

FEBRUARY 2011



PHILADELPHIA INTERNATIONAL AIRPORT

TRANSIT
ACCESS
ANALYSIS

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The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region-leading the way to a better future.



The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

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Executive Summary

Delaware Valley Regional Planning Commission (DVRPC) Aviation Planning staff were funded by the Pennsylvania Department of Transportation (PennDOT) to examine transit access options for airline passengers flying out of or into Philadelphia International Airport (PHL). Aviation capacity expansion of the airport in future years will limit available on-site car parking. Visitors and the growing future passenger volume at PHL will need to rely on public transit to reach both local and surrounding destinations. In comparison to other large hub airports in Europe and Asia, and many airports in the United States, transit options serving PHL are underutilized and underdeveloped.

Access mode split at PHL and features of transit access service were compared to other domestic and international metro areas, and deficiencies in existing service and opportunities for new service were identified. These were based on relative cost, travel times, connectivity, baggage handling, other qualitative features such as comfort, and expected components of long-range expansion of the airport.

Study conclusions include recommendations for modifications to the regional transit system provided by the Southeastern Pennsylvania Transportation Authority (SEPTA), provision of express bus service along specific corridors, enhancements to existing PHL car parking procedures, quantification of Philadelphia's policy favoring more transit usage/service to PHL, long-range capital improvements, SEPTA trolley service and Amtrak connectivity to PHL, and better integration of electronic information between all transit providers and the airlines.

Introduction

Philadelphia International Airport (PHL) is located on the border of southwestern Philadelphia and Delaware County and bounded by the Delaware River to the south, I-95 to the north, Tinicum Township to the west, and the Schuylkill River and Philadelphia Navy Yard to the east. The airport is the only major commercial, domestic/international, hub airport in the Greater Delaware Valley region including seven counties in Pennsylvania, nine counties in New Jersey, three counties in Delaware, and Cecil County in Maryland. The PHL local market area, as defined by these counties, is over 12,000 square miles with a total population of over 10 million residents.

Traffic, including passengers and aircraft movements, has grown rapidly in recent years, in response to several factors: the arrival of Southwest Airlines and its competition with US Airways, the dominant legacy carrier at PHL; the overall economic health of the national economy and continued low air fares due to deregulation; increased domestic and international service from PHL to more destinations; and the merger and reorganization of US Airways with America West providing enhanced connection options and more transfer passengers through PHL. PHL handled 31.7 million passengers in the most recent year, currently making it the 16th busiest nationally and 28th in the world. When aircraft operations (takeoff and landings) are considered, it ranks as even busier, 9th in the U.S. and 10th busiest in the world with 559,000 total operations or over 1,500 operations daily by 29 airlines. Of the 31.7 million passengers, over 4 million or 12 percent are international travelers to Europe, the Caribbean, and Central/South America. PHL handles commercial passengers through its six airlines terminals, A-east and A-west, B/C, D,E, and F, with the expanding number of gates currently at 120. The small percent of the total aircraft using PHL that are corporate, roaming based aircraft, and other itinerant private planes, use the general aviation terminal operated by Atlantic Aviation.

Projections of future growth in passenger and aircraft traffic at PHL have been accomplished through between 2010 and 2025, yielding a total of 30 percent to 45 percent additional traffic. This would mean over 41 to 47 million annual passengers and approximately 715,000-800,000 annual take-offs and landings. Federal Aviation Administration (FAA) growth estimates range from 100 to 200 percent by 2025.

In comparison to other major international airports in the United States and abroad, PHL is located on 2,300 acres, making it one of the smallest, most constrained land mass airports given its current role and aviation activity level.

Despite PHL's limited acreage for expansion, the airport is in a constant state of development and capacity enhancement. In recent years, new overseas and commuter terminals were added. Existing terminals have also been retrofitted to add more gates. Auto parking has been expanded at ground-level long-term lots and in shorter-term garages adjacent to terminals. New runway 8/26 was built 10 years ago, but due to changes from turbo props to regional jets in the commercial fleet using PHL, this runway is underutilized. The PHL master planning process, designed to add capacity and reduce delay while accommodating current and future demand more efficiently, has suggested 29 alternative scenarios for future expansion. From these alternatives, a Capacity Enhancement Program (CEP) has been defined and is currently going through environmental impact analysis. Several alternatives call for an additional main runway and extensions of other existing runways, while the terminal complex is kept intact. The more aggressive alternatives call for new runways and runway configurations as well as new terminals at new locations replacing the existing facilities. Included in all build alternatives is the creation of a ground transportation center, combining private car parking with airport tram and bus station, car rental, and courtesy van stops. Although portions of the capital program near-term projects are being advanced currently (extension of crosswind runway 17/35), the major reconstruction of terminals and construction of a new air carrier-length runway are likely five years away. Environmental analysis, governmental and public opposition, provision of adequate capital funding, and financing locally and from FAA and the airlines all must be resolved before construction can commence. Once construction is initiated, the project's total timeframe may be 20 years or longer. PHL and the region will likely suffer at least 10 more years of inadequate airport capacity. Additional negative construction impacts on air and ground capacity can be expected before new facilities are available.

The projected growth in airline passengers and airport personnel will place increasing burdens on ground transportation. Given the limited acreage at PHL, and the need for airside expansion, auto parking cannot expand. The role of public and private mass transit must be expanded and improved to meet this challenge.

In light of the probable scenario described here, this study will analyze, qualitatively, surface access modal choices, characteristics of service, policies impacting service, etc., from primarily a short-term perspective, to make recommendations that will improve access to the airport from the traveler's point of view. Operations perspective of the airport for the next 15 years will also be reviewed by comparing transit service characteristics at PHL with airports having high percentages of transit access trips. Major airport improvements completed long term, may, from an architectural

perspective, redefine ground access in ways quantifiable in this study. However, recommendations that are made regarding short-term airport access improvements may still have application after a major rebuild scenario is accomplished.

Over 65 percent of PHL's total passengers originate and finish their trip locally, which requires use of ground modes. In addition, these modes are used by the 34,000 employees based at PHL. When 56,500 daily local market air travelers, 34,000 PHL employees, and 30,000 employees at surrounding work sites are considered, over 120,000 individuals are arriving and/or departing the airport each day by means of some form of ground transportation.

When the growth of passenger demand to 2025 of at least 31 percent is considered, over 73,000 origin and destination air passengers per day will use ground transit to arrive or depart. If the employee complement working at the airport is estimated to grow by 15 percent, or one-half of the passenger rate, this would yield 39,000 employees at the airport by 2025. These two figures yield 112,000 individuals per day who will use ground access to arrive and/or depart from the airport. Surrounding employment, now at 30,000, is also expected to increase over time. Given that plans for PHL call for fewer than 25,000 total private car parking spaces, and assuming that international travel to Philadelphia will continue to increase due to expanding service, open skies agreements, and the potentially weak U.S. currency, many travelers will need to or choose to use other modes than private cars. Therefore, improving the level of service, increasing transit options, increasing ground transit destinations, and improving convenience/accessibility of non-private vehicle modes will be necessary and economically beneficial in the future.

This study, funded with PennDOT planning funds, examines airport access from the regional planning perspective, using existing sources of information and research. In doing so, several operating agencies including SEPTA, Amtrak, the City of Philadelphia, private transit operators, and the Philadelphia Parking Authority (PPA), are subjects of discussion. In multimodal fashion, all modes servicing PHL have some level of interface operationally or relationship from a demand and capacity perspective. Any strategies and recommendations regarding increased transit usage for PHL access trips will necessarily require jurisdictional overlay and interagency agreement before implementation.

Ground Access Choice and Facilities

PHL is not so much a planned facility as it is an evolved public resource. As air traffic and travel have increased in the United States before and, more significantly, after airline deregulation in 1980, PHL has responded and reacted with projects designed to increase capacity, such as commuter runway 8/26, overseas terminals, east and west, the current extension of runway 17/35 and ultimately (within 20 years) a new parallel air carrier runway 9/27.

Given the airport's location between the Delaware River and I-95 (see Appendix A), each additional expansion has taken part of the limited available ground area. The increase in traffic has resulted in the need for additional short- and long-term parking, since over 90 percent of all airport local users and employed individuals now arrive and depart by auto. If this reliance on private automobiles continues to grow, additional land expansion will be required. Future airline service profiles predict more international trips that can be more adequately served by public transit. In this chapter existing access modes will be described, and are compared with other airports and characteristics of their ground access services.

Recent Transportation Research Board (TRB) Airport Cooperative Research Program studies have provided revealing statistics regarding PHL and its market access mode behavior in comparison to other domestic and international airports. For purposes of this analysis, public transportation includes rail, bus (both local and express), and shared ride vans, but excludes taxi or single-party limo, courtesy shuttles, and charter operations (non-scheduled) serving PHL.

- ▶ Of the 27 busiest airports surveyed in 2005 by TRB, PHL is ranked 24th in market share by public modes at seven percent. Within the United States, San Francisco Airport is the most transit-intensive with 23 percent of travelers utilizing the transit system. Internationally, the Oslo, Norway airport has a 64 percent public transit access market share. Most European and some Asian airports (18) have public access modes that range from 22 percent to 63 percent.
- ▶ PHL has the seventh highest growth in trip origins from 1998 to 2005 domestically, at about 30 percent. Of the 27 airports considered, John F. Kennedy Airport has grown most at over 80 percent.
- ▶ PHL transit mode share of seven percent is comprised of three percent rail and four percent bus. Of the 16 airports surveyed having rail access, 10 have rail percentages higher than PHL and five have the same or less. All 27 airports have bus access, and 19 have usage percentages higher

- than PHL, while eight airports have the same or less percentage use. SEPTA Airport Line frequencies of 30 minutes do not compare favorably to cities with more rail to air patrons.
- ▶ Approximately 45 percent of PHL passengers use the airport for business trip purposes. Twenty-five of the largest U.S. airports surveyed have from 30 percent to 55 percent business travelers, with an average of 41 percent.
 - ▶ PHL is used by fewer City of Philadelphia residents, approximately 14 percent of passengers, than 24 of the major airports surveyed. Many PHL passengers come from longer distances than those of most big-city airports.
 - ▶ PHL is approximately seven miles from Center City and has a transit market share of seven percent. PHL is within proximity to Center City, making driving time by private auto competitive to transit, but if the auto is parked at PHL for several days or more, trip cost comparison favors transit. Internationally 13 airports surveyed had an average distance from the Central Business District (CBD) of 21.5 miles and transit market share of 41 percent. Six foreign airports are as close to their central city as PHL and have an average transit market share of 32 percent.
 - ▶ SEPTA provides rail service to PHL on the SEPTA Airport Line. This rail line has frequencies of one half-hour between 5 a.m. and midnight, and a travel time to Center City of 30 minutes, which is competitive to private auto if parked at a remote lot or under delayed traffic conditions. Interestingly, although ridership on this rail line currently approaches 6,000 passengers per day, it is estimated that between 67 percent and 85 percent of all passengers are employees working at the airport and not airline passengers.

Access Modes Description

Private Auto

Given its location immediately off I-95 north or south, near I-76 and I-476, PHL attracts thousands of drivers per day, either air passengers, employees, or pickup/dropoff trips. Approximately 18,000 car parking spots exist in short- and intermediate-term garages adjacent to the terminal and in the long-term lots on airport property, operated by the Philadelphia Parking Authority (PPA). Short-term rates are \$38.00 per day, intermediate garages are \$20.00 per day, and remote long-term lots are \$11.00 per day. A new Park and Ride lot is provided off of the Arriving Flights ramp of I-95 and 291 for motorists waiting to pick up arriving passengers. The lot has a 150-car capacity and is free of charge.

Private parking lots, off airport, with shuttle/courtesy van service to the airport are increasing in number in Tinicum Township and South Philadelphia along Bartram and Essington Avenues. Several thousand additional parking places at cost equal to or less than remote PHL lots are

available. Operators include Smart Park, Park-n-Fly, Central Airpark, Avistar, and numerous others.

Airport parking fees are collected by the PPA at toll booths. There is an occasional wait to pay the parking fee and exit the airport.

Taxi Service

Taxi services can be picked up at Zone 5 on the commercial transportation roadway, connecting all passenger terminals. All taxi rates are based per trip, not per person. Most taxis can accommodate up to three passengers. In some cases, certain vehicle types can accommodate four passengers.

The flat rate from the airport to central Philadelphia is \$28.50. This area encompasses: Fairmount Avenue (most northern point); South Street (most southern point); Delaware River (most eastern point); and University City (most western point). Any destination that falls within these boundaries is eligible for the city flat rate. A \$10.00 minimum fare exists from PHL to any destination. Other fares are based on the meter, costing \$2.00 upon entry and \$2.10 per mile or portion thereof. In addition, there is an additional \$1.50 airport fee.

