

Rapid access to airports is often high on the agenda of policy-makers for transit agencies. These leaders stress the importance of a cohesive strategy that integrates their transportation investments to foster a comprehensive solution to local, regional, national and international commerce. As a transit agency manager, you see many obstacles in extending service to airports. These hurdles are not new and many other operators have overcome them, so the real need is to find these elusive solutions and apply them to your system.

The first issue is to recognize what type of service policy-makers in your region envision when airport service is discussed. Is it primarily to serve the airline and airport employees? Is it to service other employment centers located close to the airport? Is it to provide inexpensive transportation for budget travelers? Is it to provide world-class service for tourists and business travelers? Or is it all of the above?

Each type of service requires different station locations, different service patterns, different rolling stock configurations and possibly different modes. Service primarily intended for airline and airport workers is often located in non-public areas near employee entrances and airport shuttle facilities. Services for the larger airport business area may require a circuitous routing to deliver employees close to their employers. Services oriented toward budget travelers usually trade time and comfort for cost. They operate on lines with multiple stops using equipment with few traveler amenities in exchange for basic transit fares. Service oriented toward tourists and business travelers needs the opposite – to be successful it must be very easily accessible, operate frequently with limited or no stops, and use vehicles configured for luggage laden travelers, including the potential for off-airport checked baggage service. These premium services can command fares 10 times a typical transit fare, but many of them in service around the world operate with a net revenue surplus.

Knowing what the community and their representatives are envisioning can avoid nasty surprises when implementation doesn't match expectations. Since a transit operation that can meet the very different markets described above is unlikely to be found, multiple services most likely will be required for each market.

Institutional Issues

Airports are typically organized as either a unit of local government or as an independent agency. Their operating revenues are usually derived from carrier landing fees, tenant rents and concessions. Parking fees are a significant component of the mix. While many airport operators understand and support the concept of transit service to airports, their oversight boards may be concerned about the potential diversion of key revenue. Of course, airports that have no more developable land for parking facilities may not face this problem.

One technique that has been used in other successful air-rail connections is to partner with the airport, providing it with a portion of the farebox revenue as part of the operating

agreement. This may be extended to include airport operation of buses, an airport provided rail station and even airport operation of trains themselves.

Another solution to getting airport cooperation is to work through the key revenue source, the airlines themselves. Services that open up new labor markets for their employment needs, services that extend their prospective passenger catchment area, and services that make it easier for them to tap convention facilities can be attractive enough for them to take on the issue with the airport.

Any service that requires new transportation facilities on the airport grounds may require an update of the airport master plan, known as the ALP, and that requires Federal Aviation Administration (FAA) approval. Knowing the ALP update and review cycle of the airport can make this an easy or a very hard item; timing here is key. There are many types of facilities to be considered.

Bus Connections to Airports

City bus service to airports has been controversial since the aviation industry moved out of reaching solely the carriage trade and into the vast middle class during the 1950s with the advent of jet aircraft. Airports added the rest of market in the 1970s with the arrival of budget carriers. At most airports that allow the city buses to serve the passenger terminals, the bus stop is often located in the far periphery of the complex without much if any directional signage. Las Vegas, for example, has an unsigned city bus stop outside the lowest level of the terminal.

Some transit operators and airports themselves have recently expanded their airport transit bus services with great results. In Boston the new Silver Line BRT buses offer a fast 15-minute, express connection to Boston South Station and downtown via an exclusive MBTA transit tunnel. In Pittsburgh PAT provides rapid service along its exclusive West Busway arriving in the downtown Golden Triangle only 36 minutes after leaving the airport. Los Angeles World Airports (LAWA) just inaugurated a new 35-minute “Flyway” express service from Union Station to LAX operating over the Harbor and Century Freeway HOV Transitways for only \$3 each way.

Seattle operates a fast service between Seattle-Tacoma Airport and downtown via its exclusive busway and bus tunnel, avoiding the congestion on I-5. New York’s LaGuardia Airport is served by a number of surface bus lines that connect to its subway service, bypassing the notoriously clogged Manhattan thoroughfares. Both of these services, though, operate with conventional vehicles without luggage racks and require vertical movements to and from platforms, difficult for baggage-laden travelers.

