condition	Fare refusal	Improper insurance	Illegal/ improper solicitation	Non-compliance with published schedules/fares	Driver behavior	Stopping in unauthorized areas
Taxicabs	X	X	X	X			X	X
Limousines	X			X	X		X	X
Shared-ride	X	X	X		X		X	X
Courtesy vehicles	X							
Scheduled vans/buses	X					X		
Charter buses	X							
Ride brokering services	X			X				X

National, and Monterey Regional airports, a third-party curbside management contractor is responsible for issuing violations, which are then reported to airport staff to process.

An appeal process is an important aspect of any enforcement program that allows an operator found in violation of the rules and regulations to contest the alleged violation. Common practice is to allow a specified time frame (i.e., 10 days) to request in writing that the airport review the allegation. If the operator does not appeal the violation within that timeframe, then a penalty may be imposed.

Some common violations by each mode are shown in Table 6-2.

CHAPTER 7

Role of Small and Disadvantaged Business Enterprises

Airports have limited policy levers to promote small business participation, since commercial ground transportation companies are providing a service to the traveling public (i.e., an airport's customers) rather than to the airport sponsor. This section of the guidebook discusses the regulatory framework of small business participation in commercial ground transportation at airports, followed by a description of the strategies applicable to each mode of commercial ground transportation. This section also discusses other opportunities that apply across all commercial ground transportation modes at airports.

Description of the Regulatory Framework

Airport contracting, procurement, and concessions agreements are regulated by the federal government through the FAA. Airports are required to have DBE goals and programs on construction and Airport Concessions Disadvantaged Business Enterprise (ACDBE) goals and programs for airport concessions. The federal regulation governing the ACDBE program is 49 CFR 23, known as "Part 23." As described in the next paragraph, the definition of an airport concession used in Part 23 differs from the concession business arrangement used elsewhere in this guidebook.

Generally, federal policies only pertain to ground transportation when it is a management contract or a concession. Part 23 defines commercial ground transportation to be a concession when it has a counter, kiosk, or dispatcher at the airport. Therefore, some commercial ground transportation services, such as shared-ride vans, are considered a concession when there is a counter. Likewise if taxicabs, limousines, or scheduled buses/vans have a dispatcher at the airport, they are considered a concession. Generally it is the decision of the airport, rather than the transportation company or service, to require a counter or dispatcher, thus defining the commercial ground transportation service as a concession. Other contracts, such as ground transportation coordination or on-airport parking shuttles, are management contracts and also fall within the Part 23 ACDBE program but are not considered commercial ground transportation.

Related to airport construction, the FAA, like other USDOT entities, requires grantees to have race-neutral Small Business Enterprise (SBE) programs alongside the DBE program. The airport DBE construction program is governed by 49 CFR 26, known as "Part 26." But Part 23, which governs concessions and ground transportation, does not require a SBE program alongside the ACDBE program.

Some airports operate within a city or county where there is a SBE or Minority and Women Business Enterprise (MWBE) contracting program. If the commercial ground transportation service is considered a concession, the airports operate under the federal ACDBE program and cannot administer a SBE or MWBE program local requirement. If the commercial ground transportation service is not considered a concession, the airport might apply a local SBE or MWBE program. Some airports also adopt a Disabled Veteran Business Enterprise (DVBE) Program with goals for inclusion in the 3-5% range. Many of these programs are part of a state's small business program.

Virtually all city and county SBE programs have a local preference or headquarter requirement—either city, county, or metropolitan region. Part 23 suggests that airports meld the federal ACDBE program with the local-jurisdiction policy, but where there are conflicts, the ACDBE policy takes precedence. Specifically, Part 23 prohibits a local ACDBE firm from having a preference over a non-local ACDBE firm (49 CFR 23.79). The FAA interprets Part 23 to mean that a local SBE or local MWBE program cannot be operated alongside the ACDBE program. For this reason, most airports avoid applying any local SBE or MWBE program to airport commercial ground transportation. In effect, most small business contracting in commercial ground transportation happens through the ACDBE program or indirectly in commercial ground transportation services that are not considered a concession.

Small Business Definitions

Many small businesses participating in airport commercial ground transportation programs will participate in the ACDBE program. The size definition of an ACDBE small commercial ground transportation business is one having up to $30 million in annual sales, averaged over three years, with an additional personal net worth limit.

The ACDBE size standard is higher than most, if not all, local SBE and MWBE programs, and higher than the federal Small Business Administration (SBA) standards. Table 7-1 shows the limits the SBA has established for small businesses operating in the arena of airport ground transportation.

Some airports, especially larger ones, treat taxicabs, limousines, and/or shared-ride vans as concessions, subject to the ACDBE program. Charter or scheduled buses/vans generally are not concessions. Concessionary transportation providers may form a joint venture with an ACDBE through a prime contractor–sub-contractor relationship where the ACDBE is fulfilling a core function, or through a supplier relationship where the ACDBE is not in a core function. There are a number of industries that provide a supplier role to ground transportation businesses, including vehicle parts and supplies, fuel, insurance, training, and uniforms. Small business size standards for each of these industries can be found online on the SBA website.

When the various commercial ground transportation services are not treated as a concession and are open to participation by any qualified business (i.e., an open access model), various small businesses may be among the transportation providers. In a few cases, airports apply a local SBE or MWBE program to non-concessionary ground transportation; however, many airports do not track SBE, MWBE, or DBE participation in non-concessionary commercial ground transportation businesses.

Taxicabs

A few airports, especially larger ones, treat taxicabs as concessions under the Part 23 definition. The federal regulations make a distinction of whether the taxicabs have a dispatch at the airport, in which case they are a concession. Hartsfield-Jackson Atlanta International Airport is an example of an airport where any city taxicab is allowed to operate at the airport (an open taxicab system), but taxicabs are considered a concession as defined by the SBA. In these cases the taxicab companies (concessionaires) are typically required to make a good faith effort to include ACDBE participation. This participation could be through an allotment of vehicles to operate under the prime contractor's concession. It could also be through goods and services contracts, such as maintenance and repair, fuel, insurance, or other services.

When taxicabs are not a concession, the options to increase SBE or ACDBE participation among taxicabs are limited. However, there usually is some small business participation naturally among taxicabs, especially in areas where taxicabs tend to be provided by owner-operators. A few locations have taxicab cooperatives or associations. At these locations an airport small business or equal opportunity office may wish to discuss ways to increase small business participation with the cooperatives or associations. Examples of this are the Small Business Association of DC Taxicab Drivers in the District of Columbia, the Yellow Cab Coop in Milwaukee, and the Yellow Cab Cooperative in San Francisco.

One other way to promote participation by small business taxicab companies is to list all taxicab services on an airport website. An example of this is Denver International Airport, whose online list includes the Union Taxicab Cooperative.

Limousines

Limousine service is treated in a similar fashion to taxicabs—it is generally not seen as a concession, since at most airports the limousine services do not have a counter or dispatcher. Perhaps even more than taxicabs, many limousine companies are small businesses—earning less than $14 million in annual sales and receipts by the SBA definition. Thus, there will often be small business participation in this mode of airport commercial ground transportation.

Shared-Ride Vans

Some airports treat shared-ride vans as concessions. The federal regulations indicate that if the shared-ride van

Table 7-1. SBA small business limits.

Small Business Type	Annual sales limit
Taxicab and limousine service	$14 million
On-airport shuttles	$14 million
Shared-ride vans	$14 million
Charter or Airporter buses (i.e., scheduled buses)	$14 million
Ground transportation coordination	$7 million

Source: U.S. Small Business Administration, 2014.

company(ies) has a counter or dispatch service at the airport then it should be considered a concession and fall within the ACDBE program.

An example of a concession approach to shared-ride vans is Orlando International Airport. It offers a concession for one master or prime ground transportation contract, with the prime contractor required to sub-contract with ACDBE firms. These sub-contracts can be for service contracts, such as maintenance and repair, not only van service.

Denver International Airport treats shared-ride vans in a similar way to Orlando. During 2012–2013 it placed ACDBE goals on concessions awarded to shared-ride van companies for the first time. The companies were not able to determine revenue generated by airport business to come up with a basis for a goal. Instead the shared-ride van companies determine all their expenses and the portion of their business that came from airport pickups and drop-offs, and these airport-related expenses become the basis for the ACDBE goal. The airport's anti-brokering law does not allow sub-contracting in the core operations of the shared-ride van company, so other areas of goods and services are utilized to meet the ACDBE goal. Some of the shared-ride van companies were able to meet the 10 percent goal.

Another way of operating shared-ride vans at an airport is to use an open access model rather than treating it as a concession. With an open model, any company meeting minimum criteria can operate as a shared-ride company, but none of the companies are allowed to have a counter in the airport. This typically results in allowing multiple companies to operate shared-ride vans, some of which may be qualified as small businesses.

An example of this approach is San Francisco International Airport, which allowed ten shared-ride van companies to operate during the 1990s, with additional companies able to begin operations at the airport until 1997 when the airport placed a moratorium on new shared-ride companies. Airport staff estimate that up to eight of the ten shared-ride companies might be considered small businesses. The airport does not allow any of the shared-ride companies to have a counter at the airport. Instead, a third-party airport curbside coordinator directs passengers to the vans and instructs drivers to exit the hold lot and proceed to a specific terminal.

Charter and Scheduled Buses/Vans

Scheduled buses/vans frequently have a counter, which would qualify them as a concession and fall within the ACDBE program. Charter buses/van, however, generally do not have a counter so they are not considered a concession. They are less likely than shared-ride vans to be a small business, given the amount of vehicle investment required. At first glance, there would seem to be few leverage points for small business participation regarding charter buses other than encouraging these companies to utilize small businesses for good and services and to voluntarily report small business spending.

One of the few airports that places local goals on charter/scheduled bus companies, as well as shared-ride vans, is the Port Authority of New York and New Jersey. These transportation services are not considered concessions by the Port Authority. However, because they are permitted to operate at the Port Authority operated airports, the Port Authority places MWBE goals on all the bus and van companies. Depending on how the domain of local policy is interpreted, other airports could also place MWBE or SBE goals on non-concessionary commercial ground transportation services [except where prohibited by law as in California (Proposition 209) or Washington State (I-200)].

Ground Transportation Management Contractor

Several airports use third-party contractors to coordinate and manage commercial ground transportation services at the curbside, including coordinating taxicabs and/or shared-ride vans on behalf of the airport. At times, these management services serve as a liaison between the customers at the curbside and the commercial ground transportation providers. Airports that retain third-party commercial ground transportation coordinators often do so using a management agreement rather than a concession contract, which means that ACDBE goals also apply.

The airport curbside coordination provider at San Francisco International Airport, mentioned in the shared-ride section, is an example of this. They coordinate the van departures of the ten shared-ride companies. This service is a joint venture between a large parking management company and a small, local ACDBE, therefore meeting the airport's ACDBE goal.

Other Options for Increasing SBE and ACDBE Participation

Aside from the formal ACDBE program, there are other ways that airports can influence opportunities for small businesses in airport commercial ground transportation. These include policies on brokering and small business development services.

Brokering Policies

Brokering is defined as when a contractor or concessionaire has a contract and sells the contract or a majority of the contract to another entity to represent them. Legitimate brokering services are allowed to be counted for ACDBE credit, including fees or commissions charged for assistance in the

procurement of goods and transportation costs for the delivery of goods. Unless the broker is also the manufacturer, the cost of the goods or services cannot be counted towards DBE credit. In an attempt to prevent fraud, some jurisdictions strictly interpret DBE policies so that some joint venture and sub-contracting arrangements cannot be counted for DBE credit. Best practice is to interpret the ACDBE policies (Code of Federal Regulations Part 23) to ensure against fraud but to maximize DBE utilization in a way that the DBE is providing a commercially useful function that helps the airport achieve its goals. For example, a brokering prohibition could be applied to prohibit a joint venture, as well as some sub-contracting relationships. In a joint venture or sub-contracting relationship in a shared-ride van setting, the ACDBE firm might be providing vans and/or drivers, where the vans would have the branding of the prime firm. This could be prohibited by a brokering prohibition. As a result, ACDBE firms would only be able to participate in non-core activities, such as providing fuel, uniforms, or repair services. It is advisable that, if there are anti-brokering policies, they allow for a second firm to participate in core activities as part of an ACDBE program, where the ACDBE firm has a secondary role in the operations of the venture.

Small Business Development Services and Financing

Another way that airports can increase small business participation in airport commercial ground transportation is by providing small business development services at or through the airport to small businesses bidding on or participating in airport contracts or concessions. In many cases these services would be in coordination with the city or county in which the airport is located, so that the city's small business development services are extended to an airport setting.

The small business development services could include start-up assistance, mentor-protégé programs, technical assistance on the specific operations of commercial ground transportation, and information on how to become certified, how to bid on airport projects, how to partner with a prime concessionaire, and how to form a joint venture. Other services often include bonding guarantees, assistance on obtaining bonding or insurance, loan guarantees, or low-interest small business loans.

Resources for SBE/DBE development and utilization include the following:

- National Minority Supplier Development Council;
- Taxicab, Limousine, and Paratransit Association;
- Airport Minority Advisory Council;
- National Association for Minority Contractors (for any construction or construction supply/vendor opportunities);
- Small business support organizations such as:
  - Local ethnic and industry chambers
  - Law school and business school clinical programs (e.g., Green Collar Communities Clinic of the East Bay Community Law Center at UC, Berkeley or the Community & Economic Development Clinic at CUNY School of Law);
- Women's Action to Gain Economic Security (WAGES);
- California Center for Cooperative Development;
- Insight Center for Economic Development; and
- Local Bar Association Programs.

CHAPTER 8

Examples of Best Practices

This chapter presents examples of the best practices for managing commercial ground transportation services at airports used successfully by the operators of airports of varying types and sizes throughout the United States and Canada. Emphasis is given to innovative and creative practices, which have been successfully implemented at U.S. airports to improve the airport customer experience, support the efficient and effective operation of airport facilities, support environmental and sustainability goals of airport management, enhance airport revenues, and achieve other relevant management objectives.

These best practices are presented by type of commercial ground transportation service and organized into the following sections:

- Taxicabs—both exclusive access and open access,
- Limousines,
- Ride-booking services,
- Shared-ride vans,
- Courtesy vehicles,
- Scheduled buses and vans, and
- Charter buses and vans.

In addition, best practices are presented concerning the following topics, which are applicable to several types of ground transportation services:

- Supporting environmental goals and sustainability initiatives,
- Creative passenger boarding areas, and
- Selecting the appropriate solution for a particular airport.

A. Taxicabs

The following pages describe best practices for managing and controlling taxicabs. The initial pages provide an overview of taxicab operations while subsequent pages describing best practices are organized into the following sections, grouped according to practices applicable to all on-demand taxicabs, those operating under an open access model, or those operating under an exclusive access model.

Best Practices Applicable to All On-Demand Airport Taxicab Services

A1. Vehicle Standards
A2. Driver Standards

Best Practices Applicable to Open Access Taxicab Services

A3. Fee Collection
A4. Addressing Excessive Taxicabs/Long Driver Waits
A5. Taxicab Rotation System
A6. Addressing Insufficient Taxicabs/Long Customer Waits
A7. Short Trip Procedures
A8. Dispatcher/Starter Responsibilities
A9. Processes for Communicating with Drivers
A10. Driver's Lounge
A11. Driver Training Programs
A12. Enforcement

Best Practices Applicable to Exclusive Access Taxicab Services

A13. Bid vs. Proposal
A14. One, Two, or Three Concessionaires
A15. Business Arrangements
A16. Oversight/Administration of Contract

Overview of Taxicab Operations at Airports

Taxicabs are a primary ground transportation service found at all airports, and with a few exceptions, their appearance is typically the same—sedans, SUVs, and small vans, painted in company colors/markings with a top light indicating the vehicle is operating as a taxicab. Most have time and distance meters (e.g., taximeters) in them to calculate the fare for the customer. Almost all airports have two types of taxicab

service—on-demand or walk up service and prearranged taxicab service—and charge taxicabs a fee for the privilege of picking up passengers. However, while airport taxicab services may look similar to the user, their organization, management, cost, and levels of service differ greatly from airport to airport. For example, some airports charge taxicabs to both drop off and pick up but in general, most charge only an access fee which is applied upon arriving at the taxicab holding area or exiting the airport with a customer.

The most common form of airport taxicab service is the on-demand or walkup service typically found at the deplaning curb near the baggage claim area. Taxicabs wait in a single file line (nose-to-tail) at the curb, where the drivers, generally with the aid of a taxicab starter or dispatcher, load arriving passengers into their vehicles and quickly depart the airport. Generally airport operators attempt to locate this service as close to the baggage claim area as possible and in an area visible to airline passengers as they exit the building. The number of waiting taxicabs is typically a function of the availability of curb space, the amount and frequency of customer demand, and the time required to replenish the queue line from the taxicab hold lot. At airports having heavy demand for taxicab service or where a significant amount of time is required to replenish the curb line, airports may utilize a feeder line or "chute" located away from the terminal curb but close by so replenishment time and thus, passenger wait time, is minimized.

Prearranged taxicabs at airports are taxicabs which the arriving airline passenger has either arranged for prior to their airline portion of their trip or once at their destination airport by calling the taxicab company or requesting a specific taxicab driver. Most prearranged trips result from a customer having a preference for a particular driver (referred to as a "personal") or a specific company with which the customer or their employer has a pre-established relationship. Today, many taxicab companies have their own apps which the arriving airline passenger can use to request a taxicab. When the call or app reservation is arranged through a taxicab company dispatch system, these trips are offered to the closest taxicab on their system or the one who has been in the airport hold lot or surrounding zone the longest

The objective of most airport staff with respect to on-demand taxicabs is that quick, clean, and professional service always be available at times when passengers are arriving. Common problems airport staff encounter with taxicab operations are:

- Short trip refusals—drivers refusing to transport customers requesting low-fare trips
- Insufficient number of waiting taxicabs to serve customers during late night hours, when there are irregular airline operations, or periods of inclement weather
- Excessive numbers of waiting taxicabs leading to drivers having long wait times for arriving customers
- Drivers charging customers excessive fares by taking longer routes, improperly adding surcharges, or tampering with the meter
- Drivers exhibiting reckless driving or rude behavior to customers or airport personnel
- Use of vehicles which are dirty, have torn seats, dents, or are not properly maintained
- Drivers refusing to transport service animals or charging excessive fees for baggage handling
- Drivers seeking preferential, higher value trips, attempting to bribe or "tip" airport personnel or others

To eliminate these problems, airport management seek to control both the quality and quantity of on-demand taxicab services at their airport. More information about standards for taxicab vehicles and drivers is presented in Sections A1 and A2 of this chapter.

Best Taxicab Practices in General

Airports have varying degrees of authority in dealing with the arrangement of on-demand taxicab services as some may be limited to what their local government feels is best for the airport and the community. Independent airport authorities typically have the greatest flexibility in designing their taxicab services. Airports not under the direct control of a city or county government have the ability to (1) require higher standards for taxicab vehicles and drivers than may be required by local jurisdictions, (2) determine which taxicabs and/or taxicab companies may pick up on-demand passengers at the airport, and (3) determine whether their on-demand airport taxicab service will be operated under an open, exclusive, or semi-exclusive access model.

Open Access Taxicab Model

As described in earlier sections of this guidebook, an open access taxicab system is one in which any taxicab properly registered in the city (or another local regulatory authority accepted by the airport operator) can enter the airport and wait for and transport arriving airline passengers who are seeking on-demand taxicab service as long as the taxicab operator complies with the airport's rules and regulations regarding on-demand taxicab vehicles and services.

Exclusive Access Taxicab Model

An exclusive access taxicab model is considered an operating model where the airport operator has awarded a concession contract to one or more taxicab companies and only allows the taxicabs of these companies to provide on-demand taxicab service at the airport. Exclusive systems are normally

arranged through a concession contract awarded through a competitive bid or RFP process. Exclusive or semi-exclusive concessions contracts for airport on-demand services are sometimes referred to as "closed" taxicab service. While only the company(ies) awarded the concession contract may pick up on-demand customers, other taxicab companies licensed by local regulatory officials may also pick up airline passengers by prearrangement.

The bid or RFP will typically set the minimum standards of service regarding vehicle age, condition, and appearance, driver qualifications and attire, insurance, and operating rules and regulations while on airport property. Often an airport operator requires that the selected concessionaire pay the higher of a minimum annual guarantee (MAG) amount or a fee calculated based on a taxicab concessionaire's annual revenue or other indicator of the volume of business conducted (e.g., a fee per outbound taxicab trip or per deplaned airline passenger). For example, in 2014 the taxicab concession contract at Palm Beach International Airport included a MAG of $266,000 per year while the taxicab concessionaire at Seattle-Tacoma International Airport paid a MAG of $3,600,000. Airports frequently reserve the right to adjust the MAG amount when the number of deplaning passengers changes or to reflect the activity based fee paid by the concessionaire during the prior year (e.g., the higher of the prior year's MAG or 85% of the per-trip fees paid during the year).

Table 8-1 summarizes the key differences between an open access and exclusive access taxicab system. While difficult to say these key differences appear in all cases, it is generally felt by industry representatives that these are the key attributes of both open and closed taxicab systems.

Determining the Number of Vehicles Required to Serve the Airport

Airport management frequently seek to determine how many taxicab vehicles are required to serve the airport in order to balance customer demand for taxicab service with the number of waiting vehicles. Typically airport managers wish to ensure there are sufficient numbers of taxicabs waiting at the curbside to serve all arriving airline passengers, even during periods of peak demand. However, airport managers recognize that having too many waiting taxicabs increases the length of time drivers must wait for fares, reduces the number of trips per day each driver serves, and thus reduces the driver's income. Drivers receiving insufficient revenue are more likely to defer maintenance expenses, seek to avoid paying for insurance and other costs, and potentially engage in improper activities such as refusing low-fare trips. To balance demand with supply, airport managements analyze available data to determine the demand for on-demand taxicab service. When the peak demands occur, the driver's waiting and travel times decrease but waiting times for passengers may increase due to the lack of available taxicabs.

Key inputs to these analyses include the number of taxicabs departing the terminal during peak and off-peak hours, the range of round-trip travel times between the airport and customers' destinations, and the number of customers seeking service by hour of the day during peak and off-peak periods. Using an analytical model, typically simulation, it is possible to test alternative numbers of taxicabs until there is minimal wait time for arriving customers. With these data, airport management can see the minimum number of taxicabs needed to serve the airport under normal conditions and during busy periods.

If data are available from a GTM system, it can be downloaded for analysis purposes. From this data, one can typically determine the number of taxicabs serving the airport; their frequency; waiting times and service times; and trips per day. If GTM data are not available, data may be obtained through a variety of sources. If time-stamped tickets are issued to drivers as they enter the airport hold lot, a sample of these tickets may be analyzed to obtain the required data. If no other data are available, traffic surveys can be conducted at the exit of the hold lot.

This data analysis provides airport staff with an estimate of the number of taxicabs required to serve the airport now and in the future. With this information, airport management can balance the supply and demand of taxicabs, determine

Table 8-1. Comparison of open and exclusive access taxicab systems.

Exclusive Access Operating System	Open Access Operating System
Only contracted taxicab companies	Open to all
Easier to manage	More difficult for airport staff to manage
More trips per driver	Fewer trips per driver
Higher revenue to drivers and airport	Lower revenue to drivers and airport
Higher quality service	Lower quality service
More political issues over contract awards	Fewer political issues about who can serve the airport
Fewer curb management issues	More short trip refusals
Fewer short trip refusals	More likely to run out of taxicabs
Fewer customer complaints	Greater number of customer complaints
Less likely to run out of taxicabs	Greater number of holding lot issues
Less likely to have holding lot issues	

the appropriate size of the hold lot, or use the data for other purposes, such as to support the development of an RFP for an on-demand taxicab concession or methods to manage the number of taxicabs serving the airport each day.

A1. Vehicle Standards

Description

These are recommended standards, including minimum age and physical requirements, for all vehicles providing on-demand airport taxicab service. These are considered minimal standards for serving arriving customers and may exceed local regulatory standards.

Purpose

Standards are established to ensure vehicles are mechanically safe and all amenities of the vehicles such as heating and cooling are in good working order. Additionally, airport officials wish to present the traveling public with acceptable vehicles that are clean inside and out. Thus, standards may also be set for the size and type of vehicle that may be used as a taxicab, the cleanliness of the vehicle, markings and signage permitted on the vehicle, and operation of the vehicle when on airport property and roadways.

Vehicle Age, Size, and Type

Taxicab vehicles typically operate over 200 or more miles per day or between 50,000 to 60,000 miles per year—assuming time out for repairs and a 6-day work week. This is four to five times the mileage driven by a typical personal vehicle, and this driving is often in highly congested urban areas with many stops and starts in a single trip. Thus, vehicle age and proper maintenance are important considerations for airport management. The recommended minimum standards for a vehicle used to provide on-demand airport service are:

- **Vehicle age.** A vehicle that is less than 7 model years old and preferably less than 5 model years old. When the vehicle is introduced into service it may not have accumulated more than 40,000 miles.

  Setting a maximum mileage for the vehicles such as 350,000 or 400,000 miles is problematic because it depends upon either a self-report by the vehicle owner or a reading of the vehicle's odometer which may have been tampered with. Thus, a common practice by airport staff is to set a maximum number of model years that a vehicle may be used in airport service, typically around 5 to 6 model years. At 50,000 miles per year, this would mean that few vehicles would be driven more than 350,000 miles. However, since few taxicab fleet operators purchase new vehicles, this age limitation typically means that automobiles used as taxicabs will have considerably fewer miles on them before they are retired.
- **Vehicle capacity.** The vehicle must provide capacity for at least five but not more than eight passengers and for the secure storage of their baggage. Airport officials have also found it necessary to specify what vehicles can be registered as taxicabs. Most common regulations for airport taxicabs specify that the vehicle be a four-door sedan, a six or fewer passenger van, an SUV, or similar vehicle. This eliminates both the ultra-small vehicle and the stretch limousine from being placed into service as a taxicab.
- **Alternative fuels.** Airport officials wishing to improve air quality in the region have encouraged the use of alternative fuels by taxicabs in several ways. These include reduced airport fees and/or head-of-the line privileges for taxicabs using alternative fuels such as natural gas, propane, electric, or hybrid vehicles.
  - **Reduced fees.** Airports have used both a reduction in (1) airport permit fees for vehicles utilizing alternative fuels and/or (2) their per-trip charges as the two primary methods of encouraging the use of alternative fuels. Denver International Airport provides at 10% fee discount for taxicabs using alternative fuel.
  - **Head-of-the-line privileges.** A more dramatic impact can be had by granting head-of-the-line-privileges to taxicabs that use alternative fuels. This procedure allows a taxicab to bypass the long waits in the taxicab hold lot and proceed to a much shorter line of alternative fuel vehicles or, in some cases, directly to the airport curbside for passenger pickup. If only a small number of taxicabs out of the fleet opt for alternative fuels, the impact on the total number of trips they make in a day from the airport can be dramatic.

    When SFO initiated head-of-line privileges, alternative fuel taxicabs were making 7 to 10 more trips per day than they had been under the prior system. On the other hand, non-alternative fuel taxicabs were waiting much longer in line—some obtaining only one trip per driver shift. Such disparity in trips prompted protests and a lawsuit by the operators of the standard-fueled taxicabs affected by the system. Thus, consideration should be given to the use of encouragements that reward those taxicab operators that switch to alternative fuels but do not penalize those that do not. Boston Logan International Airport allows alternative fuel taxicabs to proceed to the head of the line between noon and 8:00 PM but limits this incentive to once per day for each vehicle.

    With the increased price of gasoline in recent years, a political push for alternative fuels has been unnecessary due to the voluntary use of alternative fuels. Taxicab drivers, of their own accord, are finding it cheaper to switch to

vehicles using alternative fuels or hybrid vehicles. Vehicles such as the Prius or other hybrid often achieve 40 to 50 miles per gallon rather than the 12 to 13 miles per gallon that a used Crown Victoria may achieve. Even with today's lower gasoline prices, taxi drivers are opting for alternative fueled vehicles even when airports do not provide incentives to do so.

- **In-vehicle technologies.** The taxicab vehicle should have (1) a mobile data terminal providing for the secure processing of credit cards, Global Positioning System (GPS)-based driving directions, a digital dispatch, a smart printer, and the ability to convert text into speech, (2) video cameras recording both the forward view of the driver and the passenger compartment, and (3) potentially a passenger information monitor displaying current location, accumulated fare, news and weather updates, location directories, advertising/special promotions, and other information.
- **Secure credit card acceptance.** Credit card acceptance by taxicabs was a struggle for many airport operators due to resistance from taxicab drivers who prefer to be paid in cash. Today, as a condition of obtaining an airport permit, most airports require that taxicabs include a technology allowing the secure acceptance of all major credit cards.

  For example, Palm Beach International Airport requires that all taxicabs be equipped with backseat accessible credit card readers as part of their concession contract. Without having to hand the card to the driver, passengers have more freedom to choose their payment method. The airport also reported a reduction in trip rejections since the rule was enforced.
- **Vehicle inspections.** Most airports do not perform physical inspections of taxicabs, preferring to leave this task to the local regulatory agency, but there are notable exceptions to this general policy. San Francisco International and Salt Lake City International have complete regular vehicle inspection programs for all permitted vehicles at the airport including taxicabs.

  Most airports do visual inspections of taxicabs on a random basis to ensure that vehicles are clean on the outside and inside, that all hubcaps are in place, and that there are no obvious dents, rust, or damage to the outside of the vehicle and/or rips or tears in the interior of the vehicle. Trunks are also checked to see that they are free of unnecessary debris and clean so as to not soil passenger luggage. This inspection is performed either in the taxicab hold lot before the vehicle arrives at the terminal curbside or at the curb as starters assist passengers to their taxicab.
- **Types and amounts of insurance.** The minimum level of insurance that individual taxicab vehicles should be required to carry at an airport is $100,000 per person bodily injury/$500,000 per incident (for all injuries caused to the other party), and $100,000 in property damage. This is often referred to as "100/500/100" coverage. The airport must also be protected and be named as a co-insured on the taxicab vehicle insurance and ensure that it is informed immediately should the insurance on any taxicab serving the airport lapse.
- **Technologies.** The use of a taxicab concession agreement typically permits the airport to specify additional technologies such as the use of the latest in-vehicle GPS for determining the shortest and/or fastest route for the passenger; in-vehicle cameras for protection of driver and passenger; credit card acceptance and a credit card system with a back seat card swipe; and mobile data terminals for checking airline flight status for passengers coming to the airport.

Applicability

Taxicab vehicle standards and minimum insurance requirements help ensure safe, efficient, and effective on-demand taxicab service for airline passengers. In an open airport situation, the airport must use its permitting process to set these minimum standards.

Reported Implementation Benefits and Challenges

The benefits of adopting minimum standards and airport operating rules and procedures for taxicab vehicles are that these regulations provide for a better level of customer service and a level playing field for all taxicab drivers serving the airport. The operating costs for all permitted taxicabs are the same; the vehicle technologies are the same; and the result can be fewer short trip refusals and fewer circuitous paths from the airport. Airport passengers also benefit from minimum rules for airport taxi operations through improved safety and professionalism of the service.

The challenges in enforcing these minimum standards are considerable when one considers the many individual independent contractor taxicab drivers wishing to serve an airport. These drivers are not employees working for a company with its own operating rules and procedures so it is up to the airport to inspect the cleanliness of the vehicles, ensure the drivers follow the rules of how to use the taxicab hold lot, stay in their proper place in the taxicab queue, and treat the customer with courtesy. With an open access system, there are few incentives that airport staff can offer the individual driver in the form of additional business if they follow the standards and procedures. Therefore, penalties such as days not permitted at the airport or total disbarment from the airport hold lot are often the only levers that an airport may have to bring about compliance with these standards. One exception is Winnipeg International Airport, which uses a multi-criteria dispatch procedure to provide incentives to drivers. This technology based procedure is described in further detail in Chapter 9.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers depend upon and expect airport officials to provide properly vetted and insured taxicab services at all times when they arrive at their destination airport. Thus, minimum taxicab standards are necessary to meet the expectations of the traveling public. Minimum standards and operating rules for airport taxicabs are also necessary to project the type of image and impression most local public and hospitality/tourism officials want for their community. As many will tell you, "Our local taxicab driver and vehicle often create the first and last impression a visitor to our city experiences."
- **Commercial ground transportation operators.** Many taxicab drivers are excellent representatives of the community and do everything they can to meet, and in many cases exceed, standards set by the airport. However, there are also many taxicab drivers that view each passenger as a one-time event and do not provide the quality of service the community would wish to have for its residents and visitors alike. Many independent contractor taxicab drivers may resist attempts to improve vehicle standards. The acceptance of credit cards, as previously mentioned, has been a struggle for airports. Thus, airport officials can expect considerable resistance whenever establishing or increasing the standards for airport on-demand vehicles.
- **Local elected officials/regulatory officials.** Due to the perceived influence large numbers of taxicab drivers may play in local elections, local elected officials are usually involved in the establishment or expansion of local taxicab standards. Taxicab driver associations can be vocal in public meetings and elsewhere with concerns about their ability to make a living due to the perceived costs of any greater standards that an airport may impose. Unless they are provided accurate information explaining how the proposed standards benefit the traveling public—particularly visitors to the community—some elected officials (and members of the press) may view the independent taxicab owner/operators as small businesses that are subject to needless regulations by the airport.

Implementation Schedule and Costs

The cost of implementing taxicab vehicle standards is not significant but may take considerable time. Typically airport officials benchmark their existing standards, rules, and operating procedures, comparing them to airports of similar size and situation to see if they are adequate. An airport may set up focus groups of stakeholders and taxicab operators to review current standards and make recommendations for improvement. This process may take from 6 months to a year to implement. If an RFP process is utilized to implement these improvements (for example, through a new concession agreement and/or if new software is required to be installed to provide the automated AVI record and billing), then the time and cost of the project can range from $25,000 for a small airport to $100,000 or more for a larger airport.

Examples

Examples of vehicle standards are referenced in the previous paragraphs.

A2. Driver Standards

Description

Many airports have established supplementary standards for taxicab drivers in order to qualify for an airport taxicab permit. These supplemental standards may be greater than those required by the local municipality.

Purpose

The purpose of these additional requirements is to ensure only individuals meeting airport standards are permitted to access and wait at the airport curb. The Transportation Security Administration requires that all taxicab drivers allowed to access the airport curb have a complete criminal background check which may exceed the local regulatory requirements. In addition taxicab drivers must know how to obtain their airport security permits, if required, and how they are to use the airport's roadways and facilities. This requires specific training in the airport taxicab operating rules and procedures. Additional requirements include:

- **Experience.** Taxicab drivers should be at least 21 years old, depending upon local insurance requirements. Most insurance companies recognize the accident rates for 21 year old drivers is significantly less than that of an 18 year old, so for passenger safety, the minimum age should be 21 years old. Prior to receiving a license or permit to operate a taxicab on the airport, the driver should have at least 6 months prior experience operating a taxicab in the community.
- **Appearance and attitude**. Drivers should be neatly dressed and present a professional appearance and attitude. Airport officials may wish to establish these attributes through customer service orientation training for all taxicab drivers wishing to provide service at the airport. Taxicab drivers may also be required to adopt some form of uniform dress code—either by company or as a general minimum standard for the industry. These dress requirements need not be elaborate but can be as simple as requiring a collared white shirt and dark pants or skirt, and prohibiting open toe shoes.

- **Airport-specific training.** Prior to receiving their airport permit drivers should be required to complete a training course addressing airport rules and regulations, safe driving procedures, customer service, use of in-vehicle dispatch system and other technologies, major local landmarks, and have demonstrated their ability to clearly communicate with their customers. This is easier to achieve with an RFP in an exclusive airport taxicab concession, but the airport can include these minimum training requirements as part of a permit to pick up on-demand at the airport in an open system.
  - **Airport rules and operating procedures.** Drivers require training to learn which roadways of the airport to use, how to access the taxicab hold lot, pay any airport trip fees, and how to access the airport passenger pickup area. Airport taxicab drivers must be trained in the proper procedures to pick up and drop off passengers at the airport; where to wait; how they should interact with the taxicab starter, airport police and other airport staff; and what assistance they should be providing their passengers. For example, at some airports the taxicab starter loads a passenger's bag into the vehicle while at most airports this is the responsibility of the driver.
  - **Knowledge of region and airport rules.** Many deplaning passengers have little knowledge of local streets and landmarks. They may have an address but most depend upon the taxicab driver to know where their destination is located and what the best, most direct way is to get there. While local city regulations may have a mapping element or test as a condition of receiving their license or permit to operate a taxicab, this local test may not cover other areas in the region that the passenger may wish to go. Thus, it is important that airport taxicab drivers have a broad knowledge of the area's highways and destinations. The use of GPS mapping has greatly alleviated this problem, but taxicabs must be equipped with these devices and drivers must know how to use them. It is helpful for drivers to be familiar with local landmarks or points of interest, many of which cannot be discerned from a GPS device, as this knowledge will allow them to serve as better "ambassadors to the community." Some airports (e.g., Miami International) require drivers to take refresher courses on a regular basis.
  - **Communication with the customer.** A key attribute of the customer service provided by taxicab drivers at airports is their ability to communicate clearly with customers. This is particularly true if English is the second language of a driver or if the driver has a regional accent. Some airports test a driver's ability to clearly communicate in English.

For additional examples of specific airport taxicab driver training programs, see Section A11.

Applicability

Improved driver standards and minimum standards are applicable to all airports offering on-demand taxicab service.

Reported Implementation Benefits and Challenges

The benefits of supplementary driver standards include improved compliance with airport taxicab rules and regulations and a reduction in customer complaints regarding taxicab service. The key challenge is the opposition from drivers who may be concerned that the new standards will increase their costs, limit their ability to pick up airline passengers, or provide an advantage to other drivers or companies.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers greatly appreciate a clean taxicab and friendly, knowledgeable drivers. The impression of an airport offering good customer service is often supported by a professional looking taxicab line, the presence of starters, and drivers willing to assist with luggage. Therefore it is important that airport officials continually monitor the level of customer service and impressions created by their on-demand taxicab operations.
- **Commercial ground transportation operators.** Taxicab drivers will normally resist technical training and customer service seminars which take them out of the taxicab queue and their opportunity to earn an income, so it will be necessary to make these supplemental training programs mandatory as a condition of obtaining and/or renewing an airport permit. Maintaining a prepaid self-mailer, customer comment card in each airport taxicab permitted to be in the on-demand line or an email address where customers can submit comments will also assist airport officials in identifying individual drivers that may require residual training.
- **Local elected officials.** Generally local officials are supportive of measures to improve customer service, particularly to visitors to a community. However they are also sensitive to the concerns of small business owners, such as taxicab drivers.

Implementation Schedule and Costs

The time and costs of supplemental taxicab driver training are typically not significant. Once a specific training manual has been developed, one or two airport officials can provide orientation training on a regular basis although at some airports (e.g., Vancouver International) the training is provided by an outside organization or community college. In some large

airports such training will be more frequent (e.g., weekly), but smaller airports may wish to offer the training only once per month or quarterly if their operating rules and procedures are clearly spelled out in the orientation manual provided to all new ground transportation providers.

Examples

Airports such as Miami, Savannah, and Minneapolis have specific training programs for drivers. Section A11 provides further information on driver training programs.

A3. Fee Collection

Description

On-demand taxicab fees at an open access airport can be charged by each individual trip, referred to as the trip fee, or by a monthly or annual flat fee. Both of these types of fees are discussed herein.

Purpose

Airport management charge taxicab operators a fee for the right to conduct business at the airport and to contribute their share of the costs of the ground transportation facilities which benefit their business including the costs of taxicab dispatchers, the hold lot, supporting technologies, and a portion of the costs of the airport roadways, police, and other airport staff who enforce and maintain the facilities used by taxicabs. Airports incur the cost of providing the personnel required to manage the taxicab hold lot and the curbside pickup area, process taxicab and driver permits, enforce airport rules, and resolve disputes with taxicab drivers. While airports collect fees from taxicab operators or drivers, these fees may not allow the airport to fully recover the costs it incurs in providing, maintaining, operating, and enforcing the facilities used by on-demand taxicab services.

Per-Trip Fees

In all but a few airports, taxicab per-trip fees are levied on outbound trips only. These per-trip fees for airport taxicabs are typically calculated in one of two ways. One method is to (a) total the fixed and variable annual airport costs associated with the provision of the on-demand airport taxicab services, and then (b) divide these costs by the estimated number of annual taxicab trips departing the airport with a passenger to determine the fee each departing taxicab must pay, if the airport seeks to fully recover its costs. Another method is to compare current taxicab per-trip fees to those charged at other airports of similar size and circumstances. At the time this guidebook was written, the taxicab per-trip fee charged by airports typically ranged from $1.00 to $5.50. These per-trip fees can be collected automatically or manually.

Automated. Similar to a toll road tag, taxicab per-trip fees can be collected by debiting the taxicab company or individual driver's credit card or bank account each time the automated system detects an outbound taxicab. These systems allow the amount in the account to be replenished from the driver's credit card when the account reaches a prescribed minimum balance. These systems also need specific software that reads the information from a taxicab's RFID tag, determines the fee, and automatically debits the account. Various RFID and software companies have systems developed for airports that perform these functions.

Figure 8-1 shows an example of an RFID reader provided by Nashville International Airport (BNA).

A challenge with an automated methodology is that the fees are charged to the vehicle but more than one driver may share the use of this taxicab. Some form of sorting must be performed by the taxicab company or drivers themselves to determine how many trips each driver made from the airport during the billing period.

A second automated method, which overcomes the common or shared driver, is to require each individual taxicab driver to maintain a minimum account balance in their bank account and to allow the airport to debit their personal bank account each time they enter the taxicab hold lot. In such cases, the access to the hold lot is controlled by a gate or access arm that prevents a taxicab from entering the area until the driver has swiped his or her valid credit card or access device (Figure 8-2).

Manual. Another method for charging each taxicab driver as opposed to the taxicab vehicle is to sell access gate tickets or tokens in the amount of the per-trip fee. In this way

Figure 8-1. An RFID reader at Nashville International Airport.

Figure 8-2. A gate controls access to the taxicab holding area at Nashville International Airport.

the individual taxicab drivers use cash or credit cards to purchase tokens or coins to be used at the mechanical gate system to access the taxicab hold lot. However, the manual process requires airport staff to handle cash or process credit cards from the drivers—something that requires oversight and financial audits.

This issue has been addressed by technology based systems in a number of ways. One approach that is gaining in popularity is to assign each driver and each vehicle an RFID tag. The vehicle tag tracks/controls vehicle permits, inspections, insurance, and access control. The driver tag is used to manage the account balance, replenishments, and charges. This allows multiple drivers to use a single vehicle, but drivers each pay for their own charges. Philadelphia International Airport is an example of an airport where this approach is being used.

Reimbursement for early exits from hold lot. A common problem which affects both automated and manual airport taxicab fee collection systems is the issue of reimbursement to the taxicab driver that leaves the taxicab hold lot without going to the pickup curb for a paying passenger. This may be due to a driver getting a call to pick someone up at a location other than the airport; leaving because it is the end of his/her shift; leaving due to family emergency; or leaving late at night when no more flights are expected. The automated system can be configured in several ways to handle this situation including creating an exit gate that reverses the per-trip fee charge, identifying an alternate location to impose the trip charge, or using a mobile RFID tag reader to capture the identification of vehicles that are not to be charged. With manual systems there will typically be additional paperwork to be filled out by the driver requesting reimbursement, credit, or a ticket/token for another entry into the taxicab hold lot.

Monthly/annual permit fees. Smaller airports are less likely to have purchased automated vehicle identification systems for the automated collection of ground transportation fees. Many smaller airports charge a flat annual fee for each taxicab but require companies to pay this charge monthly. A few airports charge individual taxicab owner/operators a flat monthly or annual fee for the right to wait at the airport. Some examples of smaller open access airports and their annual individual taxicab fees include Ted Stevens Anchorage International Airport with a fee of $50 per year per taxi; Asheville Regional Airport with a $300 annual taxicab fee; and Daytona Beach International Airport with a $200 per year annual taxicab fee.