Sedan, Limo, and Shared Ride Van Services

These services can be picked up at Zone 6 and shared ride vans meet at Zone 7 on the Commercial Transportation roadways. The airport is served by approximately 200 ground transportation service providers in shared ride limos, sedans, and vans. Major providers are Tropiano, Delaware Express, and Rapid Rover, as well as AAA Airport One/Transitline, AA Direct Twin Car, American Limo, Atlantic Sedan Service, Car One Sedan, and Lady Liberty.

These companies serve suburban destinations as well as Center City, University City, and Northeast Philadelphia. Market area limits for these services to the south are Dover and Wilmington, Delaware, and Atlantic City, New Jersey; to the north, Trenton and Princeton, New Jersey, and Bucks County, Pennsylvania; and to the west, Valley Forge and Delaware County, Pennsylvania.

SEPTA Bus Service

SEPTA provides bus access to PHL terminals from three routes, 37 connecting South Philadelphia to the Chester City Transportation Center via PHL, 115 between the Darby Transportation Center and PHL via Delaware County stops, and 108 from 69th Street Terminal to PHL via Yeadon, and Eastwick. Bus schedules can be found in Appendix B. SEPTA Route 68 serves the United Parcel Service (UPS) and United States Postal Service on Hog Island and Tinicum Island Roads.

SEPTA Route 37

Starting at Broad and Snyder westbound, this city bus operates at varying headways from 4:25 a.m. to 1:07 a.m. Frequency during rush hour is 10 minutes; off-peak headway is every 30 minutes, and late night headways are hourly. The line makes four stops before PHL with an average travel time of 24 minutes. From the Chester Transportation Center, three stops are made to PHL with travel time of 10 minutes. The route uses city buses with no accommodation for significant luggage. Similar service is provided on weekends and holidays.

SEPTA Route 115

Starting at the Ardmore or Darby Transportation Center and terminating at PHL or Airport Business Center, the bus operates hourly from 4:08 a.m. to 12:40 p.m. southbound between the Darby Transportation Center and PHL Terminal B, and service starts at 5:50 a.m. to 8:06 p.m. from Ardmore on weekdays. Northbound service starts from PHL at 4:46 a.m. to 12:05 a.m. to the Darby Transportation Center and from 4:46 a.m. to 6:37 p.m. between PHL and Ardmore. Weekend service with approximately hourly frequencies is provided on a limited basis only between Terminal B at PHL and the Darby Transportation Center.

Route 115 gives particular Darby residents, especially Temporary Assistance for Needy Families recipients, access to the expanding job base located in and around PHL. Previous transit service from Darby to the airport employment area required Darby residents to take two transit vehicles, resulting in excessive combined travel and transfer time. Route 115 connects Darby to PHL and the Airport Interplex employment areas with a 20-minute, one-seat ride. Service is provided such that former welfare recipients have access to and from airport employers at virtually all hours (4:00 a.m. to 1:00 a.m.), seven days per week.

SEPTA Route 108

Initiating at 69th Street Terminal in Upper Darby, this bus operates 24 hours a day, with frequencies that are typically hourly. Most service does not terminate at PHL, but intermittently at Passyunk Avenue, Crane Street, the UPS Building at PHL, or PNC Operations Center. Service to PHL usable by air passengers exists mostly on hourly intervals on this line, with the exception of half-hour frequency service during midday and evenings.

Route 108 travels from 69th Street Terminal to PHL and operates 24 hours a day, seven days a week. This route provides access to several employment centers along the way. 69th Street Terminal provides numerous opportunities for transit connections with other services. Examples of connecting services include Light Rail Route 100, the Market-Frankford Subway/Elevated line, and bus routes 109, 113, 305. The enhanced service offers improved transit connectivity and convenience for employees destined to the key employment region of Philadelphia and Delaware County. Transit service 24 hours a day, seven days a week is extremely beneficial to employees working in service-sector jobs.

SEPTA bus lines stop at Terminal A, B/C, D, and F arrival buildings. Travel times and fares are competitive on these transit routes to PHL; their market areas include South Philadelphia, Darby, Chester, and other locations in the older neighborhoods of Philadelphia and Delaware counties (bus riders can connect to the Broad Street subway which provides access to Center City and North Philadelphia). The local nature of this bus service is well suited for any of the 34,000 employees working in the airport development area and living in the nearby older suburban and urban locations served by these SEPTA lines. However, regional suburban air passengers cannot use these lines and arriving passengers will find the buses adequate only if passenger ground destinations correspond to bus service areas. Given the high percentage of air passengers based in the suburban counties around Philadelphia, this type of city bus service will not attract significant air passengers. In fact, the federally funded Job Access and Reverse Commute (JARC) program provides subsidies to all three routes, as described below. The JARC program is designed to provide affordable transit access to Philadelphia residents to seek and hold jobs in auto-dependent suburbs. This demonstrates the local commuter nature of the services versus air passenger airport access.

SEPTA Regional Airport Rail Line

PHL air passengers have direct rail access to the five Center City train stations (30th St., Suburban Station, Market East, University City, Temple University) on the SEPTA Airport Line from four terminal locations at the airport. This rail line was established in 1985 to serve the airport passenger market and is owned by the City of Philadelphia. Trains leave and arrive at platforms which are elevator-equipped between Terminals E and F, between Terminals C and D, and at Terminals B and A. Train service starts at 4:25 a.m. from Center City, running every half-hour until 11:35 p.m. with two stops from 30th Street, at University City and Eastwick before arriving at the airport terminals. Travel time varies from 16 minutes to 28 minutes depending on stations used in Center City and terminals used at the airport. Cost of \$7.00 each way and travel times as mentioned above are competitive with other modes during most traffic situations. Cost, depending on the away days of an air passenger trip, is approximately one-fourth of the price of a taxi to Center City, and increasingly less than parking as trip time increases.

Train service is enhanced through subsidies provided by the federally funded JARC program. The funding provides for the addition of two early morning trains from Glenside to PHL to accommodate employee shifts starting prior to 5:00 a.m. SEPTA's Airport Line provides this service with transfer opportunities in North Philadelphia and Center City, as well as distribution at all airport terminal stations. (This service was requested by airline- and airport-related employers.) Airport employees are also subsidized through SEPTA's Compass program and are given a 30 percent discount in the price of weekly or monthly Transpasses. The SEPTA rail system provides passengers access to 12 commuter rail lines and the Port Authority Transit Corporation (PATCO) high-speed line, serving over 130 suburban communities in southeastern Pennsylvania as well as Camden County (via PATCO), Mercer County, New Jersey, and New Castle County, Delaware. Through the SEPTA stations located in Center City, air passengers have access to Amtrak's Northeast Corridor and Harrisburg service (although not direct access as with Newark Liberty and Baltimore-Washington International airports), NJ Transit's Atlantic City service, and the Greyhound Bus terminal.

There are apparent user benefits of the SEPTA Airport Line such as affordability, adequate frequency, relatively short trip time to Center City, and connectivity to ground destinations throughout the Philadelphia metropolitan region and the Northeast Corridor of the United States. While these benefits may seem obvious, only seven percent of PHL passengers are using transit to arrive and depart from PHL. Several qualitative aspects of the rail experience for air passengers at PHL may provide a disincentive for rail use. These include:

- ◆ number of transfers to reach final destination;
- ◆ air passengers taking extended time trips having too much baggage to negotiate transfers or needing to use stairs due to escalator/elevator breakdown, whereas short trip length business air passengers with only carry-on luggage would not deal with similar conditions;
- ◆ possible poor coordination between transit schedules resulting in lengthy waits for linked trips;
- ◆ overcrowding of regional rail during peak periods, making luggage a physical disincentive;
- ◆ lack of remote rail-to-air check-in and baggage check-in;
- ◆ lack of long-term parking at stations in the SEPTA commuter rail system resulting in those stations only being convenient to: 1) air passengers living within walking distance with luggage or 2) passengers dropped off at a station;
- ◆ information and coordination on the PHL and SEPTA websites concerning rail access opportunities for inbound air passengers with enhanced links to other operators as necessary; and
- ◆ development at PHL which favors private auto access over transit by currently continuing expansion of short- medium-, and long-term parking; parking revenues remain critical to PHL to offset operating costs.

Comparative Analysis of Ground Access Mode Options

At major European and Asian airports, up to 64 percent of all air travelers access the airport by public transit. Seventeen of the 19 airports surveyed have transit modal splits that favor rail access, and an average of two-thirds of these transit users use the rail mode when a choice exists.

Previous studies have analyzed the details of each airport's demographics, transit access, mode features, political overlays, and relevant passenger characteristics needed to identify significant criteria corresponding to high levels of transit usage. Findings indicate significant factors that definitively influence the choice of transit over private auto. However, even though these factors exist for most of the airports listed, they vary from more to less significant depending on the airport. No one factor dominates in the majority of airports, but combinations of these factors usually exist in all high transit-related airports. Each airport must be evaluated individually to determine reasons for high or low transit usage and to find strategies on how to increase transit ridership at auto-dominated airports. This comparative analysis will be discussed for PHL later in the chapter.

Table 1 is a ranking of international airports by the percentage of air passengers using public transit for their access trips.

Speed of Transit Vehicle, Travel Time, and Frequency of Service

Speed of the transit service becomes significant, since it influences travel time compared to private auto, and is a positive characteristic at most of the high transit usage airports. Of course, the distance of an airport from the major access center also is part of the equation used by air passengers to determine attractiveness. By example, Oslo is 30 miles from its airport, with taxi time averaging 45 minutes. The Oslo train travels 120 mph and makes the trip to Oslo City Center in 19 minutes, with trains departing each direction six times per hour. Bus service is slower, with 55-minute travel times and 10-minute departures, but the cost is less.

In Hong Kong, train service departing every eight minutes covers the 21-mile distance in 23 minutes and costs \$9.00. This is compared to taxi cost of \$50.00, and travel times averaging 45 minutes. Hotel bus service is inexpensive with travel times equal to that of taxi.

Narita Airport serving Tokyo has similar travel time circumstances. Distance is 40 miles and taxi fare can be \$180.00 with travel time of 90 minutes or much more. Rail service is \$40.00 per person and takes 55 minutes, departing every half hour. Bus service is affected by roadway congestion but is more economical.

Table 1: Percent of Ground Access Share by Public Transportation

Rank	Airport	Market Share	Rail	Bus/Shared Van
1	Oslo	64	39	25
2	Hong Kong	63	28	35
3	Narita	59	36	23
4	Shanghai	51	6	45
5	Zurich	47	42	5
6	Stansted	40	29	11
7	Paris CDG	40	27	13
8	Amsterdam	37	35	2
9	Copenhagen	37	33	4
10	Munich	36	28	8
11	Heathrow	36	24	12
12	Stockholm	34	18	16
13	Frankfurt	32	27	5
14	Gatwick	31	24	7
15	Geneva	28	21	7
16	Brussels	26	16	10
17	Paris Orly	26	14	12
18	Vienna	26	22	4
19	Dusseldorf	22	18	4
Not Ranked	PHL	7	3	4

Source: Airport Cooperative Research Program (ACRP) Study, 2007.

Zurich International Airport is seven miles from the city center, analogous to PHL. A taxi ride costs \$35.00 and takes approximately 20 minutes. By train, which departs every 10 minutes, the trip takes 10 minutes and costs \$10.00. Buses generally only serve employees, and rail maintains a 42 percent share of total air passengers, the highest of all airports in this sample.

Distance and Cost from Airport to Center City

The distance and cost variables contribute to modal choice of airports in Table 1. Usually, greater distances discourage auto or taxi trips due to cost and travel time increases resulting from

highway congestion. Rail transit operating on exclusive right-of-way can significantly outperform highway modes as access trip distances increase. Express bus transit is subject to similar long travel times, but in the high transit usage market bus cost to the rider is consistently less expensive, sufficient to appeal to a segment of air passengers where time is a low-rated variable and cost dominant. For any trip other than a one- or two-day business trip, the cost of driving and parking in time and money exceeds the cost of various transit modes.

Concentration of Air Passengers to and from Center City

Landside destinations concentrated at the main, non-airport terminal of the transit service, like Center City, provide a high percentage of air passengers as a sub-market for the transit mode and support a tendency to provide direct, non-stop service. Conversely, diverse regional land side origins or destinations will diffuse the market and encourage taxi and auto trips. At Oslo Airport, 48 percent of travelers start or end in Oslo and 11 percent in nearby suburbs served by the airport train. In Hong Kong, given its contained geography, 73 percent of air passengers come and go to Hong Kong proper. For Zurich Airport, most local residents do not use transit to access the airport. Rail service in Switzerland is designed to connect all major cities; Zurich Airport is the major rail hub for the entire country.

Connectivity and Air Passenger Trip Purpose

Transit connectivity to other public modes increases market area and potential transit ridership. The more seamless the connectivity is experienced by the air passenger the more likely the passenger will be to choose or repeat the transit trip. Several factors contribute to the quality of connectivity, including nature of trip (business passengers carry less baggage than vacationers, and short trips require less baggage than long trips), possibility of off-airport baggage check, parking facilities at connecting mode end, and compatibility of schedules.