Hours of operation for airport bus services can be substantially different from normal operations. Very early morning service is typical to allow employees and travelers to arrive in time for the first flights of the day, often requiring pull-outs at 5:00 a.m. or earlier. Late-arriving last flights can extend service well past midnight, depending upon the carriers’ flight schedules.

Since the airport is often the end of the bus run, consideration for layover facilities is important. Space to park buses may be at a premium for the airport. Nearby restrooms for drivers may be difficult to site. Airports in non-attainment zones may object to vehicles idling for extended periods.

The key to a successful bus service for travelers at airports involves three items: (1) ability to operate from the loop roadway in front of the terminals with a stop for each; (2) directional signage to the stop and identification signage that explains the route, fare and frequency; and (3) a well-planned distribution route that serves busy hotels, convention halls and downtown attractions. A typical three-panel promotional brochure placed in tourist information racks in these areas can be a real source of business.

Another source of revenue for the service is the use of a special advertising package just for airport buses to attract new advertisers. Also, contracts for carriage of airline crews to hotels can sometimes be arranged if the vehicles are configured for luggage and serve airline contracted hotels.

Rail Connections to Airports

The extension of rail service to airports is a goal commonly expressed by decision-makers even when a new urban rail system is still in the planning stage. The attraction is obvious because many of their citizens will fly at some point so each can envision themselves using the service. Airports add a whole new dimension to ridership estimates and, depending upon the type of service, can bring a real boost to the new line.

Just about every rail mode has been used for service to airports. Amtrak trains serve Mitchell Field in Milwaukee and BWI airport via a shuttle bus. Metra's North Central commuter rail line serves O'Hare airport and SEPTA serves Philadelphia's airport. BART heavy rail rapid transit trains serve San Francisco International and Metro serves Washington Reagan National. MAX light rail trains serve Portland International and Baltimore's serve BWI. New York's JFK is served by an automated guideway line, and Newark International is served by a monorail. In Paris and Frankfurt high-speed rail trains whisk travelers to nearby cities in less than two hours. In Shanghai a maglev line connects the airport to the city in less than 15 minutes.

Chicago has both O'Hare and Midway airports connected via heavy rail rapid transit. Atlanta's MARTA connection at its airport includes a check-in counter right at the station to relieve travelers from hauling luggage across the terminal. The Tri-Rail commuter rail service in South Florida serves three airports via dedicated shuttle buses (Miami, Ft. Lauderdale and West Palm Beach) and has built a popular service for airline crews, travelers and airport employees.

Even the small South Bend Regional Airport in Indiana incorporates a commuter rail station in the terminal for South Shore trains operated by the Northern Indiana Commuter Transportation District, and is currently studying changing the existing track alignment used to reach the airport to cut travel time.

In Europe it is hard to find a major airport without a rail connection. In Tokyo, the service is so popular that reservations are required for travel during peak hours. In Hong Kong the MTR service literally operates from the front door of the terminal right to the center of the business district with fast express trains. They have also just inaugurated a new service offering dedicated trains to a just-opened Disney theme park.

Bringing rail service to airports allows airlines to handle more travelers with less impact on the environment, multiplies the destination possibilities for travelers and ensures that time-sensitive business can be transacted without large allowances for potential highway congestion. But bringing rail lines into a complex airport site requires specialized planning and design by two groups not used to working together: rail engineers and airport engineers.

Providing the closest possible connection for travelers between rail services and airport terminals is one of the most difficult challenges facing the air-rail designer. Threading a rail line into a crowded airport facility involves specialized skills from both the railroad track designers and the airport infrastructure designers.

Rail Engineering

From a rail perspective the access track should have as few curves as possible and use the lowest “degree of curve” (largest radii) available to reach the terminal area. The grade of the line should be minimized, but could be greater than those used on main lines due to the relatively short length of typical airport access spurs and especially if use is contemplated only for purpose-built rolling stock able to operate in higher than normal gradients for short distances. Since freight operations will most likely not be accommodated on an airport spur, the use of higher-than-normal superelevation may be appropriate to allow reasonable operating speed.