Applicability

The practices described in the previous paragraphs are applicable at any airport that charges taxicab companies or drivers an annual or monthly permit fee, or a cost-recovery or other fee charged per vehicle trip.

Reported Implementation Benefits and Challenges

The key benefits to this practice are the ability of the airport operator to recover a portion of the expenses it incurs in providing, maintaining, operating, and enforcing the facilities used by taxicab companies and drivers. The key challenge is the resistance of the taxicab companies and drivers to pay the required fees, particularly if the drivers are unable to pass the per-trip fees onto their customers. Drivers are typically less opposed to the fees if they may include the fees in the fares they charge their customers, which typically increases the total cost and thus the amount of their tips.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** While it varies from airport to airport, most airports permit the taxicab driver to recover some if not all of the airport per-trip fee from the passenger. This is done by registering the fee as an "extra" on their taximeter and then either showing the extra separately on the taximeter or including the extra in the initial flag drop (e.g., if the first per-fraction of a mile charge is $1.00 and the airport trip fee is $1.00, the passenger would see a fare of $2.00 before the taxicab left the airport curb). In either case the airport fee is included in the total fare shown on the meter and represents the amount which the customer is expected to pay.
- **Commercial ground transportation operators.** Almost all North American taxicab operators pay some form of

airport trip fee or annual permit fee for the right to serve the airport. Many taxicab drivers and owners consider the taxicab to be a public service and believe that there should be no fee for making this service available to airline passengers. However, the countervailing view that taxicabs, like all other forms of airport commercial ground transportation, must pay their fair share of the cost of the airport and its facilities is the predominating view in most communities.
- **Local elected officials/regulatory officials.** Most elected officials and regulatory bodies recognize the need for airports to be self-sufficient and typically work with their airports to set reasonable and responsible per-trip fees for taxicab companies and drivers.

Implementation Schedule and Costs

The costs associated with collecting per-trip fees with an open access taxicab system are generally higher than the costs of collecting fees with an exclusive access taxicab system, based on the assumption that the airport will collect the fee from the driver in the open system and the company will pay the fee in an exclusive system. While this assumption is generally correct, there are variations. An automated system is desirable if the airport plans to collect fees from the drivers. The cost of automated GTM systems is generally proportional to the size of the airport and complexity of the roadway system (from less than $100,000 to several million). The decision by an airport to implement an automated system will include a number of criteria including cost, magnitude of the problems to be solved, and specific benefits to be achieved. In most but not all cases, an automated system will pay for its cost within 2 years. See Chapter 9 for additional discussion of automated systems.

Many airports are attempting to cooperate with local toll road authorities by using tag and reader technologies which are compatible with those used by the toll road operators. Considerable cost savings can be achieved based on economies of scale if not only taxicabs but all other ground transportation vehicles use the same type of RFID tags. Currently Boston Logan International Airport has connected their GTM system to the individual taxicab and limousine drivers' FASTLANE toll system account. The driver pays their FASTLANE balance each month by credit card and the total includes all of their airport fees. The FASTLANE system operator makes a regular payment (i.e., transfers the funds) to the airport of all the airport taxicab and limousine fees collected. This greatly simplifies the work load for the airport staff and minimizes any unpaid fees. The key to making this arrangement work is the relationship between the Airport Authority and the toll road authority. These arrangements take significant effort to negotiate due to the amount of money involved and the effort required by the toll road organization. Some airports prefer not to accept the regional toll road transponders or tags because (1) the toll road authorities charge a "processing fee" which may represent over six percent of the fees collected (unlike an airport operated and maintained RFID system), (2) customers may exceed the balance on their credit/debit cards, and (3) toll road authorities may not be sensitive to the unique needs of airport commercial ground transportation providers since they represent a small percentage of their customer base.

Examples

Airport fee collection systems used in open access airports are referenced in the previous paragraphs.

A4. Addressing Excessive Taxicabs/ Long Driver Waits

Description

In an open access taxicab system there is typically a greater supply of taxicabs than customer demand for these services. As a result, taxicab drivers may be forced to wait 2, 3, 4, or more hours before picking up a passenger. This creates a lack of revenue opportunities for taxicab drivers working the airport. If sufficient revenues are not available for a driver, both the quality of the vehicle and the driver's attitude may deteriorate, resulting in poor customer service. Airports use several strategies to either make the wait more comfortable, lessen the wait time, or both.

Purpose

Reducing airport taxicab driver wait time or making the wait more bearable has the benefit of improving the economic situation for the taxicab driver and/or creating a better working environment for drivers. There are several methods for reducing the excessive wait time and improving the work environment for airport taxicab drivers which are the following:

- **Allocating physical positions.** By assigning each driver a sequential number when they enter the taxicab hold lot, airport management can remove the need for drivers to remain close to their vehicles and to continuously move them up in line, as is the case with a nose-to-tail system. Instead, the driver can park anywhere in the hold lot and if available, wait in the driver's lounge until their number is displayed on an electronic reader board indicating that they may soon be called up to the airport terminal (Figure 8-3).

  A more sophisticated approach using this technique is to make this information available to the driver electronically so that drivers can leave the hold lot and serve other (i.e., non-airport) customers while retaining their position in the dispatch queue as long as they return to the hold lot prior to their vehicle being dispatched to the pickup area.

Figure 8-3. Reader board at Washington Dulles International Airport.

See Chapter 9 for a discussion of technology advancements to aid in operation of this function. Such a system is used at Washington Dulles International Airport.

- **Rotation systems.** A rotation system is an effective way to limit the number of taxicabs that may pick up on-demand passengers at the airport on a given day, thereby reducing driver wait times in the hold lot. Detailed information regarding rotation systems is included in the next section.
- **Limiting hold lot capacity.** Another solution to long waits by taxicab drivers at the airport is to severely limit, or not expand, the size of the airport taxicab hold lot and to encourage taxicab companies to set up their own nearby holding and sequencing scheme to allow their taxicabs to go to the hold lot when there is an empty space. While this approach solves the issue for the airport, it may not address concerns with the total wait times of drivers and their reduced income opportunities, and thus their lack of cooperation and customer courtesy on short haul trips from the airport. When a significantly smaller taxicab hold lot was introduced at one airport, taxicab drivers set up temporary secondary holding areas off the airport property from which to access the airport hold lot. At other airports, the drivers—on their own initiative—simply began a second queue line along the shoulder of a roadway near the airport or in the parking lot of a nearby restaurant.
- **Limiting number of taxicabs but all companies participate.** A variant of the program to reduce excessive driver wait times associated with an open access system is to allow all taxicab companies licensed by local authorities recognized by the airport to provide on-demand service at the airport but limit each company to a fixed number of taxicabs that can serve the airport each day. The number of taxicabs required to serve the airport can be calculated based on past usage data. This vehicle count can then be divided among the taxicab companies. The most common way of allocating airport taxicab permits is to allocate them based upon the percentage of taxicab permits controlled by a company out of the total number of taxicab permits authorized by the city. If this percentage is 20%, for example, then the taxicab company would be allotted 20% of the airport taxicabs actually needed by the airport (or 20% of the airport taxicab permits, assuming there was a cap on the number of airport permits). The introduction to Section 8A provides more information on determining the number of taxicabs needed to serve an airport. An example of a large airport that utilizes this approach is Denver International Airport.
- **Use of supplementary peak period taxicabs.** Some airports issue two types of taxicab permits, with some taxicabs permitted to operate on a full-time basis, while others have permits allowing them to only operate during the peak periods. Charlotte-Douglas International Airport is an example of an airport that uses this approach with 130 full-time taxicabs and 30 peak taxicabs.
- **Electronic sequencing.** Another approach to limit the size of the airport hold lot is implementing a virtual cab lot. With a virtual cab lot, a dispatch system is used by the airport to indicate that it has empty taxicab slot or slots to be filled in at the airport. Each licensed taxicab company is allocated a number of taxicab hold lot slots and it is up to the taxicab company's dispatcher to fill these slots as they become available. Thus, as these slots become open, the taxicab company dispatch authorizes one or a number of their company taxicabs to go to the airport hold lot. Nashville International Airport is able to keep their taxicab hold lot to a minimum size by using this system—avoiding long driver wait times and allowing drivers to potentially be more productive throughout the day.

Applicability

Applicable at most airports where the average wait time in the hold lot for taxicab drivers exceeds 2 hours.

Reported Implementation Benefits and Challenges

The key benefits are improvements to driver income and customer service resulting from the reduced driver wait time. The key challenges are to gain the support of the taxicab companies and drivers who are likely to be concerned about any

changes being imposed by the airport which they perceive may affect their income and working hours.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers are likely to be unaware of any specific steps the airport may take to limit the amount of time taxicab drivers wait in line to pick them up, but they may experience drivers less concerned about short trips and likely with an improved demeanor because they are getting more airport trips on the days or times they are permitted to work at the airport.
- **Commercial ground transportation operators.** Taxicab drivers can be expected to object to any change in their ability to choose when and how often they work at the airport, but objections are quickly overcome when drivers realize that their weekly income is increased due to the new programs implemented by the airport.
- **Local elected officials/regulatory officials.** Local elected officials are likely to be wary of approving new programs if they are not supported by the drivers. Thus, through education and positive examples, local elected officials should be informed of any proposed modifications well in advance of discussions with airport taxicab drivers. Even though there are benefits to the taxicab drivers, the airline passengers, the perception of the community towards the quality of taxicab service available at the airport, and to the airport itself in terms of reducing the costs and size of the hold lot area to be maintained and allowing better, more productive use of some of the hold lot property, there may be a lack of cooperation due to past encounters which make it politically difficult to restrict the access of permitted taxicabs in any way. It thus may take time and further discussion with elected officials before any actions may be taken.

Implementation Schedule and Costs

The cost associated with reducing taxicab driver wait times depends upon the methods employed. The use of alternative odd/even license plate numbers or other methods to rotate entry into the taxicab hold lot to every other day is relatively inexpensive and can be implemented in a matter of days once the decision is made to move ahead. The use of electronic sign boards and assigning each taxicab a number when it enters the hold lot is more complex but still relatively inexpensive compared to utilizing a GTM system to assign taxicabs to the hold lot or developing a virtual hold lot. For these more complex systems, the lead time could be as long as a year as they need to be decided upon, budgeted, and constructed. More information on these systems is included in Chapter 9.

Examples

Airport taxicab driver wait time reduction systems used in open access airports are referenced in the above paragraphs.

A5. Taxicab Rotation System

Description

The open airport taxicab rotation system is a process for limiting the number of days when authorized taxicabs may pick up on-demand airline passengers. A rotation system is sometimes referred to as an "odd-even system" as taxicabs with odd number permits, decals, or licenses can only pick up airport passengers on odd days while those with even numbers can do so only on even days (Figure 8-4). At some airports taxicabs may only pick up customers every third, fourth, or fifth day. The rotation system may also be established by colored permits rather than odd-even numbers, allowing for more than two groups of taxicabs.

Purpose

Such a system reduces the number of taxicabs eligible to pick up passengers at the airport on a given day and thus the length of time each taxicab driver must spend waiting for a fare, while allowing the driver to serve the same number of customers and receive the same fares on a monthly or annual basis. It also allows drivers to serve other portions of the community on the days when they cannot pick up on-demand airport customers, thereby increasing their potential revenues and improving service to the entire community.

Applicability

Applicable at airports that (1) have a supply of taxicabs which greatly exceeds the demand for on-demand taxicab service as evidenced by drivers waiting excessively long times between fares (e.g., over 3 to 4 hours) and thereby earning less revenue, (2) have an open taxicab system, and (3) have dispatchers or starters to inspect taxicabs to ensure compliance with the rotation system and deter short trip refusals.

Source: Salt Lake City Department of Airports.

Figure 8-4. Examples of Salt Lake City International Airport's colored, odd-even day rotation decals.

Reported Implementation Benefits and Challenges

A rotation system reduces taxicab driver wait times and the required hold lot size, while enabling drivers to maintain or potentially increase their number of annual fares and their income. Airports can benefit as drivers who stay in a hold lot for a short period of time require less oversight and fewer amenities and services than do drivers waiting for longer periods. Airport operators may also benefit from the savings in maintenance costs due to having a smaller hold lot and potentially from new revenues if the excess hold area site is developed for another use.

The key challenge occurs during the initial implementation of a rotation system when overcoming driver resistance to change and concerns about a loss of revenue or income. Once implemented, the only on-going operating costs and management efforts are those associated with issuing the permits/decals and providing a dispatcher/starter to verify them.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers should not notice any significant change in service. Customer service may improve if drivers, less concerned about excessive waits in the hold area, are less likely to refuse or complain about short trips.
- **Commercial ground transportation operators.** Taxicab drivers have been shown to serve approximately the same volume of monthly or annual customers, yet initially drivers may be fearful that their earnings will suffer if the days they can work at the airport are limited. Other benefits for and concerns from drivers may include:
  - While drivers may have an opportunity to serve customers in other areas of the community and earn additional income on the days when they cannot pick up passengers at the airport, in some areas drivers may be concerned that there is little non-airport business and an abundance of taxicabs seeking these non-airport trips.
  - Drivers may express concerns about the fairness of a rotation system claiming that the odd (or the even) days are more lucrative (e.g., when the 31st is followed by the 1st). However, because the distribution of busy weekdays and weekends does not regularly fall on either odd or even days, over the course of a month or year, all drivers have equal opportunities at the airport.
  - Drivers may not realize that with a rotation system their vehicle fuel and operating costs are reduced as they spend less time idling in the hold lot.
- **Local elected officials/regulatory officials.** Unless they are lobbied by taxicab drivers or company owners, typically local officials have little or no concerns with the implementation of a rotation system and may recognize the benefits resulting from improved availability of taxicab service in other portions of the community.

Implementation Schedule and Costs

Ongoing and initial costs are minimal. The implementation schedule will depend on the extent of cooperation obtained from the taxicab community. The political process of deciding to do so may take months or more but it may take as little as one week to implement.

Examples

Los Angeles International Airport allows its taxicabs to only serve the airport on-demand line one in every 5 days. The other 4 days these taxicabs serve a specific area of Los Angeles, as each of the nine franchise taxicab companies that serve the airport has a specific geographic area they serve. The one in 5 days approach severely limits the number of Los Angeles taxicabs that can work the airport that day so that each taxicab may spend 30 or less minutes in the hold lot before being called to a terminal. Drivers indicate that their day at the airport is by far their best revenue day and a privilege they do not want to lose. As a result, compliance with airport taxicab dispatch and airport regulations is not an issue, including problems with short trip refusals since drivers know they will be back in the airport pickup line in a matter of minutes. If additional taxicabs are needed, a call is sent out to the dispatch operations of the nine franchise taxicab companies that the airport is now open to any available taxicab. The demand is typically met within 15 minutes due to the large number of off-airport-day cab drivers willing to go to the airport when there is a call. Close cooperation between the City of Los Angeles and the Airport is a key factor in the success of the LAX taxicab rotation system.

Other examples include the airports serving Birmingham, Salt Lake City, and San Diego.

A6. Addressing Insufficient Taxicabs/ Long Customer Waits

Description

The ability of any taxicab to access the airport hold lot at any time under an open system also permits these taxicabs to not serve the airport. Late at night, early in the morning, on religious holidays, snowy days/evenings, when there are irregular operations (e.g., a diverted flight or unexpected late night aircraft arrivals), or when there is more taxicab business within the community than normal such as during a festival or sporting event, there may be customers waiting at the airport and no taxicabs available to pick them up. Insufficient taxicab service can be a significant problem at smaller airports, in part due to the lack of taxicab service in the community.

This section describes the methods that airport staff use to increase the number of taxicabs available.

Purpose

The obvious reason for having methods—established in advance—for increasing the number of taxicabs at the airport is to minimize periods where customers must wait for a taxicab and minimize the wait time itself, as airport customer expectations are that a taxicab should be immediately available at all times. The following are methods that airport staff use to increase the number of taxicab services available:

- **Dispatcher calls.** The most common method for an airport to secure additional taxicabs quickly is for airport staff (or their representatives) to call taxicab company dispatchers and let them know that additional taxicabs are needed and that the wait time will be minimal if they come to the airport immediately. In many cases this is sufficient because airport taxicab drivers (1) normally prefer to accept an airport trip rather than other lower fare trips in the community, (2) have paid a monthly or annual fee to be at the airport and they want to protect that investment lest the airport operator expand the number of taxicabs it permits at the airport or allow non-registered taxicabs to serve the airport. Should an airport want to contact taxicab drivers directly this can be done using a Twitter account or other form of social media that would send a text message directly to every taxicab permitted to work at the airport who has signed up to follow the Twitter account. This process of using social media to notify other drivers of the need for service at the airport is used at Boston Logan International Airport (Figure 8-5).

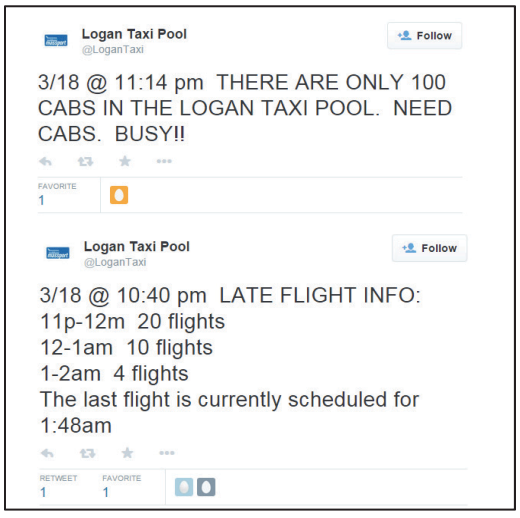


Figure 8-5. Sample tweets from Boston Logan International Airport's Taxicab Dispatcher.

- **Call taxicabs without an airport permit.** Should there be an inadequate response to a dispatch call for taxicabs registered and permitted to provide on-demand taxicab service at the airport, airport officials can open the airport hold lot to any properly licensed taxicab. If these taxicabs are registered to only provide prearranged taxicab service at the airport, they typically continue to pay a pickup fee even though they are now serving on-demand customers. If they are not permitted to provide prearranged service, then any airport pickup fees may be forgone in the view that it is better to serve the traveling public than worry about processing these taxicabs and collecting a pickup fee. Tucson International Airport is an example of an airport that uses this process.
- **Invite local limousines.** In addition to all taxicabs as noted above, airport officials can also invite all limousine operators to provide on-demand service. This is easily done where there is a flat fee system for a taxicab to most major destinations, as limousines can be required to charge only that fee for their services. In other instances, airports allow limousines to charge their standard fares.
- **Requiring a minimum number of trips per month.** Requiring a minimum number of taxicab trips per month from each taxicab forces the drivers to work at the airport at times when they might otherwise not be working or be working some other venue. The rationale here is that in order to operate during the busy, high-demand periods at the airport, they also have to work some low-demand periods such as late at night, weekends, or holidays. Savannah/Hilton Head International and Vancouver International require a minimum of 50 (60 during busy months) and 45 trips per month, respectively.
- **Require the use of shared-ride taxicabs.** Some airports require peak period customers to share a taxicab with other airline passengers when there is an unusual event occurring in the community. For example, airline passengers at Piedmont Triad International Airport are required to share a taxicab during the annual Furniture Mart which attracts many visitors to the area.

Applicability

These programs are applicable at airports that regularly have insufficient taxicabs to accommodate arriving airline passengers. Excess demands may occur at large airports (e.g., Boston Logan International Airport) and frequently occur at small and non-hub airports.

Reported Implementation Benefits and Challenges

The key benefits to the above programs are the reduced customer wait time and improved customer experience. The key challenges are balancing the demands between licensed

taxicab companies that may be alerted to the need for additional taxicabs so as not to show favoritism, and to limousines or non-licensed taxicabs.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport taxicab customers may not realize that steps were taken to reduce their wait time and to ensure there was no shortage of waiting taxicabs. Customers may dislike or not understand the reasons for having to share a taxicab, therefore, starters should ensure customers are willing to share and explain that the unusually high volume of customers will result in long wait times otherwise.
- **Commercial ground operators.** In an open access system drivers will not be in favor of attempts by the airport to, in their view, give away their business to others. These objections are not typically serious or long lasting. The drivers will likely object to being required to work a minimum number of trips and during low-demand hours.
- **Local elected officials/regulatory officials.** Most elected officials recognize the need to provide the arriving airport passenger with on-demand taxicab service at all times of the day or night and are typically in favor of the airport doing what it must to ensure that taxicabs are available.

Implementation Schedule and Costs

The cost of these backup plans is minimal, requiring minimal time by airport staff to set up the phone numbers and processes by which additional taxicabs and/or limousines may be called. Implementation time can be as short as 30 days or less to develop and deploy these plans.

Examples

Examples of airport taxicab customer wait time reduction systems used in open access airports are referenced in the previous paragraphs.

A7. Short Trip Procedures

Description

Short trip procedures are actions airport officials may take to reduce the negative attitude or refusals some taxicab drivers exhibit when they learn that their passenger is only going a short distance and thus (1) their fare will be considerably less than other pickups from the airport, and (2) they may have another long wait after returning to the airport.

Alternatively, airport management could decide that there will be no short trip procedures—that all taxicab drivers in the open access system have the same "luck-of-the-draw" for a passenger traveling a short or long distance. Drivers could pick up passengers going downtown or to other destinations that represent very good taxicab trips and driver revenue or passengers only going to a nearby hotel or residence. Not having a short trip procedure is considered to be a best practice. However, given the resistance by taxicab drivers to waiting in the hold lot for extended periods and then only getting a short trip, some airports with open access systems have developed procedures to address this issue. These procedures are discussed herein.

Purpose

The purpose of short trip procedures is to encourage drivers to accept short trips by reducing their wait time for the next customer upon their return to the airport. There are several procedures that airports have employed to solve this issue such as time, distance, or special short trip lanes only. Other options increase the compensation drivers receive for short trips, thereby reducing short trip refusals. These procedures are discussed below:

- **Time.** Time procedures typically permit the taxicab driver a certain number of minutes to complete the short trip and return to the hold lot. A mechanical time procedure would involve the taxicab curbside dispatcher providing the driver with a time-stamped ticket indicating when the taxicab left the curb. Upon re-entering the hold lot the driver shows the lot manager his/her time stamp and if it falls within the established short trip time, the driver is allowed to enter the next line of taxicabs to be dispatched to the curb or, in some cases, be permitted to go to the head of the line.

  With the use of electronic GTM systems, it is possible that this procedure can be managed by a computer that reads the taxicab RFID tag upon leaving the airport and then reads it again as the driver checks back into the taxicab hold lot. If the taxicab qualifies for the short trip exemption, it can be placed ahead in the taxicab line via the computer in assigning waiting numbers to the taxicabs or be permitted to go directly to the airport curb.

  The shortcomings of using travel time for a procedure to eliminate the issues associated with short trips is that taxicab drivers may speed excessively in both directions if they feel their time will be close to the limit (i.e., so called "white knuckle trips"). Thus, customer complaints about "white knuckle" taxicab trips and public safety are often a partial result of time-based solutions to this problem. There is also the issue of airport traffic which may impede the taxicab driver from making it back to the taxicab hold lot in a reasonable amount of time. Conversely, during late night hours when there is less roadway congestion, a taxicab driver may

be able to go downtown, drop off their customer, and return to the airport with the allotted time. (This was the case in the past when San Francisco International Airport had time-based short trips.)

- **Distance.** In order to overcome the safety and customer complaint issues associated with white knuckle trips, airport officials may employ a distance based methodology. In this procedure, all trips taken within a pre-defined geographic distance of the airport (or to certain communities) are considered short trips. If a taxicab driver is assigned one of these trips, irrespective of the time it takes, he/she is permitted to return to the airport curbside for another pickup. Traditionally, using distance required more interaction between the taxicab curbside dispatcher, the passenger, and the driver. The taxicab curbside dispatcher must ask the customer where they are going, determine if the destination is within the boundaries of the defined short trip, and then give the driver a ticket or some other item to signify that this was a short trip.

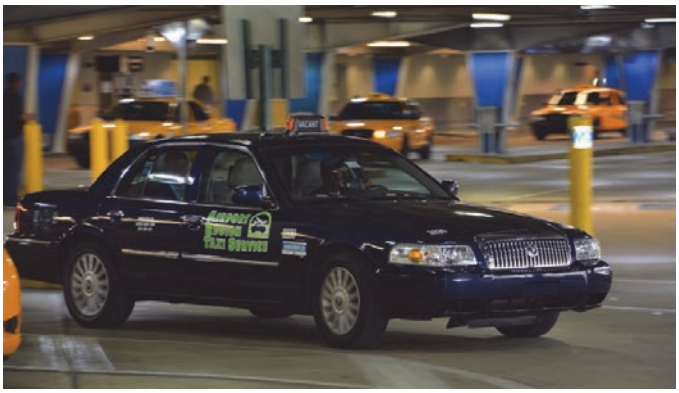
  Implementation problems arise when either the driver or the curbside dispatcher do not know if the address is within the short trip boundaries or if there is disagreement between the driver and the curbside dispatcher as to whether the destination falls within the definition of a short trip. This may take considerable time to deal with, resulting in poor service for the customers who are waiting in the taxicab pickup line.

  There is also the potential of favoritism or bribes between the curbside dispatcher and taxicab driver. The ability to return to the front of the hold lot line is valuable to the taxicab driver and some drivers may be tempted to share their revenue from an increased number of trips with friendly taxicab curbside dispatchers, or perceive that other drivers are being allowed to do so. To ensure this is not happening, it may be necessary to keep records of who is receiving short trip tickets and see if there is a statistically improbable likelihood that a driver or certain drivers are receiving an inordinate number of short trips.

  The need for the interaction between the curbside dispatcher, passenger, and driver to determine short trip destinations can be eliminated by implementing an electronic GPS-based boundary that defines the limits of a short trip. When the vehicle returns to the hold lot, the system automatically detects whether the vehicle stayed within the short trip boundary and is thus eligible for priority dispatching. A system containing this feature is being installed at San Francisco International Airport.
- **Dedicated short trip fleet.** A short trip procedure that requires neither time nor distance is a dedicated short trip line such as that of Miami International Airport, referred to as the blue line (Figure 8-6). A special line of taxicabs are designated short trip cabs only. There are a small number of these taxicabs available for short trips whenever the dispatcher at the curbside determines that the passenger is only going a short distance. These airport short haul taxicabs are painted blue and are known as the blue line taxicabs.

  While all Miami-Dade County taxicabs can serve Miami International Airport, only a small number are chosen to serve the short trips. As a result, the taxicabs in the short line procedure, due to the limited number, make substantially more trips per day than regular line taxicabs, so total revenue for blue cabs is significantly greater than taxicabs in the regular line. Thus, there is a waiting list to become a blue taxicab at Miami International Airport.

  Should the blue line of taxicabs become exhausted, regular taxicabs can take these trips and return to the starter (head-of-line privileges) to minimize their wait time for another pickup.
- **Minimum fares.** Another method for addressing the short trip issue is to put in place a minimum taxicab fare from the airport, eliminating some of the negative impact of the short trip. By having the minimum fare, the taxicab driver will be guaranteed a minimal sum for taking the short trip. Fort Lauderdale-Hollywood International Airport has a $10 minimum fare for all trips starting at the airport.



Source: Dade County Aviation Department.

Figure 8-6. A blue line taxicab at Miami International Airport.

Applicability

The programs described in this section are applicable at any airport where management wishes to establish a program to encourage taxicab drivers to accept low-fare, short trips rather than using the "luck-of-the-draw" procedures.

Reported Implementation Benefits and Challenges

The key benefits are improved customer service resulting from drivers being less likely to refuse a short trip. The key challenges are the time and costs of establishing these

procedures, none of which are perfect and all of which are subject to abuse (e.g., white knuckle trips, tips to dispatchers, and other improper activities), and which require airport staff time to administer and oversee.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers may be hesitant to provide taxicab curbside dispatchers with their intended destinations such as their personal residence address and may receive poor service through unsafe speeds, credit card refusal, or rushed help with baggage if a taxicab driver is attempting to beat a short trip time and return to the airport. Customers generally do not support paying a $15 or more minimum airport taxicab fare to a destination just off the airport, as it may seem like the airport taxicab system is unfairly charging them for the short trip. Therefore, airport officials may wish to adopt short trip procedures which are the least noticeable by customers.
- **Commercial ground transportation operators.** Airport taxicab drivers in an open access system often wait several hours for a trip. When a driver may only get four or five airport trips per shift, the imposition of a short trip will have a significant impact on his/her total income for the day. At airports with longer wait times, the need for some procedure to address the impact of the short trip becomes more of an issue. These drivers will push for the airport operator to address the issue through higher minimum fares, new short trip procedures, and/or all of the above.
- **Local elected officials/regulatory.** Local elected officials are often the source of pressure to do something about the airport short trip problem. This may come from customer complaints or the drivers who complain about their lost revenue due to short trips.

Implementation Schedule and Costs

Short trip procedures are not costly to install if the airport already has a taxicab starter system operating at the curb. Some hardware in the form of a time clock, time stamps, or other method of recording time may be necessary but these costs are minimal. The time to implement these procedures, however, may differ widely. Establishing a minimum fare from the airport will typically take political backing by both city and airport officials. Thus, drafting an ordinance change, bringing it to a vote, and implementing the new procedures may take several months. Thus, a reasonable time for implementation of any of these recommended procedures is between 3 to 6 months. Overseeing the operation of the program, once implemented, and attempting to control drivers who may be abusing the regulations may require significant staff time.

Examples

Examples of airports with time-based short trip procedures include Boston Logan International Airport (20 minutes), Toronto Pearson International Airport (20 minutes), and Washington Dulles International Airport (15 minutes). Hartsfield-Jackson Atlanta International Airport and Savannah/Hilton Head International Airport operate with distance based short trip procedures.

A8. Dispatcher/Starter Responsibilities

Description

Dispatchers or starters are individuals assigned to manage the on-demand queue of taxicabs, or taxicab line, at the airport. Their primary station is at the taxicab pickup curb where their primary duty is to direct passengers to their assigned taxi; call for more taxicabs or special taxicabs such as large vans or wheelchair accessible vehicles when they are needed; assist taxicab passengers with information and luggage; and ensure the proper sequencing of taxicabs (prevent line jumping). Secondary duties include managing the taxicab hold lot and authorizing taxicabs to proceed to the terminal curbside(s).

Purpose

The purpose of the taxicab starter is to facilitate the on-demand pickup of taxicab customers in an expedited manner and to ensure all taxicab drivers follow the airport rules and regulations regarding the pickup of passengers and use of airport facilities. This section discusses who provides the taxicab starter services, their training, and how the procedures used vary from airport to airport.

Airport officials have two basic options for performing dispatcher duties under an open taxicab system. They can either manage the function themselves using airport personnel or they can engage the services of a third-party contractor or service company. In an exclusive airport system, an airport may have the opportunity to have the taxicab concessionaire perform these tasks.

Use airport staff. The majority of the airports with open access taxicab systems use airport staff to dispatch taxicabs. Airport staff are tasked with maintaining order on the airport curb as customers queue for taxicabs. They typically are responsible for assigning passengers to a taxicab or assisting the passenger with special needs or with finding their prearranged taxicab if one has been requested. The benefits associated with the use of airport personnel are greater control over the day-to-day operations of on-demand taxicab operations. The use of airport staff with normal public employment overhead and

benefits can be costly, however, so to minimize costs other approaches may be sought.

Use a third-party management contractor. Retaining a third-party management contractor to provide taxicab starter tasks, and selecting this company through competitive bids is one method of lowering taxicab starter costs. A third-party contractor may also have experience in developing procedures, methods, and even technology to perform these tasks more efficiently and effectively. At some airports the third-party contractor may have other responsibilities including oversight of limousines, or the selected contractor may also be responsible for operating the airport's public parking facilities. Airports using third-party management contractors to provide taxicab dispatch service and oversee on-demand taxicab services on a day-to-day basis include those airports serving Denver, Fort Lauderdale, Los Angeles, Philadelphia, and San Francisco.

Training programs for dispatchers. The use of either airport or third-party taxicab dispatchers requires the staff to be trained in customer service, how the airport taxicab system operates, the technologies employed, and a detailed knowledge of the airport's taxicab operating rules and regulations. Dispatchers also need formal training in customer service and how to interact with customers. Dallas/Fort Worth International Airport has developed a specific taxicab dispatch system training program that involves 2 weeks of training with new dispatchers (referred to as guest assistants) working in the field with experienced staff.

Methods to call up special vehicles and special requests. Airport taxicab dispatchers are often called upon to fulfill specific passenger requests such as wheelchair accessible vehicles, large vehicles, and/or taxicabs from a specific company. The airport needs to have a detailed process in place for how these requests are to be met. This requires some form of communication between the curbside dispatcher and the hold lot personnel. Typically this is voice communications for special requests, although text messages are also used to request special vehicles. Some airports such as Las Vegas McCarran International and Reno-Tahoe International Airports have a designated space reserved for special request taxicabs at the curbside.

Addressing collusion/favoritism between drivers and dispatchers. As previously mentioned, the use of statistical tools can be helpful in determining if there is collusion between the taxicab dispatcher and certain taxicab drivers. However in the absence of any data trail such as short line tickets issued to taxicab X, this is difficult. Regular taxicab driver meetings and a suggestion drop box can be employed to enlist the help of other drivers should they feel they are being discriminated against by the dispatcher. Rotating taxicab dispatch starters among other jobs in traffic control, parking, and maintenance are also ways to reduce the opportunity for collusion. Technology based GTM systems have proven to be successful in addressing the favoritism issue by automating the dispatch decision process.

Applicability

This section is applicable to any airport employing a dispatcher to control the flow of taxicabs from a waiting area to a passenger pickup area and assign customers to the next waiting taxicab (Figure 8-7).

Reported Implementation Benefits and Challenges

Benefits include improved control of waiting taxicabs and the ability to inspect waiting vehicles and drivers. Challenges include ensuring that dispatch services are provided fairly and in a manner that enhances the customer experience.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers will probably not notice professionally run, efficient, and helpful taxicab starter service, but they will complain about the lack of good service. Any prolonged time at the taxicab stand or unnecessary discussions between the driver and starter may be perceived as poorly managed services and will reflect poorly on the airport and community.
- **Commercial ground transportation operators.** For the most part airport taxicab drivers appreciate a well-run curbside dispatch system but are generally suspicious of

Source: Dallas/Fort Worth International Airport Board.

Figure 8-7. A taxicab starter at Dallas/Fort Worth International Airport.

another driver being assigned a better or longer trip. Well-trained and professional taxicab starters can greatly reduce these suspicions by treating every driver with courtesy and dignity, and providing professional, friendly, and courteous service to arriving airline passengers.

- **Local elected/regulatory officials.** Typically there will be little response by local elected or regulated officials unless there is concern of favoritism or discrimination by the airport taxicab dispatchers. Thus, it is imperative that airport officials maintain a watchful eye on the day-to-day operation of the taxicab pickup line.

Examples

Examples of airports with best practices are described herein.

A9. Processes for Communicating with Drivers

Description

At airports with an open access airport taxicab system, there is often no single taxicab dispatch office or central telephone number which airport staff can use to communicate with all licensed taxicab drivers serving the airport. Many airport taxicab drivers are owner/operator independent contractors and may not subscribe to a centralized dispatch system so it is important that the airport is able to have real-time communications with these drivers.

Purpose

Airport staff may also need to contact taxicab drivers if there will be road closures or other changes in operations due to construction, unusual events, or new policies or regulations, in addition to more typical communications for alerting drivers that additional taxicabs are needed to serve the airport (addressed in Section A6). Alerts to taxicab drivers that there are an excess of taxicabs in the hold lot can also help airport taxicab drivers decide if they should return to the airport or seek customers in other areas of the community. There are several methods that have proven effective in enabling airport staff to communicate with taxicab drivers and companies. Drivers can be contacted by voice, text, and/or electronic changeable message signs in the hold lot. These methods can include the use of smartphones, tablets, and mobile data terminals. Boston Logan International Airport uses social media to communicate quickly with all drivers that follow their Logan Taxi Pool Twitter account. Figure 8-8 shows sample tweets informing drivers of an airline terminal change and a maintenance event. The communication tools available through the use of tablets and mobile data terminals are described more fully in Chapter 9.

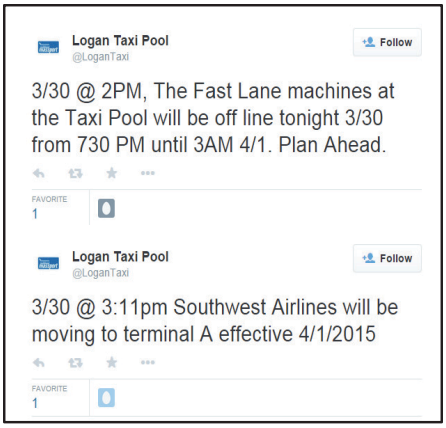


Figure 8-8. Sample tweets from Boston Logan International Airport's taxicab dispatcher.

Applicability

Applicable at any airport that needs to communicate with airport taxicab drivers either directly or indirectly.

Reported Implementation Benefits and Challenges

Key benefits include the ability to quickly and efficiently share information with taxicab companies and drivers.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers would likely be unaware of the communications systems used by airport staff to communicate with the airport taxicab drivers but would appreciate the ability of the airport to maintain taxicab services whenever passengers are present.
- **Commercial ground transportation operators.** Airport taxicab drivers appreciate the ability to know helpful information regarding conditions at the airport. Thus, electronic signs and social media usage that keep them informed are both helpful and effective in operating an efficient open access taxicab system.
- **Local elected officials/regulatory officials.** It is likely that local officials will encourage frequent coordination between airport staff and taxicab companies and drivers but are unlikely to be aware of the communication methods or tools.

Implementation Schedule and Costs

Implementation costs for most communications systems with airport taxicab drivers should not be significant for most

of the options discussed herein. Automated telephone (chain dialing) systems are available on most business phone systems as well as mass texting to driver cell phones. The use of electronic changeable message signs in the hold lot or elsewhere however can cost several thousands of dollars depending on the size and number of signs.

Examples

Additional examples are included in Chapter 9.

A10. Driver's Lounge

Description

A taxicab and/or ground transportation driver's lounge is a facility, typically located in a hold lot, providing amenities for taxicab drivers as they wait to be instructed to proceed to the terminal passenger boarding areas.

Purpose

The purpose of these driver amenities is to, at a minimum, provide restroom facilities for drivers who may wait 2, 3, or 4 hours in the hold lot before they proceed to the pickup curbside. Most airports do not permit taxicab drivers to enter the airport terminal building to use restrooms, so the driver's restroom facilities are considered a necessity for the drivers. A secondary reason for driver's lounges is to provide a comfortable, heated/air-conditioned building where drivers may wait before proceeding to the airport curb, allowing drivers to avoid running their engines (and burning fuel) in order to operate their heaters or air-conditioners.

Airport officials may not view taxicab driver facilities as something they should be responsible for in a closed system where it is the responsibility of the successful bidder to provide these facilities as a part of their concession agreement. However, in an open access system, an increasing number of airport officials have determined that, even though it is the taxicab driver's choice to wait at the airport for extended periods, to improve the experience of the drivers and ultimately the experience of airline passengers, the airport operator should provide basic restroom facilities for these drivers. These restrooms may vary from temporary structures (e.g., port-a-john or portable toilets such as those found at construction sites) to more elaborate heated and air-conditioned lounges providing TV and internet services. In an open access system, taxicab driver facilities are primarily provided and maintained by the airport operator.

Facilities to Provide

The basic driver's facility includes washrooms. This may be a simple concrete block facility that is maintained by the airport for cleanliness and restocking of products such as toilet paper and paper towels or hand drying machines.

From this basic structure, some airports add other amenities including seating areas, vending machines, food trucks, and internet. Restroom facilities should be well maintained. A food truck can be awarded a concession through a competitive bid process (Figure 8-9).

Examples of more comprehensive driver facilities are the taxicab driver lounges at Dallas/Fort Worth and Calgary International Airports. As shown in Figure 8-10, drivers have seating areas where they may watch TV, use the internet, or engage in recreational ping pong or other games while waiting for their turn to go to the airport curb.

Quiet rooms for prayer and meditation in driver's lounges may be desired by drivers, but airports have encountered challenges when attempting to provide facilities accommodating the requests of all drivers in a manner that is fair to all users, reflects the available construction budget, and results in facilities that can be readily maintained. Reasonable accommodations have been made by airports by setting aside physical spaces for personal reflection and prayer but not for the benefit or use of any one religion or group.

Applicability

A taxicab and/or ground transportation driver's lounge is applicable at all airports that have large numbers of taxicab drivers waiting between airport pickups.

Reported Implementation Benefits and Challenges

These facilities benefit waiting drivers and allow them to provide better levels of service to customers. The key challenges are

Figure 8-9. A food truck at Houston Intercontinental Airport.

Source: Calgary Airport Authority.

Figure 8-10. Calgary International Airport's taxicab driver lounge.

associated with the cost of building and maintaining the facilities, particularly restrooms and toilets.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** The airline traveling public will be largely unaware of the presence of a taxicab driver's lounge but will appreciate comfortable and clean drivers (as opposed to those that have been sitting in their vehicles for several hours on a hot or cold day).
- **Commercial ground transportation operators.** Taxicab drivers appreciate the availability of the amenities described above.
- **Local elected and regulatory officials.** Most elected officials and local regulatory bodies appreciate the hard work and many hours that taxicab drivers endure. There is the general feeling that in order to have clean, comfortable taxicabs available for passengers, these amenities should be provided.

Implementation Schedule and Costs

Depending upon the type of driver's facility the airport chooses, the cost and implementation time will differ considerably. Basic port-a-potty construction site facilities can be implemented in a matter of days and added to the airport's annual maintenance cost under contract to a local provider. However, more elaborate facilities such as those at Dallas/Fort Worth and Calgary International require capital budgeting and construction. These facilities run into several million dollars (Calgary International Airport's cost CAD $1.8 million) and can require over 2 years to budget and construct.

Examples

Airport taxicab driver lounges used in open access airports are referenced in the above paragraphs.

A11. Driver Training Programs

Description

Driver training programs familiarize airport taxicab drivers with the rules and regulations governing the use of airport facilities and its roadways, and customer service.

Purpose

The purpose of this training is to ensure that taxicab drivers receive proper training prior to their receiving licenses to operate on-demand taxicabs on the airport and pick up waiting airline passengers. This training may address the use of airport roadways and curbsides, the use of airport hold lots, applicable airport rules and regulations, proper interaction with airport staff including payment of any airport fees, and the penalties for not obeying airport rules and regulations. This training may be performed either by airport staff (internally) or by others (externally). Each of these types of training is discussed below.

Internal. Training for taxicab drivers is developed and conducted by airport staff. At Dallas/Fort Worth International Airport, drivers undergo a 30 day training program. Training topics covered during the first 3 days include uniforms, badges, paperwork, airport rules and regulations, and a tour of the airport. On the fourth day, drivers are assigned a peer coach with whom they work side-by-side for the next 2 weeks. The peer coach must complete a checklist, and a supervisor checks the

driver at the end of 2 weeks. Following the completion of the 30-day training period, the driver must pass an exam to qualify as an airport taxicab driver. There is also a training program for the peer coaches.

External. Often training for taxicab drivers is provided by local colleges on behalf of the airport or the region. At Minneapolis-St. Paul International Airport, drivers attend an 18-hour technical training class at a local college. Training may also be obtained externally from a local agency that provides training to both airport and non-airport drivers. Taxicab drivers serving Miami International Airport participate in customer service training as part of their Ambassador Cab Program. Vancouver International Airport requires all drivers to go through an in-school driver training program run by the Justice Institute of British Columbia. The airport originally developed the program; however, the surrounding cities now also require their taxicab drivers to attend the training. Topics covered include collision avoidance, how to address passengers with special needs, and English writing skills. Drivers must pass both a written and a one-on-one interview test in order to complete the training. All costs are borne by the drivers.