Many foreign airports in this study sample have rail service that is part of or connects seamlessly with regional, national, or international rail service. Paris Charles DeGaulle Airport rail service connects to metro, national, and intra-European rail service directly from the airport, and this connectivity is a major emphasis of its route service design.

Regarding baggage handling, Zurich Airport allows baggage check-in at any of its 50 rail stations throughout the country. Most European airports do not have downtown baggage check-in; however, most rail and bus service is exclusively destined to and from airports and provides dedicated luggage space.

Nature of Qualitative Level of Service

Level of service, which relates to ridership, on public transit access modes to PHL has been discussed. The indicators or characteristics of service are quantitative in nature, and include such measures as time of trip, cost, destination, frequency, accessibility, etc. Qualitative variations, such as comfort, luxury, and exclusivity may also affect the air traveler's choice to use one public transit

mode over another, or to drive or be driven in a private or exclusive vehicle. Several European airports and their Asian counterparts have built comfort into various transit service options usually relating to price. Luxury bus service exists from Tokyo and other cities to their airports, usually incorporating remote baggage check-in as a convenience feature.

Local Governmental Policy Supporting Public Transit and Integration of Modes

Local government policies regarding transportation priorities and sharing of governance can influence the quantity and quality of transit access service to airports and thereafter the modal split of passengers using these public modes. For example, Norwegian government agencies have set a goal of 50 percent market share by combined rail and bus, thereby contributing to transit adequacy.

The Zurich Airport rail system is a direct component of the national rail system, thereby insuring complete integration of rail and air modes through the country and the world's highest rail usage to a major airport. The same integration is true at Paris Charles DeGaulle Airport where direct train service north to Belgium and south to Mediterranean countries is available on high-speed luxury rail.

Also demonstrative of integration of air and service modes and their governance are their related public information systems. For transit to effectively provide airport access, website and internet services must be coordinated so that the traveler may easily access scheduling, destination, cost, ticketing, and transfer options at any location.

Inter-transportation operating agency coordination, governance, and decision making cannot compete for market share or focus on only one mode, but must macroscopically consider the total transportation trip in providing service and information. Regional or even national oversight may be necessary for metropolitan transportation systems to interact in optimal fashion.

Figure 1 shows modal choice at U.S. airports with direct rail connection. Noteworthy for PHL is the lack of express bus service to the airport, which is available at the other airports except Atlanta-Hartsfield Airport. The data in Table 2 compares markets of airline passengers at several airports and the percentage of trip-ends in the CBD served by the airport. Noteworthy is the lower Philadelphia percentage, which indicates over 86 percent of air passengers are originating in the Pennsylvania, New Jersey, and Delaware suburbs.

Figure 1: Public Transportation

Market Share Patterns (Direct Rail Connections)

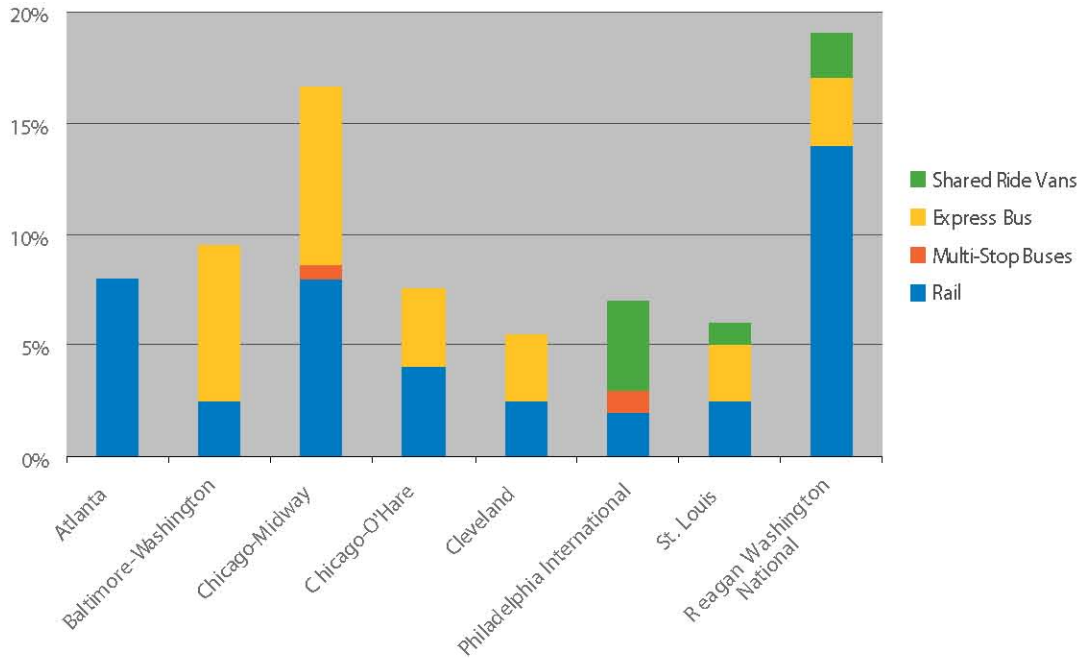


Table 2: Air Passenger Trips to the Central Business District

Airport	Percent
Reagan Washington National	33
Baltimore -Washington International	14
Chicago -Midway	20
Newark Liberty International	14
Chicago -O'Hare	14
Philadelphia International	14
Washington -Dulles	12
Atlanta-Hartsfield	7
Denver International	20

Source: Transportation Cooperative Research Program (TCRP) Report 62, 2002 .

Table 3 shows major hub domestic airports ranked dependent on percentage of air passengers flying for business purposes. Although the definition of business purpose is qualitative, destinations associated with vacations have expected low business usage. In comparison, PHL has a level of business usage at 45 percent. PHL conducted two surveys regarding trip purpose. The winter survey in 2006 yielded 53 percent, while the summer survey in 2008 indicated 36 percent business use, averaging 45 percent annually. San Francisco, with the highest percentage of transit use in the United States, is comparable with PHL at 41 percent business use.

American hub airports have much lower levels of transit access trips than their European and Asian counterparts. In fact, our most heavily used airport from a transit access point of view, San Francisco, has only about one-third of the transit market of Oslo, Norway, and fewer than all 19 foreign airports studied. Of the airports shown in Table 4, PHL is in the lowest tier with seven percent transit access use by air passengers and ranked among the lowest in rail use.

Table 3: Percent of Travelers Using Airport for Business Purposes

Airport	Percent
Atlanta Hartsfield	66
Reagan Washington National	64
Dallas-Ft. Worth	57
Kansas City	57
New Orleans	56
Boston Logan	54
Baltimore-Washington	54
Seattle-Tacoma	54
Washington-Dulles	52
Chicago-O'Hare	50
Oakland	50
San Jose	48
Denver International	47
Sacramento	46
Philadelphia International	45
San Francisco	41
San Diego	40
Tampa	37
Chicago-Midway	37
Phoenix-Sky Harbor	36
Portland (PDX)	36
Salt Lake City	35
Los Angeles International	32
Las Vegas-McCarran	30
Orlando	23
Ft. Lauderdale	23

Source: Transportation Cooperative Research Program (TCRP) Report 62, 2007.

Table 4: Percent of Transit Usage at Major U.S. Airports

Rank	Airport	Total Rail, Bus/Van	Rail	Bus/Van
1	San Francisco	23	7	16
2	John F. Kennedy	19	8	11
3	Boston	18	6	12
4	Reagan Washington National	17	13	4
5	Oakland	15	9	6
6	New Orleans	15	0	15
7	Newark Liberty International	14	5	9
8	Atlanta-Hartsfield	14	10	4
9	Denver	14	0	14
10	Los Angeles International	13	0	13
11	Baltimore-Washington International	12	3	9
12	Chicago-O'Hare	12	5	7
13	Las Vegas-McCarran	12	0	12
14	Seattle-Tacoma	11	0	11
15	Orlando	11	0	11
16	Portland	10	6	4
17	Indianapolis	9	0	9
18	Phoenix Sky Harbor	9	0	9
19	Chicago-Midway	9	5	4
20	San Diego	9	0	9
21	LaGuardia	8	1	7
22	Washington-Dulles	8	1	7
23	Tampa	7	0	7
24	Philadelphia International	7	3	4
25	Dallas-Fort Worth	6	0	6
26	St. Louis	6	3	3
27	Cleveland	6	2	4

Source: Airport Cooperative Research Program (ACRP) Report 4, 2008.

Modal Comparisons

Previous report sections have examined the service characteristics of modes serving other domestic and international airports where transit ridership is significantly higher than PHL. User demographics and qualitative factors were considered. Comparisons will now be made between other airports/markets and PHL, regarding current access modes and customer characteristics, to identify PHL access deficiencies, opportunities, and study recommendations.

Private Auto

PHL, with its expanding medium- and long-term lots, has historically increased facilities for private autos. Concurrently, aviation-related revenue to the airport through the PPA has increased proportionately, providing needed revenue to the airport. Additional private lots with shuttle service continue to develop and expand off airport property to meet increased demand from the growing number of air passengers. Private car transport and parking provide significant convenience to short-term business and pleasure travelers in comparison to transit modes. However, the cost of parking for vacationers and multi-week trips should induce travelers to consider public transit modes, the cost of which is not time-of-trip-dependent. Comparison of modes yields cost to park for one week up to to \$140.00 while taxi to Center City would average \$60.00, round trip, and round trip train fare would cost \$14.00. These differentials increase in favor of transit with increased airline trip time away.

As airport passenger traffic grows in the next 20 years, long-term projections of available parking on site go down slightly, which should induce short-term parkers to consider non-driving modes. Several current strategies could be employed now to improve parking operations at the airport, which would reduce auto congestion and circulation delays:

- ▶ Reduce parking labor costs by allowing automatic credit card readers on entering each lot and automatic billing of that credit card at departure. This would reduce the need for parking attendants and reduce check-out times for cars leaving the lots.
- ▶ Provide valet parking at a premium to eliminate delay and congestion when garages are full, and at other times for parkers willing to pay for premium service.

Limo and Shared Van Services

These modes can be economically attractive to groups of travelers going to the same regional final destination. Trips must be arranged ahead of time or at the airport, and significant increased access trip time can be experienced waiting for van departure and passenger drop-off at multiple destinations in the suburbs. Travel times will also be impacted by traffic and roadway conditions and weather. These private multi-passenger services provide longer distance access to PHL and carry significantly more air passengers than bus or train modes locally.

Internationally, these limos/vans services have smaller markets with passengers absorbed into express bus and train modes where travel time is better and cost is lower.

SEPTA Bus Service

City bus service provided by SEPTA includes Routes 37, 115, and 108. All provide attractive, frequent schedules and fast travel times. However, none serves Center City directly. Instead they provide connector options for workers from South Philadelphia, Chester, Upper Darby, and Darby with destinations focused on the major employment sites in the airport area.

Given the JARC program subsidies for these SEPTA lines, the market areas not served, and the type of city bus equipment used, which has no accommodation for luggage, it seems obvious these routes are not intended to attract or service air passengers. All data available in the study regarding transit service to airports suggest that for bus service to be successful in attracting significant market share, it must have the following attributes: serve dense air passenger markets near Center City, and suburban population centers; provide convenient, quick and high frequency scheduled service; and have a reasonable level of comfort and provide accommodations for luggage with fewer stops or express service. Since most PHL air passengers come from the suburbs and 14 percent from Center City, current SEPTA bus service is not a significant airport access mode. Given the inadequate reach into the suburbs of the SEPTA Airport Line service (to be discussed next) express bus service to PHL appears to be a missing component to effective transit access to PHL. Some form of expedited remote baggage check-in at the access trip origin would enhance the bus service attractiveness. At the foreign airports reviewed, express bus service generally has longer trip times to the center city and other population centers than rail: however, bus service usually is less expensive for the distance traveled and therefore captures a significant portion of the transit access market. Bus departure frequencies are usually similar to train frequencies, eliminating long waits between modes (see Appendix B).

There is no local government mandate to increase SEPTA bus ridership as an access mode to PHL. Bus service seems to be focused on low-cost connection trips within urban settings or to suburban jobs sites. This suggests any express bus service may likely be provided by private companies with luxury/baggage receptive buses. Routes will necessarily, for travel time savings, serve dense suburban areas/corridors along major roadways like I-95, I-476, US 422, etc. For air trips longer than a weekend, express bus from suburban settings can be less expensive than

driving and parking, or taking a taxi or limo/van. Chapter 5 analyzes the suburban market for express bus service.