Rail platforms should be covered to protect travelers from inclement weather and ideally offer level boarding to assist in luggage handling and to accommodate disabled travelers.

Existing rail clearance requirements used for the rolling stock dynamic envelope, overhead electrification (if any) and operational/safety needs may need to be reexamined in order to fit into the restricted spaces available. Since few airport spurs are planned to accommodate larger clearance freight services, waivers may be appropriate.

From a passenger perspective, the ideal service would operate to each terminal building or straddle two closely spaced terminals. The next best option is to serve one of the busier airport terminals that have convenient access to an inter-terminal people mover or serve an airport people mover transfer station with across-the-platform access from the rail service.

From an operating perspective the airport spur line should ideally operate as a loop, returning to the main line in a way that allows trains to operate through the airport without changing direction. This reduces operating costs and provides for a more

efficient service. The terminal station(s) should also be equipped with an extra track to allow for set-outs in the case of equipment malfunction or for use with group movements and special events.

Underground operation may require the electrification of the service to meet ventilation requirements, but will be more reliable in inclement weather than surface operation. Elevated operation will require a close evaluation of restricted airspace limits.

Airport Engineering

Constructing rail lines into a complex airport environment often involves adjusting the route to avoid critical FAA protection zones. A trapezoidal area at the end of each runway, known as a Runway Protection Zone, limits how close rail lines can be built adjacent to in-service runways. A clear area, known as the Object Free Area, that extends 1,000 feet from the end of each runway limits what type of obstructions may be constructed. In addition, Part 77 requirements limit the height and position of objects in the airport environment.

Some of these restrictions allow rail lines to be built where trains just pass through the restricted area, but prohibit the construction of passenger platforms and waiting areas – a mistake made by one agency required a new rail station to be demolished and removed before it was even placed into service.

Coordinating airport rail links with terminal expansion plans is critical as changes in the terminal configuration may render the rail link unusable. Security evaluation of the rail infrastructure needs to be added to the threat of mitigation plans. The operation of the service through the landside-airside barrier is an important consideration. In Minneapolis, Hiawatha light rail trains operate through the airport via a mined tunnel directly under an active runway. Some of the most difficult and problematic air-rail connections have been solved and are now in service. The solutions are out there – if you want to find them.

Traveler Expectations

For those systems oriented toward travelers, there are a number of common customer expectations. First is that the service operate frequently. That usually means a minimum headway of 15 to 20 minutes throughout the day. SEPTA's commuter rail service to Philadelphia International Airport has endured significantly lower ridership than similar services, in part, because it is only operated every 30 minutes. The second expectation is that the service delivers them to the airport with a high degree of reliability. Nonrefundable fares and long security lines mean that travelers need real assurance that the service can operate as scheduled regardless of highway congestion. Third, the vehicles must have some accommodation for luggage – even if it is only empty seats. And fourth, the fare charged must be appropriate to the service offered. Premium services can charge premium fares. Travelers have shown time and again that a frequent, reliable and comfortable service is worth significantly more than the basic transit fare. To support

the special costs of serving the airport market, a special fare is certainly appropriate and desirable to maintain the service's attractiveness.

Rail connections to airports are a once-in-a-lifetime opportunity due to their costs and complexity. You want to do them right the first time! Fortunately an association exists that is dedicated to ferreting out best practices in air-rail connections. The International Air Rail Organisation sponsors symposiums around the world to show how it can be done and how to make existing systems even more attractive. More information can be found at www.iaro.com.

Synergy

In a world where time is money, the societal costs of operating transportation hubs that inhibit rather than foster fluid movement of travelers and goods are bound to be bypassed by more nimble competitors. Rapid access from urban centers ties the business community to other business centers, it ties students and faculty to their home communities, it uses established local transportation systems to provide economical access for friends and families, and it lowers the cost of commerce which enhances the economy. The further development of transit service to airports will allow communities to create a seamless transportation system that is not significantly impacted by highway congestion, rising fuel costs or sky-high parking rates. Transit planners and operators have a major role to play in protecting the U.S. economy and keeping us all connected.