External associations. There are also several international transportation associations that have developed specific training programs for taxicab drivers. These include an online training program available through the American Association of Airport Executives (AAAE) and the Taxicab Limousine Paratransit Foundation (TLPA).

Applicability

Driver training programs are applicable in all airports with open access taxicab service that wish to improve the quality of taxicab service at their airport.

Reported Implementation Benefits and Challenges

The benefits are improved driver training, leading to a reduction in the number of customer complaints and improved compliance with airport taxicab rules and regulations. The key challenges are the costs of the program and obtaining the cooperation of taxicab drivers and taxicab companies.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers would be unaware of the training programs undertaken on behalf of the airport taxicab drivers but would appreciate the ability to obtain safe, friendly, customer oriented on-demand taxicab service.
- **Commercial ground transportation operators.** Most airport taxicab drivers appreciate the ability to know how to use the airport's facility and would appreciate receiving other helpful information regarding their services at the airport. Thus, most accept this training as part of their job as an airport taxicab driver, although they may complain about the cost and time associated with attending the training course.
- **Local elected and regulatory officials.** Local elected officials are often the source of pressure to improve taxicab service in the community in response to customer complaints or officials themselves who received poor taxicab service going to or from the airport. Thus, there is generally support for taxicab driver training.

Implementation Schedule and Costs

Implementation costs for training programs for airport taxicab drivers vary depending upon methodology and personnel utilized. Driver training costs should not be significant if the program is conducted by airport personnel and is developed in-house. While these programs are aimed primarily to introduce the new drivers to the airport's operating procedures and rules for operating while at the airport, some amount of customer training can also be included. Should external programs and personnel be utilized to provide this training, then these costs will have to be budgeted as an on-going expense for the drivers. This budget will depend upon the type of programs selected and their anticipated costs per driver.

Examples

Examples of driver training programs are included herein.

A12. Enforcement

Description

Airport taxicab enforcement procedures are processes airport officials utilize to manage the operations of taxicab drivers and their vehicles while on airport property.

Purpose

Due to the nature of an open access taxicab system, there is often little oversight or control of airport taxicab operations by the taxicab companies themselves. Taxicab companies are often concerned that the independent contractor status of their driver population will be compromised should they exercise significant control over how the taxicab drivers do their job. By default, airport staff must often assume responsibility for the manner in which on-demand taxicab service is provided at the airport, and the oversight of the individual taxicab

drivers. Airport staff conduct background checks on drivers during their application for airport permits, control the drivers' movements while on airport property, and discipline the drivers through their enforcement procedures.

Taxicab enforcement procedures are steps taken to ensure public safety and efficient utilization of the airport curbsides and roadways. These procedures are also utilized to provide fair and equitable opportunities for all taxicab drivers seeking to pick up airline passengers desiring on-demand taxicab service at the airport.

Why active and strict enforcement is necessary. Active, consistent, and strict enforcement of airport operating rules and procedures is necessary for several reasons. Primarily, strict adherence to these rules is necessary for the public's safety. The airport curbside roadway is a highly congested area with private and commercial vehicles all vying for available curbside space to drop off and pick up airline passengers. Portions of the curbside areas are allocated for on-demand taxicabs and all taxicab drivers must adhere to the rules for entering this area and the treatment of airline passengers. Actions such as refusing short trips to close by destinations, imposing extra charges for bags when not permitted, refusing to accept or securely process credit cards where required, or the use of dirty vehicles cannot be tolerated or ignored lest they become common practices at the airport.

Most airport taxicab drivers are hardworking, honest individuals that treat customers with dignity and fairness. However, some do not view airline passengers as repeat customers. Airport taxicab drivers are aware that visitors to the city probably do not know details of the route to their destination, permissible and non-permissible taxicab charges, and who to contact if they left something in the taxicab or have other problems. Furthermore, should a problem with the service arise, visitors would have to return to the city for a hearing. Thus, there is the opportunity for significant exploitation of the airport taxicab passenger by drivers. It is for these reasons that strict enforcement is necessary in order to stem any poor practices before they become widespread among other airport taxicab drivers.

Disciplining drivers and companies. As with many disciplinary systems, there is a hierarchy of actions that get progressively more severe if the offense or number of offenses increases. Smaller airports usually treat violations on a case by case basis. Airports may use a point system, a suspension program, fines, or a combination of all three to discipline drivers as described in the following:

- **Point systems.** A point system usually begins with a warning for minor infractions such as a broken taillight. A failure to go to the terminal assigned by the hold lot dispatcher may carry a more severe penalty of a few points, and a short trip refusal may result in the maximum number of points being awarded to the driver. Savannah/Hilton Head International Airport is an example of an airport with a point system.
- **Suspensions.** A suspension system is when a driver is barred from the airport taxicab hold lot and hence the airport's pickup system for a set number of days. In most cases a driver is suspended only for a serious infraction of airport rules such as failure to follow the directives of a police or traffic control officer. In most cases the first suspension is for a few days but it may be 6 months or longer if the offense was extremely serious such as reckless driving. Should this behavior continue the driver would be permanently suspended from the airport. At Birmingham-Shuttlesworth International Airport, the minimum suspension is 72 hours. Airport staff do not tolerate behaviors such as fighting and will give a 30-day suspension if a fight occurs.
- **Fines.** A fine system is a series of set fines or amounts that reflect the seriousness of the offense. For minor offenses such as failure to go to the correct terminal, the fine may be minimal but for major offenses such as soliciting passengers, the fine can be considerably higher. Airports prefer to impose suspensions rather than fines, as a suspension is easier to impose than attempting to collect a fine from an individual driver and is also an economic disincentive. Monterey Regional Airport is an example of an airport that uses fines as part of their enforcement process.
- **Appeal process.** Irrespective of the system used, whether points, fines, or suspensions, there is always an appeal process for taxicab drivers. This appeal process can be a simple two-step process of first stating the case before a hearings officer such as the Manager of Landside Management at the airport and then to the director of the airport as a secondary level of appeal. Often this means that an airport must go to some lengths to ensure each driver is getting a fair hearing. One such example is Dallas/Fort Worth International Airport where the airport engages a firm specializing in arbitration to hear appeals of taxicab drivers about their treatment from airport curb coordinators. Such a process provides an outside third party review of disciplinary actions taken by the airport staff.
- **Application to taxicab companies.** Application of any of the suspensions or fines to the taxicab company with whom the offending driver is affiliated is possible but problematic, particularly if the driver is an independent contractor owner/operator rather than employee. Taxicab companies often will not take on enforcement responsibilities advising the airport that the improper actions were those of an independent contractor driver—not that of the company. Or, the company may indicate that it cannot discipline the

driver or exercise detailed control over the driver. However, some airports do include the taxicab companies in their enforcement program and can award the company warnings, fines, suspensions, or other disciplinary type actions. It is common to request a senior company representative attend the hearings with airport staff.

- **Mystery shopping.** While the most direct way of testing airport taxicab drivers' compliance with the airport's rules and regulations is through personal observation by police officers, traffic control officers, taxicab dispatchers, and other airport personnel stationed at the curbside, a common indirect method is the use of mystery shoppers. Mystery shoppers go through the motions of waiting in a taxicab line, boarding a waiting taxicab, and experiencing the taxicab ride. The shopper (or mystery rider) then writes up a complete detail of every aspect of their experience. These reports can then be used to discipline taxicab drivers that do not take the shortest route, refuse to accept credit cards, overcharge the secret shopper, or provide other unacceptable service. Typically airport staff review the reports with both drivers and the senior management of the companies with whom these drivers are affiliated.

Applicability

Enforcement procedures are applicable to all airports with an open taxicab system.

Reported Implementation Benefits and Challenges

Active, consistent, and strict enforcement of taxicab rules and procedures improves airport customer service and decreases customer complaints. The challenge is evenly administering these enforcement procedures and being viewed as fair to all drivers. An additional challenge is carrying out these enforcement procedures, including appeals, in a cost effective manner.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** While most airport customers will not be aware of the details of any taxicab driver enforcement program, they will appreciate a comfortable, convenient taxicab ride from the airport and being treated fairly and professionally by the taxicab drivers as a result of enforcement procedures that are actively and strictly enforced.
- **Commercial ground transportation operators**. Taxicab drivers do not appreciate a myriad of rules and regulations that they must know and abide by. However, good taxicab drivers are aware that most of these rules are for the good of the traveling public and help to create a level playing field for all airport taxicab drivers.
- **Local elected and regulatory officials.** Most officials understand and appreciate the need for and the application of strict airport rules. These rules and operating procedures protect the public's interest in safety and customer service. For the most part, these officials want to see an effective appeals process that permits a fair hearing for the taxicab driver.

Implementation Schedule and Costs

Implementation costs for enforcement of taxicab driver and vehicle rules and regulations can be considerable in terms of time and effort if the number of warnings, citations, hearings, and appeals is large. This is one of the hidden costs of operating an airport with an open access taxicab system. Airport staff should not only consider the time it takes to write a citation but also the significant time required in the processing of the citation, a hearing if requested, and an appeal process if requested. Many taxicab driver complaints and ultimate disciplinary actions come from customer comment cards placed within the vehicle or personal letters sent to the airport. Each of these must be reviewed, acted upon, and answered. At a large airport, this activity may require the full-time equivalent of one or more staff members.

Drafting and reviewing a taxicab driver enforcement program can take considerable time as all legal aspects have to be considered and vetted before taking the program to the local regulatory authority for approval. This process can take between 6 months to a year to obtain approval and another 3 months to properly explain the program to drivers and make sure each has had a chance to ask questions.

Examples

Airports with various types of taxicab driver and company enforcement procedures are referenced in the above paragraphs.

A13. Bid vs. Proposal

Description

Airports have two primary ways to obtain on-demand taxicab service under an exclusive or semi-exclusive taxicab concession. They can issue a RFP which generally discusses the type of services desired by the airport and allows prospective providers to compose a proposal describing how they would meet and/or exceed the airport's requirements for the service, including compensation to the airport for the business privilege of providing this service. Alternatively, the airport can specify in detail all the aspects of the service to be provided and ask prospective operators to bid on providing these services.

In either case, there is typically a MAG stipulated for the successful proposer, as well as an activity based fee component (e.g., a fee per trip or per deplaned airline passenger).

Purpose

The purpose of an exclusive access taxicab on-demand concession is to allow airport management to gain greater control over the quality of vehicles and service provided in this airport concession. Airport taxicab concession contracts can include detailed specifications on vehicle standards and driver qualifications that generally exceed those of the local regulatory authority. A secondary purpose is to have greater leverage over the behavior of drivers and to hold taxicab companies contractually responsible for service.

Bids

Airport bids for taxicab services are not common due to the subjective nature of many aspects of providing airport taxicab services. Standards include those for vehicle age, size/capacity, and conditions; driver qualifications and training; fares; airport compensation; use of facilities; insurance; and day-to-day management and dispatching of drivers, among other details. Oversight of taxicab drivers, vehicles, services and operating rules can be complex, depending on the size of the airport, emphasizing the need for an experienced individual to oversee the day-to-day operation of an airport taxicab service.

If, however, an airport has had an airport on-demand taxicab concession for some time and is satisfied with the service, staff may wish to use a bid process which incorporates and continues the existing operating procedures, vehicle standards, and other details.

Proposals

By far the most common method for renewing or establishing an airport taxicab concession is the use of the RFP process. Airport staff develop and offer a detailed description of the service desired along with supporting information about the number of taxicab trips dispatched from the airport and other technical aspects of the airport that are deemed necessary to assist proposers in constructing their proposal. The RFP will normally specify the minimum standards for vehicles, drivers, dispatching, and customer service, and invite proposing companies to suggest programs that exceed these minimum standards and enhance the experience of airline passengers. This RFP package will also include standard forms and information supplied by the airport's procurement department regarding contracting with the airport. The RFP will be announced or sent to local taxicab operators and to regional/national taxicab companies that could offer these services.

An important aspect of the RFP is the schedule of events taking place regarding the RFP. In addition to the due date for the proposals and permissible forms of submission, a pre-proposal conference, which may or may not be mandatory for all proposers, is typically scheduled in advance of the submission date. During the time that an RFP for taxicab services is available, there are typically strict limits on who can answer questions about the RFP, and under what circumstances. All potential proposers are requested to make their intentions known and some airports require that in order to obtain a copy of the full RFP, these individuals and firms provide their contact information. Most airport RFPs for taxicab services require that all questions be in writing and that all responses be shared with any prospective proposers. *ACRP Report 54: Resource Manual for Airport In-Terminal Concessions* provides guidance on the evaluation and selection process of an RFP.

An example of a competitive taxicab service RFP is that of Phoenix Sky Harbor International Airport which conducted an RFP for three taxicab companies to provide their on-demand services. As a result of this concession agreement, the city receives a total of $3.5 million annually in concession revenues from the three taxicab concession.

Applicability

Exclusive or semi-exclusive taxicab concessions for airport on-demand services are applicable to any airport which has taxicab services. These taxicab concessions, while referred to as exclusive services, are not really exclusive—they pertain only to the exclusive right to serve on-demand airline passengers at the airport. At all but a few airports, all properly licensed taxicabs may also pick up arriving airline passengers by pre-arrangement. An airport on-demand taxicab concession allows the airport to set reasonable standards for vehicles and drivers, with the ability to bring about greater control on the delivery and consistency of high quality taxicab service for the airline traveling public.

Reported Implementation Benefits and Challenges

The benefits of an exclusive or semi-exclusive airport on-demand taxicab concession are considerable compared to many airports with an open taxicab system. The airport has much greater control over the quality of vehicles and the behavior of drivers since compliance with airport regulations and procedures is part of a contractual agreement in addition to a permitting process. There is much more involvement with the taxicab company and its management of the service. Airports also report significant cost savings when converting from an open airport to an exclusive airport taxicab system due to fewer personnel being assigned to taxicab management. These include the airports serving Cleveland, Fort Myers,

and Raleigh-Durham. Finally, in addition to cost savings, these same airports report improved financial gains from the airport taxicab concession—turning a cost deficit into a financial gain.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Given the higher standards typically found in airport taxicab concessions, customers generally appreciate a concessionaire on-demand taxicab service over open access taxicabs. There is greater uniformity and responsibility in these services due to greater involvement and day-to-day management by the taxicab company operating the service.
- **Commercial ground transportation operators.** Taxicab company operators and drivers generally prefer an exclusive or semi-exclusive airport taxicab concession—if they are the successful proposers. The ability to make more airport pickups and avoid long wait times at the airport are beneficial to both drivers and company as the entire operation becomes more efficient and time effective, enhancing the driver's income and the company's return on investment. Unsuccessful companies are likely to lobby the local regulatory agency to prevent the concession from being implemented. They may express their concerns that despite being legitimate, licensed companies—perhaps with a long history in the community—are being denied access to an important source of business.
- **Local elected officials/regulatory officials.** Some elected and regulatory officials feel the airport roadways are public roadways and that all taxicabs permitted to operate within the city should be able to pick up on-demand customers at the airport. Some amount of education upon the part of the airport staff is required to explain that the airport roadways are owned by the airport and, though there is public use of the roadways and other facilities, they are not public right-of-ways. There is also the need to convey that there are safety issues related to where and how taxicabs use the airport that must be considered. Staff can demonstrate the ability to improve customer service through the use of a concession contract, and that driver income will likely not be negatively affected, since as independent contractors these drivers may affiliate with the successful concessionaire if they wish. Finally, the need for the airport to be self-sufficient needs to be conveyed. Unfortunately, a significant number of airport taxi concession awards are challenged by unsuccessful bidders that feel the award was not properly decided. Thus, it is important for airport officials to provide a clear and transparent review of all the bids/proposals of their bid or RFP process. The addition of non-airport reviewers (e.g., local taxicab regulatory personnel) is also helpful. Even so, these awards can and do often become quite controversial, as there is a hierarchical structure of approvals required. In some cases the review committee passes their recommendations along to the airport director and/or aviation board for review and approval and then to the mayor or city council for final approval. Such a process with so many layers of political overlay can be extremely long and tedious. Thus, it is important to establish a review committee that has a clear, quantitative evaluation process that is communicated well in the RFP and followed consistently throughout the selection process.

Implementation Schedule and Costs

The implementation schedule for a taxicab concession renewal can be expected to take 6 months or longer if a new operator is selected. The issuing of an RFP and the time for proposals to be submitted and reviewed can take several months. In addition, after the selection, the operator needs to be given time to purchase new vehicles or assemble the vehicles that were proposed for the service. Should the operator selected be a new operator for the airport concession, the time frame for implementation may take longer.

Some airport taxicab concessions are contested by firms that were not selected through the RFP process, and it may take another 6 months or more to clear up any legal challenge to the award. For these reasons, the implementation costs can vary significantly. If an airport is reissuing their taxicab concession RFP for existing services, and the existing operator is the successful proposer, the time for implementation will be short and the cost minimal, consisting mostly of staff time involved in the construction of the RFP and review of proposals.

For airport officials considering a change from an open access taxicab system to that of a concession system, the time and costs of implementing the initial concession can be a considerable challenge. Local taxicab firms and elected officials may object to the inability of properly licensed taxicabs to continue to serve the airport, despite a long history of providing excellent customer service. Airport staff may have to compare the quality of taxicab service at their airport with other peer airports as material for discussions concerning the use of a concession contract. Airport Boards may need to be convinced that the political difficulties to be overcome will be worth the efforts required to address negative criticism from the owners of unsuccessful companies claiming that they and their drivers will be adversely impacted by the airport's actions. Public opinion may be on the side of protesting taxicab drivers that feel their livelihoods are at stake with proposed changes to the airport taxicab system. The success of such proposals typically depends upon how costly and how poor the level of service of the current open taxicab system is. If the service is generally poor and customers and other

stakeholders such as the local hotel and convention industry are dissatisfied with the airport taxicabs, then airport officials have a greater chance of making the shift to a taxicab concessionaire, but typically, it is a political struggle to achieve this objective.

Examples

Airports having taxicab concession contracts are referenced in the previous paragraphs.

A14. One, Two, or Three Concessionaires

Description

A question often arises concerning how many taxicab companies should be awarded a concession contract. While there are demonstrated cost advantages with the single concessionaire, there are also numerous reasons why multiple taxicab companies may be appropriate.

Purpose

The purpose of implementing either a single or multiple taxicab company concessionaire system is reducing costs and improving the on-demand taxicab service. Each of these options is considered in more detail in the following sections.

One concessionaire. Often the purpose of a single taxicab concessionaire is for uniformity and cost savings. With a single concessionaire, the company is typically tasked with managing all aspects of the operation such as the hold lot and any facilities therein, the dispatch system to call taxicabs from the hold lot to the appropriate curbside area, managing the behavior of all drivers, and processing any complaints. Thus, the greatest cost savings to the airport are when the concessionaire performs all these tasks, significantly reducing the number of airport personnel that had been previously assigned these tasks under an open airport taxicab system.

Another benefit of the single concessionaire is that there is but one entity to go to should there be a problem or issue with the on-demand taxicab service. Regular reports can be developed and provided regarding the operation of the service and its drivers.

Single taxicab concessionaires are best utilized when the airport administration has high flexibility to choose whichever type of taxicab concession it desires and there are a number of local, regional, and/or national taxicab operators that can provide competitive proposals for the service. A single company may also be more appropriate at airports with relatively low demand for taxicab service.

Two or more concessionaires. Often political concerns regarding the impact of the single concessionaire taxicab system at the airport limit the flexibility the airport has in establishing a single concessionaire. Also, the number of taxicabs actually needed by the airport might be beyond the capacity of any single local taxicab company to provide. The capacity of local taxicab companies, however, is becoming less of a factor since there are now a number of large transportation companies that can and do offer competitive proposals for taxicab services at cities and airports they are not currently serving.

The major drawback with two or more taxicab concessions is the need to also provide some form of independent management of the dispatch curb so that each company and its drivers have an equal number of opportunities to pick up passengers at the airport. This would defeat the cost savings from the elimination of airport dispatchers.

The necessity of having an independent third party to provide the taxicab dispatching services can be overcome by assigning each company to a different terminal or, as Tampa International Airport does, assign one of their two taxicab concessionaires to each side of the terminal. Thus, each company provides its own dispatch service and no airport personnel or third-party taxicab dispatching service concession is needed. In order to ensure that each taxicab company gets an equal number of taxicab trips, the airport requires that the two taxicab companies rotate sides of the airport weekly.

An example of more than two taxicab concessionaires is that of Washington Dulles International Airport. Due to political concerns and numerous legal challenges to the awarding of their on-demand taxicab concession, Dulles switched from the single taxicab concessionaire system it had originally installed when the airport opened, to a system of three taxicab companies, each with 240 vehicles. Each taxicab company has its own offices at the airport and manages its third of the demand. All vehicles are required to be painted the same battleship gray indicating it is a Washington Flyer airport taxicab. Each concession is competitively awarded from an RFP process that is renewed according to the quality of service provided. The initial contract is for 5 years but each year a concessionaire is able to meet service goals set by the airport, they are awarded another year onto their contract. Each taxicab company can earn up to 5 additional years on their concession agreement if they consistently meet the service objectives set by the airport.

Allocation among several taxicab companies/drivers. Several other alternative arrangements can be found to award a taxicab concession contract for on-demand taxicab services. An airport can specify that it desires several taxicab concessions of different sizes to provide opportunities for small and disadvantaged contractors to also provide taxicab services. Such is the case at Phoenix Sky Harbor. Taxicab service and regulations at Phoenix airport are unique in that the State of Arizona

restricts the right of any city to regulate taxicabs but does permit airports to do so. Due to poor airport taxicab service resulting from the deregulated environment, the airport moved to create a taxi concession agreement. The airport issued a competitive bid and set the service specifications for taxicabs and the rates they can charge. The airport awarded contracts to the top three bidders—top being defined as the one that provided the highest per vehicle amount per year to the airport. The bid also limited the total number of taxicabs serving the airport so that each taxicab is able to make approximately ten outbound airport trips per day.

Phoenix Sky Harbor's last round of competitive taxicab company bids resulted in annual revenue to the airport of approximately $5 million. The highest bid was $16,000 per taxicab per year with the others at around $15,000 per taxicab per year. This is believed to be the highest per taxicab access fee in North America. In addition, each taxicab pays a $1.00 per-trip fee via AVI to the airport. Finally, there is a requirement that each successful taxi company have their own curb personnel, therefore, the airport experiences relatively low management costs for their taxicab system.

Alternatively, an airport which has mainly independent contractor drivers who have little company affiliation serving their airport may choose to develop a consortium of these drivers to form an airport concession agreement. In the past, the airports serving Seattle and Honolulu awarded exclusive taxicab concession contracts to the taxicab driver consortiums. Both airports were provided high quality on-demand taxicab service by the consortiums which managed themselves and their members. However, even if these consortium providers offer excellent service during their concession time period, there is no guarantee that they will always have the on-demand taxi service concession. For example, Seattle-Tacoma International had one such consortium for many years, but pressure to put this service up for a competitive proposal resulted in the airport selecting a different company.

Applicability

Implementation is applicable at all airports desiring greater control over on-demand taxicab costs and service.

Reported Implementation Benefits and Challenges

As previously stated, the benefits of a semi-exclusive on-demand taxicab concession are considerable compared to the many airports with an open taxicab system. This is the case whether an airport awards an exclusive or semi-exclusive taxicab concession contract. With a contractual agreement an airport has much greater control over the quality of vehicles and the behavior of drivers since compliance with airport regulations and procedures is part of a contractual agreement in addition to a permitting process. There is much more involvement with the taxicab companies and their management of the taxicab services, rather than with individual drivers. Airports report significant cost savings when converting from an open airport to an exclusive airport taxicab system due to fewer personnel being assigned to taxicab management. Airports also report increased non-airline revenues resulting from the award of the airport taxicab concessions—turning a cost deficit into a financial gain.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Taxicab users appreciate the greater degree of uniformity and quality that either a single or multiple taxicab concessionaire system brings to the airport environment. There is the impression that all the taxicabs look alike which is different from the impression of the open access airport taxicab line which resembles a rainbow of colors, vehicle types, and driver appearances.
- **Commercial ground transportation operators.** Depending upon the makeup of the local taxicab industry, the response by existing taxicab operators may vary. For the full-service taxicab operator that provides considerable contract, call, and dispatch trips for its drivers, the response is likely to be one of interest and support. If the local taxicab operator provides little in the way of support for its drivers other than an operating permit, there is likely to be little interest and even opposition to an airport developing any form of taxicab concession. This would require a change in the company's operating model and perhaps financial investment so there would be resistance to this type of change.
- **Local elected officials/regulatory officials.** Local officials may be more likely to be supportive of a concession with multiple companies than a single concession, as it provides opportunities for more companies to participate. There may be pressure from officials to provide opportunities for small businesses, including the independent owner-operators.

Implementation Schedule and Costs

The implementation schedule and costs for a concession system with one or multiple concessionaires are described in the previous section.

Examples

Airport examples of exclusive and semi-exclusive taxicab concessions are referenced in the previous paragraphs.

A15. Business Arrangements

Description

The business arrangement with taxicabs changes significantly with the development of an exclusive airport concession contract. The arrangement an airport has with its taxicab providers is enhanced greatly through the addition of contractual arrangements for the service. In addition to local taxicab regulations and an airport permitting process, the airport operator can add additional requirements as well as incentives and penalties to their working arrangement with the on-demand taxicab service.

Purpose

The purpose of these enhanced business arrangements is to improve on-demand taxicab service and enhance revenues from these operations. Depending upon the concession contract, these incentives and penalties can be with the individual drivers, the taxicab concessionaire, or a third-party taxicab dispatching company.

Use of rewards and penalty clauses. Rewards within an airport taxicab concession can vary from simple items such as recognition for excellent performance in airport communications to major rewards such as additional year(s) on the concession if service standards/goals are met (e.g., Washington Dulles International). Penalties can also be simple such as a warning for dirty vehicles to a fine for all passengers that are required to wait more than a set number of minutes for their taxicab to arrive at the curb.

Agreements with management contractor. Airport taxicab concessions are primarily entered into (or signed) by a taxicab management company that utilizes independent contractor drivers to perform the transportation services. The contractor can either be rewarded with additional years on their contract or penalized by not being awarded additional years due to lack of expected performance. The ultimate penalty would be the dissolution of the concession agreement by the airport.

Separate agreements with taxicab provider(s) and the dispatching company. Awarding concession contracts to more than one taxicab company usually requires that an independent third party management contractor be utilized to dispatch taxicabs. This can be airport staff or a third-party taxicab dispatch concession agreement. The best example of this situation can be found at Washington Dulles International Airport, who has concession agreement with three taxicab companies—each with an equal number of taxicabs permitted to work at the airport. However, in order to make sure no single taxicab company is favored over another at the pickup area, an independent third party is contracted to provide the starter service for all three concessionaire companies.

Basis of Payment/Fee Collection

Most airport taxicab concession contracts include a MAG amount established for the concession. This is the minimum amount an operator is expected to pay annually (or in 12 equal payments on a monthly basis) for the concession contract. Typically an airport taxicab concessionaire is required to pay the MAG (which may be specified in the RFP or included in the bid documents) plus an activity based fee. The activity based fee reflects the volume of taxicab business conducted at the airport and can be calculated based on deplaned passengers, per inbound access to the taxicab hold lot, per outbound trip, or in the form of a flat monthly or annual fee. Typically the concessionaire is required to pay the higher of the MAG or the activity based fee, with the MAG adjusted annually to equate to a percentage (e.g., 85%) of the activity based fee if the activity based fee exceeds the prior year's MAG.

Applicability

These business arrangements are applicable at any airport that has or is considering a concession agreement.

Reported Implementation Benefits and Challenges

The benefits and challenges are described at the beginning of Section 8A.

Likely Response by Stakeholders

The likely responses by stakeholders are described at the beginning of Section 8A.

Implementation Schedule and Costs

Implementation costs and schedules will depend on the time and effort required by staff to obtain the approval of airport management, develop the RFP, evaluate proposals, and award the contract.

Examples

Examples include the airports serving Albany, Cincinnati, Phoenix, Raleigh-Durham, Seattle, Tampa, and Washington (Dulles). Sample business arrangements are included in Appendix H.

A16. Oversight/Administration of Contract

Description

Airport taxicab concession contracts are service agreements that cover day-to-day operations affecting hundreds if not thousands of airport customers. Therefore, airport officials must establish methods for analyzing whether a concessionaire is meeting the objectives of the concession agreement.

Purpose

The administration of an airport taxicab concession agreement requires regular oversight of the operation to permit airport personnel to assess the degree of compliance to contract specifications. Thus, the purpose of oversight/administration of the taxicab concession is contract compliance. This compliance review can be accomplished in the following ways:

- **Mystery shoppers.** Mystery shoppers can be used to gain an independent view of how the airport passenger is being treated by taxicab drivers. The use of mystery shoppers will provide qualitative feedback on the airport on-demand taxicab experience. Salt Lake City International Airport contracts with a mystery shopping service that routinely assesses the airport taxicabs. The results of these shops can be used to issue citations and impose fines for any violations that occurred during the trip. Operators receive reports on any mystery shops performed on their company operated vehicles, whether or not a citation was issued.
- **Customer comment cards.** A common method that allows customers to provide feedback on the taxicab experience is the use of a taxicab customer comment card. These are self-addressed and postage prepaid cards typically containing a short list of questions regarding their taxicab experience. There are spaces made available for both compliments and complaints. For those cards returned as a complaint, a file is usually created, and a resolution process involving the taxicab operator is activated. Such cards are increasingly being replaced with internet based surveys inviting customers to comment upon the quality of the taxicab service they were provided.
- **Management by observation.** A more fundamental approach to contract compliance is observation—having airport staff spend time on the airport curb every day, getting to know and observe each taxicab starter and driver as they interact with and load passengers. As dispatchers and drivers become aware that management actually cares about the service enough to spend time with it each day, compliance with contractual obligations is more likely to be observed and practiced.

Applicability

Concession management and oversight applies to every airport that has a taxicab on-demand concession, whether it is an exclusive or semi-exclusive concession agreement.

Reported Implementation Benefits and Challenges

The benefits of active concession management and oversight are considerable. Active concession management results in much greater control over the quality of vehicles and the behavior of drivers since compliance with airport regulations and procedures is part of a contractual agreement and expected to be executed every day.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers will respond favorably to the high level of service provided by a well-run concession contract.
- **Commercial ground transportation operators.** If administered in accord with the terms of the contract, operators will be supportive of efforts to oversee the concession contract.
- **Local elected officials/regulatory officials.** Elected officials will respond favorably to the improved levels of service resulting from a well-run operation.

Implementation Schedule and Costs

The implementation schedule and costs for active management and oversight of the taxicab concession agreement should be minimal and part of the daily activities of airport staff responsible for overseeing commercial ground transportation at the airport.

Examples

Various airport administrative and oversight techniques are referenced in the previous paragraphs.

B. Limousines

The following pages describe best practices for managing and controlling limousines. These best practices are organized into the following categories:

B1. Fee Collection
B2. Control of Drivers and Vehicles
B3. Controlling Illegal Solicitation of Arriving Airline Passengers
B4. On-Demand Limousine Services

B1. Fee Collection

Description

This section describes efficient methods for collecting airport fees from limousine companies and drivers, particularly in communities where some limousine companies make few airport trips.

Purpose

Most airport operators require that limousine companies obtain airport permits for each of their vehicles and pay the established airport fees. Airports that require limousine companies to obtain permits typically charge $100 to $500 per vehicle per year. Many airports also require that limousine companies pay a cost-recovery fee of $2.00 to $5.00 per trip and use a GTM system to monitor the number of airport trips made by these companies. A few airports require that limousine drivers park in an adjacent parking facility while waiting for their customers and pay the public parking fee (e.g., Boston Logan and Dallas/Fort Worth International Airports).

Limousine companies are required to pay dwell time fees or charges at airports that have established such fees. The allowed dwell time varies based upon the size of the limousine. A typical maximum dwell time for a standard town car is less than 11 minutes (e.g., Minneapolis-St. Paul International Airport).

Most often only limousines that are picking up a passenger at the airport are required to obtain an airport permit and pay an airport fee, but some airports (e.g., San Francisco International Airport) require limousines that are dropping off airline passengers to have an airport permit and pay airport fees.

Some limousine companies, particularly small companies whose vehicles make few airport trips or companies located in communities where there is little limousine business, may object to the costs of obtaining an airport permit and paying for an RFID transponder for each vehicle in their fleet if these vehicles rarely travel to the airport. In response some airports have established sliding scale fees for limousines. Examples of sliding scale fees include:

- A reduced fee per company which includes permits for up to six limousines (Oakland International Airport)
- Allowing a limousine company to choose to pay either $125 per month or 6 percent of their airport-related gross revenues with a monthly upper limit or cap of $500 (Memphis International Airport).

Applicability

Fee collection is applicable in communities where airport-related business represents a small proportion of the total business for some limousine companies, and where the limousine companies must obtain and pay for an airport permit for each vehicle in their fleet.

Reported Implementation Benefits and Challenges

A sliding scale can be equitable to both large and small limousine companies since all companies must obtain and pay for an airport permit, but each company can determine which fee system is best for them.

At an airport charging sliding fees, limousine companies must evaluate whether to pass the airport fees on to their customers. This is because a company that makes fewer airport trips may pay higher fees on a per-trip basis (but lower total monthly fees) than a competitor, and thus might charge its airport customers more than a competitor if both companies were to pass the airport fees on to their customers.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers may be confused if their limousine bill includes different amounts of airport fees depending on which company they choose. However, the differences should be small for any one trip.
- **Commercial ground transportation operators.** Limousine companies and drivers are likely to be supportive of sliding fees.
- **Local elected officials/regulatory officials.** Local officials are not expected to have any concerns with a sliding scale and may support it if they understand it benefits smaller companies.

Implementation Schedule and Costs

Ongoing and initial costs are minimal as it requires only modification to the existing airport regulations and limousine rate schedule.

Examples

Airports with sliding fees include those serving Memphis and Oakland.

B2. Control of Drivers and Vehicles

Description

Methods for controlling which drivers enter the airport and the airport terminal, and where they can meet and greet their customers.

Purpose

At many airports limousine drivers are required to remain with their vehicles and are not allowed to enter the terminal to assist their customers. These restrictions help prevent (1) unattended limousines at the terminal curbside and (2) improper solicitation of airline passengers by licensed limousine drivers, unlicensed drivers, and others. (Section B3 presents examples of practices to reduce illegal solicitation of airline passengers.)

Some airports require that the vehicles remain in hold lots or limousine lots until their customers have arrived at the terminal. These lots may be physically separated from taxicab hold lots to segregate the two services and drivers. By providing electric vehicle recharging stations in the limousine lot, such as those planned at San Francisco International Airport, an airport operator may encourage the use of hybrid or fully electric limousine services. (To further promote "green" vehicles, San Francisco International's website gives priority to limousine operators using alternative fueled or hybrid vehicles.)

However, requiring limousine drivers to remain with their vehicles adversely affects the driver's ability to provide their customers with the service they expect and pay for: someone to meet and greet them and carry their baggage from the terminal to the waiting limousine. Several airports have implemented practices which allow limousine drivers to meet and greet their customers and thus improve customer service, while allowing airport staff to maintain control of limousine drivers. Examples of these practices include:

- **Driver meet and greet areas.** Airports frequently designate locations where limousine drivers may wait for and greet arriving customers, and simultaneously prohibit drivers from waiting in other locations inside the terminal such as the baggage claim areas or international arrivals areas. Normally these "meet and greet" areas are located at or near the entrance to the baggage claim areas at a site that deplaning passengers must pass or can easily see. At some airports, stanchions and ropes are used to designate the areas where drivers may wait. Typically drivers are required to (1) display a sign with the customer's name, (2) display in clear sight an identification badge issued by the airport operator or other approved agency, and (3) possess a dated manifest or waybill indicating the arriving passenger's name, party size, airline flight number, and other information. Both paper manifests and electronic manifests visible on the driver's tablet or smartphone are considered acceptable.
- **Driver licenses or permits.** Only licensed or permitted limousine drivers are allowed to enter the terminal and wait in the designated meet and greet areas. In order to obtain an airport license, badge, or permit a driver must complete a background check (typically administered by the TSA using the FBI database) and pay certain fees. For example at Houston's Intercontinental and Hobby Airports drivers who have been issued such badges may leave their vehicles unattended in designated limousine lots and wait in the meet and greet areas inside the terminal buildings.
- **Limousine hold lots and ground transportation coordinators.** Some airports require that limousine drivers wait for their customers in a remote parking or limousine lot until a ground transportation coordinator, passenger service assistance, or individual with a similar title and responsibility authorizes the driver to proceed to the curbside boarding area to pick up their waiting customer. Only after (1) a customer notifies the ground transportation coordinator that they have reserved a limousine and provides the coordinator with the name of the limousine company or driver, and (2) the coordinator has confirmed that the driver has a valid airport permit and has paid the required airport fees does the ground transportation coordinator authorize the driver to exit the lot and proceed to the terminal. At some airports (e.g., Boston Logan International) the driver pays the required per-trip fee using cash or a debit card at an office within the lot and receives a receipt. Other airports collect the fee using an RFID tag or airport-issued debit card, which the driver can replenish (e.g., San Francisco International). There are several variations on this practice depending on where the ground transportation coordinator is located (e.g., at a counter in the baggage claim area or at the curbside) and whether the coordinator is an employee of the airport or a contractor retained by the airport. Chapter 8 Section A8 provides additional information about the use of contract staff to manage commercial ground transportation operations.
  - **Ground transportation counters in baggage claim area.** Some airports provide staffed ground transportation counters or kiosks in or near the baggage claim areas. Counter staff can assist customers by providing accurate information about the destinations served, routes, fares, travel times, and departure schedules for all available commercial ground transportation and public transit services. At some airports, (e.g., Fort Lauderdale-Hollywood and Philadelphia International airports) customers who have made prior arrangements to be picked up by a limousine service must go to the counters and ask the counter staff to notify their limousine driver that they are ready to leave the airport. Counter staff notify the customer by announcing when a customer's limousine has arrived at the curbside. At Newark International airport, counter staff escort the customer to their limousine and help carry their baggage.
  - **Ground transportation coordinator located at the curbside.** Some airports (e.g., Denver International) provide booths or desks on the curbside staffed by ground transportation coordinators. As with counters located

in the baggage claim area, limousine customers notify a ground transportation coordinator, who in turn instructs the limousine lot coordinator to release the waiting driver and allow him or her to proceed to the curbside to pick up the customer.

Most airport operators accept the definition of a limousine (e.g., a recent model luxury sedan or SUV providing up to eight seats) established and enforced by local regulatory authorities. Compared with the effort devoted to inspecting taxicab vehicles and taxicab drivers, airport operators generally devote little effort to inspecting limousine vehicles and limousine drivers. This is because, in response to customer expectations, limousine operators typically use late-model, well-maintained vehicles that comply with established local regulations and are driven by professionally appearing, licensed drivers.

Applicability

These methods are applicable at airports where management wish to control limousine driver access to arriving airline passengers in order to discourage improper solicitation of arriving passengers while enhancing the customer's experience (i.e., allowing limousine drivers to greet customers in the baggage claim area and potentially assist them with their baggage).

Reported Implementation Benefits and Challenges

Driver controls improve the level of service afforded limousine customers thus benefiting both the customers and the limousine company and driver. The plan can vary from simply designating a meet and greet area where licensed drivers may wait for customers to more labor intensive plans requiring staffed counters or full-time curbside ground transportation coordinators.

A ground transportation counter can benefit arriving customers not familiar with the airport or who may have difficulty comprehending the available ground transportation displays (e.g., those with language barriers, the elderly, or visually impaired). Counters can also reduce use of unlicensed vehicles or drivers, thus improving customer safety.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** These measures improve customer levels of service (e.g., assistance carrying bags from the terminal to the limousine) and safety (promote use of licensed vehicles and drivers), and aid those unfamiliar with the airport and the available transportation options.
- **Commercial ground transportation operators.** Limousine companies and drivers may oppose the need to wait in the limousine lot and have their customers report to a counter, but once implemented understand that this program reduces illegal or improper solicitation.
- **Local elected officials/regulatory officials.** Local officials are not expected to have any concerns particularly if those passengers choosing a limousine service are offered the expected levels of service.

Implementation Schedule and Costs

The costs of providing a driver meet and greet area are negligible. The primary cost of operating a counter, whether located inside the baggage claim area or at the curbside, is the cost of staffing the counter during all hours of airline operations. A counter must have electrical power and, if located on the curb, be enclosed and heated/air-conditioned.

Examples

Airports with limousine lots and ground transportation counters/coordinators are referenced in the above paragraphs.

B3. Controlling Illegal Solicitation of Arriving Airline Passengers

Description

This section includes measures to prevent or discourage illegal solicitation of airline passengers by ground transportation providers, particularly limousine drivers.

Purpose

Illegal solicitation of arriving airline passengers by limousine drivers—both licensed and unlicensed—is a challenge faced by many airport operators, particularly at larger airports and airports serving international arriving passengers.

Airports seek to prevent illegal solicitation and to discourage passengers from accepting rides from these drivers, who may be referred to as pirates, scoopers, or hustlers, to ensure that passengers are transported safely and securely. These limousines may be under-insured, poorly maintained, and the drivers of these vehicles are more likely to overcharge customers—particularly those arriving from overseas who may be unfamiliar with local transportation fares, options, and practices. Pirate operators compete unfairly with the providers of legitimate limousine services and other providers of airport transportation if these drivers improperly avoid the costs of vehicle maintenance and insurance, airport fees, and other costs of legally operating a limousine service at the airport.

Enforcement of illegal solicitation of airport passengers can be challenging as it requires considerable staff time and the results may be limited or ineffective. This is because in many jurisdictions in order to arrest a pirate operator for illegal solicitation it is necessary that a legal enforcement officer (rather than a traffic control officer) (1) observe the operator soliciting and receiving payment from a passenger, and (2) appear in court to testify against the illegal operator. Once in court a judge may view illegal solicitation as a minor or victimless crime and give the guilty driver a small fine and/or temporarily bar him or her from entering airport property. Often these drivers consider such fines part of the cost of doing business at an airport.

Because of these challenges in arresting a driver for solicitation, some airports attempt to cite the offending operator for illegally trespassing on airport property (i.e., not having an airport permit), but this too requires staff time and effort. As a result enforcement may be limited to airport staff identifying illegal operators (sometimes with the aid of legitimate transportation operators), warning them, and requiring them to leave the airport.