SEPTA Airport Rail Service

SEPTA operates this rail line to the airport from Center City every 30 minutes with travel time of 16 to 28 minutes, and one-way cost of \$7.00. This service is comparable with taxi times to Center City and is significantly cheaper than taxi fare for one or two passengers, or any length of time for parking a private car at PHL. In comparison to other rail lines accessing other foreign airports, frequency of service is less at PHL, with six trains per hour a typical frequency at the foreign airports. The rail line is the only SEPTA mode servicing the population center of Philadelphia from all four train stations: 30th Street, Suburban Station, Market East, and University City. Beyond these stations to suburban population centers in Pennsylvania and New Jersey or north and south to New York/Newark, Baltimore, or Washington requires transfer to rail or Amtrak or intercity bus. These transfers may require holdovers between modes, and air passengers may encounter full trains that make extensive baggage handling cumbersome for vacation travelers or those with more luggage. Despite the adequacy of rail service and price between PHL and Center City, ridership is notably lower than other domestic and international airports in Tables 1 and 4. Many business travelers into PHL from other cities end their trip in Center City and have little baggage to act as a disincentive to the SEPTA Airport Line usage. Since the SEPTA Airport Line uses mostly exclusive right-of-way not impacted by highway or train congestion (under normal circumstances), reliability is high and variation in travel time is low. This should be attractive to business users, and may be able to expand ridership through increased marketing and partnerships to promote rail service. Access distance to trains from airline gates is short and elevator equipped. Walking distances in Center City to business and some residential areas are short due to three station choices. With the expansion of the Pennsylvania Convention Center, the opportunity exists to promote the use of the Airport Line to convention visitors, traveling to Center City, though rail tickets, perhaps prepaid through conference registration.

Since rail service is competitive with other modes in price and travel time to Center City, the underutilization must be explained by other service deficiencies. One possible explanation includes the low percentage of air passengers estimated to have trip ends in Center City (14 percent) compared to the New York airports John F. Kennedy and LaGuardia of 48 percent and 32 percent, respectively, and Reagan Washington National at 33 percent. Although Center City is a business and residential center, it is a minor component of the PHL market, according to these data. Therefore, growth in transit service to PHL, as a percentage of access modes for air passengers, must concentrate on enhanced suburban service, although increased SEPTA Airport Line frequencies may also attract additional Center City riders.

Most towns and population centers in the Pennsylvania suburbs of Philadelphia are served by SEPTA commuter rail through 30th Street Station and the Center City rail stations. Service operates from early morning to night along most lines with reduced frequency after evening rush hour.

Connecting to and within the rail network to the SEPTA Airport Line and PHL may result in some holdover time in Center City and multiple stops into the suburbs before reaching their destination. Also, long-term auto parking must exist at SEPTA lots for air passengers to make this option work, unless the final destination is within walking distance (with luggage) from the local commuter rail station. If the PHL access trip occurs during rush hour, luggage space and handling issues may be an impediment to air passenger usage.

Connectivity of the SEPTA Airport Line to/from PHL is also an issue for air passengers from southern New Jersey, northern New Jersey, New York, and the Delaware/ Baltimore area. The transfer requires connections at 30th Street, with the Amtrak, Atlantic City train service, or SEPTA Trenton Wilmington lines, and may present extended waits, especially on the outbound portion of the trip. Air passengers arriving at PHL on delayed or late night flights may find no reasonable train schedule availability until morning. Transferring from the SEPTA Airport Line to Amtrak, involving purchasing ongoing tickets, adds a level of complexity for travelers unfamiliar with local trains. For passengers visiting the Philadelphia area or not familiar with ground transportation, the information available from SEPTA and the city websites, although linked, could be expanded to include a wider range of transit operators.

Although access trip cost by rail is economical, especially when compared to multi-week parking cost at the airport, utilization is low. Comparison to other international systems suggests that several factors may contribute to low SEPTA Airport Line ridership, including; holdover times transferring, schedule times and multiple commuter rail stops resulting in perceived or real long travel times compared to auto; lack of integrated information systems and fare structures for non-local arrivals; and more baggage associated with longer, non-business trips making connecting less comfortable or convenient. Providing additional direct service by rail to suburban destinations will require long-term capital investment and multiple government coordination and commitment. In the short term, the negative forces preventing more rail riders for PHL access trips can be addressed through express buses serving the suburbs. Chapter 5 examines potential market area routes and service attributes. These advantages may include 20-minute frequencies, few or no stops, dedicated luggage handling or remote check-in, and competitive fares with train.

Suburban Market Analysis

Perhaps the most notable public mode of access not provided to PHL passengers is scheduled express bus service from centroids and corridors of high population in the Greater Philadelphia region. In other comparative markets, this type of service with fixed schedules at collection points, minimal stops, and attractive fares compared to driving and parking at or near PHL, has attracted significant market share. As Philadelphia air traffic and passenger counts continue to increase, more surrounding land will be utilized for airport operations, expansion, and construction, thereby increasing the need for higher occupancy access modes that do not require parking facilities. Express bus service satisfies these criteria.

Express bus service to the airport needs to originate near population centers of sufficient density to generate enough ridership to be economically viable for providers. The service must also have a pickup location, preferably near a highway facility to provide relatively direct access to the airport. And finally, given the size of the DVRPC region, it must also be evaluated as to the travel time required from the pickup locations to the airport. These three elements, once properly identified, should provide some insight as to the relevance of creating suburban bus shuttles to PHL.

The first step in this process was to determine the municipal population densities throughout the DVRPC region. Individual municipal densities were derived by dividing the 2008 U.S. Census Bureau municipal population estimates by the acreage of each municipality. These were then sorted from high to low and divided into five nearly equal groups based on the characteristics of the distribution. Figure 2 shows the distribution of top-tier of municipalities throughout the DVRPC region, based on density.

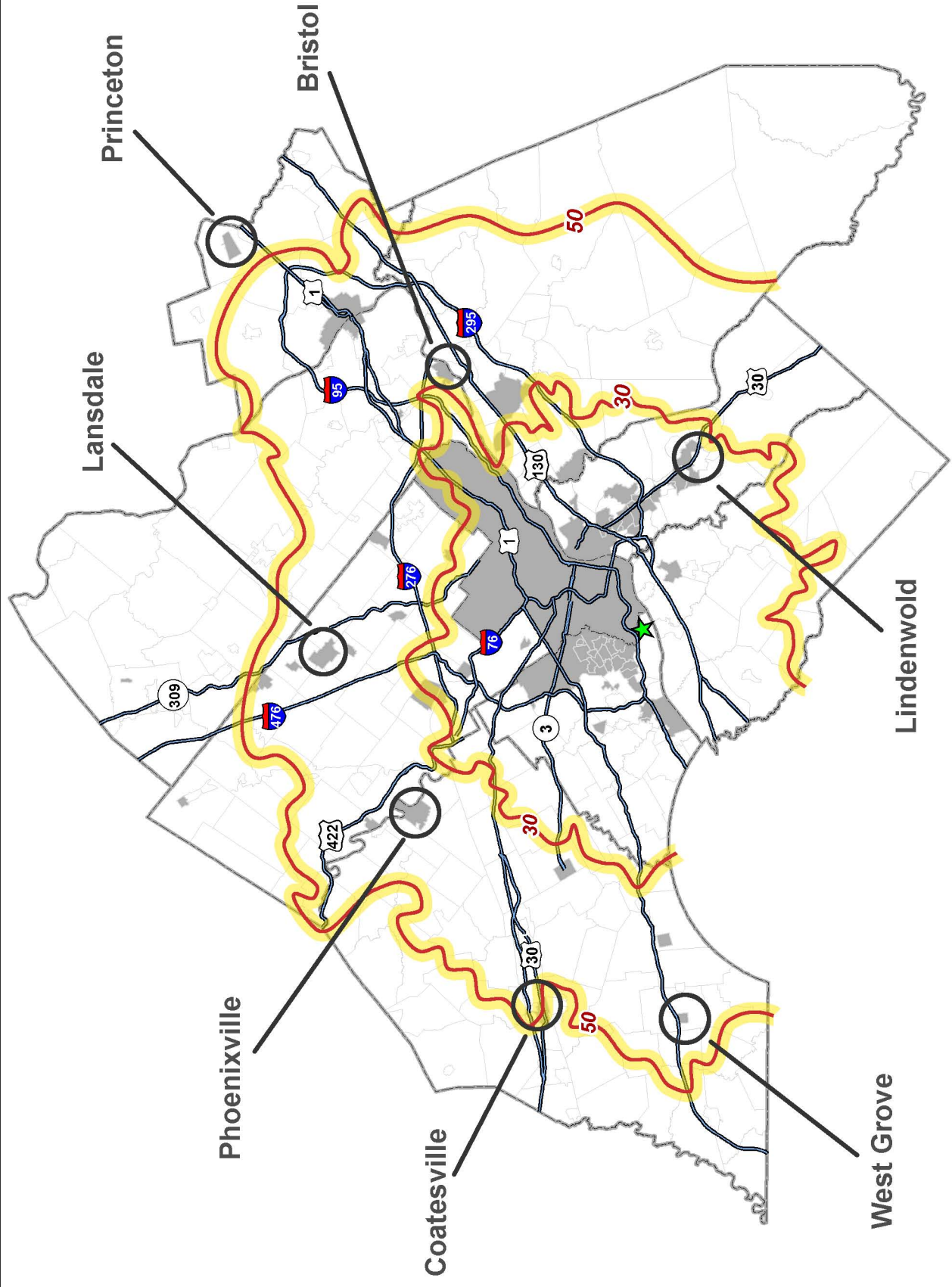
Many of the municipalities highlighted on the map are obvious; e.g., the City of Philadelphia and adjacent eastern suburbs of Delaware County, the cities of Camden and Trenton. Other pockets of density are indicative, i.e., isolated suburban areas showing either core population market areas or islands of development. These include older railroad towns now located along highway corridors, such as Kennett Square along US 1, Phoenixville along US 422, municipalities along US 309, and the dense aggregation of municipalities along US 30 in Camden County, New Jersey. These pockets of density and accompanying development suggest potential staging areas from which to establish service.

Figure 2: Population Density and Connecting Highways

★ Philadelphia Intl. Airport
~ Off Peak Travel Time in Minutes
~ Connecting Highway
○ Selected Municipality
 Municipality of Interest
 Municipality
 County

0 2 4 8 Miles

NORTH



Additionally, Figure 2 includes major highways and isochrone lines designating 30- and 50-minute off-peak travel times to the airport. These provide context for the travel from suburban locations, representing the fraction of distance to the airport and the potential attractiveness a shuttle service might provide over a car ride for suburban denizens. Most top-tier suburban locations lie within the 50-minute off-peak travel time zone.

Tables 5 and **6** identify the New Jersey and Pennsylvania suburban municipalities by county identified on the map.

Table 5: Top-Tier Population Densities by Municipality (New Jersey)

NJ Municipality	NJ County	Acres	POP 2008	POP/Acre
Maple Shade Township	Burlington	2,451	19,154	7.8
Riverside Township	Burlington	1,048	7,693	7.3
Willingboro Township	Burlington	5,207	36,530	7.0
Woodlynne Borough	Camden	136	2,687	19.8
Camden City	Camden	6,659	79,383	11.9
Collingswood Borough	Camden	1,240	13,817	11.1
Audubon Park Borough	Camden	108	1,058	9.8
Merchantville Borough	Camden	389	3,764	9.7
Audubon Borough	Camden	956	8,883	9.3
Oaklyn Borough	Camden	442	4,030	9.1
Haddon Heights Borough	Camden	1,808	14,326	7.9
Mount Ephraim Borough	Camden	563	4,392	7.8
Haddonfield Borough	Camden	1,001	7,589	7.6
Stratford Borough	Camden	1,008	7,049	7.0
Lindenwold Borough	Camden	2,515	17,485	7.0
Magnolia Borough	Camden	628	4,328	6.9
Hi-Nella Borough	Camden	146	998	6.9
Barrington Borough	Camden	1,022	6,939	6.8
Woodbury City	Gloucester	1,343	10,450	7.8
Trenton City	Mercer	5,208	82,883	15.9
Princeton Borough	Mercer	1,162	13,391	11.5

Source: Delaware Valley Regional Planning Commission, 2009.

Table 6: Top-Tier Population Densities by Municipality (Pennsylvania)

PA Municipality	PA County	Acres	POP 2008	POP/Acre
Penndel Borough	Bucks	273	2,470	9.0
Bristol Borough	Bucks	1,257	9,635	7.7
Richlandtown Borough	Bucks	175	1,327	7.6
Morrisville Borough	Bucks	1,288	9,594	7.4
West Chester Borough	Chester	1,171	18,315	15.6
Coatesville City	Chester	1,182	11,624	9.8
Kennett Square Borough	Chester	689	5,270	7.7
Phoenixville Borough	Chester	2,340	16,382	7.0
West Grove Borough	Chester	401	2,761	6.9
Ridley Park Borough	Delaware	680	7,000	10.3
Millbourne Borough	Delaware	44	905	20.7
Darby Borough	Delaware	527	9,903	18.8
East Lansdowne Borough	Delaware	132	2,473	18.8
Parkside Borough	Delaware	129	2,176	16.9
Clifton Heights Borough	Delaware	403	6,541	16.2
Upper Darby Township	Delaware	4,987	78,443	15.7
Collingdale Borough	Delaware	565	8,365	14.8
Colwyn Borough	Delaware	166	2,394	14.4
Lansdowne Borough	Delaware	773	10,638	13.8
Prospect Park Borough	Delaware	478	6,374	13.3
Glenolden Borough	Delaware	624	7,203	11.5
Norwood Borough	Delaware	516	5,774	11.2
Morton Borough	Delaware	236	2,634	11.1
Media Borough	Delaware	486	5,396	11.1
Yeadon Borough	Delaware	1,029	11,367	11.0
Sharon Hill Borough	Delaware	488	5,308	10.9
Aldan Borough	Delaware	392	4,238	10.8
Darby Township	Delaware	915	9,524	10.4
Chester City	Delaware	3,865	36,564	9.5
Rutledge Borough	Delaware	100	823	8.2
Folcroft Borough	Delaware	894	6,823	7.6
Haverford Township	Delaware	6,367	47,998	7.5

(Continued)

Table 6: Top-Tier Population Densities by Municipality (Pennsylvania) [Continued]

PA Municipality	PA County	Acres	POP 2008	POP/Acre
Narberth Borough	Montgomery	310	4,040	13.0
Conshohocken Borough	Montgomery	655	8,409	12.8
Jenkintown Borough	Montgomery	369	4,299	11.7
Ambler Borough	Montgomery	537	6,196	11.5
Rockledge Borough	Montgomery	222	2,478	11.2
Bridgeport Borough	Montgomery	450	4,350	9.7
East Greenville Borough	Montgomery	322	3,017	9.4
Souderton Borough	Montgomery	718	6,553	9.1
North Wales Borough	Montgomery	372	3,226	8.7
Royersford Borough	Montgomery	532	4,356	8.2
Lansdale Borough	Montgomery	1,896	15,526	8.2
Hatboro Borough	Montgomery	921	7,125	7.7
Hatfield Borough	Montgomery	399	2,836	7.1
Philadelphia City	Philadelphia	91,249	1,447,395	15.9

Source: Delaware Valley Regional Planning Commission, 2009.

To summarize several conclusions from Tables 5 and 6, these municipalities represent 67 of 353 municipalities (including the City of Philadelphia) within nine counties. This concentration of population, mostly along transportation corridors, offers an attractive market of potential PHL users who are traditionally auto-dependent. Additionally these locations are likely staging area candidates owing to the presence of existing infrastructure and locations near major inbound highways. In Pennsylvania, higher densities are evident along key transportation corridors: US 202, US 422, I-95, I-476, and the Schuylkill Expressway. In New Jersey, the density patterns radiate east from the older river communities along the Delaware River. New Jersey's density pattern may be less conducive to airport express bus service than the potential radial highway routes serving dense corridors in Pennsylvania.

When high population municipalities are plotted on a map of the region, several market areas for express bus service can be identified. This is shown in Figure 2. Characteristics of potential markets to be served include:

- ◆ concentrations of high-density municipalities;
- ◆ geographic corridors of high density along major highway routes;
- ◆ significant distance to PHL along major highways; and
- ◆ potential staging areas used by multiple-market areas.

Suggested Express Bus Staging Locations

Southeastern Bucks County and Eastern Montgomery County

A number of high-density municipalities exist along the border of Montgomery and Bucks counties and in the adjoining eastern Bucks County along the Delaware River. These would seem to provide staging areas for bus service along inbound routes going to the airport. A central staging location in Bristol Borough in Bucks County could supply bus service to PHL on I-95 with an approximately 30-minute inbound trip. Express bus service staged from the Telford/Souderton boroughs between US 309 and I-476 would have about a 50-minute trip to the airport. A staging area from Lansdale Borough, highlighted on the map, might have better highway infrastructure and access both to potential parking and the highway network. While other locations may be considered, Lansdale Borough should be weighed as a strong recommendation.

Delaware County

The high-density municipalities along the I-476 corridor could be served by a bus route operating out of Haverford Township with pickup points at Springfield and Granite Run Malls. Travel times in this area average less than 30 minutes, so it may not be quite as attractive as some further away. It is worth noting that pickup points at the King of Prussia (along I-76 west of I-476 and Norristown) and Plymouth Meeting malls north of I-76 along I-476 had been previously identified as potential staging areas for express buses in the DVRPC 2003 publication, I-476 Express Bus Feasibility Study (#03008). These locations may be ideal pick up points owing to their central suburban locations and existing parking areas, though both of these locations are situated in Montgomery County.

The municipalities adjacent to the City of Philadelphia, located in eastern Delaware County, are served by bus or appropriate rail transit services to the airport. There are four relevant bus routes serving the airport and providing service: Routes 37, 68, 108, and 115. These routes are largely employment-related for workers at the airport, but they provide a modicum of direct airport service for proximate municipalities well within the 30-minute boundaries.

Municipalities along the Schuylkill River

There are a few high-density municipalities along the Schuylkill River in central and western Montgomery and Chester counties along US 422. Service in this area could be centered at the King of Prussia Mall as discussed above. Express bus parking and a bus terminal in this area could provide scheduled service via the Schuylkill Expressway or I-476 to PHL. Phoenixville, highlighted on the map, might also be an excellent choice because it possesses the infrastructure and access to US 422 which is valuable in this assessment.

Western Chester County

At the western edge of the DVRPC region, Coatesville on US 30 or perhaps the boroughs of Kennett Square or West Grove on US 1 provide access to PHL. These locations are farther out than many others, with times approaching 50 minutes, and their proximity to both Delaware State and Lancaster County make them good candidates. The use of these areas as staging locations would need to consider suburban access as well as careful siting of parking/bus facilities.

Mercer County

Express bus service from a terminal/parking facility in Trenton could provide direct non-stop bus service via I-95 or I-295 through Burlington County, to PHL. One alternative might be staging this from Princeton Borough, highlighted in Figure 2, near US 1 where travel times exceed 50 minutes. The farther away from the airport such an origin can be established, the more desirable such a service might be to harried suburban citizens.

Southern New Jersey

A bus route from western Gloucester County through western Camden and Burlington counties, possibly on I-295, would service the dense municipalities along the Delaware River and access PHL from the Walt Whitman Bridge. This route would require numerous stops at parking facilities and may therefore be unattractive from a travel time perspective.

Although proposed express bus routings rely on the regional interstate highway system, bus travel times will be impacted by congestion and delay during rush periods, as well as by construction/maintenance and accidents. Without High Occupancy Vehicle (HOV) lanes, bus passengers will not experience travel time improvements compared to private auto. Competitive aspects of proposed bus service do include cost, compared to private car parking for longer time durations, and convenience of service including easy access to terminal areas.

Perhaps one of the most attractive locations for an express bus service lies along New Jersey US 30 corridor paralleling the PATCO high-speedline in Camden County. Lindenwold Borough, highlighted in Figure 2, might be the ideal candidate for staging express bus service as it is farthest out and possesses considerable infrastructure supporting such an endeavor.

Long-Term Airport Access Options and Issues

In this chapter, additional ground access improvements will be proposed in relation to major expansion of facilities at the airport, as defined in the PHL Master Plan. In the next 25 years, a growth in air passenger volume of two to four percent per year and 50 percent growth in aircraft operations is expected. To plan for this continued growth at PHL, the airport with its consultants and FAA have defined three CEP alternatives which are currently being evaluated through the National Environmental Protection Act (NEPA) process.

The three master plan alternatives in escalating degree of construction, cost, and disruption of aviation operations are: status quo (complete improvements now underway like the runway 17/35 extension, remove old overseas terminal and build parking), Alternative A (new additional runway 9/27, extend runway 8/26, keep existing terminals, build new commuter terminal and new ground transportation center), and Alternative B (new additional runway 9/27, extend 8/26, expand terminal complex and new ground transportation center). Interestingly, parking facility capacity is estimated to increase only slightly as land and construction demands of the alternatives increase. This trend is to be expected since PHL has limited acreage with the constraining boundaries of I-95, the Delaware River, the Navy Yard, and Tinicum Township surrounding the airport. All three future alternative scenarios require land acquisition for aviation facility expansion, leaving little excess land for auto parking expansion. Expected on-airport parking capacities are listed in below.

Alternative	Design Parking Level
Status Quo	20,000
A	25,500
B	24,000

Source: Delaware Valley Regional Planning Commission 2009.

These parking space totals do not include off-airport pay parking facilities; however, available land limitations suggest that growth in total parking spaces available to air passengers will not keep pace with the growth in passenger traffic, thereby placing increasing emphasis on non-private transit modes of arriving and departing from PHL. The process of developing master plan alternative airport designs and testing these alternatives for capacity, costs, staging times, and environmental impacts is time-consuming. Public input must be solicited and responded to within

the various designs. Initial master planning for expansion of PHL from its existing layout began in 1998 and the Record of Decision is anticipated to be issued by FAA in 2010. Several variables exist, including escalating costs and available federal, state, and local funds; legal actions by neighbors opposing development; airline market forces influencing demand; and mergers, consolidations, and international competition, which could affect the final airport buildout of this cycle of PHL enhancement. However, certain consistencies within the alternatives regarding ground transportation exist and several transit access options not currently employed or reviewed in this study have been suggested for consideration independent of the details of the PHL build out. They include:

Ground Transportation Center (GTC)

In the two development alternatives, a GTC is called for to act as a collection-distribution center for air passengers in and out of PHL. The GTC will provide an interface between access modes including private parkers, bus, train, taxi, rental and shuttle/courtesy vehicles, and the airport terminal via walkways and automated people movers (APM) connecting all terminals. The existing SEPTA Airport Line service would continue to provide airport access, terminating at the GTC and interfacing with the APM system.

Design Issues

Alternative designs de-emphasize auto parking expansion at the airport in favor of expanded aviation and transit operating areas. Further policy development favoring non-auto modal choice for airport access should be considered.

Information

Air and ground passenger information functions exist for each modal choice via each operating agency. These must be integrated in such a way that multimodal information can be provided to the air passenger encompassing the door-to-door trip.

Market Area

Market area coverage by transit serving PHL, excluding South Philadelphia bus service, is provided by the SEPTA Airport Line with frequencies of 30 minutes. Market analysis in Chapter 5 revealed that certain corridors in Bucks/Montgomery, Chester, and New Jersey counties may benefit from new express airport bus service. However, for the shorter trips from the high-density areas of Delaware County and Philadelphia travelers have limited access on the SEPTA Airport Line; service is instead provided by several SEPTA trolley and bus lines from eastern Delaware County, Center City, West Philadelphia, and Southwest Philadelphia. With service modifications, these lines could provide needed linkages to PHL from the nearby high-density communities. Specifically, trolley Route 36 runs from West Philadelphia, through South Philadelphia to Eastwick. Trolley Route 11 runs from West Philadelphia to the Darby Transportation Center. If Route 36 were extended to the PHL Transportation Center, serving all terminals, and connected with Route 11 at Island Avenue, where they are in proximity, residents from Delaware County could have direct transit access to PHL. Similarly, trolley passengers from Media to Upper Darby could connect to PHL via a connection of the Route 101 and 102 tracks at Drexel Hill junction if the Route 102 trolley were extended to connect

with the Route 11 trolley to the Route 36 trolley to PHL. (See trolley route maps in Appendix C.)

The attractiveness of these scenarios to air passengers would depend on frequency and directness of service. However, providing light rail access to PHL from the dense Delaware County area would significantly expand the rail/bus transit market reach into PHL to a larger segment of the regional suburbs.

When compared to higher utilization rail lines serving airports in Europe and Asia, service characteristics not present at PHL would most likely increase SEPTA Airport Line ridership. First, remote check-in at Amtrak's 30th Street Station could eliminate the physical hassle of carrying baggage through 30th Street Station, to the platform, and through the train and the check-in at PHL. Second, headways of 30 minutes are longer than comparable service at other airports and should be shortened to 10–15 minutes, if train turnaround times permit. Track modifications may be required to decrease headways.

Northeast Corridor Amtrak train service connects all major cities between Boston and Washington, DC, at frequent headways. Each city is served by one or more hub airports providing extensive domestic and international service. The nature of the evolution of airline service is predicted to include mergers and demand management strategies to cut the number of scheduled flights during peak hours. Not all airlines from all Northeast Corridor airports will provide as wide a range of destinations and numbers of flights. It is predictable that air passengers from one metropolitan area may need to travel to another metropolitan area to take an international flight or a domestic connection. Given the congestion levels and delay at the Northeast Corridor hub airports, Amtrak rail service could become the most efficient connecting mode between airports from price and time perspectives. Both Newark Liberty International (EWR) and Baltimore-Washington International (BWI) airports benefit from a dedicated transit link between the airport and its dedicated station stop on the Northeast Corridor Amtrak line. For foreign arrivals to these airports, any ground destination in the Northeast is available via the Amtrak linkage. The same is true for PHL; however, the air passenger must first negotiate the SEPTA Airport Line, a taxi, or other form of transit to get to 30th Street Station before connecting with Amtrak, resulting in increased hassle and the uncertainty of multi-vehicle (at least three) linked trips to the final destination.