Examples of creative measures used by airport operators to address illegal solicitation by drivers include:

- **Control of all limousine drivers.** Section B2 describes the use of driver meet and greet areas, limousine hold lots, and ground transportation coordinators to control illegal solicitation.
- **Public announcements to arriving international passengers.** Several airports have prepared public information videos describing the international arrivals process which are shown on international flights before the flight lands in the U.S. In addition to explaining the immigration and customs processes and other useful information, these videos warn passengers not to accept rides from pirate limousine drivers and to only use authorized transportation services. Videos such as these are shown aboard international arriving flights at John F. Kennedy International and San Francisco International.
- **Photograph drivers caught soliciting.** Airport staff at Las Vegas McCarran International Airport maintain a "hot list" of drivers who are caught soliciting rides that contains photographs of the drivers and lists the driver's name, company he/she works for, citation number, and a description of the violation(s). These drivers and their employer receive a formal written warning the first time they are caught and are issued a trespass notice plus a 3-month prohibition. The second time they are caught they are given a 6-month prohibition and a trespass notice, and the third time they are restricted indefinitely. If a driver is caught performing any type of commercial transportation work during his restriction period the airport's procedures call for the driver to be cited again, staff will request the driver be arrested by airport police, and the driver's vehicle will be towed to the on-airport impound lot. Other airports also impose prohibitions that increase in length each time a driver is caught soliciting.
- **Secret shoppers.** Drivers who frequently solicit airport passengers learn to spot airport police and ground transportation staff and avoid soliciting in the view of these individuals. As a result some airports employ secret shoppers who may be airport staff from other departments, police officers from other divisions or stations, or contract secret shoppers.
- **Increasing fines.** When fining offending drivers some airports use a sliding scale system, and impose a small fine or penalty for the first offense, a moderate penalty for the second, and increasingly large penalties for each additional offense, often leading to very large fines and long-term or permanent suspension of airport operating privileges. For example, Monterey Regional Airport charges a fine of $250 for the first offense, $500 for the second, and $1,000 for the third. Salt Lake City International Airport has a similar penalty system, with fines rapidly increasing for each offense. Because it may be easier to temporarily suspend an offending driver than collect a fee, some airport operators (e.g., Savannah Hilton Head International Airport) penalize drivers by issuing suspensions with durations that increase dramatically with each subsequent suspension.
- **On-site court and vehicle impound.** To avoid incurring the overtime costs and loss of active time caused by police officers having to spend a day in court waiting to be called to testify, the Port Authority of New York & New Jersey established an on-site administrative court staffed by law students for the sole purpose of trying drivers caught for illegal solicitation. This court allowed for the prompt trial of pirate drivers and also allowed the court to impound the vehicles of drivers found guilty of soliciting passengers. At Washington Dulles International and Reagan National airports, trial dates are scheduled on a single date to minimize the amount of time police officers are away from the airport and potential overtime hours. At Los Angeles International, the vehicles of drivers arrested for illegal solicitation may be impounded.
- **Enact anti-solicitation state law.** State legislatures of California and New York have enacted laws which specifically prohibit solicitation of airline passengers (e.g., California Assembly Bill 1885) and thus provide police officers with better tools to arrest drivers illegally picking up passengers for solicitation rather than trespassing.
- **Scooper mitigation strategy.** To combat solicitation of airline passengers, the Greater Toronto Airport Authority has implemented the "Scooper Mitigation Strategy" which consists of the following four elements:
  - **Educate.** Airport staff attempt to educate airline passengers against accepting rides from pirate drivers (or

scoopers as they are referred to in Toronto) through the use of the airport's website, signs placed in prominent locations in the baggage claim area, and public announcements in the baggage claim area. (Other airports, including those operated by the Port Authority of New York & New Jersey have similar education programs.)

– **Engage.** Airport staff realize that combatting solicitation requires the assistance of many people working at the Airport, not just the ground transportation staff. As a result, this program has engaged the assistance of the Airport Authority security/police, contract ground transportation enforcement and dispatch staff, drivers of other ground transportation services, and a local towing company under contract to the Airport Authority. Airport staff are educated about the Scooper Mitigation program and the adverse effect scoopers have upon guest safety and revenue loss. Those persons then serve as the eyes and ears of the Airport Authority's contracted security company and the Airport Authority police. These supplemental observers allow the security company and Airport Authority police to be alerted on a real-time basis as to the scooper's presence and whereabouts.
– **Enforce.** This relates to the work done directly by the contracted security company, the Airport Authority's safety/security officers, and ultimately Peel Regional police, the on-site contracted police force who can issue charges.

The contracted security company has been given the responsibility to (a) identify scoopers and notify the on-site police force of their presence, and (b) advise guests who are being scooped that they are about to take a ride with a potentially unlicensed and uninsured driver. In addition, the Airport Authority's police have developed an "enforcement playbook" to coordinate their enforcement plans including changing their role from daily monitoring to ad hoc tactics inside the garage and terminal to catch the scoopers off guard, including towing blitzes, impounding blitzes, and other measures.

The other element of enforcement relates to "Asset Utilization." This is a more expensive effort and requires a long-term capital investment. At Toronto International Airport, this includes building barriers within the parking garages to make it more difficult for scoopers to operate. These barriers include the use of:

- License Plate Recognition (LPR) technologies which allow the Airport Authority to identify vehicles having a license plate known to be associated with a scooper and prevent these vehicles from entering a garage.
- Closed circuit television (CCTV) cameras positioned in the garage and triggered when a scooper's license plate is identified so their parking spot can be determined and police can be waiting for the driver upon their return.
- Speed humps at the garage exit to prevent vehicles, particularly scoopers, from "tailgating" behind a paying customer.

– **Eradicate.** Airport Authority legal staff, in conjunction with government lobbyists representing the limousine drivers, worked with the Province of Ontario to establish new laws or amend existing laws so they have "teeth" in the court system, enabling the Airport Authority's enforcement officers to charge scoopers with offenses that will be upheld in court and make their ability to work at the airport undesirable, if not impossible.

Applicability

These measures are applicable at any airport experiencing illegal solicitation of airline passengers or wishing to discourage drivers from attempting to initiate illegal solicitation.

Reported Implementation Benefits and Challenges

Benefits include ensuring that (1) passengers are transported safely and securely rather than in vehicles that may lack proper insurance and maintenance or by drivers likely to overcharge customers, and (2) all providers of airport ground transportation service do so in accord with the regulations established by the airport operator.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Without education customers may not recognize the difference between pirate and legitimate limousine operators, and if presented the option may accept the offer for a ride from a pirate driver.
- **Commercial ground transportation operators.** Legitimate providers of limousine and other airport ground transportation services benefit if all ground transportation operators are required to comply with the rules established by the airport and other regulatory authorities.
- **Local elected officials/regulatory officials.** Without education local elected officials may not recognize that pirate operators create potential safety and security risks to airline passengers and unfairly compete with legitimate operators of airport ground transportation service.

Implementation Schedule and Costs

The costs of Toronto Pearson International Airport's Scooper Mitigation Strategy program were originally borne by a community of limousine drivers. These drivers collaborated in 2006 and agreed to each contribute a set fee each month to

a fund that pays for the cost of the increased police presence and the contracted security company.

Examples

Airports with creative or innovative measures to control illegal solicitation of arriving passengers are described herein.

B4. On-Demand Limousine Services

Description

On-demand limousine service is offered at a few airports as an alternative to on-demand taxicab service, particularly in communities where airport passengers are dissatisfied with the quality of the available taxicab service and/or have grown accustomed to and regularly use and expect limousine service.

Purpose

On-demand limousine service is offered at an airport by a limousine company awarded an exclusive concession contract through a competitive process. The on-demand limousine concessionaire is allowed to have its vehicles and drivers wait at the curbside for arriving airline passengers, often at a curbside location near the area used by waiting taxicabs. Arriving passengers can chose an on-demand taxicab or an on-demand limousine, with the limousine service typically provided in a late-model, high-quality town car or sedan at a slightly higher fare than a taxicab. Examples of airports that have awarded on-demand limousine concession contracts include:

- **Fort Lauderdale-Hollywood International Airport.** The Broward County Aviation Department (BCAD) awards an exclusive concession contract for the provision of both on-demand private car service (provided using luxury town cars) and on-demand, shared-ride services (provided using 9-passenger vans). The concessionaire is required to (1) staff a ground transportation counter in the baggage claim area, and (2) obtain BCAD's consent of any fare increases. Unlike most airports, BCAD allows the concessionaire (1) exclusive use of a curbside area, and (2) to transport shared-ride customers in either a town car or a 9-passenger van. Under the terms of the current concession agreement the concessionaire is required to pay the higher of (1) an annual "Per-Capita Charge," calculated as $0.0461 multiplied by the Airport's annual deplanements (arriving passengers), or (2) a MAG amount, which was $500,000 in 2014 and is adjusted annually as the higher of the initial MAG or 80% of the aggregate privilege fee due and payable for the prior contract year.
- **Phoenix Sky Harbor International.** There is an exclusive on-demand limousine concession service (referred to as contract limousines) at the Airport. Airport staff report that this service serves a niche market as most airline passengers do not expect to find on-demand limousine service available at the airport. For example in 2010, there were about 531,000 on-demand taxicabs that exited the airport but only 36,000 on-demand limousines. The on-demand limousine company pays the city $1.00 per outbound trip.
- **Seattle-Tacoma International Airport.** The Port of Seattle awards an exclusive concession contract for the provision of on-demand limousine service. The concessionaire is allocated a visible boarding area near that used by taxicabs. The concessionaire pays the Port a MAG ($839,000 in 2014) plus an additional $4.00 per trip if the concessionaire makes more 38,000 trips per year. On-demand limousines are popular with airline passengers going to the nearby Port of Seattle cruise ship terminal, who are willing to pay higher fees for a luxury limousine service. As a result, the concessionaire reports experiencing a double-digit increase in on-demand limousine trips each of the past few years.

Applicability

This service is applicable at airports in communities where airport passengers:

- Are dissatisfied with the quality of the available taxicab service and where the airport operator is unable to improve the quality of taxicab operations. This may occur at an airport where the standards for taxicab vehicles and drivers are established by a local regulatory authority and where the airport is unable to impose stricter standards and/or enforce the existing standards.
- Have grown accustomed to the availability of on-demand limousine services, perhaps due to the unsatisfactory quality of taxicab service in the past or in communities where limousines and town cars are used frequently.

Reported Implementation Benefits and Challenges

Benefits include the additional revenues from the on-demand limousine concessionaire. The opposition of taxicab and prearranged limousine companies and drivers is the key challenge to implementing this service. Other challenges include providing visible and convenient curb space that is separated from the space provided for taxicabs.

The availability of ride-booking services (e.g., UberX or UberBlack) may pose a challenge to the award of an on-demand limousine concession contract and may reduce the potential MAG. This is because these ride-booking services are offering the same or similar services, seeking to attract the same customers, more familiar to the traveling public, and do not have to pay a MAG or concession fee, as currently regulated.

As a result, some airport staff believe that on-demand concessioned limousine services will be less common at airports in the future.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers may welcome this option if many are dissatisfied with the existing taxicab services, desire to be transported in a luxury vehicle, and the new service is competitively priced using luxury sedans.
- **Commercial ground transportation operators.** Existing taxicab and prearranged limousine companies will state that there is no need for this service since they are already accommodating these customers, and that the on-demand service will divert their existing customers rather than attract new customers.
- **Local elected officials/regulatory officials.** Lobbying by existing taxicab and prearranged limousine companies may cause local officials and airport board members to be opposed to the new service unless they have received numerous complaints about the existing taxicab service from local residents or representatives of the local visitors bureau.

Implementation Schedule and Costs

The costs of awarding an on-demand limousine concession are similar to the costs of developing a request for bids (RFB) and award of similar concessions.

Examples

Airports offering on-demand limousine service include those serving the three listed in this section.

C. Transportation Network Companies

At the time this guidebook was completed, state and local laws regulating the increasingly popular transportation network company (TNC) services were continuing to evolve. A limited number of airport sponsors had established permits or regulations governing the operation of these services, and these airports had only done so within the past year. Thus there was insufficient information to confirm that the programs described in subsequent pages represent successful best practices because of (1) the continuing changes to the TNC industry and the regulation of this industry by airport operators and other agencies, and (2) the lack of long-term experience documenting the success of the permitting processes and regulations now in place.

Description

This section includes methods for regulating TNCs such as UberX, Lyft, and Sidecar and enforcing these regulations.

Purpose

Ride-booking services offer airline passengers the equivalent of a near on-demand car service which customers can request and pay for using their smartphone. Although relatively new, these services are available in an increasing number of urban areas, and are attracting customers who might otherwise have taken another mode due to their convenience, high quality service, and competitive cost during non-peak times when compared with other transportation services available in these same communities.

There are two basic categories of ride-booking services:

1. Services such as UberSUV and UberBlack which use vehicles and drivers with commercial licenses issued by local regulatory authorities. These vehicles are typically regulated as prearranged limousines at airports. The TNC regulations discussed in this chapter do not apply to these services.
2. Services such as UberX, Lyft, and Sidecar that are considered peer-to-peer services, as drivers use their own personal vehicles to provide these services. The State of California was the first jurisdiction to establish regulations and authorize its PUC to issue permits to these services, defining this type of service as a Transportation Network Company (TNC).

Airport operating rules and regulations for these TNC companies were initially difficult to develop since classification of their service, i.e., on-demand or prearranged, has led to confusion as to which category of ground transportation service they should fall under. In addition, the low-cost business model of these TNCs often conflicts with established airport regulations for existing commercial ground transportation carriers and fees paid by these carriers. Standard rules for obtaining background checks, vehicle inspections, and primary liability insurance as well as outfitting vehicles with AVI transponders, and registering vehicles and drivers were all issues with respect to admitting TNCs to the commercial airport curbside. In addition, unlike a municipality, an airport typically owns its roadways and curbsides and has greater liability on what happens on their property than city streets. However, airports have and are actively working to integrate these new types of ground transportation operators within their goals for airport ground transportation options.

Airport Goals

With respect to ride-booking services, airport operators typically seek to:

- Ensure airline passengers are provided safe, secure, and reliable transportation.
- Provide airline passengers with the opportunity to select from a menu of transportation services available at a range of costs and convenience.
- Maintain efficient landside operations while minimizing the staff resources required to manage these operations.
- Maintain and preserve airport revenues and require all ground transportation businesses to contribute to the costs of providing and maintaining airport facilities.
- Provide opportunities for new ground transportation businesses while recognizing existing agreements and regulations.

Developing regulations and a permitting process for TNCs allows the airport to accomplish these goals. The main areas of focus for regulators are background checks and sharing of driver information, vehicle inspections and identification, insurance coverage, fees and reporting requirements, and accessibility. Many of these requirements may be set by local city/county ordinances or state regulations, so it is important to coordinate with state and local officials while they are developing regulations for TNCs as these decisions may impact operations at the airport. Specific TNC operating requirements for staging, pick up, and drop off of passengers at the airport can also be included in an airport's rules and regulations.

Driver identification and background checks. At the airports that have TNC permits in place, airport permits are typically issued to the TNC rather than to individual drivers. Under these circumstances the company is typically required to ensure that background checks are conducted on each driver prior to initiating airport service. This background check may be conducted by a third party contracted by the TNC and in some jurisdictions includes a requirement for fingerprinting at that time. Companies are reluctant to have the drivers undergo an additional background check conducted by the airport or regulatory agency to obtain a specific airport permit. Best practices require that the company certify that the background check has been conducted on every TNC driver operating at the airport. Rather than requiring the companies to provide a list of their active drivers (which are considered proprietary information by the companies), airport operators require that the company issue each driver a unique identifying number that is included in the company issued monthly trip reports and which can be displayed electronically to airport enforcement staff to identify a driver if requested. The company is required to provide further information (e.g., the driver name or contact information) if requested for an enforcement issue or in response to a customer complaint.

Vehicle inspections and identification. Annual inspections of TNC vehicles are typically required to ensure the vehicle is maintained in a safe and reliable operating condition. The inspection can be conducted by a service station or mechanic approved by the airport or other regulatory agency. The companies are typically responsible for issuing a vehicle decal certifying that the vehicle has successfully passed inspection. Along with this decal, trade dress identifying the vehicle as operating for a specific TNC is generally required to be displayed in a visible location (e.g., on the right side of the dashboard) at all times while operating as a TNC vehicle on the airport (Figure 8-11).

Insurance coverage. When creating insurance requirements for TNCs, it is important to define when a TNC vehicle is considered to be providing TNC services. Coverage levels are typically required any time the driver has the application turned on, with a lower amount (typically $100,000 to $300,000 for death and personal injury per occurrence and $50,000 for property damage per occurrence) required when the driver is available to provide a ride to a passenger but has not yet accepted a ride request. A much higher coverage amount is required when the driver is enroute to pick up a passenger or has a passenger

Figure 8-11. Examples of TNC vehicle decals and trade dress.

in the vehicle (typically $1 million of primary commercial liability coverage per occurrence). Most airport operators require that the airport also be named as an additional insured. Many airports require that the $1 million coverage be maintained at all times when the vehicle is operating on airport property, whether the passenger is in the vehicle or not.

Fees. Airports typically charge TNC operators an annual permit fee to operate at the airport and cost-recovery trip fees for the use of the airport roadways and other facilities. Nashville International Airport also charges a dwell time fee if vehicles remain at the curbside for longer than 20 minutes. These types of fees are described in more detail in Chapter 5.

Vehicle tracking and reporting. To track TNC vehicles using the airport, a geofence—an electronic boundary defined by GPS coordinates—can be installed around the airport. Airport staff typically develop an outline of the boundaries they wish to use as the perimeter of the geofence, which is then implemented by each company. A record of each time a TNC vehicle crosses the geofence boundary, whether entering or exiting the airport, can be recorded and transmitted to the airport. Typically a record of the number of these trips is remitted to the airport each month and is the basis upon which any per airport trip fees are calculated.

Accessibility. Airport operators have not included any accessibility requirements as part of their TNC permit applications, relying instead on the requirements set by the state and city regulators. These state and city requirements may require the company to have a percent of their fleet be wheelchair accessible, pay a fee that goes towards funding accessible service in the region, or provide access to a service offering accessible vehicles. Additional information on state and city requirements can be found in the forthcoming *TRB Special Report 319: Between Public and Private Mobility: Examining the Rise of Technology-Enabled Services*.

Operating requirements. While waiting to be connected to an arriving airport customer, TNC drivers are typically required to wait in a designated staging area such as the commercial vehicle hold lot or a parking area. Some airports charge the companies for lease of this space or require that parking fees are paid for the time a driver is waiting in a parking lot. Most airports allow TNCs to drop off passengers at the departures level of the terminal building. Allocating specific curb space for TNCs with signage directing passengers to this area will simplify the process for passengers.

Applicability

Methods to regulate ride-booking services and enforce these regulations are applicable at any airport whether the service already exists or may be initiated in the future. It is preferable to establish the regulation before service is initiated, rather than after it is available and the ride-booking provider has begun service.

Evolving Regulations

Because TNCs are relatively new, it can be expected that municipal and airport rules and regulations for their operations will continue to evolve. It is also expected that there will be many hybrid forms of TNC type operations using private cars and part-time drivers.

Reported Implementation Benefits and Challenges

By establishing and enforcing regulations, an airport can achieve the objectives described herein. In particular the regulations can help provide opportunities for new ground transportation businesses while recognizing existing agreements and regulations and assuring airline passengers are provided safe, secure, and reliable transportation.

There are numerous challenges to both establishing and enforcing regulations. A key challenge to establishing regulations is that traditional airport ground transportation providers view ride-booking services as having an unfair cost advantage and these competitors may aggressively lobby to prevent these services from being allowed to operate in a community or at the airport. Enforcement of the regulations can also be challenging due to the difficulty in identifying the TNC vehicles if trade dress and markings on the vehicle are not properly displayed and the need to obtain the ride-booking company's cooperation to establish a geofence and collect trip data.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers are likely to respond favorably to the availability of ride-booking services. This is because many airline passengers prefer these services, having grown accustomed to finding these services available in downtown areas or in other communities.
- **Commercial ground transportation operators.** As noted above, traditional transportation providers, particularly taxicab companies view ride-sharing companies as competitors and may oppose the establishment of regulations that allow the ride-booking companies to serve an airport. In areas where the companies are already operating, however, some existing providers may welcome the new regulations as it requires the ride-booking services to also contribute to the airport's costs and obtain permits as they do.
- **Local elected officials/regulatory officials.** The response by local officials is likely to vary from community to

community depending on the officials' experience with and opinion of ride-booking services and the extent of organized opposition from taxicab companies and drivers. The response of local elected officials may also depend on whether TNCs have already been authorized to operate in the community and the process for obtaining this approval.

Implementation Schedule and Costs

The key costs to establishing the regulations are the staff time needed to obtain the input from and approval of airport management and the elected officials, and the staff time that must be devoted to the enforcement of these regulations. At the time this report was written, tracking software was being developed by several organizations to monitor TNC trips in real time. This software is expected to be available for any airport's use by the time of publication. This type of software allows each airport to receive data from the TNC's server whenever a TNC vehicle crosses the geofence boundary, picks up a passenger, or drops off a passenger, including the company name, driver identifier, vehicle license plate number, and which action is occurring (entry, exit, pick up, or drop off).

Examples

The airports serving Denver, Nashville, John Wayne (Orange County), San Diego, and San Francisco all have TNC permits in place with multiple companies that have agreed to operate under their regulations. At the time this report was prepared, numerous other airports were developing or evaluating TNC regulations but had yet to adopt them.

D. Shared-Ride Vans

The following pages describe best practices for managing and controlling shared-ride vans. These best practices are organized into the following categories:

D1. Open Access Systems
D2. Exclusive or Semi-Exclusive Access
D3. Vehicle and Driver Standards
D4. Customer Service Standards

D1. Open Access System

Description

This section describes measures to accommodate and regulate shared-ride van services operating under an open access system.

Purpose

An open access shared-ride van system is one in which any shared-ride van licensed by the local regulatory authority is allowed to pick up on-demand customers at the airport. Measures to accommodate and regulate shared-ride van services include:

- **Licenses or permits.** At airports with an open system, shared-ride van operators are required to obtain an airport license or permit in addition to showing proof of a license from the local regulatory authority. This allows the airport to establish rules and regulations that are more stringent than those of the local regulatory authority and to have increased oversight of these rules. Examples of vehicle and driver standards are provided in Section D3.

  With an open shared-ride system there are often more vehicles serving the airport than necessary. This oversupply of vehicles can lead to van drivers having long wait times in the hold lot, fewer trips for each driver, fewer passengers transported on each of these trips, and less driver income, which often results in poor customer service as drivers receiving less income are more likely to not maintain their vans, attempt to overcharge customers, or engage in other improper activities (e.g., not transporting a customer to their final destination). Some airports with an open system have a moratorium or cap limiting new companies, the number of vehicles, or the number of drivers allowed to serve the airport.
- **Third-party management contractor.** A third party can be contracted to provide curbside management and oversight of shared-ride van operations. This third-party contractor can provide dispatching and answer customer questions, assisting the airport in coordinating the many different companies operating at the airport under an open access shared-ride van system. One challenge of a third-party dispatching company is in assuring fair treatment of all companies and drivers. Operators may believe the dispatchers are sending passengers to other companies when there was no request made for that specific company or are showing favoritism to one driver or group of drivers.

  At Bob Hope Airport the third-party contractor divides passengers into three types of calls: a "free call," where the passenger does not have a prior reservation and did not request a specific company; a "reserved call," where the passenger has made a prior reservation with a company; and "a company-preferred free call," where the passenger does not have a reservation but has requested a specific company. In the case of a reserved or company-preferred call, the next van for the requested company is called from the hold lot. For a free call, the next van in line is called to the curbside. Van drivers are not allowed to access the

curbside until called by the dispatcher, preventing soliciting at the curbside.
- **Types of fees.** For an open system, airports typically charge shared-ride van operators a monthly or annual permit fee to operate at the airport and cost-recovery trip fees for the use of the airport roadways. These fees are described in more detail in Chapter 5.

Applicability

Any airport with an open access shared-ride van system.

Reported Implementation Benefits and Challenges

As described in the introduction to Chapter 8 Section A, there are significant benefits to awarding a contract rather than operating an open access system. With respect to a shared-ride system, an open system allows for competition among companies and requires less effort by airport staff to implement than an exclusive access system. Managing an open access system requires much more effort by airport staff, however, as the large number of companies and lack of a contractual agreement regarding standards and behavior result in the need for more oversight and strict enforcement of rules and regulations to maintain the same level of customer service. Drivers and operators also must wait longer for a fare and typically may have fewer passengers per van, resulting in lower revenues.

Likely Response by Stakeholders

The following are likely response by stakeholders:

- **Customers.** The higher level of customer service provided by a third-party dispatcher who can manage the many companies, reduce opportunities for improper solicitation, and answer the customer's questions results in customers responding positively to the use of a third-party management company.
- **Commercial ground transportation operators.** While there may initially be concerns with limiting new entrants at the airport, incumbent drivers are typically supportive of a moratorium as they can earn more revenue working fewer hours per day as wait time is reduced. A cap may also increase the value of their airport permit if the airport allows the permit to be sold or leased to other drivers (which is not recommended, since any subsequent attempt to reduce the number of authorized permits or prohibit the sale of permits will be opposed by drivers holding valuable permits).
- **Local elected officials/regulatory officials.** Local elected official may express concern at limiting opportunities for new operators to access and conduct business at the airport.

Implementation Schedule and Costs

The costs of establishing an open access system are the staff time needed to develop a permit application and associated rules and regulations and to gather input from and approval of airport management and the elected officials. Awarding a contract to and overseeing a third-party management company will take additional staff time and effort.

Examples

Airports with open access shared-ride systems include those serving Burbank, Boston, and Orange County.

D2. Exclusive or Semiexclusive Access

Description

Measures to accommodate and regulate shared-ride van services operating under an exclusive access system.

Purpose

An exclusive access shared-ride system is one in which the airport limits which shared-ride companies may pick up on-demand passengers at the airport. The system may be exclusive, with only a single company allowed to serve the airport, or semi-exclusive, with multiple companies authorized to serve the airport.

Some variations on the semi-exclusive model include awarding different shared-ride contracts to different operators by geographic service area (e.g., Baltimore-Washington International Airport). Another practice is to provide opportunities for small businesses by awarding the shared-ride van contract to a driver collective or consortium, where multiple smaller independent owner/operators agree to work together as one group, creating a fleet large enough to serve the airport.

Fees. Shared-ride operators with an exclusive or semi-exclusive concession agreement with the airport are typically required to pay a MAG, sometimes calculated as a percentage of gross revenues or percentage of the fees paid during the prior year of the contract. In addition, trip fees may be assessed, resulting in the airport receiving the greater of the trip fees or the MAG. Some airports also charge circuit fees to reduce the number of times a shared-ride van driver circulates among different terminals in an effort to maximize the number of passengers (or revenue) prior to leaving the airport. These fees are described in Chapter 5.

Applicability

This model is applicable to any airport that currently has or is considering an exclusive or semi-exclusive concession contract with one or more shared-ride van operator(s).

Reported Implementation Benefits and Challenges

An exclusive access system allows the airport staff more control over the standard of service that is provided at the airport than does an open access system. Driver and vehicle standards, customer service standards, and areas to be served may all be specified in the contractual agreement between the shared-ride van provider and the airport sponsor, which is easy to enforce since a concessionaire is motivated to comply with the rules and regulations set forth in the contract so as not to lose the privilege of operating at the airport.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers are generally supportive of the higher level of service that will be achieved by using a concession contract. They may prefer the options provided with a semi-exclusive over an exclusive contract.
- **Commercial ground transportation operators.** Smaller companies will be concerned that they will not be able to compete with larger companies for an exclusive or semi-exclusive contract. They may not want to create a driver collective or consortium, as they want to maintain their operational independence. Licensed shared-ride companies now serving the airport will be concerned about the potential loss of business if they are not one of the selected concessionaires, despite their ability to continue to transport prearranged business (or charter) customers.
- **Local elected officials/regulatory officials.** Local elected officials may express concern at limiting the number of operators who can access the airport, particularly if there are many existing small companies operating at the airport. These officials may not understand that some small companies lack the financial resources needed to market their services, invest in web-based reservations systems and mobile data terminals or other technologies, or other measures needed to remain competitive.

Implementation Schedule and Costs

An exclusive shared-ride van system may take more than 12 months to implement depending on the time needed to obtain approvals from an airport board/elected officials, prepare and release an RFP, allow interested operators to respond, evaluate the proposals, and award the contracts. In addition the companies not selected may contest the final award of the contract(s) using legal and political methods.

Examples

Airports with an exclusive concession contract include those serving Cincinnati, Houston (Hobby and Bush Intercontinental), Miami, Phoenix, Roanoke, Sacramento, and Santa Barbara.

Airports with a semi-exclusive concession contract include those serving Baltimore/Washington, Dallas/Fort Worth, Oklahoma City, and Washington (Dulles and Reagan National).

D3. Vehicle and Driver Standards

Description

This section includes information regarding supplemental standards for shared-ride vehicles and drivers that airport operators include in airport-specific regulations if not already required by the local regulatory authority.

Purpose

Many airport operators implement standards for vehicles and drivers that are more stringent than those required by the local regulatory authority in order to maintain a high level of customer service and efficient curbside operations. These standards can be included in the requirements to receive an operating permit or as part of a concession contract. Examples of these standards include the following:

- **Vehicle size.** Vehicle size for shared-ride service is often set by a local regulatory authority, which may also have different insurance requirements depending on the number of seats in a vehicle. Airports typically require a minimum vehicle size to accommodate shared-ride passengers and their luggage. Baltimore-Washington International requires a van to seat at least 7 passengers, while Miami International requires a minimum of 10 seats per van.
- **Vehicle age or mileage limits.** Limits on model year or vehicle mileage are often set to create a better level of customer service for the passenger who expects to travel in a late-model, well-maintained vehicle. Age and mileage limits may also be implemented as part of an environmental initiative to reduce emissions and fuel consumption by requiring the use of newer, more efficient vehicles.
- **Vehicle maintenance and appearance.** Airport operators typically require companies to have a uniform paint scheme for all vehicles in their fleet serving the airport. This makes it easier for customers, airport staff, and enforcement personnel to identify the company. Vehicles are also required to be maintained in working order with no visible dents or scratches, operable air conditioning/heating systems, and working seat belts. Vehicles may also be required to have mobile data systems allowing the driver to communicate with the dispatcher, securely process credit cards, obtain directions to a customer's destination, and obtain customers for trips to the airport as well as from the airport.

- **Alternative fuels.** Airports may include requirements for a percent of the vehicle fleet to use alternative fuels or meet a green standard. Incentives or penalties may be imposed to encourage compliance with these environmental initiatives. Examples of airports using alternative fuel shared-ride vans include Phoenix Sky Harbor, whose fleet operates entirely on propane, and San Francisco International, whose vans all use CNG. Section H of this chapter provides more information on the use of alternative fuels.
- **Credit card acceptance.** While many customers pay for shared-ride services in advance, either online or via the phone, best practices call for secure in-vehicle credit card readers to be available for on-demand customers who wish to pay by credit card following the completion of their ride. Some airports have counters inside the terminal building, allowing customers to pay in advance with a credit card prior to boarding a van.
- **Dress codes.** Consistent driver attire is often required to enable customers to identify which shared-ride van company a driver is working for. If company provided curbside coordinators or customer service representatives are present to represent each company, having these staff wear uniform attire displaying the company's logo assists customers in identifying the company representative.
- **Driver training and behavior.** Driver training programs can be offered by airports to ensure shared-ride van drivers are aware of airport rules and regulations, airport operating procedures such as where to stage, dispatching procedures, use of pickup areas, how to provide good customer service, and safe driving programs. Often airports have specific regulations regarding driver behavior at the curbside such as requiring drivers to stay with their vehicle rather than approaching a customer. These measures reduce accusations of soliciting, whether real or perceived, by other drivers. The three airports operated by the Port Authority of New York and New Jersey, Dallas/Fort Worth International, and Santa Barbara Municipal Airport all specify that shared-ride van drivers must stay with their vehicles. Baltimore-Washington International requires a minimum of 8 hours of annual customer service and driver safety training plus attendance at the airport's shared-ride driver training program which is operated by the Maryland Tourism Council.

Applicability

These standards are applicable at any airport with a shared-ride van operator.

Reported Implementation Benefits and Challenges

Increased customer satisfaction, improved levels of safety, and easier enforcement are all benefits of setting higher standards for operations at the airport. Implementing requirements for alternative fuels and vehicle age or mileage limits reduces emissions and can support local or regional environmental initiatives.

Enforcing the stricter standards may require additional staff resources, as personnel must inspect the vehicles to spot those drivers and vehicles not in compliance. While some driver and vehicle standards can be enforced when a vehicle is permitted or during an annual inspection, more regular visual inspections will need to be conducted by curbside coordinators, enforcement officers, or other staff either in the hold lot or at the curbside to determine compliance with dress codes, vehicle appearance, and driver behavior standards. Mystery shoppers may also be needed to ensure credit card acceptance.

There may also be political challenges to implementing stricter standards, as small companies may have fewer resources and need to make significant financial investments to implement required changes to their existing fleet. This may prove to be a hardship for the company, and local officials may be sensitive to the needs of these small, locally owned businesses.

Another challenge is in establishing the regulations without infringing on a driver's status as an independent owner/operator. The language used to describe driver standards generally recognizes the potential owner/operator relationship of many drivers and their companies and does not include any statements that could be perceived as control over a driver as defined in an employer-employee relationship. Chapter 4 describes the challenges of employee versus owner/operator relationships in further detail.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers are expected to respond positively, as these standards improve customer service levels by providing late-model, clean vehicles, and allowing customers to easily identify company representatives and pay securely with a credit card.
- **Commercial ground transportation operators.** Shared-ride companies and drivers may have concerns about the additional cost of the higher standards for their vehicles and the effect on their income.
- **Local elected officials/regulatory officials.** Due to the concerns of operators, particularly those of small businesses, about costs of implementing higher standards, elected official may be sensitive to these concerns. However, regulatory officials are typically supportive of measures and programs that improve customer service and reduce the environmental effects of shared-ride operations, so airport staff frequently work with local officials to explain the benefits of implementing these standards.

Implementation Schedule and Costs

The airport operator's costs of implementing improved driver and vehicle standards are limited to the staff time required to develop and enforce the standards. The shared-ride van owners and companies are typically responsible for the costs of implementing higher standards. However, some airport operators assist the van owners by helping them (1) apply for and obtain state and federal grants funding the conversion of vehicles from gasoline to CNG or alternative fuel, or (2) obtain customer service training for their drivers and other staff who may come into contact with airline passengers.

Examples

Examples of airports that have implemented improved standards for shared-ride vans and drivers are described in the previous section.

D4. Customer Service Standards

Description

Customer service standards are meant to improve the customer experience when taking a shared-ride van, from the reservation process to retrieving lost items following the trip.

Purpose

Establishing minimum customer service requirements can increase customer satisfaction. These standards can be included in an operating permit a company is required to obtain to serve the airport or in a concession contract. Customer service standards include the following:

- **Web-based reservation systems.** Best practices require that company computer systems have technology to enable customers to make reservations online through a company website and/or smartphone application. This includes secure storage of personal information such as customer names, addresses, and phone numbers, and the ability to pre-pay using secure credit card processing. Information regarding fares, company contact information, and lost and found are also required to be displayed on the website.
- **Twenty-four hour dispatch.** Customers should be able to phone a company to make a reservation or have questions answered by a customer service representative 24 hours a day.
- **Vehicle tracking software.** Vehicle tracking software allows for real-time updates on the location of shared-ride vehicles using GPS. Customers are able to see the current location of their arriving van on a map. Vehicle tracking also enables a company to monitor a vehicle's location and speed and receive an alert if a van shows excessive speed. This ability to monitor a vehicle's speed reduces erratic driving, providing a more comfortable ride for passengers. It also allows the dispatch office to respond to customers questioning the expected arrival time of a vehicle. More information on GPS vehicle tracking is included in Chapter 9.
- **Maximum wait time.** Operators prefer to wait until a van is as full as possible in order to maximize passenger loads, thereby increasing the revenue received from one trip. To prevent excessive delays to customers, many airports set time limits on the amount of time shared-ride van operators can wait in the terminal area when picking up passengers from the airport. There are several variations on the time limit:
  - Shared-ride companies may be required to depart the airport within a set time frame from when the first customer boards the vehicle: e.g., Bob Hope (Burbank) and Washington Dulles International, which have maximum times of 10 and 15 minutes, respectively. Dallas/Fort Worth International, Miami International, and San Francisco International have maximum time limits of 20 minutes before a van must depart the airport.
  - Other airports focus on the time a customer spends waiting for a vehicle on the curbside, establishing maximum wait times from the time a vehicle is requested until the vehicle arrives at the curbside. Cincinnati/Northern Kentucky International requires a van to arrive at the curbside within 5 minutes of a customer's request.
- **Maximum enroute stops.** Airports may establish a limit on the number of stops that a shared-ride van may make prior to dropping off the last passenger. This limitation reduces the duration of the trip for the customer whose destination is at the last stop. Some airports provide an exception to the maximum stop rule if the destinations are located in a dense urban area. For example, Dallas/Fort Worth International has a maximum of three stops except in designated areas such as those with many hotels in close proximity to one another.

  Customers also prefer to know how many stops will be made prior to arriving at their destination. If asked, best practices call for drivers to be required to inform passengers of how many stops will be made, particularly for trips to the airport when customers are more anxious about arriving late for a departing flight.
- **Vehicle assignment technology.** Drivers may want to maximize passenger loads to increase the revenue earned from one trip, however, if the passengers' destinations are not geographically similar, the passengers may have a much longer trip than anticipated, resulting in poor levels of customer service. Shared-ride van passengers are ideally grouped according to the geography of their destinations, with passengers with similar destinations sharing the same van. Airports can include standards to require shared-ride

operators to use vehicle assignment software to efficiently assign customers to vans, for both trips to and from the airport.
- **Navigation software.** Once passengers are assigned to a vehicle, navigation software is generally used to optimize the route to all destinations, minimizing trip duration and length for both the passengers and the driver, and reducing fuel use and vehicle emissions. Navigation software will also ensure that the driver does not get lost, causing concern to passengers who are anxious to reach their destinations.

Applicability

These customer service standards are applicable at any airport with a shared-ride operator.

Reported Implementation Benefits and Challenges

Implementing customer service standards will improve the customer experience and levels of satisfaction with shared-ride services. The main challenge in implementing these standards is opposition from operators who may need additional resources to develop and install new systems.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers are expected to respond positively, as these standards improve the customer experience.
- **Commercial ground transportation operators.** Shared-ride companies, particularly smaller companies, and drivers may have concerns about the cost of implementing these standards.
- **Local elected officials/regulatory officials.** Local officials may have concerns over the impact on smaller operators but are generally supportive of efforts to improve customer service and safety.

Implementation Schedule and Costs

The airport operator's costs of implementing improved customer service standards are limited to the staff time required to develop and enforce the standards. The shared-ride van owners and companies are typically responsible for the costs of implementing the new technologies and programs required to provide these improved customer service standards.

Examples

Most airports with exclusive concession contracts have established higher customer service standards.

E. Courtesy Vehicles/Shuttles

The following pages describe best practices for managing and controlling courtesy vehicles. These best practices are organized into the following categories:

E1. Vehicle Permitting and Fees
E2. Supporting Environmental and Sustainability Goals

E1. Vehicle Permitting and Fees

Description

This section includes efficient methods to allow airport operators to permit businesses providing courtesy vehicle services and collect airport fees from these businesses.

Purpose

Rental car companies, parking businesses, hotel/motels, casinos, training centers, and other businesses located on or off an airport operate courtesy vehicles (or courtesy shuttles) to transport airline passengers between the airport and their place of business. Unlike other airport ground transportation services, courtesy vehicle service is offered at no direct charge to the airline passenger. This is because the cost of providing transportation is incidental to the primary business (e.g., renting cars, providing parking spaces, or leasing hotel rooms to airline passengers) and is included in the price customers are charged for these services.

Courtesy Vehicle Permitting

As described in Chapter 5, most airports require that all businesses providing courtesy vehicle services obtain airport permits. Generally management and enforcement of courtesy vehicles requires less effort by airport staff than does the management and control of taxicabs, limousines, and shared-ride vans. This is because, compared to the owner/operators of taxicabs, limousines, or shared-ride vans, the owner/operators of courtesy vehicles are generally larger companies with greater financial resources. Since courtesy vehicles are a part of the overall customer experience they offer, these businesses properly maintain their vehicles, familiarize their drivers with the airport rules and safe operating procedures, and purchase the required insurance for their vehicles since the cost of courtesy vehicle insurance is a small portion of their total insurance needs. Furthermore the drivers are employees rather than contracted owner/operators. Enforcement of new entrants or those without airport permits is relatively simple as it easy to spot a courtesy vehicle (compared to limousines or ride-booking services), they use airport roadways frequently, and display the operator's

Figure 8-12. An airport permit used at Oakland International Airport.

name and location or contact information on the outside of their vehicles.

Issuing airport permits to courtesy vehicle operators is simpler than issuing permits to taxicabs or limousines because the operators have much smaller fleets of vehicles, thus requiring less airport staff time to inspect the vehicle and install decals and RFID transponders (Figure 8-12). Some airport staff allow courtesy vehicle operators to affix the decals or transponders to the vehicles themselves, saving staff time.

As a result businesses providing courtesy vehicles generally cooperate with airport management and abide by airport rules. While most courtesy vehicle operators abide by airport rules, there are some exceptions, which are discussed in subsequent paragraphs.

Courtesy Vehicle Fees

As noted, the businesses operating courtesy vehicles generally cooperate with airport management. One common exception is when the airport sponsor wishes to establish new airport fees. As described in Chapter 5, commercial ground transportation operators doing business on an airport may be required to pay airport fees including permit fees, cost-recovery/per-trip fees, dwell time fees, privilege fees, or other fees.

Examples of fees charged to businesses operating courtesy vehicles, their amounts, and the challenges to establishing these fees are described in the following paragraphs. The fee amounts shown are those that were in effect when this guidebook was prepared (2014) but may have changed because airport operators regularly review and modify their fees. They do so to reflect increasing costs of operations, changes in the annual number of vehicle trips, or other reasons. Conducting such reviews and modifying the fees annually or bi-annually is considered to be a best practice as it allows the airport operator to adjust the fees incrementally rather than in large amounts. Publicizing the amount of the increase at least one month in advance of its effective date is recommended, as this allows commercial ground transportation businesses to incorporate the increased costs into their business model and advertised rates (e.g., before a customer reserves a rental car or hotel room). Current airport commercial vehicle fees can be obtained from peer airports, the most recent AGTA *Fees and Fares Survey*, or from other sources listed in the bibliography (see Appendix C).

As shown herein, courtesy vehicle fees vary based upon vehicle size, type of business served, business location, and other factors.

Vehicle size. Vehicle size can be defined by a vehicle's weight, length, or number of seats, with the number of seats being the most frequently used definition. Larger vehicles are charged higher permit and cost-recovery fees to reflect the greater wear and tear they impose on an airport's roadways and other facilities. For example:

- **Vehicle length.** Orlando International Airport defines vehicles by their length with Class I vehicles being those up to 21 feet in length (e.g., a sedan or small van), Class II vehicles being those between 22 and 30 feet (e.g., courtesy vans, small cutaway vans), and Class III vehicle being those over 31 feet in length (e.g., large cutaways, minibuses, and full-size buses), with exceptions made for Class I vehicles having a wheelchair lift which may be up to 23 feet in length.
- **Number of seats.** Denver International Airport defines vehicles by the number of seats as designated by the vehicle manufacturer excluding the driver with Class I being those vehicles with up to 15 seats, Class II those with 16 to 31 seats, and Class III those with 32 seats or more. Class I vehicles are charged $2.15 per trip, while Class III vehicles are charged $6.45 per trip. At Houston Hobby Airport the annual permit fee charged courtesy vehicles varies by vehicle size with those having 6 seats or fewer charged $325 per vehicle per year, those having 7 to 24 seats charged $400 per vehicle per year, and those having over 25 seats charged $550 per vehicle per year. At Tucson International Airport the permit fee varies by vehicle size with hotel/motels charged $1,098 per vehicle per year for vehicles with up to 6 seats and up to $2,084 for vehicles with more than 15 seats.
- **Vehicle weight.** While it is possible to define vehicles by their weight, there are no examples of airports having done so. This is because vehicles of different sizes or capacities

can have similar weights depending on the manufacturer and style (e.g., a luxury sedan and a small cutaway may have similar weights).

Type of business. Rental car companies and off-airport parking businesses are frequently charged higher airport fees than the operators of hotel/motels. This is because, as described in Chapter 5, rental car companies and off-airport parking businesses are required to pay privilege fees reflecting the business benefits they receive from the presence of the entire airport, with rental car companies required to pay this fee at most every airport and off-airport parking businesses required to pay this fee at over 40 airports.

Rental car companies and off-airport parking businesses located near an airport are required to pay privilege fees because they could not exist were it not for the entire airport. By the nature of their location, marketing, service model, and business orientation, these businesses derive all their revenues from airline passengers. Motorists do not drive to an airport and rent a car or park at an off-airport lot unless there are airline passengers, visitors accompanying an airline passenger, or employees working on an airport. Few, if any, travelers would park in an off-airport parking lot were it not for the airport.

Conversely the operators of hotels/motels located near an airport are not required to pay privilege fees as they do not derive all their business from airline passengers. In addition, were hotels/motels to cease providing courtesy service it is likely their customers would use single occupancy taxicabs or limousines to travel between the hotel and the airport, rather than continue to use multiple occupancy courtesy vans. This would be undesirable as it would increase roadway traffic and roadway congestion. If a rental car company or off-airport parking business were to cease providing courtesy service, it is highly unlikely that their customers would hire a taxicab or limousine. Some examples of factors that influence fees include:

- **Business location.** Some airports charge hotel/motels located near the airport higher permit and per-trip fees than hotel/motels located farther away, under the assumption that hotels located nearer the airport make more trips onto the airport and derive greater business benefits from the airport than do those located further away. For example, at Bradley International Airport, courtesy vehicles serving hotels located within 5 miles of the Airport are charged $3.75 to $4.75 per trip (depending on the vehicle size), while those located further away pay $3.25 to $4.25 per trip.
- **Business volume.** Some airports have permit fees that vary based upon the number of trips. For example, at Dallas Love Field off-airport businesses making fewer than 200 trips per month are charged $0.75 per trip, while those making 201 trips or more are charged $1.25 per trip.
- **Location of passenger boarding area.** At Miami International Airport, hotel/motel courtesy vehicles can pick up passengers on either the upper (ticketing) or lower (baggage claim) levels. In an effort to balance demand and encourage use of available curbside capacity, the airport charges courtesy vehicles using the lower level higher per-trip fees ($2.50 to $3.00 per trip) than those using the lower level ($1.00 to $2.00 per trip) depending on the vehicle size.

Examples of the types and amounts of courtesy vehicle fees. In addition to the fees mentioned herein, the following are sample amounts for each type of fee (effective 2014):

- **Examples of annual permit fees.** Annual permit fees range from less than $100 (e.g., Jacksonville International Airport) to over $2,000 (e.g., Tucson International Airport). A typical permit fee is $450 to $500 per vehicle per year with airports that charge cost-recovery/per-trip fees charging lower annual permit fees.
- **Examples of cost-recovery fees calculated per vehicle trip.** Cost-recovery fees are intended to allow an airport operator to recover the costs it incurs in providing, maintaining, and operating the facilities used by the commercial vehicle operators. They are frequently charged on a per-trip basis with the fee per trip varying based upon the volume of commercial vehicle trips using airport facilities and the annual expenses an airport incurs. While such fees are intended to allow the airport operator to fully recover their costs, many airports are unable to. Per-trip fees for courtesy vehicles vary from less than $1.00 per trip (e.g., Dallas Love Field) to $8.70 (e.g., San Francisco International Airport for operators of vehicles that are not in conformance with the airport's clean vehicle policy). The typical per-trip fee for a small courtesy vehicle is $2.00 to $3.00 per trip, with larger vehicles charged higher fees.
- **Examples of fees calculated per hotel room.** The operators of hotel/motels providing courtesy vehicle service at Hartsfield-Jackson Atlanta International are charged $10 per room per year with a cap of $2,400 to $3,600 per company depending on their distance from the airport. The operators of hotel/motel courtesy vehicles at Honolulu International are charged an annual fee of $250 per company plus $250 per vehicle plus $2.00 per room. A fee per room generally generates less revenue than a fee per trip and is unlikely to allow an airport operator to fully recover its costs of providing, maintaining, and operating the roadway and other facilities.
- **Examples of fees to promote efficient use of curbsides**. Airport operators have established fees or fines to discourage vehicles from remaining at the curbside other than picking up waiting passengers. A courtesy vehicle operator

who complies with airport rules would not pay any fee or fine. Examples of these fees include:

- **Examples of dwell time fees.** Airports charging dwell time fees allow courtesy vehicles an initial dwell time period to load customers (e.g., 10 minutes depending on vehicle size) and then charge an additional amount for each additional minute or 10-minute period that the vehicle remains at the curbside loading area. For example, at Minneapolis/St. Paul International Airport, hotel/motel courtesy vehicles are charged $2.00 for every 10 minute period they remain at the boarding area after the initial 10 minute period. At Nashville International Airport hotel/motel courtesy vehicles are charged double the per-trip rate for each additional 10-minute increment that the vehicle remains at the curbside boarding area.
- **Example of a monthly cap on vehicles.** At Washington Reagan National Airport, the operators of courtesy vehicles are charged an annual permit fee of $500 to $750 per vehicle, depending on vehicle size, which allows them to make 300 trips per month per vehicle. However these operators are charged $1.00 per trip for every trip exceeding the 300 trips/month limit. (In January 2015 the free trips are to be eliminated.) In 2001 Los Angeles World Airports, operator of Los Angeles International Airport, established a cap on rental car company courtesy vehicle trips, with the number of annual trips allotted each company established based on the company's market share. Every rental car company was required to pay $5.00 for each trip exceeding their annual allotment, with the fine increasing to $10.00/trip depending on the number of excess trips. The program proved successful as it resulted in a 62% reduction in rental car courtesy vehicle trips over an 8-year period, with each rental car company achieving their goal and never incurring a fine.
- **Headway fees.** At Raleigh-Durham International Airport, the operators of courtesy vehicles are charged a headway fee of $4.00 each time one of their courtesy vehicles enters a curbside zone within 3 minutes of a previous vehicle operated by the same company. Both on- and off-airport rental car companies and off-airport parking lot businesses are required to pay these headway fees, which are in addition to dwell time fees. Hotel/motels are not required to pay headway fees since they operate their courtesy vehicles on a scheduled or demand-responsive basis and do not linger at the curbside. Prior to 2014 the headway fee was $1.00 per violation, which according to airport staff was insufficient to serve as a deterrent to some businesses. For example, some rental car businesses paid over $1,000 per month in headway fees because they preferred to have their courtesy vehicles parked at the curbside for advertising or marketing purposes.
- **Examples of privilege fees calculated as a percent of gross revenues.** Most airports charge on-airport rental car companies a concession fee of 10% as well as ground rent and other charges, with the exception of Canadian airports, several of which charge over 13%. The privilege fees charged to off-airport rental car companies range from 4% to 10% of gross revenues with most airports charging 7% to 10% (excluding Canadian airports, several of which charge over 12%). The privilege fees charged to off-airport parking businesses range from 4% to 12% of gross revenues with most airports charging 8% to 10%.
- **Examples of privilege fees calculated using other metrics.** Calculating a privilege fee as a fixed percentage of gross revenues is considered best industry practice and is generally accepted in the airport industry as a fair and valid measure of the overall business benefits a commercial vehicle operator receives from the presence of an airport and access to its passengers. In addition, this metric is self-indexing (i.e., fees paid to the airport increase or decrease in proportion to the volume of business conducted). However, some airports calculate privilege fees per trip, per parking space, or per rental car in the industry's fleet. For example, at one airport, courtesy vehicles operated by off-airport parking businesses are charged $10/parking space/year. Charging an annual fee per parking space is not considered a best practice because this method results in substantially less revenue to the airport operator than fees calculated per trip or as a percentage of gross revenues, is not self-indexing, and may be difficult to establish (e.g., should the fees be charged per striped space, or should the calculation consider unmarked spaces used to store valet-parked cars).

Key Challenges

Examples of the challenges associated with courtesy vehicle fees are described in the following paragraphs.

Establishing new fees or modifying existing fees. Businesses providing courtesy vehicle service frequently voice their concerns when airports establish new commercial ground transportation fees or increase existing fees. These businesses may express their concerns directly to airport board members and senior airport management (bypassing airport ground transportation staff), elected officials, representatives of the hotel/convention bureau, or to other stakeholders. They may describe the airport's ground transportation fees as an airport tax, which is inaccurate. They may argue that the fees will adversely affect the number of visitors or conventioneers, which is also inaccurate. Potential responses to these complaints include:

- Many of these same companies are already paying these same fees at other airports which they serve.
- The proposed fees represent a very small portion of a customer's total costs of renting a car, paying for airport parking, or staying in a hotel room, particularly when the fees are divided among all the customers riding in each courtesy vehicle.
- The authors of this guidebook are not aware of any research indicating that airport courtesy vehicle fees, if passed on to a customer, change a customer's travel behavior or choice of destinations.
- To the extent that these businesses do not pay the ground transportation fees and contribute to the airport operator's costs, these businesses are being subsidized by other businesses, including existing airport tenants and concessionaires.

Courtesy vehicles serving multiple land uses. Occasionally a business may use the same courtesy vehicle to serve several businesses (e.g., an off-airport parking business as well as a rental car company or a hotel/motel). If the airport requires different businesses to pay different fees, normally the courtesy vehicle operator's fees are calculated based upon the higher of the two fees. For example, if permit or per-trip fees charged to off-airport rental car companies are higher than those charged to off-airport parking businesses, then an operator using the same courtesy vehicle to service both businesses would be charged fees calculated assuming that all their trips are related to the rental car business regardless of the mix of customers.

Park, sleep, and fly services. Most hotel/motels provide free parking for their overnight guests. Many hotel/motels located near an airport offer their overnight guests free parking for the duration of their trip if they stay at least one night at the hotel. This service is commonly known as "park, sleep, and fly." Hotels consider this free parking to be a customer amenity much like free breakfasts or free newspapers. Thus airport operators do not consider those hotels/motels offering free parking to their guests to be in the off-airport parking business or require them to pay the fees charged to an off-airport parking business if the parking is only offered to hotel guests and if there is no direct charge for this parking. However if the hotel/motels advertise that parking is available for airline passengers who are not hotel guests and/or charge a fee for this parking, then these hotel/motels are considered to be operating an off-airport parking business and are required to pay the same airport fees as other off-airport parking businesses.

Web-based sales of hotel parking. Numerous companies sell airport parking reservations over the internet. Most companies are selling airport parking reservations for spaces located in parking facilities that they own or operate. A few companies (e.g., AirportParkingReservations.com; greenbeeparking.com, and OneStopParking.com) sell reservations for spaces which they do not own or operate and offer parking rates that are lower than those offered by either the airport or by off-airport parking businesses. These internet based reservation services are able to offer low rates because (according to the greenbeeparking.com website) they have "negotiated discounted rates with major hotel chains for parking spaces that are not currently occupied." These unoccupied spaces are the spaces that hotel/motels provide for free to their overnight guests. These internet based reservation companies negotiate rates with the corporate headquarters of major hotel chains rather than individual hotel properties. As a result, the parking revenues received from customers using these websites are divided between the website company and the corporate headquarters of the major hotel chain, with the local hotel receiving little if any of the parking revenue. Airport operators report that charging these hotels the same commercial ground transportation fees as other off-airport parking businesses has caused these hotels to cease offering paid parking and no longer allow persons who are not overnight guests to park on their property (i.e., local management requested that corporate headquarters cancel the agreement with the internet based reservation company).

Use of temporary vehicles. When a courtesy vehicle with a valid airport permit requires major maintenance or will be out of service for other reasons, a courtesy vehicle operator may request approval to use a temporary vehicle. The temporary vehicles may be a different color than the other vehicles used by the courtesy vehicle operator, may not display the operator's logo, and may not have a transponder or permanent airport permit. Airports may issue temporary vehicle permits allowing a courtesy vehicle operator to use a vehicle for a limited time (e.g., less than 30 days) if (1) the operator requested and obtained prior approval from airport staff, (2) a vehicle without trade dress is using temporary signs approved by airport staff, and (3) the temporary vehicle is in compliance with the airport's safety, insurance, and other standards. To establish the permit fees to be charged for the use of a temporary vehicle, airports typically prorate the annual permit fees and/or estimate the monthly cost-recovery fees per vehicle paid by the courtesy vehicle operator for the most recent 3 months. A vehicle to be used more than 30 days may be required to have colors and markings consistent with the rest of the operator's fleet, and to have an RFID transponder.

Use of contract shuttles. Some hotel/motels do not operate their own courtesy vehicles but instead use a contractor to provide shuttle service. An airport may choose to treat the shuttle like any other courtesy vehicle if the contract shuttle is used exclusively by one hotel and bears permanent markings displaying the name of the hotel and its logo. However,

an airport may choose to treat the shuttle as a prearranged van or scheduled (per-capita) van service, even if the service is offered for free, if the shuttle does not display the hotel's name or transports both paying customers and hotel guests in the same vehicle. This requirement does not apply to consolidated hotel/motel courtesy vehicles (see Section E2).

Applicability

It is recommended that all courtesy vehicle operators wishing to pick up airline passengers be required to abide by airport rules and regulations, obtain an airport permit formally signifying their agreement to do so, and pay required airport fees.

Reported Implementation Benefits and Challenges

Requiring courtesy vehicle operators to abide by airport rules promotes the safety and security of all airline passengers, including those using the courtesy vehicles, and enhances the customer experience of all airline passengers. Requiring courtesy vehicle operators to pay airport fees allows an airport sponsor to partially recover their costs of providing, maintaining, and operating the roadways and other facilities used by the courtesy vehicle operators. The fees received from rental car companies and parking represent a major source of non-airline revenues which airport operators are required to preserve and, consistent with other goals such as improving customer service, enhance.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers of rental car companies, off-airport parking businesses, and hotel/motels expect that courtesy vehicle service will be available and that it will be provided conveniently, safely, and efficiently.
- **Commercial ground transportation operators.** As noted, the courtesy vehicle operators typically work cooperatively with airport staff but are likely to object to the imposition of new airport fees or increases to existing fees.
- **Local elected officials/regulatory officials.** Local officials do not typically have any concerns with courtesy vehicle permitting, but if lobbied by courtesy vehicle operators, they may have concerns with or not understand why airport management wish to impose some fees, particularly privilege fees.

Implementation Schedule and Costs

Ongoing costs are primarily the staff time required to issue and monitor airport permits, and issue and monitor monthly or annual bills. Implementing new fees may require significant staff time to calculate and support the proposed fees, the prior approval of airport management, and assistance from airport legal staff and community relations staff. Increasing existing fees requires less staff time.

Examples

More than 90 airports have airport permits. More than 50 have cost-recovery or per-trip fees. More than 50 require off-airport rental car companies to pay fees calculated as a percent of gross revenues, and more than 40 require off-airport parking businesses to pay such fees.

E2. Supporting Environmental and Sustainability Goals

Description

This section describes methods to improve air quality and support regional environmental and sustainability goals by limiting or reducing the number of courtesy vehicle trips and promoting the use of alternative fuels.

Purpose

Airport operators support regional environmental and sustainability goals, particularly efforts to improve air quality, by reducing vehicle miles of travel and promoting use of vehicles that use alternative fuels. Airports use several programs to achieve these objectives (see Section H). These programs include the following:

- **Promoting efficient use of airport roadways through the use of per-trip fees.** Airports seek to discourage the operators of courtesy vehicles and other commercial vehicles from making unnecessary trips or continually looping around airport roadways. They do so by charging commercial operators for each vehicle trip made on airport roadways, with the fee amount varying based on the vehicle size or capacity. An operator who makes unnecessary trips will be charged greater fees than one who operates efficiently. These fees are referred to as cost-recovery or per-trip fees. A typical per-trip fee for a small courtesy vehicle is $2.00 to $3.00 per trip, with larger vehicles charged higher fees. These fees are also described in Chapter 5 and Section E1 of this chapter.
- **Promoting efficient use of airport roadways through the use of circuit fees.** A circuit fee is similar to a per-trip fee, with the difference being that the amount of the fee increases dramatically if the vehicle passes the terminal area or makes excessive "circuits" of the terminal area within an established time limit. Los Angeles International Airport is an example of an airport with circuit fees.

- **Minimizing idling at curbside areas through the use of dwell time fees.** Airports discourage the operators of courtesy vehicles and other commercial ground transportation vehicles from idling at the curbside areas for excessive periods by fining the operators of vehicles that do so. Airport staff define an allowable dwell time (e.g., 10 minutes for a courtesy vehicle) and then fine operators whose vehicles remain at the curbside in excess of this time. These fines are commonly referred to as dwell time fees and are charged for each additional minute or each additional 10-minute period that a vehicle remains at the curbside loading area. Examples of these fees are provided in Section E1.
- **Discouraging excessive use of curbside areas through the use of headway fees.** Airports discourage courtesy vehicle operators from attempting to constantly maintain one of their vehicles at a curbside area or from using "bump and run" operations by fining the operators of vehicles that do so. Airport staff define an acceptable headway (e.g., 4 minutes) and charge operators whose vehicle(s) operate at closer intervals or lower headways. Examples of courtesy vehicle headway fees are provided in Section E1.
- **Reducing the number of vehicle trips by penalizing operators for excess trips.** As described in Section E1, Los Angeles International Airport successfully reduced the number of rental car courtesy vehicle trips at the airport by implementing a fee for any company that exceeded their annual allotted trips. The airport established a similar trip reduction program for hotel/motel courtesy vehicles, which led to the introduction of a consolidated courtesy vehicle program as described below.
- **Reducing the number of vehicle trips by requiring the use of consolidated courtesy vehicles.** Hotel/motels are required to use consolidated courtesy vehicles at Los Angeles and San Francisco International airports. At these airports, one "consolidated" courtesy vehicle serves three or more hotels rather than each hotel operating its own courtesy vehicle. These programs differ at each airport:
  - **San Francisco International Airport.** To achieve the air quality goals established by the City of San Francisco's clean vehicle program, the airport tripled its per-trip fee for courtesy vehicles not in compliance with the consolidated hotel/motel courtesy vehicle program (i.e., courtesy vehicles serving a single hotel and powered by gas or diesel fuels), while maintaining the existing per-trip fees for hotel/motels that either participate in a consolidated courtesy vehicle service or use CNG or other approved clean fuels. Currently all hotel/motels with courtesy vehicle service at San Francisco International use CNG-fueled consolidated courtesy vehicles that serve three or more nearby hotels. The current per-trip fee is $2.85 for hotel/motels that have implemented the clean vehicle program and $8.55 per trip for hotel/motels that have not. The consolidated courtesy vehicles are operated by an independent bus operator under contract to the individual hotel/motel who uses a dedicated vehicle that displays the names and logos of all the hotels it serves.
  - **Los Angeles International Airport.** In March 2006, to achieve Airport management's goal of reducing hotel/motel courtesy vehicle trips, the airport agreed to waive trip fees for those hotels that reduced their vehicle trips compared to a 2004 base year, and converted new or replacement shuttles to an alternative fuel. In December 2006, the airport established a mandatory trip reduction program with an annual allotment on the number of courtesy vehicle trips each hotel/motel could make. Each hotel/motel was required to pay $5.00 for each trip exceeding the annual allotment. Most of the major hotels along the corridor where most airport hotels are located participated in the program, and on a voluntary basis, established a consolidated courtesy vehicle service. These programs resulted in a 66% decrease in hotel/motel courtesy vehicle trips. However not all hotels participated in the program from the start. During the first full year of the program (July 2007 through June 2008), 7 hotels incurred a total of over $75,000 in penalties, and in the second year, 4 hotels incurred penalties totaling over $12,000.
  - **Consolidated rental car programs.** Numerous airports, including those serving Baltimore, Boston, Dallas/Fort Worth, Houston, Las Vegas, Phoenix, and Seattle, have implemented consolidated rental car busing programs as part of the development of a consolidated rental car center. These programs reduce vehicle trips by replacing the courtesy vehicles operated by each of the individual rental car companies with a single, common bus. These busing programs differ significantly from the consolidated hotel/motel courtesy vehicle programs in that (a) all the on-airport rental car companies are located in a single building rather than customers being dropped off or picked up at several hotels, (b) the programs are mandatory rather than voluntary, and (c) many are funded by the airport operator unlike the hotel/motel courtesy shuttles.
- **Reducing vehicle emissions though the use of alternative fuels.** As noted, San Francisco and Los Angeles International Airport have established fee structures that encourage hotel/motels to operate courtesy vehicles that use CNG or other alternative fuels. A similar program was used at San Francisco to promote the use of CNG vehicles by the off-airport parking businesses. As a result, at San Francisco International Airport all the courtesy vehicles are now fueled by CNG. Similar results have occurred at Los Angeles International in response to airport fees and the lower costs of operating CNG vehicles. Other airports have reported fewer courtesy vehicles using CNG, propane, or

other alternative fuels due to the challenges associated with (1) lack of CNG fueling stations/infrastructure, (2) costs of conversion kits which allow vehicles originally designed for gasoline to use CNG, propane, or other fuel, and (3) lack of maintenance facilities and support from vehicle manufacturers. More information on the use of alternative fuels is provided in Section H.

Applicability

These goals are applicable at airports seeking to reduce vehicle emissions by reducing vehicle trips and vehicle miles of travel and promoting the use of alternative fuels.

Reported Implementation Benefits and Challenges

The key benefits are the improved environment, reduction in vehicle emissions, and the ability to be a greener airport and a good neighbor to the region.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers, to the extent they are aware of these programs, are likely to support them.
- **Commercial ground transportation operators.** Courtesy vehicle operators, particularly rental car companies and hotel/motels, may resist programs with limits on headways or annual trips by complaining that the programs adversely affect their ability to provide expected levels of customer service, restrict their ability to comply with corporate waiting time policies, and unfairly affect larger companies or those serving higher end properties (e.g., a 5-star hotel vs. a 2-star motel). They may also express concerns about the required use of alternative fuel vehicles.
- **Local elected officials/regulatory officials.** Local officials are likely to support an airport's efforts to improve air quality and support regional environmental objectives.

Implementation Schedule and Costs

The airport's initial costs to implement these programs include the time required to (1) research the existing courtesy vehicle trip volumes and options for use of alternative fueled vehicles, (2) modify existing airport regulations, and (3) work with the courtesy vehicle operators to establish the new regulations and an implementation schedule. Minimal efforts are required to oversee and enforce these regulations.

Examples

Examples are mentioned in this section. Los Angeles and San Francisco International airports are good examples of airports with comprehensive environmental ground transportation programs (Figure 8-13).

Figure 8-13. A consolidated hotel courtesy vehicle at San Francisco International Airport.

F. Scheduled Buses and Vans

The following section describes best practices for managing and controlling scheduled buses and vans. Because of the overlapping nature of these best practices, these modes have been merged into a single topic, addressing business arrangements and programs to support customer use of scheduled bus/van services.

Description

This section describes measures allowing airport operators to encourage, accommodate, and regulate scheduled buses and vans.

Purpose

Airports seek to encourage the use of transit and other high occupancy transportation services, whether privately or publicly operated. Scheduled bus/van services include fixed-route transportation services between:

- An airport and the city center (e.g., between LaGuardia Airport and downtown Manhattan) or suburbs.
- An airport and a popular destination resort (e.g., those available at Orlando International and Tucson International airports).
- An airport and a distant city, frequently located an hour or more away. Examples of such scheduled services include the service between Bangor (Maine) and Logan International Airport, Eugene (Oregon) and Portland International Airport, and Laramie (Wyoming) and Denver International Airport.
- Two cities, with an intermediate stop at the airport. These are interstate routes typically operated by an established interstate bus service (e.g., Greyhound/Jefferson service between Minneapolis-St. Paul International Airport and

North and South Dakota) or between an airport and an international destination (e.g., between Burlington International Airport and Montreal, Canada).

Business arrangements for scheduled buses/vans. Generally bus/van companies operate scheduled airport service on a non-exclusive basis (i.e., any properly licensed company with an airport permit may provide transportation to/from the airport). In the past some airport operators awarded bus/van companies exclusive or semi-exclusive concession contracts to operate scheduled airport services. However, today few airports award exclusive concession contracts for scheduled bus/van services, as qualified companies are less interested in competing for such exclusive contracts. These companies indicate that the proportion of airline passengers seeking scheduled, fixed-route service has declined in the face of competition from more popular shared-ride, door-to-door services and other transportation services. As a result, an exclusive contract offers less revenue opportunities and in many cities frequently does not warrant the required concession fees and MAG amounts.

Programs to support customer use of scheduled bus/van services. Examples of the measures and programs airports have implemented to promote and accommodate scheduled bus/van services include:

- **Permitting privately operated scheduled/bus van services.** Airports require the operators of privately owned scheduled bus services to obtain an airport permit and pay required airport fees. Before obtaining an airport permit and initiating airport service, a privately owned scheduled transportation provider must be licensed by a state DOT or other regulatory authority. Typically, as part of the licensing process the provider must submit a business plan and document the need and necessity for the proposed service. Having done so, the scheduled bus/van company can then apply for an airport permit and, once it is granted, initiate service to/from the airport. It is recommended that scheduled bus/van operators be charged flat annual fees or per-trip fees in order to promote the use of these services, rather than fees calculated as a percentage of their airport-related revenues, which may be time consuming to audit.
- **Regulation and control of privately operated scheduled bus/van services.** Airport staff are required to devote less effort to regulating, permitting, and controlling scheduled bus/van services than to taxicab, limousine, shared-ride, or other on-demand services. This is because most airports are served by few scheduled bus/van companies, and these companies are likely to be well capitalized, use drivers who are employees (rather than owner/operators), and are regulated by federal, state, and local agencies. They are also easily recognizable as they need to advertise to and attract airline passengers.
- **Regulation and control of publicly operated scheduled bus services**. Airports do not require local public transit agencies which operate scheduled bus services on an airport to obtain an airport permit or pay required airport fees. This is because these transit operators are not-for-profit agencies which often are affiliated with or sponsored by the county or city government that sponsors the airport. These agencies typically provide traditional low-fare, fixed-route, multi-stop public transit services rather than the express service or limited stop service operated by private businesses.
- **Convenient curbside area.** Airport operators provide conveniently located passenger drop-off and boarding areas that allow vans and full-size buses to safely maneuver into and out of curbside spaces. Public transit services frequently drop off and pick up passengers at the same location. Privately operated scheduled services may also use a single stop depending on the frequency of the service and the length of the routes. (Long-haul services frequently allow for a driver recovery period between the time the bus or van drops off passengers and the scheduled departure time.)
- **A driver recovery area.** During their recovery period (or break time) drivers of scheduled bus/van services are required to park their vehicles in the commercial vehicle hold lot or similar location since airport operators prefer that curbside areas be used only for active passenger loading and unloading. Enforcing the use of a hold lot by the drivers of scheduled services may require coordination with the management of these services, particularly public transit services, since drivers often wish to use the restrooms and food/beverage concessions in the terminal.
- **Ticket counters in the baggage claim area.** Several airports (e.g., Denver, Phoenix, and Seattle International airports) lease counter space in the baggage claim area to scheduled bus/van operators. Operators use these counters to provide customers with information about their services, including fares and departure times, and sell tickets. Waiting areas with seats may be provided, particularly for the customers of services leaving every 1 to 2 hours, or less frequently. Other airports provide similar ticket counters in ground transportation centers, as described in Section I (e.g., Minneapolis-St. Paul International Airport).

Key Challenges

Compared to other modes of commercial ground transportation, there are few challenges to the control of scheduled bus/van operators. Examples of the challenges associated with accommodating scheduled buses/vans are described in the following paragraphs.

Ensuring compliance with published schedules. A poorly managed company may cancel or combine scheduled airport departures with few customers in order to merge the customers onto a single vehicle. If this occurs regularly, airport staff may receive complaints from unhappy customers or from competing ground transportation operators.

Controlling use of counter space inside the terminal. When scheduled bus/van companies have counters in baggage claim areas (or other locations inside the terminal), some counter staff may engage in improper solicitation of airline passengers or seek to attract customers who have purchased tickets on a competing company. This is primarily a concern when competing ground transportation companies lease adjacent or nearby counter space. Remedies to this problem include:

- Not providing counters in the baggage claim area
- Only leasing counter space to one commercial ground transportation concessionaire
- Only allowing a third-party management contractor to staff a ground transportation counter (e.g., the Port Authority of New York and New Jersey)
- Only leasing space to one concessionaire and a third-party ground transportation management contractor (e.g., Fort Lauderdale-Hollywood International Airport)
- Bidding the space in such a way as to avoid leasing space to competing companies (e.g., the process used at Denver International Airport).

Determining the appropriate curb space to be allocated to scheduled bus/van operators. Buses operated by a public transit agency or other scheduled operator require large portions of convenient curb space. The length of curb space needed to allow these buses to maneuver into and out of the curbside may appear to be out of balance with the number of airline passengers using these scheduled bus services, particularly at small hubs or non-hubs, or at airport with a limited amount of curb space available. Airport staff must prioritize allocation of the available curb space, balancing the competing requirements for this space and the objectives of airport management.

Applicability

These practices are applicable to any airport that is served by a publicly or privately operated scheduled bus/van operator. It is recommended that all scheduled bus/van operators be required to abide by airport rules and regulations, obtain an airport permit, and pay required airport fees.

Reported Implementation Benefits and Challenges

Airline passengers benefit by being able to choose from a menu of ground transportation services available at varying levels of cost and convenience, including publicly and privately operated scheduled bus/van services. Encouraging airline passenger and employee use of public transit and other scheduled transportation services benefits the airport sponsor's efforts to support regional environmental and sustainability objectives, including improving air quality, reducing energy consumption, and reducing the airport's carbon footprint.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airline passengers and employees will likely respond favorably to the availability of public transit and scheduled bus/van services, as these transportation options provide an alternative to their use of private automobiles.
- **Commercial ground transportation operators.** Efforts by an airport sponsor to accommodate scheduled bus/van services will likely be viewed favorably by other commercial ground transportation operators, with the possible exception of the amount and location of the curb space allocated to these scheduled services.
- **Local elected officials/regulatory officials.** Local officials are expected to be supportive of the efforts of airport staff to (1) encourage the use of and accommodate scheduled bus/van services, whether public or privately operated, and (2) improve the customer experience of those passengers using these services.

Implementation Schedule and Costs

The costs of accommodating scheduled bus/van operators are minimal with the exception of the costs of developing a special purpose ground transportation courtyard or ground transportation center (described in Section I).

Examples

Examples of best practices include the scheduled bus/van services at the airports serving Boston, Chicago (O'Hare International) as seen in Figure 8-14, Denver, Philadelphia, and Pittsburgh.

G. Charter Buses and Vans

The following section describes best practices for managing and controlling charter buses and vans. Because of the overlapping nature of these best practices, these modes are merged into a single topic, addressing permitting and regulating charter buses and vans and occasional user permit programs.

Figure 8-14. Bus center at Chicago O'Hare International Airport.

Description

These measures allow airport operators to accommodate charter buses and vans, and the passengers and baggage they transport.

Purpose

Compared to other commercial ground transportation services the volume of charter buses dropping off or picking up passengers at most airports is very small, with these buses/vans using airport facilities infrequently. There may be only one or two buses operating on the airport at any one time. Typically charter buses transport airline passengers going to/from athletic events (e.g., football teams and their fans), tourists traveling as part of a prearranged tour group or tour package (e.g., bus tours or cruise ship passengers), or a large convention/conference. (Chartered buses are frequently used on a temporary basis to provide scheduled transportation or shuttle service between an airport and a conference venue.) While most airports have little charter bus traffic, a few airports located near cruise ship ports (e.g., Miami, Fort Lauderdale, Orlando, Seattle, and Vancouver) serve large volumes of cruise ship passengers and corresponding large volumes of charter/cruise ship buses during the peak cruise ship season. These airports have developed specialized programs and facilities to accommodate the large number of buses, passengers, and baggage associated with cruise ships, often in cooperation with the representatives of the cruise ship lines

Permitting and Regulating Charter Buses

Compared with the time devoted to other commercial ground transportation services, oversight of charter bus operations requires minimal airport staff effort. Operators of charter buses typically work cooperatively with airport staff to provide their customers with efficient and convenient transportation. Charter bus/van operators typically abide by airport rules, obtain airport permits and pay airport fees which for a bus may be $20 per trip or more. This cooperation is because (1) airport fees represent a small portion of the bus operator's total costs and can be passed directly on to the party chartering a bus or van, (2) the operators recognize that airports require all charter bus companies to pay these fees, and (3) these companies are also regulated and regularly inspected by federal and state agencies.

The key issue with regards to regulating charter buses is how best to permit buses and vans (and their companies) which infrequently serve the airport (i.e., occasional users). The best practice response involves the sale of company permits and daily permits.

Company permits. Most charter bus/van companies own many buses but use only a few of them for airport transportation on a given day or month. Consequently charter bus operators prefer to avoid the expense of purchasing a separate airport permit for each vehicle they own. Airport operators have attempted to respond to the concerns of the charter bus companies by developing programs that reduce a company's costs of obtaining airport permits while ensuring that these companies obtain an airport permit, as must every other commercial ground transportation operator. Examples of these programs include:

- A permit fee per charter bus company rather than per vehicle (e.g., Dallas/Fort Worth International or Minneapolis-St. Paul International airports)
- Maximum annual fee regardless of the number of charter buses permitted (e.g., Asheville Regional Airport)
- A daily fee for companies with an airport permit that is much lower than the daily fee charged companies that do not have an airport permit (e.g., Tampa International Airport).

  These permit fees are in addition to any daily or per-trip fees that an airport may charge the operator of a charter bus or van.

Occasional user permit programs for charter buses and vans. Occasional users are those companies that infrequently drop off or pick up airline passengers at an airport. Occasional users include those companies based in distant communities as well as those local companies who, by the nature of their client base, rarely serve the airport. As noted in earlier sections of this guidebook, airport sponsors require that all companies doing business on the airport, including occasional users, agree to abide by the airport's rules and regulations, and enter into a formal business relationship with the airport sponsor (i.e., obtain an airport permit) signifying their agreement to do so. As such, airports require that all commercial ground transportation companies obtain an airport permit,

even those that rarely serve the airport. Occasional user permits are typically sold per trip or allow an unlimited number of trips on a given day (e.g., a daily permit). Some airports also waive the cost of the airport permit for each occasional use charter bus/van (e.g., Bradley International Airport).

Airport operators prefer that charter bus companies and other commercial ground transportation operators establish a permanent relationship with the airport (e.g., purchase an annual permit) rather than a temporary relationship (e.g., purchase an occasional user permit). Thus most airports either:

- Limit the number of daily permits an operator can purchase per year (e.g., up to 12 trips per vehicle or 25 trips per company per year), or
- Charge businesses that do not have an annual airport permit two to three times more per trip than permit holders. For example, Tampa International Airport charges charter bus companies with an annual permit $25.00 per trip while non-permit holders must pay $50.00/trip for the first two trips and $100.00/trip after the second trip without an airport permit. Pittsburgh International Airport charges charter buses with an airport permit (which costs $660) $2.00 per trip, while non-permit holders must pay $50/trip.

Typically, a commercial vehicle operator can purchase an occasional use permit prior to their arrival at the airport. However many occasional users do not know that they need to purchase a permit until they arrive at the airport and learn from an airport police officer/ground transportation agent that they must do so. Often the driver must purchase the permit from an airport operations office or landside office located in the terminal, requiring the driver to park the vehicle and enter the airport terminal or the offices of the ground transportation manager or police. At Richmond International Airport occasional use permits may be purchased from machines located in the commercial vehicle hold lot.

Off-site baggage handling. Passengers alighting from charter/cruise ship buses at the airports serving Fort Lauderdale, Miami, Seattle, and Vancouver can check their bags with airline representatives stationed near the bus unloading point. This relieves passengers from having to carry their bags from the bus to the airline ticket counters, which may be a long distance from the bus unloading point. Generally not all airlines offer remote baggage check services, as those with lower market shares may prefer not to participate in these programs. Examples of off-site baggage check-in programs include:

- **Baggage check at cruise ship port.** At Fort Lauderdale-Hollywood International, airline representatives greet passengers as they disembark from their ship and accept the passengers' bags.
- **Baggage check at the airport at the passenger drop-off site.** As noted above, airline representatives at Miami and Seattle-Tacoma International airports greet cruise ship bus passengers and accept their bags as they get off their buses at the airports rather than at the cruise ship berth. This is because of the large number of cruise ship berths in Miami, and the need for some cruise ship passengers to go through customs before arriving at Seattle International Airport because they boarded their cruise ship in Vancouver, British Columbia.
- **Baggage check and claim at a remote site.** Hotel guests staying at the Disney resort hotels in Orlando who use Disney's Magical Express Bus are able to skip the baggage claim at Orlando International Airport and have their baggage delivered directly to their hotel room. Upon returning to the Airport, guests can bypass the Airport check-in counters completely by giving their bags to airline representatives stationed in the hotel lobby who will check in the bags to the guests' final destinations.

The key advantages of off-site baggage handling are that it enhances the customers experience by relieving them from the need to carry their bags from the bus to the airline ticket counters and reduces congestion in the ticket lobby, which may occur when an entire bus load of passengers is dropped off. The key disadvantage is that some airlines may not participate in the program, confusing the passengers flying aboard the airline that is not represented.

Key Challenges

There are a few challenges to the management and control of cruise ship bus/vans. The key challenges are to (1) ensure all charter bus/vans operating on the airport have an airport permit, which may involve the use of company permits or occasional use permits, and (2) provide sufficient space within the terminal building and at the curbside boarding/alighting areas to accommodate charter bus/van passengers and their baggage.

Applicability

These practices are applicable to any airport experiencing charter bus/van traffic, and particularly at airports with larger volumes of charter bus/van traffic.

Reported Implementation Benefits and Challenges

As noted airline passengers traveling in charter buses/vans benefit by having a convenient and comfortable area where enplaning passengers can wait for their bags to be offloaded from the bus, or where deplaning passengers can remain seated until they can board the bus. Airport operators benefit by being

assured that all commercial ground transportation operators and the employees of these companies have agreed to abide by airport rules and regulations. The region served by an airport may benefit if the improved facilities and operations lead to increased numbers of tourists or visitors. The key challenges involve arranging for the sale of occasional use permits, providing sufficient curb space on the few times when there are charter bus/vans at the airport, and allowing ample time to work with representatives of the bus operator or the charter party when a large movement of passengers is expected.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airline passengers traveling by charter bus/vans will likely respond favorably to the availability of adequate boarding/alighting areas and comfortable waiting areas with seating.
- **Commercial ground transportation operators.** Charter bus/van companies will likely support efforts to provide adequate pickup/drop-off areas. They will also be supportive of airport regulations that require all charter bus/van companies to pay airport fees.
- **Local elected officials/regulatory officials.** Local officials are expected to be supportive of the measures to improve the experience of visitors and tourists, as well as other passengers, using charter buses/vans.

Implementation Schedule and Costs

The costs of accommodating charter bus/van operators are minimal with the exception of the costs of developing special purpose ground transportation courtyards or ground transportation centers.

Examples

Examples of best practices include the charter bus fees established at the airports described in this section, and for those airports serving large volumes of charter buses/vans, the charter bus/van facilities at Chicago O'Hare's Bus Shuttle Center, Miami's south bus station, Orlando, San Francisco's International Terminal building, and Vancouver.

H. Supporting Airport and Local Environmental Goals and Initiatives

The following section describes best practices for supporting local, regional, and airport environmental goals and initiatives. The measures described in this section may pertain to one or multiple commercial ground transportation modes.

Description

These environmental measures may be applied to commercial ground transportation at the airport to support environmental and sustainability goals established by the airport or local government.

Purpose

Many airports and municipalities have established green initiatives or environmental goals to reduce emissions, conserve energy, and achieve other objectives of airport management. Sustainable measures can be implemented across most types of ground transportation operations to support these initiatives.

Clean and alternative fuel vehicles. One of the most common ways to promote sustainable practices in airport ground transportation is by encouraging commercial vehicle operators to use clean vehicles. Many airports with concession contracts or operating permits for various services require that a percentage of a provider's fleet be green. Some airports such as San Francisco International require 100% of the fleet (for shared-ride vans and all taxicabs other than ADA accessible vehicles) to be green. The definition of a green vehicle varies by airport, but a common definition is to use the EPA's greenhouse gas ratings, which rates vehicles based on tailpipe emissions. The green rating is on a scale of 1 to 10, where 10 is the cleanest. Additional information about green standards can be found on the EPA's website. Seattle-Tacoma International phased in their taxicab green requirement, requiring a green rating of 10 for 50% of the taxicab fleet in the first year and 100% of the fleet by the second year. Phoenix Sky Harbor International Airport has a shared-ride fleet that operates entirely on propane.

Another method of providing cleaner vehicles is to require a certain fuel type. Many airport taxicab fleets operate using hybrid vehicles, while other commercial vehicles may use CNG, or propane. At the time this guidebook was prepared, several airports were using diesel-electric hybrid buses for their rental car or parking fleets, but no airport had required their use by commercial ground transportation operators.

To increase compliance with clean vehicle initiatives, airports may impose penalties such as fines or provide incentives such as reduced fees or head-of-line privileges. San Francisco International charges three times the normal trip fee for shared-ride operators not using CNG vans and only lists green limousine companies on the airport website. Boston Logan International allows hybrid taxicabs to receive head-of-line privileges once

per day between 12:00 PM and 8:00 PM, and Denver International and San Jose International provide a discount on the per-trip fee for clean vehicles. At Orlando International, where each company's fleet size is limited, a company is allowed 10 percent more permits if hybrid vehicles are used. Incentives should be re-evaluated after a trial period, as some airports such as Vancouver International began with an incentive program but found that, due to fuel cost savings, once drivers purchased hybrid vehicles they found significant benefit in operating a hybrid vehicle without the incentives. Similarly, Washington Dulles International does not require hybrid vehicles but found that many drivers chose to operate hybrid vehicles on their own. Encouraging the use of these vehicles by publicizing not only the environmental but also the economic benefits to drivers and operators can be an effective way of increasing the proportion of green vehicles in a fleet.

One consideration when requiring a specific fuel type is access to fueling locations. Many airports of all sizes have constructed public alternative fueling stations on airport property, including those serving Lincoln, Nebraska, Oklahoma City, and Tampa, among others. Although a fueling station may be provided at the airport, consideration should be given to the typical trip length from the airport and the fueling options in the surrounding areas, as a lack of fueling stations away from the airport in communities with a high proportion of long distance trips may preclude the use of alternative fuel. This may also vary by mode and should be considered when selecting the use of a specific fuel type.

Another challenge is access to the alternative fuel vehicles. Manufacturers and mechanics for a specific type of alternative fuel vehicle may not be available in all areas. Conversion kits for vehicles may be costly to purchase and install, and maintenance requirements can differ from gasoline vehicles. At Phoenix Sky Harbor, the airport did not specify which type of fuel was required, leaving the shared-ride concessionaire to select propane instead of CNG since the vehicles were more readily available, and the vehicle manufacturer no longer offered engines that could be easily converted to CNG.

In addition to alternative fuel vehicles, another method for implementing cleaner vehicles and reducing emissions is by requiring operators to use newer vehicles. Placing a model year limit on commercial ground transportation vehicles will increase the overall efficiency and reduce the emissions generated by a gasoline fleet, as advances in technology allow for the production of more efficient and cleaner vehicles.

Reduction and control of deadhead trips. Often times, commercial vehicles serving the airport will pick up passengers from the airport, drop off their customers at their destinations, and return to the airport without a passenger. This empty return trip is called a deadhead trip. Similarly, some companies who are not authorized to pick up passengers at an airport may bring passengers from a downtown or residential area to the airport but have a deadhead trip returning from the airport. Deadhead trips often occur at airports that are located adjacent to multiple cities or counties, but where only vehicles licensed by specific cities or counties may serve the airport or pick up in the municipality where they are licensed.

These deadhead trips add to congestion on roadways, increase vehicle miles traveled, and create unnecessary emissions. Controlling and minimizing deadhead trips to and from the airport can support an airport or municipality's goals of implementing more sustainable practices and reduce the airport's impact on the environment. Reducing deadhead trips also benefits the drivers and operators, as it provides them with an additional fare when returning to the airport.