To include PHL in this group which partners directly with Amtrak and create the possibility of a single ticket issued between origin and final destination, a new Amtrak station must be built to serve PHL and transit service by automated guideway transit line, such as EWR, or bus service such as BWI, must be instituted spanning the 2.5 miles minimum distance between the airport terminal and the rail corridor. Given the expense, timeframe, and jurisdictional issues surrounding this type of facilities project, the recommended improvements to the SEPTA Airport Line seem more feasible and realistic.

Recommendations

As the result of transit access comparisons of PHL with other airports, several potential strategies and service enhancements have been identified which may, if implemented, increase the transit usage percentage of total air passenger access trips to PHL. Since several public and private operating agencies must agree and cooperate to provide improved service, recommendations must be found politically, financially, and technically feasible to the primary operators involved. Strategies vary in capital cost and budgets are proportional to usage levels; therefore, high-cost service enhancements would necessarily be long-term in implementation time and require detailed engineering analysis to define costs and detailed market analysis to establish estimated passenger volumes and revenues. Certain strategies are less capital-intensive and/or are reliant on private-sector initiative versus public funding and are therefore available for consideration more immediately. Feedback from transit operators, which will help in determining the feasibility of a long-term project, especially, has been included in these recommendations in the form of “issues” noted after each strategy.

Short-Term Access Strategies

Auto Parking Strategy

Because parking capacity is limited within the master plan design, and may be formally capped, more efficient circulation and automated parking procedures will expedite transit vehicle service times at the airport and lower parking operations costs, thereby increasing the parking revenue contribution to airport total revenue. It is assumed that surface lots and garages will reach capacity, valet parking at reserved sites will be instituted, at premium prices to avoid congestion from unnecessary auto re-circulation trips within the airport. Of note, the PPA has initiated a Parking Guidance System which may improve circulation. Install an automatic parking fee collection system at entry and exit points to reduce congestion, processing time, and personnel costs for fee collection, thereby increasing PHL net parking revenues.

Issue

- ◆ As air passenger traffic grows at PHL over the next twenty years, auto access and parking will become a smaller proportion of total access trips due to limited on site and private parking facilities. More access trips will require transit modes, while auto access revenues must be optimized and auto access circulation made more efficient. Design or administrative caps on auto parking capacity will force increased transit usage.

Commuter Rail Strategy

SEPTA Airport Line service from Center City stations to major terminals at PHL is very attractive and competitive with taxi, limo, and private auto parking from cost and access trip time

perspectives. Because air passengers have baggage, it is imperative that all City stations have working elevators or escalators serving SEPTA's Airport Line platforms. Train cars used on the SEPTA Airport Line should be equipped with floor-level luggage racks to accommodate air passenger luggage.

One market segment in Center City that has a strong potential for increased use of the Airport Line train are the visitors coming to Philadelphia for conferences. The Pennsylvania Convention Center is currently completing a significant expansion project that will attract more and larger conferences. For visitors flying into Philadelphia, the Convention Center and the primary convention hotel, the Philadelphia Marriott, are directly connected to the Market East Station served by the Airport Line. SEPTA and the Pennsylvania Convention Center should partner to encourage each convention to provide Airport Line passes for incoming visitors, which could be included as part of the conference registration fee. At a minimum, this service should be heavily promoted to incoming convention visitors.

Much of the Pennsylvania portion of the DVRPC region, as well as Camden and Mercer counties, New Jersey and New Castle County, Delaware, can connect to the SEPTA Airport Line, to PHL, by using the rest of the SEPTA commuter rail network and PATCO. However, suburban SEPTA rail service parking caters to daily commute use rather than longer-term (multiday) air passenger parking needs. Where additional land or underutilized parking facilities exists, dedicate a portion of parking capacity to multiday use. Additional short-term actions which would provide incentives for SEPTA's Airport Line use when accessing PHL include airline ticketing and baggage check-in remotely at 30th Street. The potential for joint airline/Amtrak through-ticketing would integrate the multi-modal trip, and contribute to reduced check-in delay at PHL if accomplished remotely. Analysis is also suggested regarding the positive effects of pairing the SEPTA Airport Line with different regional rail lines, other than the Warminster and West Trenton lines, to increase ridership and/or operating efficiencies.

SEPTA Airport Line headways of 30 minutes are less frequent than analogous rail service at other airports with high rail patronage. The SEPTA Airport Line service frequencies have been studied by SEPTA, and to decrease headway to less than 30 minutes, extensive track work improvements must be made. This would eliminate train scheduling congestion from Amtrak and Warminster Line trains, and in Center City, the West Trenton Line, and Landsdale/Paoli Line trains. Detailed current engineering cost estimates should be reviewed or developed in light of expected future ridership, based on assumed limitations to private auto parking,

Issue

- ◆ Since air passengers carry baggage, SEPTA's rail line cars must be equipped with floor-level luggage racks, center city rail stations must be equipped with working elevators or escalators to the platforms servicing the Line. Commuter rail stations in the suburbs must allocate parking, and advertise spaces for overnight and extended stay. Supplemental fee structure and enforcement mechanism must be developed to control these airport access trip parking spaces. The requirement that passengers and baggage be screened before entering airport secure areas would require Transportation Security Administration involvement and cost with any remote check-in facility. Required track work to reduce headway including switching, signalization scheduling changes, and land acquisitions will be an expensive public investment, only warranted by a significant ridership increase.

Express Bus Strategy

Express bus service, between suburban population centers and commercial hub airports, accounts for a significant portion of airport trip transit riders at the airports discussed, in comparison to PHL. Express bus service to PHL should be evaluated to determine operating and revenue/cost feasibility. Significant population in the DVRPC region is concentrated in suburban centers and along interstate corridors, many of which are routed past PHL via I-95. Staging areas can be developed providing terminals, long-term parking and, potentially, remote airline check-in service. Service could be provided incrementally by public or private transit operators, on a corridor by corridor basis, as patronage grows. In other hub airport markets, such bus service is competitive with other modal choices from the travel time perspective, and is superior from the perspectives of cost and convenience to private auto.

Issue

- ◆ Express buses traveling from suburban centers to PHL are subject to the same traffic congestion and delay during rush periods, accidents, and construction events as are private auto trips accessing PHL. Frequencies of service and operating times, by corridor, must be sufficient to service inbound/return passengers to PHL even during periods of airline operating delays. HOV lanes may be necessary to achieve the perceived reliability necessary to attract sufficient ridership to justify the service.

Informational Strategy

The information website of PHL is coordinated with the SEPTA website providing a link to SEPTA rail and transit schedules and other information. The airport website should be expanded to include other transit operations such as PATCO and Amtrak, for intercity travel. This extended ground transportation access would be especially helpful for international arriving passengers seeking destinations along the Northeast Corridor.

Issue

- ◆ Several airlines, such as US Airways, operate from multiple terminals. As a convenience to departing passengers arriving by any access mode to the airport, expand the sources for departure gate information, perhaps to include mobile signboards on the SEPTA Airport Line and shuttle vehicles from remote sites near PHL.

Long-Range Transit Stimulating Strategies

Long-range airline service to diverse destinations from major airports in metro areas along the Northeast Corridor will expand in the future. However, not all destinations will be offered at any one airport, thereby increasing the use of transit between airports in multiple metro areas. Forecasted increases in total passenger traffic will also drive transit usage, as air passengers originating in the Philadelphia area, for example, may choose an air destination not served by PHL, but served by EWR or Washington-Dulles. This trend, which is driven by the need to optimize the scarce Northeast Corridor aviation operating capacity, supports the convenience and seamlessness of a more direct link between PHL and Amtrak corridor service.

Rail Strategy

Track installation with interlockings would allow some or all northbound Amtrak trains to divert to the SEPTA Airport Line tracks and directly serve PHL. Southbound Amtrak trains currently have this potential. Cost estimates, ridership projections, and Amtrak willingness to serve PHL, as it does with some trains to BWI and EWR, should be researched.

The idea of Amtrak/PHL linkage through a yet to be built station on the Northeast Corridor, and some form of monorail or other dedicated, 2.5 mile transit link, similar to EWR has been proposed. The expense and timeframe of such a project would not yield the benefit/cost ratio adequate to justify the project given current and foreseeable future funding and ridership projections.

Trolley Routes 11, 36, and 102 in Delaware County have been proposed as alternate transit access facilities for PHL. Combining and rerouting these lines would require major investment in land acquisition, retracking, and modified rolling stock with costs greatly in excess of potential benefit. The current SEPTA streetcar fleet is not designed to accommodate airport passengers as no luggage capacity exists, aisles are narrow, and floors are elevated and not compliant with the Americans with Disabilities Act. Current service includes high turnover of passengers and frequent stops, not viable for airport access passengers and baggage.

Issue

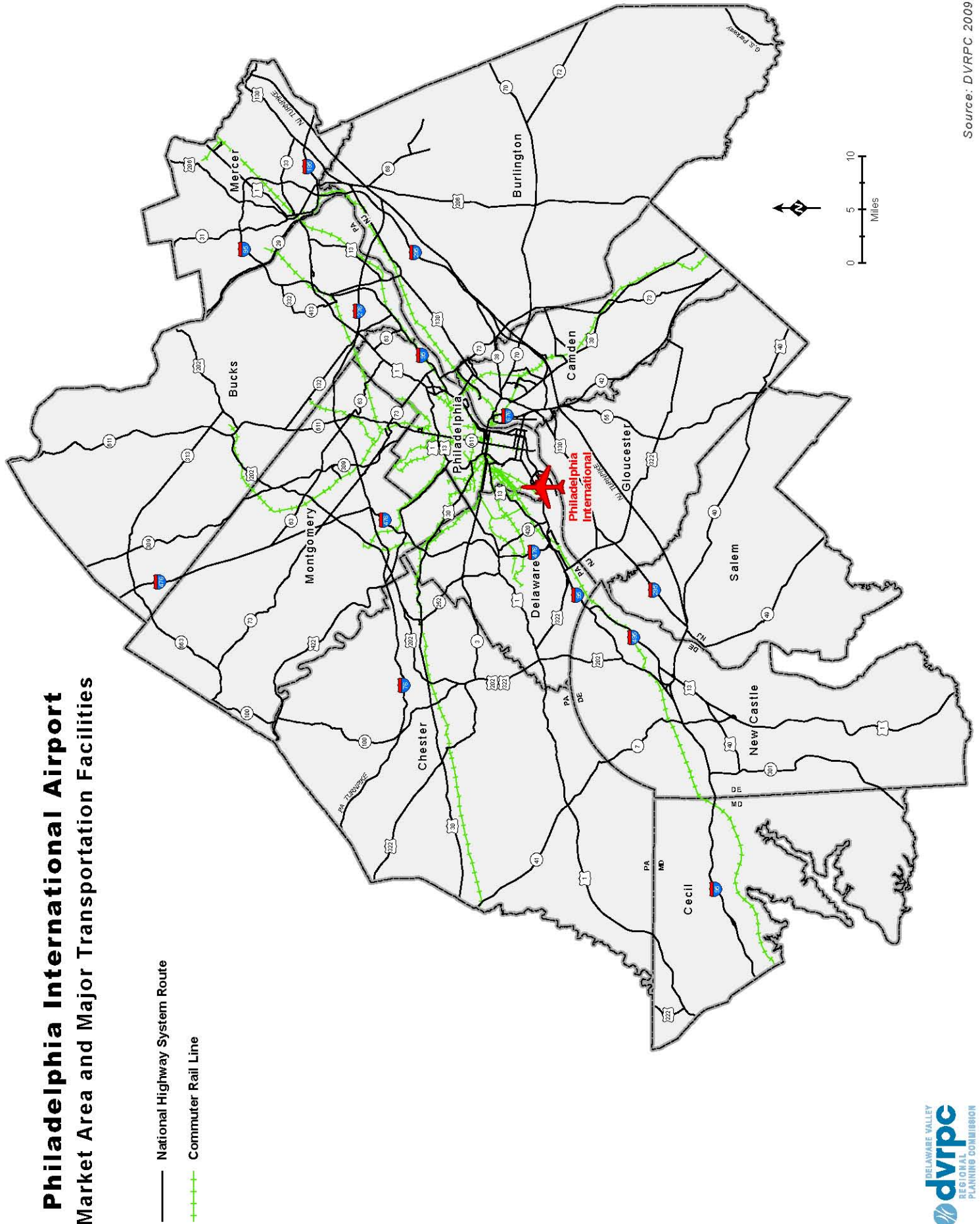
- ◆ Several, more capital-intensive approaches to increasing the ease of connecting between PHL and Amtrak have been proposed by local planners. These proposals build on the track work and service improvements proposed under the short-term strategies to decrease SEPTA Airport Line headways. The feasibility of larger capital investment projects to improve the PHL/Amtrak interface ultimately is based on cost, availability of funds, and trends in growth of the air passenger market.