To reduce deadhead trips, some airports have worked with the local regulatory authority to change the licensing requirements for commercial vehicles. The exclusive taxicab concessionaire serving Seattle-Tacoma International previously was not authorized to pick up customers in Seattle, leading to a large number of deadhead trips returning to the airport. The airport worked to enable taxicabs to obtain dual licenses to serve downtown as well. Additionally, the airport included a question regarding how a company would work to reduce deadhead trips in the RFP for a new taxicab concession contract. The proposed reduction goal of 2% in the first month, increasing to a 9% reduction in deadhead trips by the fourth year was incorporated into the successful company's operating agreement. Taxicab drivers who drop off a passenger at departures receive front-of-line privileges in the hold lot to pick up arriving passengers.

Fees. Airports may implement fees to reduce the amount of time vehicles spend at the curbside or the number of times a vehicle circulates around the airport roadway, reducing congestion and greenhouse gas emissions. Fees may also be used to encourage operators to convert to alternative fuels or comply with age or mileage limits on vehicles, as is the case at Oakland International Airport, where operators are charged higher fees for any vehicle older than 7 years or if less than 50% of the vehicle fleet use alternative fuel. More detailed information on fees for each type of commercial ground transportation service is included in their respective best practices sections.

Trip fees. Airports discourage commercial vehicle operators from making unnecessary trips or continually looping around airport roadways by charging commercial operators for each vehicle trip made on airport roadways, with the fee amount varying based on the vehicle size or capacity. An operator who makes unnecessary trips will be charged more than one who operates efficiently. Some airports such as Los Angeles International Airport charge a variation on the trip fee, where the fee increases after a number of circuits around

the airport. This circuit fee is a strong disincentive for vehicles such as shared-ride vans that might otherwise recirculate multiple times, as the $5.50 trip fee for the first two circuits increases to $22.00 for any additional loops around the terminal area prior to that vehicle exiting the airport.

Dwell fees. Airports charge dwell fees to discourage airport operators from spending excessive time waiting at the curbside, which may lead to increased congestion on the roadway. The airport defines a maximum allowable dwell time that an operator may remain at the curbside, after which time the dwell fee will be charged. Examples of airports that charge dwell fees include Minneapolis-St. Paul International, Orlando International, and Winnipeg James Armstrong Richardson International Airport.

Limit on annual trips and headway fees. Section E2 describes examples of headway fees to limit the number of annual vehicle trips made by the operators of courtesy vehicles. It also describes fees or fines charged to courtesy vehicle operators who operate closely spaced vehicles (i.e., a bump and run operation).

Consolidated vehicles. Section E2 describes the use of consolidated hotel/motel and rental car courtesy vehicles, which if implemented, reduce vehicle miles of travel and emissions.

Supporting the use of scheduled buses and vans. Section F describes measures to encourage airline passenger and employee use of public transit and privately owned scheduled bus and van services. Increased use of these services reduces employee and airline passenger reliance upon private vehicles and reduces overall roadway traffic, vehicle miles of travel, and vehicle-generated emissions.

Design of vehicle hold lot. Vehicle hold lots may be designed to minimize impacts on the environment and promote sustainable practices. Examples of such practices include:

- Control of runoff and the oil and waste that accumulate on these lots through the use of detention basins, filters, and porous pavements.
- Installation of solar panels as a source of renewable energy. These solar panels can also serve as shaded areas for the parked vehicles and waiting drivers if installed on canopies.
- Use of electric vehicle charging stations. No current examples of airports having installed electric vehicle charging stations in the hold lot were identified at the time this report was prepared. However, with the increasing number of electrically powered taxicabs and limousines in some cities, it is likely these stations will be made available in hold lots in the future.

Other measures to promote environmentally sensitive and sustainable hold lot operations are (1) to eliminate single file queues or stacks, and (2) provide a drivers' lounge. Allowing taxicab drivers to park randomly throughout the hold lot eliminates the need for drivers to continuously move their vehicles forward to maintain their place in line. The availability of a drivers lounge reduces the need for taxicab drivers to run their engines to stay warm or cool, thus saving fuel and reducing emissions, as well as improving driver comfort.

Applicability

These measures are applicable at airports seeking to support local or regional environmental initiatives and reduce vehicle emissions by reducing vehicle trips and vehicle miles of travel, and promoting the use of alternative fuels.

Reported Implementation Benefits and Challenges

The benefits of these best practices are reduced vehicle emissions, reduced congestion at curbsides and on airport roadways, and an improved environment.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers, to the extent they are aware of these programs, are likely to support them.
- **Commercial ground transportation operators.** Commercial vehicle operators may resist programs which increase trip fees, limit headways, or reduce annual trips by complaining that the programs adversely affect their ability to provide expected levels of customer service or restrict their ability to comply with corporate waiting time policies. They may also express concerns about the required use of alternative fuel vehicles.
- **Local elected officials/regulatory officials.** Local officials are likely to support an airport's efforts to improve air quality and support regional environmental objectives.

Implementation Schedule and Costs

The initial capital cost of implementing an alternative fuel requirement may be high, as a fueling station may need to be constructed and operators will need to purchase new alternative fuel vehicles. Federal grants are available through the FAA and EPA to support environmental initiatives, however, which can significantly reduce the cost to the airport and operators. These include Diesel Emission Reduction Act (DERA) grants, which are available through the EPA's National Clean Diesel

Campaign (NCDC). Other than these initial grants that offset some of the capital costs, cost savings are typically accrued over time due to the reduced amount spent on fueling the vehicles. For example, the price of CNG is typically less than the price of gasoline, and a hybrid taxicab provides better gas mileage than a standard gasoline vehicle.

Environmental initiatives may be phased in over time, starting with a small percentage of vehicles which must be green or small percentage decrease in trips during the first year. These percentages can then be increased each year to reduce the cost burden on operators.

Examples

Examples are included through this section.

I. Creative Passenger Boarding Areas

The following pages describe best practices for passenger boarding areas serving commercial ground transportation vehicles. These best practices are organized into creative boarding areas serving:

I1. Taxicabs
I2. Limousines
I3. Shared-Ride Vans
I4. Courtesy Vehicles
I5. Scheduled and Chartered Buses and Vans

At most airports passengers board commercial vehicles that are parked parallel (i.e., nose-to-tail) on the arrivals roadway either at a sidewalk adjacent to the terminal or at a raised center island. Most airport operators divide the available curbside area into segments or zones, each serving a specific class of commercial vehicle (e.g., taxicabs, shared-ride vans, buses) or sub-class (e.g., separating courtesy vehicles serving hotel/motels from those serving rental cars).

While such layouts are common throughout the airport industry, these layouts may result in an inefficient use of curb space and require customers to cross busy roadways to reach vehicles stopped adjacent to the center island. Waiting customers may have difficulty seeing an arriving courtesy vehicle since from afar the front of many look alike. If a customer's vehicle stops at the opposite end of the curbside, the customer will have to carry their baggage from one end to the other, while trying to flag down the driver before their vehicle departs.

Several airport operators have developed creative or non-traditional boarding area layouts to remedy these concerns which are described in the following sections. The layouts described initially can accommodate multiple types of ground transportation services or vehicle sizes while those described in subsequent pages are intended to accommodate a specific type of ground transportation service.

The layouts that accommodate multiple types of ground transportation services or vehicle sizes include the following:

- **Angled boarding spaces.** The courtesy vehicle boarding areas at several airports (e.g., those serving Atlanta, Calgary, Greensboro, Minneapolis, Orlando, and Vancouver) have angled parking spaces (e.g., the vehicles park at a 45-degree angle to the curbside sidewalk rather than parallel). These spaces may be configured to allow vehicles to exit by pulling forward or by backing out. Passengers simply board the vehicle from a raised curbside adjacent to the vehicle's door or from street level. Access to the angled courtesy vehicle spaces is generally gate controlled to prevent unauthorized vehicles from entering the area and parking behind the commercial vehicles. Key advantages of angled boarding spaces include:
  - Passengers have shorter walking distances. This is because 50% more commercial vehicles can be parked along a given curbside length at an angle (or even more depending on the angle at which the vehicles are parked) rather than parallel. Thus, for every 100 feet they walk a customer may pass six to eight vehicles rather than four or fewer vehicles.
  - Customers know exactly where to wait for their commercial vehicle when each provider is permanently assigned a specific angled parking space, as is done at several airports (e.g., Calgary International). This allows passengers to wait at the sidewalk area immediately adjacent to the assigned boarding space and be assured they have not missed their vehicle's departure.
  - Customers can find the vehicle more easily since they can see the side of the vehicles displaying the names of the scheduled bus service, hotel/motel, parking lot, or rental car company rather than trying to read the name on the front of the vehicle.
  - Provides for easier prohibition of double-parked or improperly parked vehicles as vehicles must stop in an angled space and are not allowed to double park in the roadway. This improves passenger safety and service.
  - Each angled space can be numbered and assigned to a vehicle (e.g., a limousine or chartered bus) or operator as the vehicle is released from the hold lot. Curbside enforcement officers can compare the coupon number issued at the hold lot exit and space number to ensure that the space is being used correctly and to prevent its use by unauthorized vehicles or vehicles stopping to illegally solicit passengers. For example, Vancouver and Portland International Airports contain 15 sequentially numbered, 45-degree angled parking spaces.

Key disadvantages of angled boarding spaces include:

- When backing out of the space, commercial vehicle drivers may not be able to see oncoming traffic. That is they are backing up into their "blind spot" which is a safety concern. However, where angled spaces are used this has proven not to be a concern or safety issue since the vehicles are driven by professional drivers who regularly drive along the same curbside roads and typically exhibit courteous driving behavior by stopping to allow other vehicles to back out of their spaces. To eliminate the concern with vehicles backing out of spaces, some airports (e.g., Minneapolis-St. Paul and Calgary International) use pull-through angled spaces. This method has its own safety concerns, however, as it requires airline passengers to walk across exiting courtesy vehicle traffic and perhaps other traffic.
- Less flexibility in how the curbside space is utilized since each space must be designed to accommodate a "design" vehicle or the largest vehicle. That is, even if only one or two operators use (or plan to use) 30-foot-long courtesy vehicles then all angled spaces may need to accommodate these larger vehicles, even though most courtesy vehicles are only 25 feet in length. In contrast, a parallel curb space can accommodate vehicles of varying length concurrently and thus offers more flexibility. Some airports, such as Vancouver International Airport, provide angled spaces of varying length such that some can be used only by vans while other spaces accommodate full-sized buses.
- Increased curbside roadway depth but less curbside length is required to provide the equivalent number of boarding spaces compared to a parallel curbside boarding area. The required depth of the boarding area (measured perpendicular to the sidewalk) is approximately 60 feet, depending on the angle, which is about the same as the area required for a five lane curbside roadway.

- **Commercial vehicle lots or courtyards.** Several airports have surface lots reserved for use by authorized commercial vehicles. These lots are referred to by a variety of names including ground transportation areas (GTA), ground transportation lots, or courtyards. Courtyards are distinct from curbside commercial vehicle lanes in that they often (1) have entry gates to restrict access to authorized vehicles, (2) allow vehicles to enter and exit while avoiding use of the curbside roadway, and (3) are located immediately adjacent to the baggage claim area. Airports with courtyards include Fort Lauderdale-Hollywood, Reno-Tahoe, San Francisco, and Tampa International airports.

  The key advantages of a courtyard are that they (1) offer a convenient boarding area immediately adjacent to the baggage claim areas, (2) separate commercial vehicles from private vehicles and thus provide safer and more efficient operations, and (3) reduce curbside roadway requirements by providing an alternate or supplemental boarding area. Often the key challenge to developing a courtyard is the lack of a potential site that is accessible to public vehicles (i.e., vehicles that have not been inspected or are considered non-secure). This is because at many airports the areas immediately adjacent to the ends of a terminal building—a frequent site for courtyards—are already occupied by other land uses and/or not accessible by unsecured vehicles. A key disadvantage is the lack of capacity and vehicle maneuverability if the courtyard is undersized, or potential vehicle-pedestrian conflicts if pedestrians must cross the paths of exiting/entering vehicles.
- **Boarding areas located in a parking structure.** At several airports a closed-in parking structure contains boarding areas for passengers using taxicabs, limousines, shared-ride vans, courtesy vehicles, scheduled van services, or some combination of these services. At these boarding areas the physical arrangements and the type of vehicles permitted to use these areas vary. Vehicles stop in a traditional nose-to-tail manner at the boarding areas located in the parking structures at the airports serving Indianapolis, New Orleans, and Seattle but stop in angled spaces at Boston Logan's Terminal B parking structure.

  The key advantages of boarding areas located in a parking structure are that they (1) provide conveniently located, covered boarding areas often with benches and other amenities, (2) limit entry to authorized vehicles through the use of card- or AVI-activated gate arms, and (3) reduce curbside roadway requirements by providing an alternate or supplemental boarding area. The key challenge to using parking structures as a commercial vehicle boarding area is limited vertical clearances in the garage—typically less than 9 feet—which precludes their use by cutaways, vans with header boards, or other tall vehicles. Furthermore, if an alternative boarding area must be provided for one commercial vehicle operator because its vehicles exceed the height limit, then all competing operators (i.e., those providing the same service) must be required to use the same alternative boarding area to prevent a company from receiving a perceived competitive advantage (or disadvantage). For example, at Seattle-Tacoma International Airport one shared-ride van company uses over-height vehicles which cannot use the Level 3 boarding area, thus requiring all shared-ride van companies to use the alternate boarding area.
- **Ground transportation counters.** A ground transportation counter is a desk or counter where customers can obtain information about available ground transportation services (e.g., fares, schedules, destinations served), purchase a ticket or make a reservation for one of these transportation services, or gather information about the airport or the local region (Figure 8-15). These counters are

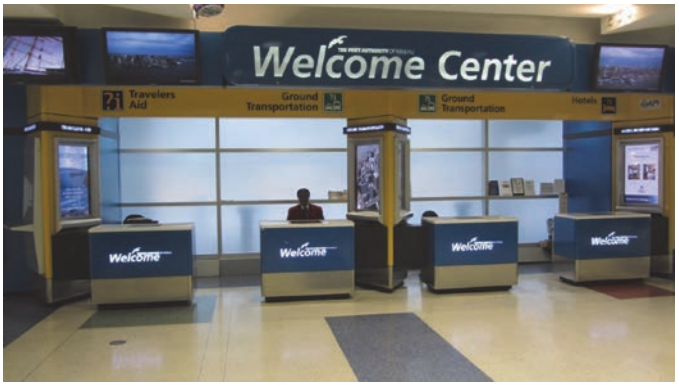


Figure 8-15. Ground transportation counters at John F. Kennedy International Airport.

typically located in the baggage claim or arrivals areas and are staffed by representatives of a ground transportation concessionaire (e.g., a scheduled bus company or shared-ride van company), airport staff, a third-party contractor retained by the airport, or volunteers. Counters staffed by airport staff, third-party contractors, or volunteers do not sell tickets or make reservations, but instead provide the phone numbers or websites of authorized transportation providers. Frequently taxicab and shared-ride van operators having a concession agreement with an airport are allowed (or required) to operate a counter.

Many airports, including those serving Baltimore/Washington, Cincinnati/Northern Kentucky, Denver, Fort Lauderdale-Hollywood, Houston Intercontinental, Piedmont Triad, Syracuse, and Reno-Tahoe have counters inside their terminal buildings. At other airports such as Miami International and Tampa International Airports the counters are located adjacent to the vehicle boarding areas. At Denver International the available counter space is limited and is made available through competitive bids with space reserved for mountain carriers, the local public transit agency, and shared-ride van operators offering door-to-door service. Counters tend to be offered at small hub airports where there are a limited number of transportation providers or a single taxicab company. At some airports a concessionaire provides an automated kiosk that provides ground transportation information and allows customers to make reservations (e.g., Oklahoma City International).

The key advantage of ground transportation counters is the benefit to customer service since passengers—unfamiliar with the airport, the local region, and/or the available ground transportation services—can obtain assistance from trained staff rather than having to rely upon signs or other media. Counter staff act as ambassadors to the community and are frequently required to answer questions not related to commercial ground transportation. Counters are also beneficial to ground transportation concessionaires as it provides them a business advantage not available to companies not awarded a concessions contract. A staffed counter in a visible location allows a concessionaire to intercept prospective customers, market and advertise their services, and sell one-way and round-trip tickets to on-demand customers. At some airports seating is available adjacent to the counters so that customers waiting for a scheduled service, for example, are not tempted by competitive operators.

Potential disadvantages of counters relate to the hours with which they are staffed (e.g., all hours at all terminals when there are scheduled arriving flights or just peak periods) and the need to ensure counter staff behave in a professional manner (e.g., prohibiting hawking or yelling at passing customers or arguing/fighting with drivers/representatives of competing companies). When one concessionaire is awarded counter space (e.g., a shared-ride van operator), other commercial ground transportation operators, particularly taxicab companies and drivers, may complain that the counters provide the shared-ride van operators an unfair advantage.

Ground Transportation Center

A ground transportation center (GTC) is a separate building or waiting area where airline passengers board commercial ground transportation vehicles. These centers are also referred to as intermodal transportation centers, intermodal transfer centers, and bus/shuttle centers. At some airports, passengers may walk between the terminal and the GTC, while at others they ride an automated people mover (APM). GTCs primarily serve as boarding areas for courtesy vehicles and scheduled buses, but at some airports they also serve taxicabs and limousines.

An ideal GTC provides:

- An enclosed, heated/air-conditioned waiting area (e.g., Chicago O'Hare, Minneapolis-St. Paul International, and New Orleans International)
- A ticket counter(s) for scheduled services (e.g., Minneapolis-St. Paul International)
- Limited food/beverage concessions (e.g., Chicago O'Hare International and Minneapolis-St. Paul International on a separate level of the building)
- Angled parking spaces to enhance customer visibility of the commercial vehicle and reduce walking distances (e.g., Minneapolis-St. Paul)
- Airline baggage check-in counters when the GTC is used for both arriving and departing commercial vehicles

Examples of GTCs include:

- *Minneapolis-St. Paul International Airport* has a Transit Center located on Level 1 of a parking structure. In addition

Source: Dade County Aviation Department.

Figure 8-16. Miami International Airport's South Station.

to charter buses/vans it serves public transit and intercity (i.e., Greyhound) buses. Passengers ride a tram between the passenger terminal and the transit center. Airport staff report that the transit center reduces roadway congestion and enhances customer safety levels by separating large bus traffic (and the passengers they transport) from private vehicles.

- *O'Hare International Airport* contains an enclosed, heated/air-conditioned Bus Shuttle Center providing waiting and seating areas as well as a food and beverage concession. Passengers use a moving sidewalk and elevators to travel between the passenger terminals and the Bus Shuttle Center.
- *Miami International Airport* has a north and south (Figure 8-16) bus station where cruise ship passengers board and alight from cruise ship buses. The south station, which was specially designed to accommodate cruise ship passengers and buses, provides an enclosed and air-conditioned area with baggage check-in counters for American Airlines (the dominant carrier) and the vertical clearance needed for charter buses. By separating cruise ship passengers from other airport passengers, these bus stations improve customer service and minimize congestion in the terminals.

Other airports having a GTC but which may not provide all the above amenities include those at the airports serving Indianapolis, Newark, and Seattle.

Key advantages of a GTC include:

- Provides exceptional customer service by minimizing walking distance and providing an enclosed, comfortable waiting area:
  - Customers may have a short walk from the baggage claim area to the GTC depending on its location and the availability of an APM or moving walkway.
  - Customers can wait in an enclosed waiting area that is heated or air-conditioned and provides seating. When used by scheduled or charter bus/van services, a company representative can assemble and organize their customers or travel party and the accompanying baggage and then walk their customers to the adjacent waiting vehicle.
  - Electronic signs indicate departure times for scheduled carriers and other information.
- Allows airport staff to readily monitor vehicles loading passengers to ensure that only authorized vehicles are picking up airline passengers, even if access to the GTC is not gate-controlled.
- Supplements available curbside length, reducing the required area in front of the terminal building.
- Provides a location where airline passengers can readily observe and compare the full range of commercial ground transportation options available.

The key disadvantages of a GTC are the capital costs because they are typically built as part of the development of a new parking structure or terminal building or modification of an existing parking structure or terminal building. To accommodate a potential GTC, an existing parking structure should:

- Provide greater vertical clearance than a typical parking structure on the GTC level in order to accommodate all courtesy vehicles (e.g., at least 10 feet and preferably 12 feet).
- Comply with building code and fire requirements for "occupied" areas such as passenger waiting areas or counters. The code requirements for these areas differ from those for a standard parking structure and may trigger the need to install fire suppression sprinklers in all or a portion of the building. Depending on the ceiling height and proximity to an exterior wall, it may also be necessary to provide mechanical ventilation for the vehicle loading areas.
- Provide entry lane(s) and exit lane(s) for use by commercial vehicles which lead to/from the passenger boarding

Source: Metropolitan Airports Commission.

Figure 8-17. Ground transportation center at Minneapolis-St. Paul International Airport.

area and which are separate from the entry and exit lanes used by parking customers.
- Provide a convenient walking path between the terminal building and the GTC. This implies minimizing walking distances and level changes, or providing moving walkways/APMs and escalators/elevators to mitigate distances and level changes. However, most frequently these mechanical systems also serve other uses (e.g., rental car and parking facilities or other terminals), not just the GTC.

A GTC can provide an efficient and effective commercial vehicle boarding area when it is built as part of a new parking structure and terminal building. However, it can be relatively expensive and disruptive to convert an existing parking area into a GTC unless it meets the above requirements.

Applicability

Applicable to any airport serving large volumes of commercial vehicles or the ability and space to develop an alternative solution.

Reported Implementation Benefits and Challenges

The key benefit is the improved customer service. The key challenge is the cost of developing creative areas if they require substantial modification of airport roadways or parking structures.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Airport customers appreciate the ability to quickly get into a waiting vehicle and complete their trip from the airport. Thus, these creative systems are viewed very favorably by the customer.
- **Commercial ground transportation operator.** Commercial vehicle drivers in general appreciate the ability to move quickly to the curb and pick up a customer without excessive wait time so these creative boarding areas are generally favored and appreciated by drivers.
- **Local elected and regulatory officials.** There is generally widespread support among elected and regulatory officials regarding the fast loading or customer alternative choice programs offered to the airline traveling public.

Implementation Schedule and Costs

Designing and implementing a creative boarding area should not consume capital costs unless the roadway or other physical aspects of the airport require modification. Thus, costs are primarily for engineering, planning, implementation, and training of staff and drivers. These are typically low-cost improvements to customer service. These creative approaches can take time to design, gain approval, and implement. A reasonable time for this would be 6 to 9 months.

Examples

Airports with various types of creative taxicab passenger loading areas are referenced in the above paragraphs.

The following pages present additional examples of best practices or creative boarding areas designed for specific ground transportation services. Because of the similarities among these creative boarding areas, the following paragraphs do not repeat the descriptions of the applicability, implementation benefits and challenges, likely response by stakeholders, or implementation schedule and costs. Only key differences are highlighted in subsequent paragraphs.

I1. Creative Taxicab Passenger Boarding Areas

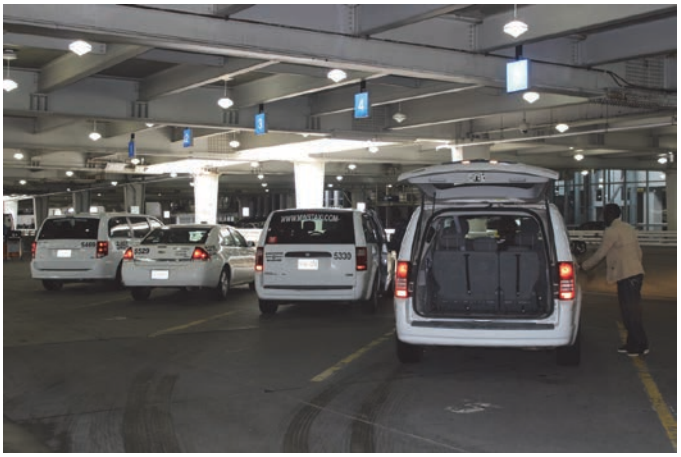
Description

Most airports have a traditional taxicab line that lines up parallel to the curbside roadway where passengers queue nearby waiting to board the next available taxicab. However, a few airports have developed creative loading areas that improve the efficiency and effectiveness of the passenger loading system.

Purpose

The purpose of many of these creative taxicab loading areas is to improve customer service and provide for more efficient operations. A secondary purpose of some of these areas is to improve the availability of information in order to help inform the airport passengers about the various ground transportation alternatives. Each of these is described more fully in the following:

- **Numbered boarding spaces.** Single queue: Both Las Vegas McCarran International Airport and San Francisco International Airport direct airline passengers to numbered boarding positions that allow nine or more taxicabs to board passengers simultaneously. At these airports taxicabs are parked in a single queue (nose-to-tail) while passengers board. Once a passenger has boarded a vehicle, taxicabs are able to exit even if the vehicle in front has not completed the loading. This process ensures the ability to load passengers quickly, thereby decreasing overall passenger wait time.
- **Angled, pull-through spaces.** As noted Minneapolis-St. Paul International Airport has a loading system of multiple taxicabs which pull into diagonal parking spots (Figure 8-18).



Source: Metropolitan Airports Commission.

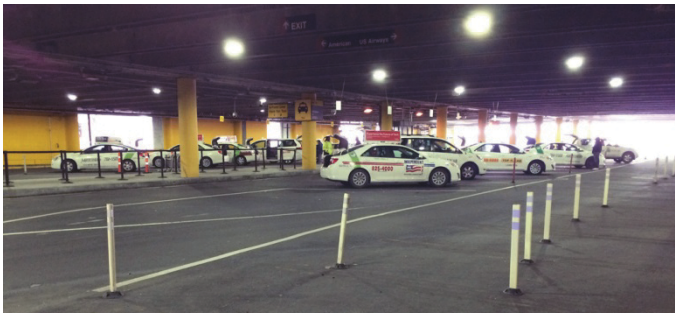
Figure 8-18. Numbered, angled boarding spaces at Minneapolis-St. Paul International Airport.

The taxicab dispatcher then assigns passengers to a specific numbered parking spot. This allows all cabs to load simultaneously and depart more easily when they are ready.

- **Pickup area located in adjacent garage.** As noted previously, nose-to-tail taxicab boarding areas are located in a parking structure at Seattle-Tacoma International Airport (Figure 8-19).
- **Boarding angled spaces from a central island.** As noted, Boston Logan International Airport has developed a unique system to load over 20 passengers at once (Figure 8-20). At Terminal B, an entire level of a parking structure has been allocated to taxicab boarding. Two rows of angled taxicab spaces are arranged around a central sidewalk. Passengers are directed to one of the waiting taxicabs. This allows for faster boarding as taxicabs can enter and exit independently without waiting for other vehicles to complete the boarding process.

Source: Port of Seattle.

Figure 8-19. Taxicab boarding area inside Seattle-Tacoma International Airport's garage.



Source: Massachusetts Port Authority.

Figure 8-20. Angled boarding spaces at Boston Logan International Airport.

I2. Creative Limousine Passenger Boarding Areas

Description

This section details alternative passenger boarding configurations for prearranged limousine customers.

Purpose

At most airports, prearranged limousines are required to wait for customers on the arrivals curbside roadway while parked parallel to the curbside. Several airports provide creative, alternative layouts for prearranged limousines, allowing drivers to leave their vehicles unattended, while also allowing the airport to better control these vehicles and the drivers. Examples of alternative passenger boarding areas for prearranged limousines include:

- **Convenient parking areas for limousines near the terminal.** Several airports have lots reserved solely for use by limousine drivers or which are predominantly used by limousine drivers
  - At each of Bush Houston Intercontinental Airport's terminal buildings, surface parking areas (or an area within the parking structure) adjacent to the baggage claim are reserved for limousine drivers. Limousine drivers having an airport permit can leave their vehicles unattended and enter the terminal to greet their customers. Each parking area contains 30 to 60 spaces, but according to airport staff, more spaces are needed because limousine drivers often arrive earlier than is necessary and linger in the lots. If time limits were placed upon these spaces, fewer additional spaces would be needed.
  - A limousine lot, containing about 100 spaces, is located at Hartsfield-Jackson Atlanta International's curbside, west of the courtesy vehicle boarding area. Access to this lot is limited to authorized limousines and is gate-controlled.

  - An hourly parking area, located directly opposite the baggage claim area at Dallas/Fort Worth International Airport, is used by limousine drivers. Limousine drivers and drivers of private vehicles may leave their vehicles unattended in this area. Limousine drivers pay a duration-based parking fee for use of these spaces.
- **Commercial vehicle lots or courtyards.** Commercial vehicle lots or courtyards are described at the beginning of this section.
- **Assigned boarding spaces.** These spaces have already been described in this section (e.g., those at Vancouver International Airport).
- **Ground transportation concourse.** At Orlando International Airport limousine drivers are required to pick up customers on curbside roadways or "ground transportation concourses" located beneath Terminals A and B (Figure 8-21). These roadways have a 7' vertical clearance making them ideally suited for use by limousines but precluding their use by larger vehicles such as courtesy vehicles, shared-ride vans, or scheduled and chartered buses/vans. Limousine drivers may park their vehicles on the concourses and leave them unattended while meeting and greeting customers because all vehicles must be inspected by security guards before entering the concourse. Guards are on duty at the roadway entrance between 8:30 AM and midnight. During other hours, limousine drivers use the same curbside area as other commercial vehicles.

Reported Implementation Benefits and Challenges

Benefits include improved customer service as a result of the driver's ability to meet and greet their customers while leaving the vehicle unattended, and the airport staff's ability to monitor limousine operations more easily and efficiently.

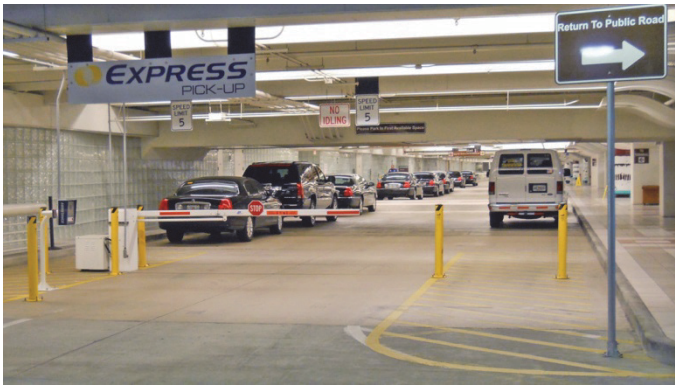


Figure 8-21. Ground transportation concourse at Orlando International Airport.

Likely Response by Stakeholders

The following are likely responses by stakeholders:

- **Customers.** Customers prefer to be met by their driver and to be offered assistance carrying their bags. Customers may walk further with some configurations described above than they would if the limousine were parked on the curbside roadway but the overall customer experience is not appreciably different and may be better.
- **Commercial ground transportation operators.** Limousine companies and drives are likely to be supportive of the ability to leave their vehicle unattended and have access to reserved areas.
- **Local elected officials/regulatory officials.** Local officials are not expected to have strong positive or negative concerns.

Implementation Schedule and Costs

The cost of developing a new pickup area depends on the configuration and whether it is to be built in conjunction with a terminal area redevelopment program. No additional operating costs or revenues are expected unless the boarding area requires a full-time security guard, such as Orlando's ground transportation concourse.

I3. Creative Shared-Ride Van Passenger Boarding Areas

Description

This section describes creative boarding areas and processes for assigning loading zones used by airport operators to efficiently manage shared-ride van operations.

Purpose

Airports have a limited amount of space at the terminal curbside for picking up airline passengers. Most airports allocate one to two spaces per shared-ride operator per loading zone, so particularly at airports with multiple shared-ride van operators, a system for fairly and effectively loading passengers is necessary, as this may require a large amount of space for one type of commercial ground transportation. The following are examples of areas and processes used by airports to efficiently manage shared-ride van operations:

- **Courtyards and ground transportation centers.** Hartsfield-Jackson Atlanta International Airport has designated courtyard areas with angled spaces for loading passengers into shared-ride shuttles. Tampa International Airport has courtyards (known as ground transportation

lots) at the ends of the terminal buildings where shared-ride vans pick up their passengers from the airport. The passenger checks in at a kiosk located in the courtyard, is assigned a number, then waits comfortably in a temperature controlled waiting room with clear views of the courtyard until the van arrives and the driver calls the passenger's number. Seattle-Tacoma International Airport has a designated lane inside the parking garage for shared-ride vans and other commercial vehicles to pick up passengers.

- **Selection and rotation of curbside zones.** If an airport is limited to having shared-ride vans pick up along a linear curbside, there are several methods for fairly and effectively assigning loading areas among multiple operators. Dallas/Fort Worth International Airport has three shared-ride van operators. Each company is allocated one or two spaces in each shared-ride zone, depending on the terminal. To fairly allocate spaces, a lottery is held for the first, second, and third positions in each zone. Los Angeles International Airport, which has two full-service shared-ride van operators, also assigns spaces at each terminal to the companies by lottery.
- **Counters.** Counters staffed by shared-ride van company personnel are often located in the terminal building arrivals area to respond to passenger questions and sell tickets.

I4. Creative Courtesy Vehicle Passenger Boarding Areas

Description

This section describes alternative courtesy vehicle boarding area configurations that enhance customer service and safety, and improve the ability of airport staff to manage and control courtesy vehicles.

Purpose

The purpose of these boarding areas is to improve customer service and airport staff's ability to manage the passenger boarding areas. The following are examples of creative courtesy vehicle boarding areas.

Single stop operations. At most airports, courtesy vehicles drop off passengers at a curbside located near the ticket lobby and pick up passengers at a different curbside area located near the baggage claim area. However, courtesy vehicles drop off and pick up passengers at the same location at some airports (e.g., Houston Bush Intercontinental, Los Angeles, Seattle, and San Francisco International). A single stop operation reduces the amount of curb space that must be reserved for courtesy vehicles. It also benefits the operators of courtesy vehicles at airports with multi-level curbsides, since a single stop operation eliminates the need for vehicles to recirculate from the ticketing level to the baggage claim level.

The key benefits include the following:

- Reductions in the total amount of curb space that must be allocated for courtesy vehicles.
- Improvements in air quality due to the reduction in distance traveled by each courtesy vehicle and the associated reduction of vehicle-generated emissions.
- Lower operating costs for the courtesy vehicle operators as each of their vehicles travels shorter distances, reducing fuel consumption and potentially enabling the operator to reduce the number of vehicles needed to maintain the same service levels/headway intervals.

Key disadvantages of a single stop operation include:

- Less convenient customer service at airports with multi-level curbsides as either enplaning or deplaning passengers must change levels with their baggage, depending on which level of the terminal building the courtesy vehicle single stop is located.
- Increased demands upon the terminal building's elevators and escalators as a greater number of passengers, many accompanied by their checked baggage, must use the vertical transportation systems to change levels.
- Increased reliance upon wayfinding signage to guide passengers to/from their courtesy vehicle stop since it is not located on the same level as the private vehicle drop-off (or pickup area), and thus creating an increase in the number of signs and the complexity of the required wayfinding system.

Gated controlled access. At several airports (e.g., those serving Denver, Orlando, Portland, and Salt Lake City) gates located at the entrance to the courtesy vehicle boarding area restrict access to only vehicles with airport permits and RFID transponders. The commercial vehicle boarding areas at these airports are located on curbside roadways used exclusively by commercial vehicles and are either adjacent to the private vehicle roadway (e.g., Salt Lake City International Airport) or on a separate roadway level (e.g., at Denver International Airport). Gate-controlled access provides a positive control on the volume and type of vehicles that may enter the commercial vehicle boarding area, resulting in several benefits.

The key benefits include:

- Private vehicles are prevented from entering the area, reducing conflicts between professionally driven commercial vehicles and private vehicles, which improves traffic safety.
- Unauthorized commercial vehicles are prevented from entering the boarding area limiting their ability to improperly pick up airline passengers or interfere with the operations of authorized vehicles.

- A gate-controlled system can be installed at any airport with a separate commercial vehicle roadway or lane. Installation of a gate arm control is the only required physical modification to the roadway layout.

Key disadvantages of gate controlled access include the need to provide:

- A queuing lane or area prior to the entry gate to accommodate waiting vehicles.
- A backup system should the primary gate arm control mechanism fail.
- Access for infrequent operators (e.g., those serving the airport less than once a month).

Angled parking spaces. The courtesy vehicle boarding areas at several airports (e.g., those serving Atlanta, Calgary, Orlando, and Vancouver) have angled parking spaces (e.g., the vehicles park at a 45-degree angle to the curbside sidewalk rather than parallel, see Figure 8-22). The advantages and disadvantages of angled spaces are described herein.

Commercial vehicle courtyards. As described previously, some airports provide surface parking lots or courtyards adjacent to the baggage claim area where courtesy vehicles are required to park while passengers board. These courtyards are also called commercial vehicle lots or GTAs, among other names (Figures 8-23 and 8-24). These courtyards and their advantages and disadvantages are described herein.

I5. Scheduled and Chartered Buses and Vans

At most airports, passengers alight and board scheduled and chartered buses/vans that are parked parallel to the arrivals area curbside roadway. However alternative boarding areas include:

Figure 8-22. Angled courtesy vehicle parking spaces at Hartsfield-Jackson Atlanta International Airport.

Figure 8-23. Commercial vehicle courtyard at Reno-Tahoe International Airport.

- **Single stop operations.** At most airports, public transit services drop off and pick up passengers at a single airport stop. Private operators may do so as well if they serve the airport with frequent departures, but operators providing service that departs an airport every one to two hours or less often are likely to drop off adjacent to the ticket counters and pick up by the baggage claim areas. Additional information about the benefits and disadvantages of single stop operations is presented in Section E2.
- **Angled parking spaces.** The scheduled bus boarding areas at several airports (e.g., those serving Atlanta, Calgary, Orlando, and Vancouver) have angled bus parking spaces or use a "shallow saw tooth" design that allows buses to enter and exit without backing up (Figures 8-25 and 8-26). Access to the scheduled bus/van area is generally gate controlled to prevent unauthorized vehicles from entering the boarding areas.
- **Commercial vehicle courtyards.** As described herein some airports provide surface parking lots or courtyards adjacent

Figure 8-24. Commercial vehicle courtyard at San Francisco International Airport.

Figure 8-25. Angled boarding spaces at Vancouver International Airport.

Figure 8-26. Shallow saw tooth boarding spaces at Seattle-Tacoma International Airport.

to the baggage claim area where scheduled buses/vans are required to park while passengers board. These courtyards are also called commercial vehicle lots and GTAs.

- **Ground transportation center.** GTCs are described previously.

J. Selecting the Solution

This section describes a process for the evaluation and selection of the best practices, selling the selected best practices to those who must approve or support their implementation, and the subsequent implementation of these best practices.

Evaluating and Selecting the Solution

The evaluation of best practices should reflect the goals of airport management, its vision for the airport, its mission statement, and its specific values. As described in Chapter 2, while each airport has its own unique set of goals these goals frequently include one or more of the following five objectives:

1. Enhance the experience of the airport customer
2. Minimize required staff time and airport resources
3. Support airport and regional environmental and sustainability objectives
4. Establish an environment allowing drivers to earn a fair wage and other business owners to receive a reasonable return on their investments
5. Recover costs and, to the extent possible, increase airport revenues consistent with the other goals of management.

The first step in the process for evaluating ground transportation practices and selecting those to be implemented is to determine the relative emphasis airport management places on each of these objectives or other objectives. The second step is to determine which of the practices described in Chapter 8 best support management's objectives. In Tables 8-2 through 8-6, the best practices are ranked according to whether they provide a very positive effect, a somewhat positive effect, a neutral effect, a somewhat negative effect, or a very negative effect. These tables are intended to support the evaluation and selection process. These are defined as follows:

- **Very Positive**—The best practice positively and significantly influences many of the relevant factors that contribute towards meeting a goal.
- **Somewhat Positive**—The practice positively influences some of the relevant factors and perhaps a few significantly.
- **Neutral**—A practice equally positively and negatively influences factors that contribute towards meeting a goal, or a strategy has no effect on a particular goal.
- **Somewhat Negative**—The practice negatively influences some of the relevant factors and perhaps a few significantly.
- **Very Negative**—The practice negatively and significantly influences many factors that contribute towards meeting a goal.

Chapter 2 of this guidebook describes the key considerations used to prepare these rankings and to define customer experience, required staff time, the environment, driver wages/owner Return on Investment (ROI), or revenues. It is helpful to refer to these definitions as airport operators may define these terms differently or place different emphasis on the individual components of these rankings.

The extent to which each practice is expected to positively or negatively influence an airport operator's ability to meet each overall goal will vary depending on the practice and the airport. That is, two strategies receiving the same ranking or score may not have the same effect on customer experience,

Table 8-2. Ability to improve customer experience.

		Ability to improve customer experience					
		Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Notes
A. Taxicabs							
A1	Vehicle Standards	O					
A2	Driver Standards	O					
A3	Fee Collection			O			
A4	Addressing Excessive Taxicabs/Long Driver Waits		O				
A5	Taxicab Rotation System		O				
A6	Addressing Insufficient Taxicabs/Long Customer Waits	O					
A7	Short Trip Procedures	O					
A8	Dispatcher/Starter Responsibilities		O				
A9	Processes for Communicating with Drivers			O			
A10	Driver's Lounge			O			
A11	Driver Training Programs	O					
A12	Enforcement		O				
A13	Bid vs. Proposal	O					Assumes award of contract
A14	One, Two, or Three Concessionaires	O					
A15	Business Arrangements	O					
A16	Oversight/Administration of Contract	O					
B. Limousines							
B1	Fee Collection			O			
B2	Control of Drivers and Vehicles		O				
B3	Controlling Illegal Solicitation of Arriving Airline Passengers		O				
B4	On-Demand Limousine Services		O				
C. Ride-booking Services			O				Assumes vehicles are permitted to operate
D. Shared-Ride Services							
D1	Open Access Systems				O		
D2	Exclusive or Semi-Exclusive Access	O					
D3	Vehicle and Driver Standards		O				
D4	Customer Service Standards	O					
E. Courtesy Vehicles							
E1	Vehicle Permitting and Fees			O			
E2	Supporting Environmental and Sustainability Goals			O			
F. Scheduled Buses				O			
G. Chartered Buses and Vans				O			
H. Supporting Airport and Local Environmental Goals and Initiatives				O			
I. Creative Boarding Areas			O				

Table 8-3. Ability to minimize required staff time and airport resources.

		Minimize required staff time and airport resources					
		Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Notes
A. Taxicabs							
A1	Vehicle Standards		O				Depends on enforcement
A2	Driver Standards		O				Depends on enforcement
A3	Fee Collection		O				
A4	Addressing Excessive Taxicabs/Long Driver Waits		O				
A5	Taxicab Rotation System	O					
A6	Addressing Insufficient Taxicabs/Long Customer Waits		O				
A7	Short Trip Procedures			O			
A8	Dispatcher/Starter Responsibilities		O				
A9	Processes for Communicating with Drivers			O			
A10	Driver's Lounge				O		
A11	Driver Training Programs		O				
A12	Enforcement				O		
A13	Bid vs. Proposal	O					Assumes use of concessionaire
A14	One, Two, or Three Concessionaires	O					
A15	Business Arrangements	O					Assumes use of concessionaire
A16	Oversight/Administration of Contract	O					Assumes use of concessionaire
B. Limousines							
B1	Fee Collection		O				
B2	Control of Drivers and Vehicles		O				
B3	Controlling Illegal Solicitation of Arriving Airline Passengers				O		Depends on program
B4	On-Demand Limousine Services				O		
C. Ride-booking Services							
D. Shared-Ride Services							
D1	Open Access Systems					O	
D2	Exclusive or Semi-Exclusive Access	O					
D3	Vehicle and Driver Standards		O				
D4	Customer Service Standards		O				
E. Courtesy Vehicles							
E1	Vehicle Permitting and Fees		O				
E2	Supporting Environmental and Sustainability Goals			O			
F. Scheduled Buses				O			
G. Chartered Buses and Vans				O			
H. Supporting Airport and Local Environmental Goals and Initiatives				O			
I. Creative Boarding Areas			O				

Table 8-4. Support airport and regional environmental and sustainability objectives.

		Support environmental and sustainability objectives					
		Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Notes
A. Taxicabs							
A1	Vehicle Standards	O					
A2	Driver Standards			O			
A3	Fee Collection		O				Depends on type of fees
A4	Addressing Excessive Taxicabs/Long Driver Waits		O				
A5	Taxicab Rotation System		O				
A6	Addressing Insufficient Taxicabs/Long Customer Waits			O			
A7	Short Trip Procedures		O				
A8	Dispatcher/Starter Responsibilities			O			
A9	Processes for Communicating with Drivers			O			
A10	Driver's Lounge		O				
A11	Driver Training Programs		O				
A12	Enforcement			O			
A13	Bid vs. Proposal		O				
A14	One, Two, or Three Concessionaires		O				
A15	Business Arrangements		O				
A16	Oversight/Administration of Contract			O			
B. Limousines							
B1	Fee Collection			O			
B2	Control of Drivers and Vehicles			O			
B3	Controlling Illegal Solicitation of Arriving Airline Passengers		O				
B4	On-Demand Limousine Services				O		
C. Ride-booking Services					O		
D. Shared-Ride Services							
D1	Open Access Systems					O	Excess trips and wait times
D2	Exclusive or Semi-Exclusive Access			O			
D3	Vehicle and Driver Standards		O				Assumes use of alternative fuel vehicles
D4	Customer Service Standards				O		
E. Courtesy Vehicles							
E1	Vehicle Permitting and Fees	O					Assumes use of headway and dwell time fees
E2	Supporting Environmental and Sustainability Goals	O					Assumes use of alternative fuel vehicles
F. Scheduled Buses			O				
G. Chartered Buses and Vans			O				
H. Supporting Airport and Local Environmental Goals and Initiatives		O					
I. Creative Boarding Areas					O		

Table 8-5. Ability to provide environment allowing drivers to earn a fair wage and owners to receive a reasonable ROI.

		Allow drivers to earn fair wage/owners to receive reasonable ROI					
		Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Notes
A. Taxicabs							
A1	Vehicle Standards		O				
A2	Driver Standards	O					
A3	Fee Collection			O			
A4	Addressing Excessive Taxicabs/Long Driver Waits	O					
A5	Taxicab Rotation System			O			Depends on non-airport business
A6	Addressing Insufficient Taxicabs/Long Customer Waits	O					
A7	Short Trip Procedures		O				
A8	Dispatcher/Starter Responsibilities		O				
A9	Processes for Communicating with Drivers			O			
A10	Driver's Lounge			O			
A11	Driver Training Programs		O				
A12	Enforcement		O				
A13	Bid vs. Proposal	O					
A14	One, Two, or Three Concessionaires		O				
A15	Business Arrangements		O				
A16	Oversight/Administration of Contract		O				
B. Limousines							
B1	Fee Collection			O			
B2	Control of Drivers and Vehicles		O				
B3	Controlling Illegal Solicitation of Arriving Airline Passengers	O					
B4	On-Demand Limousine Services				O		
C. Ride-booking Services				O			
D. Shared-Ride Services							
D1	Open Access Systems					O	
D2	Exclusive or Semi-Exclusive Access	O					
D3	Vehicle and Driver Standards		O				
D4	Customer Service Standards		O				
E. Courtesy Vehicles							
E1	Vehicle Permitting and Fees			O			
E2	Supporting Environmental and Sustainability Goals			O			
F. Scheduled Buses				O			
G. Chartered Buses and Vans				O			
H. Supporting Airport and Local Environmental Goals and Initiatives				O			
I. Creative Boarding Areas				O			

Table 8-6. Ability to recover airport costs and increase airport revenues.

		Ability to recover costs and increase revenues					
		Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Notes
A. Taxicabs							
A1	Vehicle Standards			O			
A2	Driver Standards			O			
A3	Fee Collection	O					
A4	Addressing Excessive Taxicabs/Long Driver Waits			O			
A5	Taxicab Rotation System		O				
A6	Addressing Insufficient Taxicabs/Long Customer Waits		O				
A7	Short Trip Procedures			O			
A8	Dispatcher/Starter Responsibilities			O			
A9	Processes for Communicating with Drivers			O			
A10	Driver's Lounge			O			
A11	Driver Training Programs			O			
A12	Enforcement		O				
A13	Bid vs. Proposal	O					
A14	One, Two, or Three Concessionaires		O				
A15	Business Arrangements	O					
A16	Oversight/Administration of Contract		O				
B. Limousines							
B1	Fee Collection	O					
B2	Control of Drivers and Vehicles			O			
B3	Controlling Illegal Solicitation of Arriving Airline Passengers		O				
B4	On-Demand Limousine Services		O				
C. Ride-booking Services		O					Assumes collection of per-trip fees
D. Shared-Ride Services							
D1	Open Access Systems				O		
D2	Exclusive or Semi-Exclusive Access	O					
D3	Vehicle and Driver Standards			O			
D4	Customer Service Standards			O			
E. Courtesy Vehicles							
E1	Vehicle Permitting and Fees	O					
E2	Supporting Environmental and Sustainability Goals			O			
F. Scheduled Buses				O			Depends on measure
G. Chartered Buses and Vans				O			Depends on measure
H. Supporting Airport and Local Environmental Goals and Initiatives				O			Depends on measure
I. Creative Boarding Areas			O				With gate controls

Notes: Assumes costs are recovered and revenues increased in a manner which is consistent with other goals of the airport.

required staff time, the environment, driver wages/owner ROI, or revenues. These evaluations are qualitative, not quantitative. For example, both vehicle standards (described in Section A1) and the selection of one, two, or three concessionaires (described in Section A14) have significant and positive effects on improving the customer experience but the expected degree of improvement may not be the same at all airports.

In addition to identifying those strategies that best respond to the management's objectives, it is helpful to identify the complimentary strategies and consider including those in the list of candidate strategies to be evaluated.

CHAPTER 9

Supporting Technologies

The implementation of a significant number of ground transportation "best practices" can be greatly improved through the use of a variety of technologies. Some technologies automate or provide a more efficient approach while others enable approaches to be used that would not be possible using a manual system. This chapter is intended to provide the reader with an understanding of the technologies currently in use, their benefits, limitations, and relative cost, as well as identify some of the new technologies that are very likely to be used in the future.

Many airports have created a set of policies, practices, and regulations that, when combined, form a "system" that allows ground transportation operators and the airport to move passengers through the airport on a daily basis. These "systems" take on many forms from informal general understandings of how passengers are moved to highly complex, technology based, automated systems. While all of these approaches can work for an airport, the following discussion highlights the benefits and shortcomings of using a technology based GTM system so that airport staff can evaluate which alternative will provide the best results for their set of issues, objectives, and budget.

One goal of airport management is to provide for the movement of passengers quickly and easily into and out of the airport. Managing the flow of vehicles through the terminal roads and curbside as efficiently as possible is a key element of this task. Most of the components of commercial ground transportation operations are aimed at achieving this goal. Managing the flow of commercial vehicles (e.g., access control for gated areas, limiting the number of any type of ground transportation vehicle at the curb, or organizing the location of types of transportation to specific areas for easy signage) is a primary goal of the technology based GTM system. Airports have a number of objectives that need to be accomplished by their GTM systems. Some of these objectives can be simplified and made much more efficient by technology and some are only possible through the use of technology. In broad terms, technology based GTM systems are used to address:

1. **Vehicle movement.** Technology based GTM systems can eliminate some or all of the manpower needed to accomplish access control tasks to keep vehicles out of restricted areas and to sequence/dispatch ground transportation vehicles to limited spaces allocated at the curbside. Fee structures are used to provide an incentive for vehicles to leave the curbside quickly to increase the movement of passengers and promote efficient use of the curbside areas.
2. **Compliance with airport ground transportation regulations.** Automated systems simplify administrative tasks such as issuing permits and certifications, tracking the compliance with renewals for insurance and inspections, and tracking the issuance of citations. They also track vehicle operations on the roadway for adherence to airport requirements.
3. **Revenue generation and the collection of fees.** An almost unlimited number of activity based charges are possible with technology based GTM systems. Many airports have adopted charging structures to generate revenue as well as to provide incentives or penalties for ground transportation companies to operate in ways that benefit the entire airport operation. Fees can be aimed at encouraging the use of alternative fuel and HOVs or provide an incentive or penalty to reduce the number of vehicles operating at the same time from a single company. None of these types of fees would be possible without the aid of technology.

Types of GTM Systems

A somewhat arbitrary set of "types" has been created for this report to provide a simple way to compare and evaluate system options.

1. **Basic**—This approach is characterized by its "manual" orientation, with very little or no tracking of vehicle movement. Fees tend to be charged on a basis other than vehicle activity, such as flat annual fees sometimes using

self-reporting (honor system), or a basis that approximates the volume of business conducted by an operator (e.g., number of rooms in a hotel or percent of gross revenue). Compliance with airport rules and regulations is typically paper based with simple database tools (i.e., a spreadsheet or Microsoft Access) to manage the required company, vehicle, and driver information.

2. **Comprehensive**—Approximately 50 U.S. airports have implemented a technology based, special purpose, automated GTM system. While the airports that have implemented such a system tend to be among the larger airports, it is more accurate to say that these systems have been implemented where airports have significant challenges with traffic congestion, control of commercial vehicle activity, compliance with airport regulations, and/or recovery of costs and generation of non-airline revenues. These systems typically use some type of technology tracking vehicle movements and providing access control. They typically use a "relational database" to track account, vehicle, and driver information. This information is generally more extensive than seen in basic systems and in many cases includes integration with other systems such as accounting software, PRCS, and badging or security systems.
3. **Multi-Modal**—Although not numerous at this point, these systems are likely to become more common in the future. This type of system recognizes that the airport is likely part of a communitywide "multi-modal" transportation environment and the system design attempts to capture the benefits and efficiencies of a cooperative approach to solving transportation needs. This can result in a system that integrates airports with toll roads and public transit including bus, light rail, and commuter rail. The integration attempts to have a single or limited point of contact for ground transportation operators for administration of the entire system.

Tracking of Drivers and Vehicles

One of the primary purposes of implementing a technology based GTM system is the ability to track and control the movement of commercial vehicles and/or drivers. Early systems focused on vehicle tracking technologies, but more recent systems have incorporated tracking of drivers as a separate "entity." This capability has allowed airports to generate information on driver work hours and to assess and collect charges directly from the driver when necessary. It also enables airport staff to more easily manage fee collection when there are a large number of individual operators to oversee rather than a few larger companies. A number of systems are now in operation at airports that track both vehicles and drivers to meet the needs of the airport staff responsible for the management of commercial ground transportation services. When the decision is made to include "vehicle and/or driver" tracking as part of a GTM system, several technology options are available. The following discussion identifies the most widely used options.

Tracking Technology Options

Three primary technologies are currently available to monitor/control the movements of vehicles/drivers on or off airport property. Each can be an effective solution, but each has a set of attributes that requires some analysis to allow selection of the option that is best suited for an airport's needs. The following is an overview of each of the technologies.

Electronic Identification Credential

An electronic "credential" for tracking drivers and/or vehicles is well suited for the airport environment. In addition to tracking driver and/or vehicles, this capability can be expanded to perform access control functions and the generation of per-trip charges. It can also be used for enforcement of airport regulations (e.g., compliance with dwell time and headway limits through fees). This technology is well suited for this type of use from both a cost and functionality perspective.

Within this "electronic credential" category, several options have been used by airports over many years in GTM systems. These options include the following.

Bar code. This technology was the first to be used in GTM systems due to its very low cost and ease of deployment; however, its very short read distance and rapid deterioration in weather have limited its adoption for GTM systems.

Proximity cards. This technology found wide adoption in parking systems (primarily employee and tenant parking). While it has a longer read range than bar code technology and is more durable, it requires the vehicle to be stopped and the driver to accurately position the card next to the "reader." Its cost has been lower than RFID, but recent technology advancements in RFID have almost eliminated the cost differential.

Radio Frequency Identification. This technology (see sample sticker type RFID tag and "reader" unit in Figure 9-1) is characterized by accurate detection at longer range and greater speeds than bar code or proximity cards. It has been the choice of airports in more than 90% of the GTM systems installed to date. Based on the wide acceptance of this technology, the remainder of this chapter refers to RFID when evaluating GTM alternatives.

License Plate Recognition (LPR)

License Plate Recognition or "LPR" technology creates images of each vehicle that passes the camera and then inter-

Source: Transcore

Figure 9-1. An RFID tag and reader.

prets the alpha and numeric characters that make up the unique ID on the vehicle's license plate. This unique ID is then used in the GTM system to track the movement of the vehicle. This technology has been used in a large number of Parking Revenue Control Systems (PRCS) at airports and is likely to be used more extensively in GTM systems in the future. The accuracy of vehicle identification was less than expected (e.g., fewer than 90% of the "readable" license plates were accurately read or interpreted) in many of the early projects, but technology advancements have now made this an option that can be considered.

While LPR technology can serve as the basis for a GTM system, certain characteristics make it more viable for use as a supplemental technology for enforcement purposes by ensuring operators are in compliance with any required use of RFID or GPS tracking technologies.

Global Positioning System (GPS)

"Global Positioning" (GPS) technology is becoming widely available to track the movement and location of vehicles. It is based on the installation of a device (sample shown in Figure 9-2) in the vehicle that transmits a signal on a regular and frequent basis to a base station, generally available on the internet. The device is generally connected to the vehicle as a power source.

Figure 9-2. A GPS device.

GPS technology is now used by airport operators to track, generally in real-time, the movement of commercial vehicles. This technology is used primarily for tracking consolidated rental car, parking, and inter-terminal shuttle vehicles in order to manage headways, the number of vehicles in service, and for documenting the service provided (e.g., schedule adherence when the vehicle is operated by a third-party contractor). It is also well suited for tracking vehicles when they are not on airport property. It is generally less well suited for access control or dispatch needs.

A key element of this technology is the form of communications selected. The systems are generally configured to use satellite or cell phone (CDMA) communications. While either option can be used, the needs of an airport GTM system favor the relatively less expensive cell technology.

Technology Combinations

As airports have multiple objectives and requirements for the tracking of commercial ground transportation vehicles and drivers, they now have the ability to use multiple technologies in the system to take advantage of the benefits of each technology and eliminate or reduce the limitations of a particular technology. One example of this approach is the use of RFID technology as the primary source of tracking vehicles and providing a basis for the calculation of fees, but supplementing it with LPR technology to provide an automated enforcement function that will identify untagged vehicles that enter the facility using an open (i.e., un-gated) multi-lane roadway. Las Vegas McCarran International and San Francisco International Airports are implementing the use of GPS technology in addition to RFID to provide the ability to automate the determination of taxicabs that are eligible for short trip treatment.

Tracking Technology Comparison

More than 90% of the GTM systems implemented by airports have used RFID as the basic tracking technology. It is the best overall fit for the main system objectives at airports. The improvements in GPS and LPR technology are allowing their use for specialized and more limited purposes. GPS is particularly effective in tracking shuttle activity where constant location is needed. LPR is likely to be a more attractive choice for tracking very large groups of vehicles where installation of an RFID tag is difficult or too costly. An improvement in accuracy of reading the full license plate is the current limiting factor in a greater adoption of this technology. Table 9-1 provides a comparison of these three types of tracking technologies.

Movement of Drivers and Vehicles

The major benefit of a GTM system that includes driver/vehicle tracking is the ability to control the movement of drivers/vehicles while on the airport property in order to implement ground transportation program policies and practices. This capability can be used in a wide variety of ways to accomplish the efficient and secure flow of passengers as

Table 9-1. Tracking technologies comparison.

Attribute	RFID	LPR	GPS
Cost			
Credential (vehicle or driver)	Low	None	High. Recurring monthly cost
Detection Device (reader)	Medium	Medium-high	None
Infrastructure	Significant	Significant	None
Infrastructure Required	Structure required for either overhead or "sidefire" mounting of detection device at every location where detection is desired	Structure required for either overhead or "sidefire" mounting of detection device at every location where detection is desired	None
Access Control Function	Yes, easily accomplished	Can be done, but requires additional equipment	Not typically possible without significant cost
Detection Distance	Up to 18 feet	Greater distance than RFID	Not applicable
Detection Speed	Variable based on detection device, 0-70 mph in typical airport environment	High speeds possible	Not applicable
Accuracy	Typically 99% +	Accuracy is improving but is still a major concern. Factors include camera shutter speed, vehicle speed, sunlight, symbols on plate.	99% +
Tamper/Abuse	Enforcement required to confirm tag is present, tag is working, tag is on proper vehicle	Enforcement required to confirm license plate changes are reported and updated in the system	Enforcement required to determine GPS device is functioning. Difficult enforcement
Credential Form	Sticker, license plate, hard case	Not applicable	Not applicable
Power	Option to use battery assisted tags and tags without battery. Battery can greatly enhance the read distance but requires tag replacement	Not applicable	Device is driven by vehicle electrical system
Proprietary Protocol	A significant consideration if multiple airports or toll roads are present in a limited geographic area. Interoperability between systems is available, but significant planning is required	Not applicable	Not applicable
Unique Criteria	Fixed and mobile options for deployment	Fixed and mobile options for deployment. Accuracy is primary consideration	Communications choices. Limited capability to distinguish vehicles on upper vs. lower level roadway
Open Road vs. Gated Lanes	Both are available	Both are available, but additional equipment is needed to operate gate	Both are available but not suited to operating gate

they arrive and depart the airport. The following discussion is intended to provide an overview of the capabilities of the technology and to provide a basis for an airport to develop its own program and even create new uses for these technologies.

Automated Dispatch

When an airport operator needs to facilitate the flow of a large number of vehicles through a very limited space, vehicle/driver tracking technology is used to dispatch or sequence those vehicles in a first-in-first-out pattern. This function has been in operation at a number of airports for more than 20 years, so it is a reliable and practical option for airport consideration. Although this approach can be used for any type of vehicle, most of the current airport systems are used to control taxicabs. Other types of vehicles such as limousines and charter buses are also utilizing the automated dispatch function. The following is a discussion of the primary benefits of the automated dispatch function.

Reduced manpower. A number of airports no longer have staff stationed at the hold lot but allow the automated system to make the entry access decision and to perform the dispatch function (i.e., determine when vehicles are needed, how many, and the proper pickup location). All of these tasks are done through configurable business rules programmed into the system that provide the framework for the system to make the appropriate dispatch decisions. Other airports maintain staff at the curb and/or hold lots during peak periods, but are now able to reduce the manpower during off-peak times (e.g., nights, weekends).

Better use of manpower. An equally important manpower benefit is the ability to change the responsibilities of the staff to focus on customer service rather than on the movement of vehicles through the system. This change in focus results in major improvements in customer service functions including validating that the passenger's best choice is a taxicab, providing directions/information, and conducting passenger feedback programs.

Electronic queue. An automated dispatch system allows for the creation of an electronic queue of vehicles in the hold lot that is completely objective and accurate. Drivers feel confident that they will be treated fairly and will not lose their place in line. This has been demonstrated to lower the level of confrontation and stress for drivers and airport staff.

Reduced emissions. The use of technology allows the airport to operate the hold lot in a manner similar to a parking facility where the driver parks in a designated space and waits until they are dispatched to the terminal before they are required to move. There is no need to maintain a physical "line" where vehicles leave the engine running and move frequently as other vehicles leave the lot.

Faster throughput. Allowing the system to keep a target number of vehicles at each terminal curbside boarding area location will move more vehicles through the system in a specific time period. It also avoids the need to rely upon dispatchers to anticipate the need for vehicles while concurrently attempting to respond to the needs and questions of drivers or passenger. This capability also allows for balancing the wait time for taxicab drivers at low use terminal pickup locations. Vehicles/drivers can be "migrated" to another terminal location after a configurable wait time.

Complete trip documentation and history. A significant number of airports have reported that the detailed reporting of each dispatch trip, including violations of the dispatch rules, has been a valuable tool in resolving complaints and in providing the data needed to make improvements to the operation of the system and driver behavior.

Components. Typical automated dispatch functions need only a few additional components in order to operate.

Vehicle/driver detection device. This is typically one or more RFID readers, although GPS devices will find a role as the technology is improved and becomes more cost effective.

Driver notification. Several options exist for communicating important information to the driver such as the notice to move to a terminal curbside boarding area, the driver's place in the queue, status of the driver's account balance, or the need to replenish the balance. Most systems can be configured to allow transmission of configurable emergency or special purpose messages. It is very common for systems to utilize more than one of the following communication options:

- Variable message signs
- Video monitors
- Text to speech audio announcements
- Indicator lights
- Smartphones or computers

Mobile computer. Many automated systems include the use of an off-the-shelf mobile tablet or smartphone to manage the curbside activity. This device is used to view the status (valid or invalid)of vehicles at the curbside boarding area or enroute to the location, to summon additional vehicles, to request special vehicles in response to customer needs, and to authorize the migration of vehicles.

System adaptations. Using the basic automated dispatch functionality, airports have expanded and modified their systems to address specific physical, business rule, or local

ground transportation preferences. Listed below are of some of the options that have been implemented by airport operators, and the airports at which they have been implemented:

1. Company-based limits on the number of taxicabs parked in a hold lot—Nashville International Airport
2. Allow taxicabs to exit the hold lot and retain their queue position—Washington Dulles International Airport
3. Registers waiting limousines and dispatches the appropriate vehicle to proceed to the curbside boarding area in response to a customer request, limiting illegal or improper solicitation and the length of time a limousine is parked at the curbside—Boston Logan International Airport
4. Dispatch of specific taxicabs to individual terminals with the ability to automatically migrate them from terminal to terminal to avoid orphaned vehicles—Minneapolis-St. Paul International Airport
5. Separate taxicab dispatch queues for individual jurisdictions surrounding the airport.(e.g., District of Columbia/Maryland and Virginia)—Washington Reagan National Airport
6. Daily limitations or controls on the number of taxicabs, by company, that can serve the airport each day. The limit is established by airport staff with each taxicab company then selecting which of its vehicles can serve the airport that day—Denver International Airport
7. Pilot program for dispatch of rental car buses to the proper terminal building using GPS—Las Vegas McCarran International Airport
8. Tracking and reporting of passenger destination and number of passengers for each taxicab trip as a function in the dispatch program—Raleigh-Durham International Airport
9. Multiple dispatch criteria: first-in-first-out plus age of vehicle and level of training completed by the driver—Winnipeg International Airport.

Emerging technology: smartphone systems. The evolution of the smartphone from its early beginnings as an expensive gadget into a necessity for business and personal needs has now expanded into numerous areas related to airport ground transportation dispatch. The early efforts have been most visible in the taxicab and limousine industries, as described herein.

Ride-booking services. Many applications have been developed to enable passengers to hail or reserve a commercially licensed taxicab or limousine, or a peer-to-peer TNC vehicle through a smartphone. More information on TNCs is included in Chapter 8 Section C.

Airport smartphone dispatch. The almost universal ownership of some type of smartphone or mobile computer tablet by commercial vehicle drivers allows airport staff to design and implement systems that take advantage of this real-time communications tool. The technology is available to address the frequent "peak transportation needs" that may result in a shortage of taxicabs, limousines, or other on-demand commercial ground transportation service at an airport.

This technology allows the creation of a virtual hold lot of vehicles/drivers that are prepared to come to the airport to pick up airline passengers when needed. These could be drivers that normally come to the airport or drivers that are only authorized to come during "emergency" needs. The airport can send a message to a large or small group of drivers informing them that additional vehicles are needed. The system could include the ability for the driver to respond or just drive to the airport hold lot. The system might also include provisions for an "emergency" condition that instructs drivers to proceed directly to the curbside boarding area and bypass the hold lot.

At the time this guidebook was prepared, the technology to implement a smartphone dispatch system was available, however, this function was not yet in operation at any airport. The key challenge in implementing this functionality is in "packaging" the technology (i.e., the capability to transmit and receive standard messages to the devices sold by major manufacturers) with a set of business rules for operating the system, and finding a cost effective delivery method.

Access Control

Another key function of GTM systems where vehicle tracking and control is included is the ability to control vehicular access to restricted areas. These controls allow only authorized vehicles/drivers to enter restricted areas, which maintains security policies and aids in efficient vehicle flow. Using these controls airport staff can create and manage special purpose areas for one or more ground transportation services. RFID technology is the best suited for the integration of gates, lights, and signs into the GTM system due to its ability to send the commands that are needed to operate the devices. GPS and LPR based systems need additional peripheral devices in order to provide this function.

Occasional Use Vehicles

At many airports it is necessary to address companies that send vehicles and drivers to the airport on an infrequent basis. Increasingly airports are turning to technology to provide a more systemic approach to these occasional use vehicles. Websites and electronic communications are used to provide a place for infrequent users to find out how to work with the airport to deliver or pick up their passenger with as little uncertainty as possible to improve customer service. In addition to using websites for advance registration and processing, technology has made it cost effective to register all

occasional users (company and vehicles) in the airport GTM system and attach a credential to each vehicle or assign one credential to the company. This allows the company to access restricted loading/unloading areas, pay fees electronically, and be notified of changes in airport regulations, current construction activity, etc. Best practices for occasional use charter buses are described in Chapter 8 Section G.

Revenue Generation

The justification for imposing fees on ground transportation vehicles, and the multiple options that are being used to assess those fees, are discussed in Chapter 5 and elsewhere in this guidebook. This section summarizes the use of activity based fees and the technologies that are available for creating, invoicing, and collecting these fees.

Activity Based Fee Types

Calculating fees based on the volume of trips made on airport roadways, terminal curbsides, hold lots, and dedicated GTAs has been made possible through the use of technology to track all trips made by ground transportation vehicles. Several types of activity fees are in use as described below:

1. Fixed Fee—Assesses a fixed amount to a vehicle that is detected at a designated location on the roadway or curbside.
2. Dwell Fee—Assesses a time-based fee for a vehicle that is detected as it arrives and as it leaves the airport.
3. Trip Continuation—Commonly used to provide an incentive for the vehicle to "circle" the terminal area rather than remain at the curbside for an extended period. For example, detecting a vehicle exit from the terminal area, followed by an entry into the terminal area within a specified time is considered a continuation of the original trip and no additional trip charge is created.
4. Circuit Fee—Commonly used to discourage shared-ride van drivers from circling the terminal area multiple times in an attempt to increase the number of customers before they exit the airport. The fee is assessed when the set number of circuits is exceeded.
5. Headway Fee—A fee charged when a second vehicle operated by the same commercial ground transportation operator arrives at a curbside boarding area within a defined time interval or headway.
6. Violation Fees—A charge assessed for not complying with airport ground transportation regulations such as tampering with RFID or GPS device, solicitation, entry into unauthorized area, expired insurance or permit status, or failure to pay airport fees.
7. Pickup vs. Drop-Off Fees—One of the important choices to be made in implementing activity based fees is the decision to apply the fee to all trips or to charge for only pickup or for drop-off. This decision can be based on existing policy or more practical criteria such as a significant difficulty in collecting fees from vehicles if they are not required to register for dropping a passenger at a terminal. Depending on the roadway layout it can be difficult to differentiate between those two types of trips (i.e., if the airport has a one level roadway or no assignment of trip types to inner or outer lanes). A number of airports have implemented a trip fee that applies to both pickup and drop-off trips and adjusted the amount to equalize the total revenue generated. Accuracy of the RFID and GPS technologies can differentiate between the use of adjacent lanes in most cases, so if the airport can establish/enforce operating rules for each lane, a technology based system can impose the correct fee.

Trip Fee Processing

A technology based GTM system includes the capability to:

- Identify the vehicle/driver behavior that has been defined as creating an activity fee
- Create an invoice that is then sent to the appropriate firm/individual
- Record the collection of the fee
- Track past due charges.

In some cases the GTM system includes all of the accounting functionality that is needed to perform these four functions. More frequently the GTM system manages the creation of the charge and then transfers the charges to the airport enterprise accounting system to handle the charges just as any other airport charge. As more airports look to use electronic payment methods to reduce the risk and manpower required to accept cash and check payments, integration of the GTM system with online (internet) based payment options or the implementation of an automated cash payment device are becoming much more popular.

Mobile Devices

Recent technology advancements have created the ability for airports to have access to their GTM system "anytime-anywhere," not just in their office. This is an important capability due to the need to make decisions in near-real-time and the amount of time airport staff spend outside the office on the roadways, hold lots, and curbside. Having the information necessary to make the best decision on a mobile device is extremely valuable.

Nowhere is the value of the mobile device more valuable than in the various types of enforcement activities of the ground transportation staff in order to obtain compliance

with airport rules and regulations. The following is a discussion of the major enforcement functions that airports are accomplishing through the use of mobile technology as part of their GTM systems:

Curbside Enforcement

Airport staff need to verify that their GTM system rules and regulations for vehicle/driver tracking are being followed. The enforcement staff first visually verifies that an RFID tag, GPS device, or license plate is present on the vehicle or in the possession of the driver. A mobile device can then be used to determine that the device is working (not disabled) and display the vehicle/driver information to determine whether it is valid and assigned correctly.

Curbside Dispatch Operations

Automated dispatch functions benefit in a substantial way from the use of mobile devices to update system operations with real-time information. Devices are in use today that display valid and invalid vehicle status, request additional vehicles, migrate a vehicle to another terminal, and request special vehicles. There is also the option to pause automated dispatch operations from the mobile device.

Citations

Airport staff are using mobile devices to issue and document infractions by vehicles or drivers, allowing them to maintain a history on company or driver behavior.

Inspections

There is airport interest in the development of vehicle inspection software that can be used in the field to schedule, conduct, and record the results of required vehicle inspections.

Registration and Annual Certification

Typically the registration or permitting process for ground transportation vehicles includes some type of physical inspection by airport personnel in order to authorize a vehicle for use at the airport. Mobile devices are now able to allow staff to update the data in the GTM system while completing the physical process.

Unplanned Events

Outside of planned activities airport staff may be presented with an unlimited number of unique issues, problems, or questions while on the roadways or in meetings. GTM systems deployed as "Browser Based" can be used at any time or place where an internet connection is available. This allows the staff person to obtain information from the system on-the-spot and not have to "get that information when I return to my office" or contact another person to look up the information.

Administrative Related Technology Options

In addition to the technologies that are being used to manage the physical activities of drivers and vehicles, the administrative responsibilities for airport ground transportation staff is also being impacted and improved by technology tools. This next section looks at the technologies available, their uses, and benefits.

Website Technology

While airports have created public websites for a variety of public service, publicity, and passenger information purposes for many years, only recently has the power of websites been adopted by airport staff to assist in the management of commercial ground transportation services. While not an exhaustive list, the following is a representative example of the uses that can be found at airports today.

New Company Registration

While the process for getting the required approvals for a company to pick up passengers at the airport generally requires several steps (e.g., documentation, inspections, certification, background checks, and payment of fees), the first step of submitting an application is a perfect use of an airport's website to allow the electronic submittal of the initial request. The website can also provide detailed documentation of the steps required to submit an application, the airport operating rules, fee structures, staff contacts, and other information. By requiring an email address from the firm applying, future communication between the airport operator and applicant can be conducted electronically.

Account Maintenance

Allowing operators secure access to their GTM system account opens up the ability for the operators to assist in keeping the information in the account current. Drivers can update their information (e.g., addresses, phone numbers, insurance, vehicle information) and submit the information for approval by the airport before being updated in the GTM system. This reduces the data entry effort for airport staff and reduces the potential for data entry error.

Report Generation

Airport staff can allow ground transportation operators to generate specific reports for their vehicles/drivers (e.g., trip details and trip fees generated) through the website, eliminating the need for airport staff to provide large amounts of backup for invoices. It can also facilitate the transfer of information between the airport ground transportation staff and financial staff responsible for issuing and collecting fees, if these are paid electronically (see Fee Payment in the following paragraphs).

Document Transfer and Storage

A website is an ideal location for the electronic submission of documents from ground transportation operators (e.g., insurance certificates, permits, inspections). The airport can store documents, schedules, and instructions, and post relevant information that may be needed by the companies as they operate at the airport.

Vehicle Authorization

Website technology is being used to allow individual ground transportation operators to manage the "valid" vehicles from their fleet on a daily basis. If an airport limits the number of vehicles from a particular category that can operate at the airport each day (e.g., Company A has 50 taxicabs that operate at the airport but airport regulations allow only 30 of those vehicles to operate on any one day), the website allows each company to identify which of their vehicles are valid (up to the 30 vehicle limit) each day and make changes at any time necessary. Airport staff only needs to monitor the limits on a random schedule.

Fee Payment

Increasingly, airports are encouraging electronic payment of fees from ground transportation companies. Websites can be used to process these payments in a secure environment (PCI compliant), provide receipts, and update customer balances. A number of credit card "gateway" firms have developed systems that can be linked to the airport payment website to provide the maximum reliability and security for credit card payments.

Appointment Scheduling

Software applications are available that will automate the process for scheduling appointments for tasks such as vehicle inspections, annual permitting, and driver testing.

Business Intelligence

Business intelligence, also known as Big Data, Data Mining, or Data Warehousing, is near the top of the list of new technology efforts by companies all over the world. Particularly for consumer product companies, the manipulation of large amounts of data from a variety of sources can enhance the understanding of buyer behavior and turn that information into sales campaigns that increase product sales and identify needs for product improvement.

Airports are a perfect environment to take advantage of this concept. In the airport environment, a number of sources of data are available for study, analysis, and action to improve customer convenience and service. Sources of data that can be of particular value include: commercial vehicle activity, FIDS history, airline passenger information, parking activity, airline flight schedules, revenues from a variety of concessions activities, and attendance at community attractions, among others. The challenge is to identify the specific information that is needed to solve a problem or persuade others. This data manipulation and analysis technology can be applied to commercial ground transportation issues such as predicting the need for different types of ground transportation services or determining the time between flight arrivals and increased curbside activity. With the improvements in technology, it is very likely that almost any data airport staff believe they need to more fully understand and optimize the airport's ground transportation operations can be obtained.

Social Media

While an extensive discussion of the technology and potential use of the various new forms of social media is not the purpose of this handbook, it is worth noting that airport ground transportation staff should be familiar with this type of technology and its potential benefits. Ground transportation operations at airports operate nearly 24 hours per day, 7 days per week, and they involve relatively small groups of people. Both of these characteristics support the use of these new communication options.

Software such as Facebook, LinkedIn, and Instagram can be used to communicate with a specific audience, but simple, short, immediate communication software such as Twitter may be more useful for the management and operation of ground transportation programs at airports. Since 2011 Boston Logan International Airport has maintained a Twitter account under the name "@LoganTaxi." The Twitter feed is updated regularly throughout the day with the date, time, and number of taxicabs currently in the pool. Staff also use it to indicate when they are very busy and need additional cabs, when they are slow and have an excess of taxicabs, when double loading is occurring, and to provide information regarding late flights and their expected arrival times. The Twitter feed is open for anyone to see and allows drivers to make more informed decisions about when to go to the taxicab hold lot.

Private groups can also be established on Twitter, or similar software such as Yammer and Tumblr. These groups might include the ground transportation or other airport staff, a group of all limousine drivers, or any other subset of the airport's commercial ground transportation providers. Although the network can be used for any type of communication among members, it may have significant value during emergencies, special events, or peak activity levels. In addition to providing taxicab hold lot information, the real-time communication could be used to coordinate activities such as traffic control efforts during busy periods or moving vehicles through safety inspection processing. This technology could also be used to inform limousine drivers that passengers with a reservation have arrived at the passenger boarding area. This type of software represents a very low-cost tool for airport staff to use.

Additional information regarding the use of social media at airports can be found in *ACRP Synthesis 56: Understanding the Value of Social Media at Airports for Customer Engagement.*

GTM System Deployment

In addition to the evolution of technology on the operations side, technology is also advancing at a rapid rate for infrastructure components and deployment options that are available at a lower cost and provide greater functionality and reliability. Most technology based systems use some or all of the components listed herein. A short description of the more significant alternatives being adopted by businesses in general and studied and implemented by airports is included in this section.

Servers

GTM systems that were once deployed on dedicated physical servers can now be deployed on virtual servers. This reduces the cost of providing a dedicated physical server for each system and allows systems with very different requirements to be housed on a single server. Another approach that is being adopted by many business organizations is the creation of a hosted system. In a hosted system the owner purchases no server hardware, instead deploying the system on a server provided by a firm dedicated to providing secure and reliable servers in their facilities. This reduces the up-front cash requirement for the system and in general provides much more security and server performance than would be affordable for a single airport. The use of software that connects over the internet to an airport user makes this hosted deployment approach very attractive for airports of all sizes. While some airports and other types of businesses are still concerned about the total cost and security of this approach, it is becoming an increasingly popular alternative.

Network Communications

GTM systems generally require network communications from lane equipment to the central server location. The rapid expansion of wireless network products in the market has resulted in a number of GTM systems using wireless technology for the entire system or for locations where it may be difficult or costly to provide communications infrastructure. The use of wireless communications helps keep system implementation costs within the desired level and minimizes or avoids disruptive construction. Wireless communications for GTM systems is a proven and effective alternative for airport management to consider. There are a couple of areas where special care should be taken before selecting a wireless solution. Those are locations with vehicle gates and systems that have real-time operations such as automated dispatch and account balance tracking. In these locations, the potential for slow communications could cause system operation problems. This can be addressed by developing and executing a thorough test of these locations to be confident that a wireless option is an appropriate solution.

Software

The evolution in software has produced some new technologies that may provide options that were not available in the past for GTM systems at airports. These new software developments are described herein.

Software as a Service

One of the fastest growing options for software ownership is the ability to acquire the use of software packages on a subscription basis, typically called Software as a Service (SaaS). This option has become popular due to the economies of this approach. First, the software package is developed to be used simultaneously by several customers (multi-tenant). This makes much better use of the server, network, and other related equipment and creates significant economies of scale for supporting the software. These economies result in a lower overall price for each customer. In addition the software provider "sells" the software for a recurring fee (typically annual, quarterly, or monthly) that includes the cost of the license, support, training, updates to fix any problems, and upgrades to the new versions of the software.

This approach can bring highly sophisticated and costly software within the budget of smaller organizations, and it simplifies the ownership responsibilities to a single payment for all services. This type of ownership for software is available to airports in an increasing number of software products, including ground transportation. Careful investigation of all types of deployment and payment for software is needed to ensure the approach that best meets the needs of airport management and staff is selected.

Apps

Software applications designed specifically for mobile devices such as smartphones, tablets, and special purpose devices are frequently referred to as an "app." Thousands of these products are developed and offered for sale each year. Many are very specialized and perform a single purpose while others are highly complex. Due to the large volume of apps being developed, it is impossible to keep track of these new tools as they are released. The key for finding and taking advantage of these apps is to start with a clear problem or need that you believe is worth some effort to solve and research the topic online to see what is available. Airport staff should also talk to their peers about software solutions that are used at other airports. These apps will likely not be intended for use by airport staff, but they may be a close match. Examples of this type of software are described in the Social Media section of this chapter.

Reliability

All airports have significant concerns regarding the impacts of a system failure or down-time of a technology based system. These are legitimate concerns that need to be addressed when purchasing a system as well as when constructing the maintenance approach. The technology components of a GTM system are constantly improved to eliminate or minimize failures and have become almost entirely "modular" so that components can be easily and quickly replaced. While no system is error free, several layers of redundancy are available in the lane equipment, servers, communications, and network infrastructure to protect data and revenue and maintain vehicle movements. The following are key approaches to keeping your system in operation:

1. Data buffering—Data captured in the "field" (specifically vehicle movements captured by RFID reads) can be retained in the device until the data has been saved to the database, even if that takes days to accomplish.
2. Local intelligence—Components can be added to GTM systems to allow continued operation of gates during loss of communications with the host server.
3. High availability/clustered servers—Redundancy can be incorporated into the server infrastructure that seamlessly replaces a server that has failed with a replacement server.
4. Redundant power—Local devices in the lane keep devices operating for relatively short periods of time (30 minutes) in the event of a loss of power to equipment.
5. Monitoring software—GTM and server monitoring software is now an important part of any GTM system. This type of software will automatically notify the appropriate maintenance staff of system health and operating status to allow immediate repair of system components.

Integration of Systems

A technique frequently used by airports is combining the operation of two or more software/hardware systems (integration) to expand the functions that can be provided and appear as a single system to the user. The underlying technologies used to create many systems have advanced to facilitate this type of approach. The concept is to take "best in class" technologies in two or more categories and add the ability to work together rather than accept a less functional single system that compromises some of the capabilities needed. While not always the best choice, this approach can be very effective. Options for integration are only limited by the needs of the airport staff.

Examples of Integrated Systems

Some examples of integration that has been done to expand the functionality of GTM systems include:

- **Accounting software**—An existing accounting software package can be integrated into a GTM system to include the creation, distribution, and collection of ground transportation fees.
- **Electronic payment**—Integration with online websites is used to provide the capability to accept forms of payment other than cash or check. A similar integration approach can be used to add a payment kiosk (similar to an ATM or pay-on-foot station) to a GTM system.
- **Toll road system**—In a number of metropolitan areas a toll road system has been implemented to improve and pay for expansion of the roadway systems for the community. Most of these systems include an RFID based payment option that allows the user to charge tolls to their account and pay the fees by an electronic transaction (e.g., E-ZPass, FasTrak, SunPass). Where this option is used extensively by ground transportation vehicles, the airport can develop an agreement with the toll authority to allow airport fees to be charged to the toll account and paid to the airport by the toll authority. This simplifies the payment process and reduces the credit risk.
- **Badge systems**—Where airports desire to create an identification badge with a picture for ground transportation drivers, an existing badge system can be integrated with the GTM system to create and update the pictures using a single database of driver data.
- **Citations**—Stand-alone systems are available to automate the process of issuing citations for infractions that are committed by GT drivers. An integration effort can minimize data entry efforts and add the citation information to the data stored and used in the GTM system.

Stand-Alone vs. Parking Revenue Control System Integrated GTM

The benefits of an integrated PRCS system that includes a GTM system are the elimination of the need for a separate acquisition process for two systems (a single vendor handles the implementation process) and the potential for integration between the two systems. Airport staff interested in issuing an RFP or RFB for a PRCS that includes a GTM system need to prepare their solicitation carefully and should do the following:

1. Identify specific integration requirements. This will result in both types of vendors providing systems that meet the functional requirements.
2. Require submissions to separate the costs of the PRC and GTM systems and their implementation costs.
3. Use the information gathered in pre-solicitation system research to provide a very specific list of functional requirements so that the system selected will provide the benefits desired from the system.
4. Consider the option to award the PRC and GTM systems separately. This approach would allow the airport to select the best individual systems. It does require the vendors to "partner" on the project, but these partnerships are a normal practice in the industry.

Airports that use this approach will receive bids/proposals from PRC vendors that have an integrated GTM solution and from PRC vendors that partner with a GTM vendor to provide a complete system. There are very few firms that offer technology based GTM systems (stand-alone or integrated with PRCS) and have an existing airport system in operation. This is primarily due to the very small number of systems purchased each year. This makes the comparison of alternative systems prior to the selection process a reasonable approach in order to make sure that the solicitation process is focused on the considerations that matter most to the airport.

Table 9-2 provides a more detailed comparison of the two options.

GTM System Costs

One of the first questions that airports have when considering the purchase and implementation of a GTM system is its cost. The cost of purchasing and implementing a GTM system will vary from airport to airport. This section discusses what

Table 9-2. Comparison of stand-alone and PRC integrated GTM systems.