APPENDIX A

Regional Map with Major Transport Facilities



Philadelphia International Airport Market Area and Major Transportation Facilities



APPENDIX B

SEPTA Bus Route Schedules



SEPTA Bus Route 108

108

**69th Street Terminal
To Philadelphia
International Airport
or UPS**

via Yeadon and Eastwick
Effective February 9, 2009



SEPTA BUS ROUTE



INFORMATION NUMBERS

Customer Service.....215-680-7800
 TDD/TTY (HEARING IMPAIRED ONLY).....215-680-7853
 Or check the Internet.....www.septa.org



**SEASON TICKETS
Available Now!**

215.339.7676 * SIXERS.COM



SEPTA Bus Route 108 Saturday Schedule

SATURDAYS																	
SOUTHBOUND									NORTHBOUND								
69th Street Terminal (South Terminal)	Church Lane and Baltimore Av	Church Lane and Chester Av (Yearon)	65th St and Woodland Av	Passyunk and Elmwood Ays	78th St and Lindbergh Blvd	84th and Crane Sts	PNC Operations	Philadelphia International Airport	Philadelphia International Airport	PNC Operations	84th and Crane Sts	78th St and Lindbergh Blvd	Island and Elmwood Ays	65th St and Woodland Av	Church Lane and Chester Av (Yearon)	Church Lane and Baltimore Av	69th Street Terminal (South Terminal)
AM SERVICE									AM SERVICE								
4:15	4:23	4:27	4:32	4:40	4:44	4:48	4:50	4:56	5:02	5:09	5:11	5:15	5:20	5:27	5:31	5:35	5:44
5:15	5:23	5:27	5:32	5:40	5:44	5:48	5:50	5:56	6:00	6:07	6:09	6:13	6:18	6:25	6:29	6:33	6:42
6:15	6:23	6:27	6:32	6:40	6:44	6:48	6:50	6:56	7:00	7:09	7:11	7:16	7:21	7:30	7:36	7:42	7:53
7:15	7:26	7:32	7:37	7:47	7:51	7:55	7:57	8:03	7:38	7:47	7:49	7:54	7:59	8:08	8:14	8:20	8:31
7:45	7:56	8:02	8:07	8:17	8:21	8:25	8:27	8:33	8:08	8:17	8:19	8:24	8:29	8:38	8:45	8:52	9:07
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10:45	10:57	11:04	11:10	11:20	11:25	11:30	11:33	11:40	11:15	11:25	11:28	11:34	11:39	11:51	11:58	12:05	12:20
11:15	11:27	11:34	11:40	11:50	11:55	12:00	12:03	12:12	11:45	11:55	11:58	12:04	12:09	12:21	12:28	12:35	12:50
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5:45	5:56	6:03	6:08	6:18	6:23	6:27	6:30	6:38	5:50	6:00	6:03	6:09	6:14	6:24	6:30	6:36	6:46
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SEPTA Bus Route 108 Sunday Schedule

SUNDAYS																	
SOUTHBOUND								NORTHBOUND									
69th Street Terminal (South Terminal)	Church Lane and Baltimore Av	Church Lane and Chester Av (Yeaton)	65th St and Woodland Av	Passyunk and Elmwood Avs	78th St and Lindbergh Blvd	84th and Crane Sts	PNC Operations	Philadelphia International Airport	Philadelphia International Airport	PNC Operations	84th and Crane Sts	78th St and Lindbergh Blvd	Island and Elmwood Avs	65th St and Woodland Av	Church Lane and Chester Av (Yeaton)	Church Lane and Baltimore Av	69th Street Terminal (South Terminal)
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5:15	5:23	5:27	5:32	5:40	5:44	5:48	5:50	5:56	6:00	6:07	6:09	6:13	6:18	6:25	6:29	6:33	6:42
6:15	6:23	6:27	6:32	6:40	6:44	6:48	6:50	6:56	7:00	7:09	7:11	7:16	7:21	7:30	7:36	7:42	7:53
7:15	7:26	7:32	7:37	7:47	7:51	7:55	7:57	8:03	8:08	8:17	8:19	8:24	8:29	8:38	8:45	8:52	9:07
8:15	8:26	8:32	8:37	8:47	8:51	8:55	8:57	9:03	8:38	8:48	8:51	8:57	9:02	9:14	9:21	9:28	9:43
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10:45	10:57	11:04	11:10	11:20	11:25	11:30	11:33	11:40	11:15	11:25	11:28	11:34	11:39	11:51	11:58	12:05	12:20
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5:45	5:56	6:03	6:08	6:18	6:23	6:27	6:30	6:38	5:50	6:00	6:03	6:09	6:14	6:24	6:30	6:36	6:46
6:15	6:26	6:33	6:38	6:48	6:53	6:57	7:00	7:08	6:15	6:25	6:28	6:34	6:39	6:49	6:55	7:01	7:11
6:45	6:56	7:03	7:08	7:18	7:23	7:27	7:30	7:38	6:45	6:55	6:58	7:04	7:09	7:19	7:25	7:31	7:41
7:40	7:51	7:58	8:03	8:11	8:15	8:19	8:21	8:27	7:15	7:25	7:28	7:34	7:39	7:49	7:55	8:01	8:10
8:40	8:49	8:54	8:59	9:07	9:11	9:15	9:17	9:23	7:45	7:55	7:58	8:04	8:09	8:17	8:22	8:27	8:36
9:40	9:49	9:54	9:59	10:07	10:11	10:15	10:17	10:23	8:30	8:39	8:41	8:45	8:50	8:58	9:03	9:08	9:17
10:40	10:49	10:54	10:59	11:07	11:11	11:15	11:17	11:23	9:26	9:35	9:37	9:41	9:46	9:54	9:59	10:04	10:13
11:40	11:49	11:54	11:59	12:07	12:11	12:14	12:17	12:23	10:26	10:35	10:37	10:41	10:46	10:54	10:59	11:04	11:13
AFTER MIDNIGHT SERVICE								AFTER MIDNIGHT SERVICE									
12:50	12:59	1:04	1:08	1:15	1:19	1:22	1:25	1:31	12:26	12:34	12:37	12:40	12:45	12:52	12:56	1:00	1:07
1:20	1:29	1:34	1:38	1:45	1:49	1:52	1:55	2:01	1:35	1:43	1:46	1:49	1:54	2:01	2:05	2:09	2:16
2:25	2:34	2:39	2:43	2:50	2:54	2:57	3:00	3:06	2:25	2:33	2:36	2:39	2:44	2:51	2:55	2:59	3:06
3:25	3:34	3:39	3:43	3:50	3:54	3:57	4:00	4:06	3:29	3:37	3:40	3:43	3:48	3:55	3:59	4:03	4:10
									4:29	4:37	4:40	4:43	4:48	4:55	4:59	5:03	5:10

Sunday schedule will be operated on New Year's, Memorial, Independence, and Labor days. Sunday service operating on Thanksgiving and Christmas days is highlighted in gray.

Subject To Change

115

Ardmore or Darby
Transportation Center
To Philadelphia
International Airport
or Airport Business Center

Effective March 15, 2010



SEPTA BUS ROUTE



INFORMATION NUMBERS

Customer Service.....610-734-1300
TDD/TTY (HEARING IMPAIRED ONLY).....215-580-7853
Or check the Internet.....www.septa.org

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WWW.SEPTAPASSPERKS.ORG

SEPTA Bus Route 115 Weekday Schedule

MONDAYS THROUGH FRIDAYS

NORTHBOUND										SOUTHBOUND											
Airport Business Center	International Airport Term. B Arrivals	Folcroft East Industrial Park	Grant Rd & Taylor Dr (Delmar Village)	Sharon Hill Trolley Station	Darby Transportation Center	Lansdowne Av and Baltimore Pk (Lansdowne)	Lansdowne Av and Garrett Rd (Upper Darby)	Lansdowne Av and Township Line Rd	Ardmore Junction	Suburban Square (Ardmore)	Suburban Square (Ardmore)	Ardmore Junction	Lansdowne Av and Township Line Rd	Lansdowne Av and Garrett Rd (Upper Darby)	Lansdowne Av and Baltimore Pk (Lansdowne)	Darby Transportation Center	Sharon Hill Trolley Station	Grant Rd & Taylor Dr (Delmar Village)	Folcroft East Industrial Park	International Airport Term. B Arrivals	Airport Business Center
AM SERVICE										AM SERVICE											
--	4:46	4:59	5:09	5:18	5:23	5:27	5:31	5:35	5:40	--	--	--	--	--	--	4:08	4:12	4:17	4:28	4:44	--
--	5:42	5:55	6:05	6:13	6:18	6:24	6:29	6:34	6:40	--	--	--	--	--	--	5:00	5:05	5:12	5:23	5:40	--
--	6:48	6:58	7:10	7:22	--	7:33	7:39	7:46	7:51	--	--	6:57	7:02	7:07	7:12	7:20	7:27	7:38	7:58	8:08	7:00
7:30	7:37	7:52	8:05	8:16	8:22	8:31	8:38	8:44	8:52	9:03	--	8:36	8:42	8:49	8:55	9:01	9:07	9:15	9:26	9:46	8:56
8:30	8:37	8:54	9:05	9:16	9:22	9:30	9:35	9:40	9:49	10:01	8:15	8:27	8:36	8:43	8:49	8:55	9:04	9:10	9:21	9:39	9:49
9:30	9:37	9:52	10:03	10:14	10:20	10:28	10:33	10:39	10:47	10:59	9:15	9:27	9:36	9:41	9:46	9:51	10:00	10:07	10:17	10:35	10:45
10:30	10:37	10:51	11:02	11:13	11:19	11:27	11:32	11:38	11:46	11:58	10:15	10:27	10:36	10:42	10:47	10:52	11:01	11:08	11:18	11:36	11:46
11:30	11:37	11:51	12:02	12:13	12:19	12:27	12:32	12:38	12:46	12:58	11:15	11:27	11:36	11:41	11:47	11:53	12:02	12:09	12:21	12:39	12:49
PM SERVICE										PM SERVICE											
12:30	12:37	12:51	1:02	1:13	1:19	1:27	1:32	1:38	1:46	1:58	12:15	12:28	12:36	12:42	12:48	12:54	1:03	1:10	1:21	1:39	1:49
1:30	1:37	1:51	2:02	2:13	2:19	2:27	2:34	2:42	2:53	3:05	1:15	1:27	1:36	1:42	1:48	1:54	2:03	2:10	2:21	2:39	2:49
2:30	2:38	2:54	3:07	3:18	3:25	3:33	3:38	3:45	3:54	4:06	--	--	--	2:16	2:23	--	2:34	2:42	2:54	--	--
3:30	3:38	3:55	4:08	4:18	4:24	4:32	4:37	4:42	4:51	5:04	2:15	2:29	2:40	2:49	2:56	3:03	3:12	3:19	3:31	3:51	4:02
4:30	4:39	4:57	5:09	5:19	5:25	5:33	5:38	5:43	5:52	6:05	3:18	3:30	3:41	3:49	3:56	4:03	4:12	4:20	4:32	4:51	5:02
5:30	5:37	5:53	6:05	6:14	6:19	6:26	6:31	6:36	6:43	--	4:30	4:42	4:53	5:02	5:08	5:14	5:23	5:32	5:43	6:01	6:11
6:30	6:37	6:51	7:03	7:12	7:17	7:23	7:27	7:32	7:39	--	5:20	5:34	5:44	5:51	5:56	6:02	6:11	6:20	6:31	6:49	6:59
7:15	7:22	7:38	7:49	7:58	8:03	8:08	8:12	8:17	--	--	6:30	6:44	6:54	7:01	7:06	7:12	7:21	7:30	7:41	7:59	8:09
8:20	8:26	8:40	8:51	9:00	9:05	--	--	--	--	--	--	8:05	8:10	8:14	8:19	8:25	8:32	8:38	8:48	9:07	--
--	9:09	9:24	9:33	9:43	9:48	--	--	--	--	--	--	--	--	--	--	9:30	9:36	9:43	9:52	10:11	--
--	10:12	10:28	10:37	10:45	10:50	--	--	--	--	--	--	--	--	--	--	10:30	10:35	10:42	10:51	11:10	--
--	11:12	11:25	11:34	11:42	11:47	--	--	--	--	--	--	--	--	--	--	11:30	11:35	--	11:46	12:04	--
AFTER MIDNIGHT SERVICE										AFTER MIDNIGHT SERVICE											
--	12:05	12:18	--	12:28	12:33	--	--	--	--	--	--	--	--	--	--	12:40	12:45	--	12:55	1:11	--
E - Time shown East Darby and Eagle Rds S - Operates only when school is in session.										E - Time shown East Darby and Eagle Rds S - Operates only when school is in session.											
To SAVE Money on Your Commute visit www.thecommuterschoice.com																					