Consideration	Stand-Alone	PRC Integrated	Other Information
Deployment	Generally deployed on dedicated servers or co-located on existing servers using virtual technology	PRC system generally deployed on dedicated servers and segregated from other systems to provide security required for credit card processing (PCI compliance)	Segregation of GTM with PRC system may present network connection issues between the GTM system and other airport systems such as accounting.
Integration	Limited or no integration with PRCS	Integration with PRCS included	Amount and type of integration may vary between vendors
Functionality	Due to the maturity of the stand-alone system, they generally have more functionality options	Generally will provide the basic functionality	Desired functionality is an important consideration for selection of the best system for the airport
Maintenance	Maintenance options for hardware need to be arranged. Software support provided by vendor.	Hardware and software generally provided as part of the PRC contract	A great deal of variation between airports on how they prefer to provide for maintenance. A significant number of airports use internal maintenance staff
Replacement	Decision based solely on GTM system factors	PRC and GTM are a combined system so a replacement of one requires replacement of the other	Timing of the need for replacement and the desire to keep one of the systems make the replacement a complex decision.
Cost	Airports generally require a fixed price for a complete system implementation.	Airports generally require a fixed price for a complete system implementation that includes both systems	Difficult to compare the cost of alternatives during the RFP process

drives the overall cost and provides very simplistic budgetary estimates using some basic assumptions.

Major Cost Drivers

Functionality. The functions desired by airport staff is the first element of cost. System functions such as automated dispatch, accounting interface, electronic payment (PCI compliance), external use of the system by ground transportation companies, and special or unique functions such as a driver permit process can all be provided, but each function adds to the total cost.

Reader locations. One of the key cost drivers is the number of RFID reader locations and the number of lanes of traffic that will be monitored. This decision significantly impacts the total amount of equipment as well as the installation cost. The number of reader locations is dictated by the charge structure desired by airport management. Dwell charges and circulation charges require a larger number of detection points on the airport.

Number of drivers/vehicles. Assuming every vehicle will need an RFID tag installed, the size of the fleet will determine the number of tags needed when the system is installed and the ongoing inventory of replacement and new tags needed.

Installation. Installation costs are very airport specific, and can be one of the largest costs if the system requires a number of reader locations. The cost of installation includes some type of mounting structure. An overhead sign is an ideal location, but the side of a bridge or building is also an option. If there is no existing structure that can be used, the system cost will need to include a pole or an overhead support.

Servers. The server infrastructure is developed by the airport IT organization based on internal standards and practices, so the costs will be dictated by the design approved by the airport staff. Many systems have been installed using dedicated servers and this is still a common option. However, as discussed previously in this section, virtual server environments are growing rapidly in popularity. A virtual server is significantly less expensive to implement and provides more flexibility in the future.

Software. The software cost of a GTM system is heavily dependent on the functionality required by the airport. However, unless the airport needs highly customized functions, the cost of the software will not be a major cost driver.

Implementation. As with most enterprise level systems that are required to be operating on a 24/7 basis, the cost of implementation is an important element that can be significant. Implementation cost includes:

- System Design
- Installation of Software
- Configuration of Software
- Testing
- Training
- Documentation
- Project Management/Travel.

Warranty and maintenance. While generally not a significant element in the total cost of a GTM system, its value is worth discussion. A wide range of costs and responsibilities can be included in any contract, but in general most agreements include warranties or maintenance support for:

- Repair of system hardware and software problems, including after-hours support
- Updates/upgrades of system components
- Preventive maintenance on the hardware and software to ensure accuracy and reliability
- Cost of ongoing software license to grant the airport ownership of any new versions
- Configuration changes
- Response to questions on system operation

Cost Estimates

Table 9-3 provides an indication of the approximate costs for three sizes of GTM systems. The assumptions used for each system include the following:

Small GTM System

- A single reader location with two lanes of traffic to be monitored
- No existing structure to mount the RFID antennas, so a pole structure is provided
- 250 vehicles to be tracked with RFID tags
- A single, small, dedicated physical server installed in the airport server room

Table 9-3. Approximate GTM system costs.

Cost Element	Small	Medium	Large
Lane Equipment	$ 23,000	$130,000	$ 930,000
Installation	$ 20,000	$160,000	$ 200,000
Server Equipment	$ 7,000	$ 50,000	$ 80,000
Software	$ 66,000	$180,000	$ 400,000
Implementation	$ 19,000	$ 80,000	$ 235,000
Total System Cost	$135,000	$600,000	$1,845,000

- Basic GTM system functionality
- No cost included to bring power and communications to the reader location

Medium GTM System
- Four reader locations with a pole structure provided for each
- 1,000 vehicles to be tracked with RFID tags
- Dedicated server configuration with large capacity for data storage, duplicate components for reliability, and additional equipment for security and failover
- Basic GTM software functionality including a stand-alone accounting package
- No cost included to bring power and communications to the reader location

Large GTM System
- Twelve reader locations with a structure provided for five locations and use of existing structure for seven locations
- 3,000 vehicles to be tracked with RFID tags
- Dedicated server configuration with multiple physical servers, large capacity for data storage, "cluster" configuration for seamless real-time failover, duplicate components for reliability, and additional equipment for security and failover
- Basic GTM software functionality including a standalone accounting package, automated dispatch, external vendor (customer) website, and some customization of functions to meet airport requirements
- No cost included to bring power and communications to the reader location

Total cost of any of these systems can be reduced through the use of one or more of these alternatives:

- Virtual server configuration to eliminate the cost of a physical server
- Using wireless communications at the reader locations to avoid the need to bring communications lines to each
- Using a phased approach for implementing the system. This can be a delay in creating all of the desired reader locations or waiting to implement some of the functionality desired. A significant amount of information is available after several months of GTM system operation that frequently changes the airport's priority for the additional components. This phased deployment may uncover a different approach or issue that changes the airport staff's requirements from the original plan.

Procurement

GTM systems are normally obtained through the use of an RFP or RFB to purchase a complete (turnkey) system. There are several groups within the airport that need to be involved if the document is prepared in-house, including Ground Transportation/Landside, Information Technology (IT), Finance, and in some cases Operations and Construction, under guidance of the Procurement or Legal departments. In many cases the IT group may "own" the system with ground transportation staff seen as the user or customer. Regardless of the structure, it is important to let the ground transportation group establish the basic requirements, with input and recommendations from IT, Finance, and others as appropriate. A system cannot be successful if it is not used, or if it is not used in the way it was designed, so significant user input is an absolute necessity.

Another key component of a successful procurement process if the airport plans to issue an RFP is to focus on the specific requirements of the system (functionality) rather than the details of how the system should operate. Airport staff should allow the proposers to use their expertise to propose a system that utilizes their best and most cost effective components.

Special consideration is typically needed to address the IT issues regarding security, reliability, network access, and equipment preference. The desired solution will need to address these issues, so IT input in the RFP/RFB is critical to vendor compliance on those items. Another area of importance is the financial functions of the system. It is common for several options to be available, as the GTM system can generate the charges to be imposed, facilitate creation and distribution of customer invoices, collect payments, track outstanding balances, and ensure collection of all charges. Use of the airport "enterprise" accounting system is common. This will require some type of data transfer to the accounting system. The requirements for this function will be driven by the Finance/Accounting group and will need to address the data integrity of the enterprise software. Some systems are very restricted, so this function will take a cooperative effort between airport staff and the vendor to resolve. Both of these items should be addressed in the RFP/B so that vendors can propose their best solution and the airport can use their response in the evaluation process.

In addition to the enterprise accounting system, new alternatives have been selected that provide additional flexibility and potentially a less costly and quicker approach.

- Hosted Systems. It is common practice in many industries to outsource the IT equipment and operation functions to third-party firms that specialize in providing these services. Typically the services are superior to what many airports can afford to provide internally. Physical security of the facility, multiple data centers for reliability, fire suppression, data security, backup, and storage of data are all functions that can be more cost efficient due to the economies of scale provided by these specialty firms. This option is being researched and adopted by a growing number of airports.
- SaaS. A large number of firms in other industries are opting to obtain software through a recurring fee. This

"Software as a Service" approach is generally based on multiple customers using the same software, with unique databases for each customer. In addition to these economies of scale, the payment arrangement is typically a monthly or quarterly payment that makes sophisticated and expensive software affordable to much smaller enterprises than a typical one-time purchase. The SaaS approach is almost always deployed on a hosted server environment. While many firms have been concerned with paying more for the software over time, many firms, including airports, are beginning to focus on the "life cycle cost" approach to analyzing the best ownership approach. When all of the costs of ownership are included the SaaS approach is generally very competitive.

- Flexible Contracting. A number of airports are beginning to look at changes that have been made by state, city, and internal purchasing department regulations that allow the use of competitive procurements by one organization to be used by another organization. For example, the State of Florida allows a governmental organization (Organization A) to use a contract issued by Organization B to meet the competitive solicitation requirements and purchase the same products/services using the contract issued by Organization A. This assumes that Organization B and the vendor are both willing to meet the terms of the contract. In various forms, this approach has been used to purchase a GTM system without the need for developing an RFP and conducting a competitive RFP/RFB process.

CHAPTER 10

Selling and Implementing the Solution

This chapter describes the best strategies for selling the selected best practices to those who must approve or support their implementation and the subsequent implementation of these best practices.

Commercial ground transportation decisions often affect a large number of users, from the traveling public to the commercial ground transportation drivers and owners. While the airport staff who oversee the day-to-day operations of ground transportation at the airport may be responsible for identifying problems and developing plans to improve these services, the implementation of many best practices requires changes that must be approved by those higher in the administrative hierarchy of the airport. Therefore, it is important for airport staff to develop a strategy for selling and implementing the solution to any concerns they identify. Four key stakeholders that should be considered in this process are senior airport management, the commercial ground transportation providers and drivers, the traveling public, and elected officials or airport boards/commissions.

Convincing Senior Airport Management

Senior airport management are typically less involved with the day-to-day management of commercial ground transportation and more concerned with the policies, plans, and strategies of the airport's ground transportation plan. Thus, airport staff must demonstrate how their proposals will improve upon the airport's current ground transportation services, affect overall airport operations (if at all), and address the financial implications of these recommended changes.

Documenting the Problem or Need for Improvement

While a problem and its causes may be evident to airport staff (e.g., if there have been a large volume of customer complaints regarding the wait times for taxicabs), this problem may not be evident to a person who is not involved in commercial ground transportation on a day-to-day basis. To clearly understand the extent of the issue, detailed information on the problem must be gathered and documented.

For example, with long passenger wait times for taxicab service, one might start with collecting data on how often and why this is happening by interviewing ground transportation operations and management staff, reviewing customer complaint data, auditing the provider's trip records, and/or using airport staff or mystery/secret shoppers to witness or use the ground transportation service and record their findings. Such techniques will assist in determining the time(s) of day when the excess wait times are occurring and possible factors contributing to this problem. This process could include depicting how taxicabs are called up from the hold lot, gathering travel times between the hold lot and the terminal boarding area, and evaluating the passenger loading procedures. Are there variations in time with different taxicab dispatchers or starters? If so, why?

With this documentation and data, airport staff can gain a better understanding of the problem and develop recommendations that address the issue at hand.

Analyzing the Data

Once data regarding the problem have been gathered, airport staff must analyze it, determine the key factor(s) contributing to the problem, develop and evaluate potential solutions, and recommend a preferred solution based on these findings.

For example, following the documentation suggested for taxicab passenger wait times, the problem could be isolated as a traffic congestion problem delaying taxicabs traveling from the hold lot, inadequate response time for taxicabs coming from the hold area, too few taxicabs, poor passenger loading procedures, and/or insufficient or ineffective starters. Approaching a recommendation this way demonstrates that

all possible causes of the problem have been considered prior to developing a recommended solution.

Developing the Recommendation

Some changes (e.g., minor changes to operational procedures) can be implemented by staff and do not require the approval of senior management. Other changes—particularly those involving capital improvements or major changes to existing operational procedures—require the approval of senior management. The process for obtaining management approval varies at each airport and may differ depending on the airport's size and management structure, the cost of the recommendation, and the extent of the required operational changes. When recommendations to senior management are required, they should be in the form of a written document containing a brief memorandum conveying the substance of the recommendation and the underlying problem, a one-page executive summary of the report documenting the recommendation, and information regarding any financial implications. Accompanying this document should be the supporting material, including key data and the analysis methodology. Depending on the preferences of senior management, a PowerPoint style presentation may supplement the report. This document should be prepared such that senior management can share it with the airport board/commission with few, if any, modifications. Thus the text should avoid the use of technical terms or acronyms and, if possible, include supporting graphics or charts.

Working with the Providers and Drivers

A common question among airport ground transportation managers is when and how to involve providers and drivers in solving a problem or implementing a new process or procedure. If the problem or suggested improvement comes from either the provider's management or the drivers themselves, then they are already involved in the process and should continue to be involved. For many issues such as the inability of passengers to find a provider's loading areas, this is the best process.

It is best to work with provider management through meetings where notes are taken and circulated to others who may not have been able to attend the meetings. In most cases, with the major exception being taxicabs at airports with an open access system, these providers will communicate any changes in process or procedures to their drivers once they have been implemented by the airport.

At airport with an open access system, working with drivers typically refers to taxicab or shared-ride van drivers due to the independent contractor nature of these industries. Often there is an association of taxicab drivers that should be addressed and kept informed on a regular basis. Regular monthly or quarterly meetings with taxicab association leadership, if one exists, and/or quarterly meetings in which all taxicab drivers are invited are standard communication tools for feedback from the drivers regarding any issues with the proposed changes. At airports with a concession contract with one or more taxicab or shared-ride van company, the meetings are normally held with the concessionaire's representatives or on-site general manager, and normally not with the drivers.

Whether coordinating with provider management or drivers, any changes in procedures or operating rules must be in writing and posted where all drivers can and should see them. Additionally, a document covering airport facilities, rules, and operating procedures, their use by drivers, and any incentives and penalties for drivers needs to be kept up to date, and republished whenever a significant number of changes are being made or have been made.

Working with Elected Officials and Airport Boards/Commissions

Elected officials and board/commission members setting and adopting policies for airports are used to having to make difficult decisions with broad impacts on a large number of people. Commercial ground transportation is no exception. As the policy makers are trying to balance the goals of convenience, safety, and dependability for the customers, they must also be mindful of the time, effort, and resource allocation issues impacting airport management and staff. They must also take into account concerns, suggestions, and ideas from the general public.

Decision makers may sometimes see an initiative, program, or action adopted by another jurisdiction, and want to adopt it for their own. However, these programs and policies are not always replicable, for political or other reasons. For instance, one jurisdiction may adopt programs that specifically allow targeting of small, minority, and women-owned businesses, but a different jurisdiction may be prohibited from doing so.

It is important to understand the values, goals, and political contexts in which the decision makers operate. Most intelligent decision makers want to know the pros and cons of an issue, whether they agree with the perspectives or not. Having more information allows the decision maker to make better decisions and he or she will typically appreciate the information, even if it differs from what he or she might think. Legislators and elected officials do not like to be surprised and want to show they have done their due diligence; considered all relevant, available information; and appropriately weighed competing concerns. Best practice is to always provide them with the most timely, accurate, and relevant information available—preferably in advance of a public meeting or workshop.

Airport staff must also understand the goals and opinions of stakeholders, including industry groups, unions, community members (representing themselves or represented by neighborhood and community groups), local businesses, chambers of commerce, regional groups, and ethnic chambers. Maintaining good relationships with these stakeholders on an ongoing basis enables staff to provide the most comprehensive information and to prepare and support decision makers in community, board, and commission meetings. Staff can utilize focus groups, surveys, and social media tools to help obtain information on opinions and suggestions regarding any proposed changes. Airport staff responsible for community relations and public relations may be able to offer helpful suggestions in this area.

Ground transportation staff must work closely with government affairs staff who monitor legislation at the state and federal level. State and federal elected officials may be able to adopt legislation (e.g., regulation of TNCs, enforcement of improper solicitation, use of alternative fuel vehicles) that will help local airport operators achieve their goals and take advantage of available grants, funding, and other financial resources.

Ultimately, the decision makers must balance a wide variety of interests to achieve innovation and efficiency that provides the most benefit for all who are involved.

Working with Local and State Regulatory Agencies

Airport staff should work closely with their local agencies. The airport is often the largest single generator of commercial ground transportation trips in the region; therefore, an airport official is typically included as a representative on the commission or governing board of the local regulatory agency. If this is not possible then, at a minimum, airport staff should work closely with the board or commissioners to inform and educate them on airport ground transportation rules, regulations, and permitting processes.

As stated earlier in this guidebook, state or local agencies typically establish the procedures whereby a transportation company can obtain operating authority. Once a company has obtained this authority, there is every expectation of serving customers going to and from the airport. The airport, however, is the agency that must establish how and under what conditions and fees these operators may conduct business or work at the airport. Airport passenger safety, traffic flows, service quality, and recovery of facility costs, among other concerns, are typically not part of a local regulator's charter and must be addressed by the airport operator.

At the state level, airport staff need to stay well-informed of any changes in the law or regulatory hearing which may affect airport operating rules and regulations. The legislative staff of the airport should have an ongoing working relationship with state legislators and state agencies such as a Public Service Commission, should one exist.

Working with the Traveling Public

One of the most important aspects of dealing with the traveling public is providing information regarding commercial ground transportation options and where to find them on the airport. Many users of the airport's commercial ground transportation system(s) are not familiar with the local region, the available surface transportation options serving their destination, the costs of these options, or where to board these transportation services. Therefore, signage and information are important for both the customers and the providers of these services. This ground transportation information and signage should avoid using local terminology unfamiliar to visitors (e.g., airporters or trams). If the airport serves international flights, it may be beneficial to offer ground transportation information in multiple languages in the international arrivals hall. The use of customer surveys, customer focus groups, in-vehicle customer comment cards, and a review of questions asked at the information counter of the airport can provide important feedback for airport staff regarding what additional signage and information the traveling public needs in order to make connections with their ground transportation service providers.

Smartphone technologies are increasingly being used to disseminate information. Airport ground transportation staff should work with IT professionals to integrate the information provided by ground transportation providers with that of their own airport website or smartphone app. At a minimum, the airport website (and app if one has been developed) should provide links to the various ground transportation operators. An airport app might additionally contain information regarding destinations served, standard fares, typical travel times, departure schedules, and even past user comments regarding commercial ground transportation services.

Implementing the Solution

The appropriate implementation process depends on what best practices the airport is implementing. Different implementation processes are used to revise rules and regulations, modify commercial ground transportation fees, improve facilities used for passenger pickup/drop-off areas or vehicle staging, or deploy new technologies.

Obtaining Budget Approval

Implementing a solution can require the expenditure of airport operating funds (e.g., to hire new staff or contractual

services) and/or capital funds (e.g., to purchase new equipment or to construct new or improved facilities). Understanding the operating and capital budgets processes is important to improve the chances of approval.

Operating budgets are developed and approved annually for each airport department or business unit, which could affect personnel, contractual services, and/or other expense line items for the department. If new staff are needed, there is often a need to coordinate with the human resources (HR) department to develop job descriptions, refine the organization chart, and hire the staff. Capital budgets are also approved annually and tend to be part of a 5-year capital improvement program. For some airports, the airline agreement may require approval of capital improvements by the signatory airlines. In these cases there is often a need to demonstrate operational or capital savings over time and the associated impact on airline rates and charges. Depending on the size and complexity of the airport and the nature of the proposed solution, it may be necessary to coordinate with the airport HR, legal, finance, properties, planning, engineering, information technology (IT), and construction departments.

Airport management must evaluate and prioritize requests for operating and capital improvement budgets considering the impacts upon passenger health/safety/security; customer service levels; revenue generation; operational savings; ability to maintain and preserve existing assets and infrastructure; government mandates; and, other factors. Thus when seeking funding approval, it is helpful to demonstrate how the proposed best practice or solution achieves these goals using information contained in this guidebook or prepared while planning and selling the solution.

Revising Rules and Regulations

First drafts of new or revised rules and regulations can be written using, as a starting point, similar regulations prepared by other airports or other airport departments. Typically the drafts must be reviewed and approved by airport legal staff and by airport executive management. The regulations may also need to be reviewed and approved by the airport board or by city council depending on the airport's organizational structure/sponsorship and the nature of the new or revised regulation. The rules of the airport sponsor and the new or revised regulation may also trigger the need for a public meeting or hearing to review the proposed change(s) prior to their being brought before the airport board or city council, again depending on the airport's sponsorship and the nature of the new or revised regulation. Airport legal staff are typically the best source to outline the specifics of the approval process. If the new regulations are expected to be controversial, guidance can be obtained from senior management or community relations staff.

Modifying Commercial Ground Transportation Permits or Fees

The steps required to implement new commercial vehicle permits or fees will vary based upon the powers granted to the airport director, the type and cost of the permit, the type and amount of the proposed fees, and whether the permits or fees are new or are modifications to existing fees.

The required steps typically include the following:

- **Review the permit process and fees charged at other airports.** These airports include those considered peer airports in terms of size, geographical location, or customer market.
- **Determine any needed changes/improvements to airport facilities.** These may include installation of an AVI system or other technology to monitor commercial vehicle trips or other changes. (This step may not be required if staff are proposing changes to existing fees.)
- **Determine the amount of the proposed fees.** For example, staff can calculate the per-trip fee required to fully recover the airport's costs of providing and maintaining the facilities used directly by the commercial vehicle operators, or the amount of privilege fee (e.g., percent of gross revenues) that represents the benefits an off-airport rental car or off-airport parking business receives from the presence of the entire airport.
- **Prepare proposed changes to airport regulations or rules.** With the assistance of airport legal staff, prepare draft changes to airport regulations or rules to support the implementation of changes to the permit process or fees.
- **Consider the implications to airport revenues.** Consider the airport's ability to maintain, preserve, and enhance airport revenues in order for it to remain financially self-sufficient as required by the FAA and its bond holders. After reviewing the implications, it may be appropriate to revise the fees or the implementation schedule due to its estimated impact on the airport's condition.
- **Consider the implications to commercial ground transportation businesses.** Review the operators' ability to pass the fees on to their customers or absorb them in their costs of doing business (which may be a function of airport or city regulations), and compare the amount of the proposed airport fees in relation to the total costs the business charges their customer (e.g., the cost of renting a car, a hotel room rate, or daily parking fee). Ensure competitive companies are charged equivalent fees (e.g., all limousine or charter bus/van operators pay equivalent fees). If the fees represent a significant increase, consider introducing them in a phased manner to allow the commercial businesses an opportunity to gradually adjust their business model. After reviewing the implications, it may be appropriate to revise the fees or the implementation schedule in consideration of

the need for such businesses to be given an opportunity to make a reasonable profit.
- **Review the proposed permit process changes and fees with representatives of the commercial ground transportation business.** After receiving their input, it may be appropriate to revise the fees or the implementation schedule to reflect constructive suggestions offered. If new or increased taxicab fees are proposed at an airport having an open system, it may be appropriate to review the proposed fees with representatives of the taxicab drivers as well as with representatives of the companies. If shared-ride vans operate under an open business relationship, it may be appropriate to conduct similar review with the van drivers.

In some communities, meetings with commercial ground transportation business owners and drivers to discuss new fees (or changes in regulations) can be contentious and require careful preparation. It is helpful to anticipate the likely questions and comments from those affected by the new fees, prepare potential responses in advance, and conduct the meeting in a professional and respectful manner.

- **Develop recommended changes to airport fees and/or regulations or rules.** With the assistance of airport legal staff, prepare recommended changes to airport fees and/or regulations or rules to support the implementation of the changes to the permit process or fees. These changes may ultimately be presented to airport management or board members for approval, depending on each individual airport's requirements.
- **Present the proposed fees to airport senior management and the airport board or city council as necessary.** Prepare supporting documentation to succinctly describe the fees and permit changes (if any), the implications to airport operations and revenues, the feedback received from the commercial ground transportation businesses, and examples of the permit process and fees charged at peer airports. If the presentation is to be made at a public meeting, it is advisable to review a draft proposal with management and board representatives beforehand.

Improving Commercial Ground Transportation Facilities

The steps required to improve or modify existing airport facilities to better accommodate commercial ground transportation customers and the business serving them will vary depending on the scale and type of improvement. Minor improvements such as sign fabrication, pavement and curb markings, and minor roadway modifications may be performed by airport maintenance staff. Larger improvements such as construction of curbside areas or commercial vehicle hold lots/staging areas may require retaining an architect or engineer and a contractor. Some airports retain one or more architects, engineers, and contractors on an on-call basis who are available to provide the required services and in order to simplify the selection process and maintain continuity.

Airport planning and engineering staff can assist and may lead the procurement of an architect/engineer (A/E) and contractor and assist with the choice of a traditional design and construction process versus awarding a design-build contract. ACRP Report 42 (Sustainable Airport Construction Practices) and Report 116 (Guidebook for Successfully Assessing and Managing Risks for Airport Capital and Maintenance Projects) and other publications contain relevant information. If a traditional process is to be used and the A/E and construction contractor are to be selected through separate competitive awards, the required steps typically include the following:

- **Develop a problem statement.** This explains why the airport wishes to implement the improvement project, summarizes the airport's goals, and describes the project's desired outcome (e.g., a longer curbside to accommodate ten taxicabs and a starter). The problem statement may include an outline of the tasks to be performed and desired schedule.
- **Develop RFP for A/E.** This is a formal process requesting the A/E to indicate their understanding of the project, their approach to conducting the work, the qualifications of the individuals who will perform the work, and the experience of the prime and any sub-consultants. Typically the problem statement is incorporated into the RFP. Most RFPs also state the airport's contract and liability/insurance provisions and certain legal requirements. As this process is frequently used by airport planning and engineering staff, they can provide valuable guidance and prior examples.
- **Issue RFP, review proposals, select and award contract.** Upon receipt of the proposals, airport staff select the A/E and award a contract. Airport planning and engineering staff or the procurement department can provide guidance on the evaluation and selection process and those responsible for performing these tasks.
- **Monitor work of A/E.** After award of a contract and issuance of a notice-to-proceed, A/Es are typically required to submit preliminary, draft, and final documents for airport staff's review. For design and construction specification documents, these submissions typically occur when the designs are 10%, 30%, 60%, and 90% complete prior to the final submission. Often airport staff request that these submissions be accompanied by an estimate of probable cost to ensure that the improvement project remains within the original budget. Upon acceptance of the final construction documents, the airport advertises and requests bids from

qualified contractors. The A/E may provide assistance in reviewing the resulting bids and confirming that the low bidder is qualified to perform the work. Once airport staff are satisfied with the bid, they typically award the contract to the apparent low bidder but the award process may vary among airports depending on the nature of the project. Again, airport engineering staff can guide and assist during this process, and may lead these efforts.

- **Monitor work of contractor.** After award of a construction contract, airport staff and/or a construction management firm under contract with the airport normally inspect the work on a regular basis to ensure that the construction is occurring in accordance with the original designs and specifications. Unexpected conditions may be discovered during the construction process requiring change orders and increasing the costs of construction. Most airports have standard procedures for monitoring construction, approving change orders, and reviewing and approving requests for payment submitted by a contractor. Airports typically retain a portion of each payment pending final approval of the project. Normally airport staff and/or a construction management firm under contract with the airport formally inspect the work upon completion of construction and notify the contractor of any uncompleted or unsatisfactory items (i.e., a punch list). When all punch items have been completed satisfactorily, the airport releases payment. Again, the specific steps and procedures vary from airport to airport depending upon the nature of the improvement, the processes used by the airport, and airport staff resources.
- **Before and after study.** To document the benefits of the improvement, it is desirable to monitor the commercial ground transportation operations or activity before and after implementation of the improvement. A before and after study might measure customer waiting times for taxicabs or other vehicles, roadway congestion, customer (or driver) satisfaction with a new service or facility, and/or changes in airport revenues or operating costs.

Deploying new technologies. The steps required to improve or modify an airport technology to better manage and control commercial vehicles or monitor commercial vehicle activity will vary depending on the scale and type of improvement. The required steps parallel those required for facility improvements as they frequently require design and construction with the key difference being the emphasis on procurement of new software or hardware rather than facility construction or improvements.

As with airport facility improvements, airport planning and engineering staff can assist and may lead the design and construction process. Depending on the type of technology, airport IT staff may be involved in the process, particularly if they will be responsible for maintenance of the new technology or if the technology is to be integrated into the airport's overall information systems. If airport IT staff are unfamiliar with the proposed commercial ground transportation technology, it is recommended that airport landside and IT staff jointly contact the staff of other airports or transportation agencies that have previously implemented the proposed or similar technologies. These airport staff are typically willing to offer advice and describe their experience with the procurement process, the subsequent operation and maintenance of the proposed technology, and indicate what changes they would recommend.

A key to the successful implementation of a technology or technology based solution is the preparation at the outset of the project of a clear statement of the problem that needs to be solved as well as a description of the desired outcome, rather than the technology to be implemented.

Technologies change frequently and there will likely be more than one acceptable solution. By developing a clear goal and functional requirements airport staff can create a valuable tool for evaluating alternatives submitted by vendors. Secondly, while most airport ground transportation systems have a long life expectancy, airports should anticipate that their system will evolve and change over time, so flexibility and expansion capability at a reasonable cost should be part of the evaluation/selection process.

Airports generally follow one of two paths to provide the infrastructure needed for the implementation of a technology based system:

- The solicitation can include construction of the infrastructure as part of the technology solution, this "turnkey" approach places all of the responsibility for a successful implementation with a single vendor and takes advantage of the expertise and experience of the vendor and increases the probability of a successful implementation.
- The solicitation can exclude the infrastructure work scope and award this work to a separate firm or use in-house staff resources, if available. It is likely that the total cost will be less if the airport retains the responsibility for the infrastructure. The size of the project, expertise of airport staff, and the benefits of direct airport supervision will all be factors in the decision on the best approach.

As with facility improvements, deploying new technologies may require retaining an engineer, preparing design documents including plans and specifications, issuing an RFB, and awarding a construction contract using the processes described above. However, if the improvement does not require physical construction, the contract may be awarded directly to a hardware and/or software vendor rather than to a licensed construction contractor. In these instances, the airport may issue a request for statement of qualifications or

statements of interest to prospective vendors to ensure that they have the necessary qualifications and experience before issuing the RFBs.

Once a contract is awarded to a technology vendor, the process is similar to those described above with the vendor submitting preliminary designs (or equivalent material) at prescribed milestone points, installing the equipment, providing the software, and demonstrating its successful operation. For complex systems, there may be a requirement for factory tests before the equipment is shipped to the field, and then demonstration of the successful operation of specific components or systems prior to a required 30-day or 60-day demonstration that the entire system is operating satisfactorily and complies with the original specifications.

APPENDIX A

Acronyms

AAAE	American Association of Airport Executives
ACDBE	Airport Concessions Disadvantaged Business Enterprise
ADA	Americans with Disabilities Act
A/E	Architect/Engineer
AGTA	Airport Ground Transportation Association
APM	Automated People Mover
AVI	Automatic Vehicle Identification
BCAD	Broward County Aviation Department
CCTV	Closed-Circuit Television
CDMA	Code Division Multiple Access
CNG	Compressed Natural Gas
DBE	Disadvantaged Business Enterprise
DERA	Diesel Emissions Reduction Act
DMV	Department of Motor Vehicles
DOT	Department of Transportation
DVBE	Disabled Veteran Business Enterprise
GPS	Global Positioning System
GTA	Ground Transportation Areas
GTC	Ground Transportation Center
GTM	Ground Transportation Management
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FIFO	First In First Out
FMCSA	Federal Motor Carrier Safety Administration
HOV	High Occupancy Vehicle
HR	Human Resources
IT	Information Technology
LEED	Leadership in Energy and Environmental Design
LEO	Licensed Enforcement Officer
LPR	License Plate Recognition
MAG	Minimum Annual Guarantee
MMG	Minimum Monthly Guarantee
MPO	Metropolitan Planning Organization
MWBE	Minority and Women Business Enterprise
NCDC	National Clean Diesel Campaign
PRCS	Parking Revenue Control System
PUC	Public Utilities Commission

RFID	Radio Frequency Identification
RFB	Request for Bids
RFQ	Request for Qualifications
RFP	Request for Proposals
ROI	Return on Investment
SaaS	Software as a Service
SAGA	Sustainable Aviation Guidance Alliance
SBA	Small Business Administration
SBE	Small Business Enterprise
SUV	Sport Utility Vehicle
TCO	Traffic Control Officer
TIFIA	Transportation Infrastructure Finance and Innovation Act
TLPA	Taxicab Limousine Paratransit Foundation
TNC	Transportation Network Company
TSA	Transportation Security Administration
WAGES	Women's Action to Gain Economic Security

APPENDIX B

Glossary

The following pages provide a glossary of terms used in this guidebook.

Airport permit—A document creating a formal business agreement between the airport and a commercial ground transportation provider. By signing the permit, a provider agrees to abide by the airport's operating rules and regulations and pay any fees specified in the permit to do business on the airport.

Airport sponsor—The organization which owns and operates the airport, typically a city, county, or authority.

Airporter—A scheduled bus, typically privately operated, providing point-to-point service between an airport and center city or other major destination.

Alternative fuel—A fuel that produces lower emissions than gasoline or standard diesel thus having beneficial environmental effects. Such fuels may include biodiesel/clean diesel, compressed natural gas (CNG), clean diesel, diesel/electric hybrids, gasoline hybrids, fuel cells, pure/plug-in electrics, and propane among others.

Automatic vehicle identification (AVI)—A long-range radio-frequency identification (RFID) or microwave identification system that automatically identifies vehicles having vehicle-mounted transponders (or tags) as they enter and pass through the range of the AVI system reader (the read zone) without any action by the driver. The term can also be used to refer to the system that records the time the vehicle enters and exits the read zone, and summarizes the number of trips made by each operator.

Base yard—The location, typically a surface lot, used to store out of service buses and/or other commercial vehicles. Vehicle maintenance and repair may also be performed in the base yard.

Best practice—As used in this report, those innovative and creative practices which, if implemented, help achieve or support the relevant goals of airport management concerning commercial ground transportation services. These include a broad range of standards, strategies, rules and regulations, business practices, procurement methods, fees, operational models or methods, facility configurations, supporting technologies, and other programs used by airport operators to provide, monitor, control, regulate, and enforce commercial ground transportation services.

Black car—A sedan used to provide door-to-door transportation, typically a form of limousine.

Bump-and-run operations—A dispatch pattern whereby a waiting courtesy vehicle (or other vehicle) remains at a curbside pick-up location until another vehicle operated by the same provider arrives to take the place of the first vehicle. This assures that a courtesy vehicle is always waiting for arriving passengers.

Chartered service—A transportation service that is provided on a prearranged basis where the company is compensated based upon the length of time the vehicle is hired regardless of the number of passengers transported or distance travelled. Most commonly this refers to chartered buses or vans.

Chute—As used in this report, an area used to store a taxicab queue or queue of other vehicles waiting to be dispatched to the passenger boarding areas.

Commercial ground transportation—Rubber-tired publicly and privately operated transportation service transporting customers to/from airports including taxicabs, limousines, shared-ride vans, courtesy vehicles, chartered buses and vans, but excluding rail service and parking shuttles, consolidated rental car shuttles, or other buses operated by or on behalf of the airport.

Concession contract—A contract between an airport operator or sponsor and a commercial ground transportation business whereby the airport provides the company or business certain rights or privileges (e.g., the exclusive or semi-exclusive right to offer a specific transportation service or use designated areas of the airport) and in turn the company agrees to pay the airport a fee which frequently

involves an annual minimum guaranteed amount and/or an amount that reflects the volume of airport-related business conducted by the company (e.g., a percent of gross revenues).

Concessionaire—A company or business that has entered into a concession contract (with an airport).

Consortium—As used in this report, a group of businesses or individuals that have formed a joint business proposition or venture with an airport (e.g., a consortium of taxicab drivers or taxicab owners which has entered into a contract with an airport owner.)

Cost-recovery fee—As used in this report, a fee charged to commercial vehicle operators doing business on an airport (i.e., picking up passengers) which allows the airport owner to recover its costs of providing, operating, and maintaining the roadways, curbsides, hold areas, and other facilities used directly by the commercial ground transportation operators. Most frequently such fees are determined based upon the operators' use of airport facilities (e.g., calculated according to the number of airport trips made by each operator) and may be referred to as per-trip fees, gate fees, or AVI fees (as an AVI system is often used to monitor the volume of trips).

Courtesy vehicle—Door-to-door, shared-ride transportation provided solely for their customers by the operators of hotels/motels, rental car companies, parking lots, and other businesses. The customers are not charged a fare as the cost of such service is considered to be incidental to the primary service offered the customer.

Deadhead trip—A nonrevenue trip which occurs prior to picking up a customer or after dropping off a passenger.

Deplaned passengers—Passengers that alighted from an aircraft at an airport, including both connecting and terminating airline passengers.

Disadvantaged business—The definition of a disadvantaged business varies from community to community but typically includes minority owned, women-owned, or small locally owned businesses that have been certified by a state or other agency.

Dispatcher—As used in this report, an individual responsible for the proper sequencing of waiting taxicabs or other vehicles, assuring the waiting vehicles and drivers are in compliance with airport rules and regulations, and responsible for assigning a customer to the correct vehicle. Sometimes referred to as a starter.

Double parking—A condition in which two or more vehicles are parallel parked or stopped adjacent to one another along the curbside roadway.

Dwell time—The total time a vehicle spends at the terminal curbside while waiting for a passenger to arrive or to actively load or unload.

Economically regulate—The ability of a state or local regulatory body to authorize a license for a company to operate, set its rates (either maximum, minimum, or exact rates), and issue directives about operational practices and vehicle safety standards.

Enplaned passengers—Passengers who boarded an aircraft at an airport, including both connecting and originating airline passengers.

Focus group—A form of qualitative marketing research, where a group of 6 to 10 people are interviewed at the same time (as opposed to a one-on-one interview) about their attitudes toward a product, service, concept, advertisement, idea or packaging. A focus group moderator asks the group questions in an interactive group setting that allows participants to talk with other group members. Frequently, focus groups are conducted in a setting that allows others to observe the participants as they respond to questions.

For-hire transportation—A vehicle such as a taxicab or limousine which transports one or more passenger(s) between locations of the passenger's choice on an on-demand or prearranged basis as opposed to scheduled vehicles operated along fixed routes.

Headway—The time interval between one vehicle and the next vehicle arriving at a station or boarding point on a scheduled, fixed route.

High occupancy vehicle (HOV)—Typically considered any vehicle transporting more than one or two people. This standard HOV definition may not be applicable for airport transportation planning and operations, however. Instead HOV may be defined as the use of public transit, scheduled buses/vans, shared-ride vans or other multi-passenger vehicles rather than vehicles transporting a single airline passenger.

Hold area—An area designated for use by commercial vehicles such as taxicabs, limousines, shared-ride vans, and buses/vans to wait in (or stage) until they are called to the curbside.

Improper solicitation—As used in this report, improperly or illegally offering for-hire transportation services to passengers at an airport (e.g., in the baggage claim area). Most frequently this occurs when licensed and unlicensed limousine drivers (or their representatives) solicit business directly from passengers who have not made prior arrangements for such service.

Invitation to bid—Documents describing requested services or products to be furnished, information to be contained in a bid, the required format and due date, and the form of the bids.

Large-hub airport—Per FAA, an airport with 1% or more of all annual passenger boardings in the United States.

Licensed enforcement officer (LEO)—As used in this guide, a licensed police officer monitoring airport facilities who, among other duties and responsibilities, is capable of

issuing tickets for moving violations and other activities, and arresting offenders.

Limousine—Transportation service offered in town cars or luxury vehicles on a prearranged basis and where the provider is compensated based upon the length of time the vehicle is hired regardless of the number of passengers transported or distance traveled.

Livery service—An on-demand form of door-to-door transportation that is limited to responding only to radio dispatch calls and charges an agreed upon price rather than a time and distance based metered fare.

Medium-hub airport—Per FAA, an airport with at least 0.25% but less than 1% of all annual passenger boardings in the United States.

Metropolitan Planning Organization (MPO)—The local agency responsible for the Transportation Improvement Plan, which prioritizes regional investments in transportation infrastructure. The local MPO is also responsible for documenting the local goals and policies governing these priorities including those related to the environment and sustainability.

Minimum annual guarantee (MAG)—The minimum fee or amount that a business or concessionaire agrees to pay on an annual basis regardless of the revenues collected or business volume conducted. A similar fee may instead be assessed on a monthly basis as a minimum monthly guarantee (MMG).

Model year—The year specified by an automobile manufacturer for that vehicle model

Mystery rider—A person who evaluates a commercial ground transportation service surreptitiously posing as a customer. Also known as mystery shopping or mystery shopping service.

Non-hub airport—Per FAA, an airport with at least 2,500 and no more than 10,000 annual passenger boardings.

O&D (origin and destination)—Airline passengers who began (or will end) their trip at this airport as opposed to those passengers who are connecting from (or to) another flight.

On-demand service—Transportation service (e.g., taxicab service) that is provided in direct response to a customer's request via telephone, street hail, or in some communities a smartphone application or other form of communication as opposed to prearranged transportation service.

Owner-operator—As used in this report, an individual who both owns and operates a vehicle (e.g., a taxicab driver who owns a taxicab and drives the vehicle). Frequently owner/operators may operate a vehicle as a franchisee, or as part of a fleet owned/controlled by others.

Peer-to-peer services—Services that are shared among users rather than owned by a company. As used in this report it refers to a business that seeks to connect the operator of a vehicle or owner of a vehicle with a customer seeking transportation or to hire the vehicle.

Prearranged service—Transportation service (e.g., limousine or bus/van service) that is provided in response to a prior request as opposed to on-demand service. Often the limousine or bus/van driver will have a waybill showing the customer's name, party size, destination, flight number and arrival time, and other details. The precise definition of prearranged varies from community to community.

Privilege fee—As used in this report, a fee charged commercial vehicle operators that reflects the overall business benefits the commercial ground transportation operators receive and privileges they enjoy as a result of the presence of the entire airport and from the operators' access to the traveling public. Typically such fees are calculated based on the volume of airport-related business conducted by the operator.

Request for qualifications (RFQ)—A type of solicitation in which an organization interested in procuring services asks outside vendors to provide a summary of their qualifications and experience performing these services.

Request for proposals (RFP)—A type of solicitation in which an organization interested in procuring services asks outside vendors to submit competitive proposals containing their approach, qualifications, and fees. Also known as Request for Tenders.

Scheduled service—Fixed route transportation operated at set headways or departure times

Semi-exclusive contract—A concession contract that is awarded to multiple providers all offering the same service.

Shared-ride service—A service providing door-to-door transportation for multiple customers or parties to or from an airport whereby each passenger pays a predetermined fare regardless of the number of passengers transported or distance travelled. The service, most commonly provided in 8 to 12 passenger vans, may make multiple enroute stops and may be available on a walk-up or pre-reserved basis.

Small-hub airport—Per FAA, an airport with at least 0.05% but less than 0.25% of all annual passenger boardings in the United States.

Staging area—(See hold area)

Taxicab—A vehicle—typically a sedan or van—providing nonstop, door-to-door transportation for a single party (one or more passengers) between locations of the passenger's choice with the fare established based upon a taximeter or zone system regardless of the number of passengers transported. The precise definitions for taxicabs, taxicab companies, and taxicab drivers vary from community to community.

Traffic control officer (TCO)—An enforcement officer capable of issuing tickets only for nonmoving violations but not arresting an offender

Transponder—As used in this guide, transponder refers to a vehicle-mounted automatic vehicle identification (AVI) system tag or device that emits a signal detected by readers. (See automatic vehicle identification.)

Transportation network company (TNC)—A business that connects its affiliated drivers, using their personal vehicles, with passengers desiring door-to-door transportation who have requested this service using the business' proprietary smartphone application. The fare is typically established based upon time and distance traveled. Service may be nonstop or shared with another party depending on the type of service selected.

APPENDICES C THROUGH H

Appendices C through H have been published online and can be found by searching for *ACRP Web-Only Document 25* on www.trb.org.

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
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
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
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
TDC	Transit Development Corporation
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

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