SEPTA Bus Route 115 Weekend Schedules

SATURDAYS									
NORTHBOUND					SOUTHBOUND				
International Airport Term. B Arrivals	Folcroft East Industrial Park	Grant Rd & Taylor Dr (DeImar Village)	Sharon Hill Trolley Station	Darby Transportation Center	Darby Transportation Center	Sharon Hill Trolley Station	Grant Rd & Taylor Dr (DeImar Village)	Folcroft East Industrial Park	International Airport Term. B Arrivals
AM SERVICE					AM SERVICE				
6:08	6:21	6:31	6:39	6:43	5:35	5:39	---	5:49	6:06
7:11	7:25	7:35	7:43	7:49	6:37	6:42	---	6:52	7:09
8:15	8:28	8:39	8:47	8:53	7:35	7:40	7:46	7:55	8:13
9:15	9:28	9:39	9:48	9:54	8:35	8:40	8:46	8:55	9:13
10:18	10:33	10:44	10:53	10:59	9:38	9:43	9:49	9:58	10:16
11:19	11:34	11:45	11:54	12:00	10:38	10:43	10:49	10:59	11:17
PM SERVICE					PM SERVICE				
12:19	12:34	12:45	12:54	1:00	12:38	12:44	12:50	1:00	1:18
1:20	1:35	1:46	1:55	2:01	1:38	1:44	1:50	2:00	2:18
2:20	2:35	2:46	2:55	3:01	2:38	2:44	2:50	3:00	3:18
3:20	3:35	3:46	3:55	4:01	3:38	3:44	3:50	4:00	4:18
4:20	4:35	4:46	4:55	5:01	4:38	4:44	4:50	5:01	5:19
5:21	5:36	5:47	5:56	6:02	5:38	5:44	5:50	6:01	6:19
6:21	6:36	6:47	6:56	7:01	6:40	6:46	6:52	7:02	7:20
7:22	7:37	7:48	7:57	8:02	7:48	7:54	8:00	8:09	8:27
8:26	8:41	8:52	9:01	9:09	8:46	8:52	8:58	9:07	9:25
9:26	9:41	9:52	10:01	10:06	9:46	9:52	9:58	10:07	10:24
10:25	10:39	10:48	10:56	11:01	10:46	10:51	10:57	11:06	11:23
11:24	11:38	---	11:48	11:53	11:46	11:51	11:57	12:06	12:23
AFTER MIDNIGHT SERVICE					AFTER MIDNIGHT SERVICE				
12:24	12:38	---	12:48	12:53	12:45	12:50	---	1:01	1:18

SUNDAYS									
NORTHBOUND					SOUTHBOUND				
International Airport Term. B Arrivals	Folcroft East Industrial Park	Grant Rd & Taylor Dr (DeImar Village)	Sharon Hill Trolley Station	Darby Transportation Center	Darby Transportation Center	Sharon Hill Trolley Station	Grant Rd & Taylor Dr (DeImar Village)	Folcroft East Industrial Park	International Airport Term. B Arrivals
AM SERVICE					AM SERVICE				
6:04	6:17	6:28	6:34	6:39	5:35	5:40	---	5:50	6:03
7:20	7:34	7:44	7:52	7:57	6:50	6:55	---	7:05	7:19
8:22	8:36	8:46	8:54	8:59	7:45	7:50	7:56	8:05	8:20
9:22	9:36	9:46	9:54	9:59	8:45	8:50	8:56	9:05	9:20
10:28	10:42	10:54	11:03	11:08	9:50	9:55	10:01	10:11	10:26
11:28	11:42	11:54	12:03	12:08	10:50	10:55	11:01	11:11	11:26
PM SERVICE					PM SERVICE				
12:28	12:42	12:54	1:03	1:08	12:50	12:55	1:01	1:11	1:26
1:28	1:42	1:54	2:03	2:08	1:50	1:55	2:01	2:11	2:26
2:28	2:42	2:54	3:03	3:08	2:50	2:55	3:01	3:11	3:26
3:28	3:42	3:54	4:03	4:08	3:50	3:55	4:01	4:11	4:26
4:28	4:42	4:54	5:03	5:08	4:50	4:55	5:01	5:11	5:26
5:28	5:42	5:53	6:02	6:07	5:46	5:51	5:57	6:07	6:22
6:24	6:37	6:48	6:56	7:01	6:50	6:55	7:01	7:10	7:25
7:27	7:40	7:51	7:59	8:04	7:50	7:55	8:01	8:10	8:24
8:25	8:38	8:49	8:57	9:02	8:46	8:51	8:57	9:06	9:20
9:21	9:33	9:42	9:50	9:55	9:46	9:51	9:57	10:06	10:19
10:20	10:32	10:41	10:49	10:54	10:46	10:51	10:57	11:06	11:19
11:20	11:32	---	11:44	11:49	11:46	11:51	---	12:01	12:14
AFTER MIDNIGHT SERVICE					AFTER MIDNIGHT SERVICE				
12:15	12:27	---	12:39	12:44	12:35	12:40	---	12:50	1:03

Above schedule will be operated on New Year's, Memorial, Independence and Labor days. Limited Sunday service operating on Thanksgiving and Christmas days is highlighted in gray.

SEPTA Bus Route 37

37

South Philadelphia
To Eastwick and
Chester
Transportation Center
via Philadelphia
International Airport
Effective February 8, 2009





SEPTA BUS ROUTE





INFORMATION NUMBERS

Customer Service.....	215-580-7800
TDD/TTY (HEARING IMPAIRED ONLY).....	215-580-7853
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SEPTA Bus Route 37 Weekday Schedule

MONDAYS THROUGH FRIDAYS																			
WESTBOUND							EASTBOUND												
Broad St and Snyder Av	20th St and Passyunk Av	Island Av and Lindbergh Blvd	PNC Center	International Plaza	International Airport Term. B Arrivals	Airport Business Center	Gov. Printz Blvd and Wanamaker Av	Harrah's Chester	Chester Transportation Center	Chester Transportation Center	Harrah's Chester	Gov. Printz Blvd and Wanamaker Av	Airport Business Center	International Plaza	International Airport Term. B Arrivals	PNC Center	Island Av and Lindbergh Blvd	20th St and Passyunk Av	Broad St and Snyder Av
AM SERVICE																			
2:21	2:25	2:37	2:44	---	2:49	---	3:00	3:07	---	---	3:12	3:18	---	---	3:24	3:32	3:38	3:51	3:55
3:21	3:25	3:37	3:44	---	3:49	---	4:00	4:07	---	---	4:12	4:18	---	---	4:24	4:32	4:38	4:51	4:55
4:21	4:25	4:37	4:44	---	4:49	---	5:00	5:07	---	---	5:12	5:18	---	---	5:24	5:32	5:40	5:55	5:59
4:48	4:52	5:06	5:14	---	5:20	---	5:32	5:39	5:44	---	---	---	---	---	5:56	6:04	6:19	6:19	6:23
5:21	5:25	5:39	5:47	5:52	5:55	6:03	6:08	6:15	6:20	5:48	5:52	5:58	---	6:02	6:05	6:14	6:24	6:39	6:44
5:50	5:54	6:08	6:17	6:22	6:25	6:33	6:38	6:46	6:51	---	---	---	---	---	---	6:40	6:50	7:09	7:14
6:07	6:11	6:25	6:34	---	---	---	---	---	---	6:30	6:34	6:42	6:47	6:50	6:53	7:02	7:12	7:30	7:35
A6.17	6:21	---	6:38	6:43	6:47	6:56	7:01	7:10	7:15	---	---	---	---	---	---	7:14	7:24	7:42	7:47
6:29	6:33	6:48	6:57	---	---	7:03	---	---	---	A7.02	7:06	7:14	7:20	7:24	7:27	7:37	---	7:57	8:02
A6.41	6:45	---	7:02	7:07	7:11	7:20	7:26	7:35	7:40	---	---	---	7:28	---	---	7:34	7:44	8:02	8:07
6:49	6:53	7:09	7:18	---	---	7:24	---	---	---	---	---	---	7:39	---	---	7:45	7:55	8:13	8:18
6:57	7:01	7:17	7:26	---	---	7:32	---	---	---	---	---	---	7:50	---	---	7:56	8:06	8:24	8:29
A7.05	7:09	---	7:26	7:31	7:35	7:44	7:50	7:59	8:04	A7.27	7:31	7:39	7:45	7:49	7:52	8:02	---	8:22	8:27
7:07	7:11	7:27	7:36	---	---	7:42	---	---	---	---	---	---	8:01	---	---	8:07	8:17	8:35	8:40
7:19	7:23	7:39	7:48	---	---	7:54	---	---	---	---	---	---	---	---	---	8:18	8:28	8:46	8:51
A7.29	7:33	---	7:50	7:55	7:59	8:08	8:14	8:23	8:28	A7.52	7:56	8:04	8:10	8:14	8:17	8:27	---	8:47	8:52
7:45	7:49	8:05	8:14	8:19	8:23	8:32	8:38	8:47	8:52	---	---	---	---	---	---	8:33	8:43	9:01	9:06
8:09	8:13	8:29	8:38	8:43	8:47	8:56	9:02	9:11	9:16	8:17	8:21	8:29	8:35	8:39	8:42	8:52	9:02	9:20	9:25
8:34	8:38	8:54	9:04	9:09	9:12	9:21	9:27	9:36	9:41	8:42	8:46	8:54	9:00	9:04	9:07	9:17	9:26	9:44	9:49
8:59	9:03	9:19	9:29	9:34	9:37	9:46	9:52	10:01	10:06	9:08	9:11	9:19	9:25	9:29	9:32	9:42	9:51	10:09	10:14
9:24	9:28	9:44	9:54	9:59	10:02	10:11	10:17	10:26	10:31	9:33	9:36	9:44	9:50	9:54	9:57	10:07	10:16	10:34	10:39
9:49	9:53	10:09	10:19	10:24	10:27	10:36	10:42	10:51	10:56	9:58	10:01	10:09	10:15	10:19	10:22	10:32	10:41	10:59	11:04
10:14	10:18	10:34	10:44	10:49	10:52	11:01	11:07	11:16	11:21	10:23	10:26	10:34	10:40	10:44	10:47	10:57	11:06	11:24	11:29
10:39	10:43	10:59	11:09	11:14	11:17	11:26	11:32	11:41	11:46	10:48	10:51	10:59	11:05	11:09	11:12	11:22	11:31	11:49	11:54
11:04	11:08	11:24	11:34	11:39	11:42	11:51	11:57	12:06	12:11	11:14	11:17	11:25	11:31	11:35	11:38	11:48	11:57	12:15	12:20
11:29	11:33	11:49	11:59	12:04	12:07	12:16	12:22	12:31	12:36	11:40	11:43	11:51	11:57	12:01	12:04	12:14	12:23	12:41	12:46
11:54	11:58	12:14	12:24	12:29	12:32	12:41	12:47	12:56	1:01	---	---	---	---	---	---	---	---	---	---
PM SERVICE																			
12:19	12:23	12:39	12:49	12:54	12:57	1:06	1:12	1:21	1:26	12:06	12:09	12:17	12:23	12:27	12:30	12:40	12:49	1:07	1:12
12:44	12:48	1:04	1:14	1:19	1:22	1:31	1:37	1:46	1:51	12:32	12:35	12:43	12:49	12:53	12:56	1:06	1:15	1:33	1:38
1:09	1:13	1:29	1:39	1:44	1:47	1:56	2:02	2:11	2:16	12:58	1:01	1:09	1:15	1:19	1:22	1:32	1:41	1:59	2:04
1:34	1:38	1:54	2:04	2:09	2:12	2:21	2:27	2:36	2:41	1:24	1:27	1:35	1:41	1:45	1:48	1:58	2:07	2:25	2:30
1:59	2:03	2:19	2:29	2:34	2:37	2:46	2:52	3:01	3:06	1:49	1:52	2:00	2:06	2:10	2:13	2:23	2:32	2:50	2:55
2:24	2:28	2:44	2:54	2:59	3:02	3:11	3:17	3:26	3:31	2:14	2:17	2:25	2:31	2:35	2:38	2:48	2:57	3:15	3:20
2:49	2:53	3:09	3:19	3:24	3:28	3:37	3:43	3:52	3:57	2:38	2:41	2:49	2:55	2:59	3:02	3:12	3:21	3:39	3:44
3:13	3:18	3:34	3:44	3:49	3:53	4:02	4:08	4:17	4:23	3:02	3:05	3:13	3:19	3:23	3:26	3:36	3:45	4:03	4:08
3:39	3:44	3:50	4:00	---	---	4:06	---	---	---	A3.26	3:29	3:37	3:43	3:47	3:50	4:00	---	4:19	4:24
A3.44	3:49	---	4:09	4:15	4:19	4:29	4:35	4:44	4:50	---	---	---	3:56	---	---	4:02	4:13	4:31	4:36
3:56	4:01	4:18	4:28	---	---	4:34	---	---	---	A3.48	3:51	3:59	4:05	4:09	4:12	4:22	---	4:41	4:46
4:19	4:23	4:42	4:52	---	---	4:58	---	---	---	---	---	---	4:20	---	---	4:26	4:37	4:55	5:00
A4.07	4:37	---	4:57	5:03	5:06	5:16	5:23	5:32	5:38	A4.12	4:16	4:25	4:31	4:35	4:38	4:48	---	5:07	5:12
4:45	4:51	5:08	5:17	---	---	5:23	---	---	---	---	---	---	4:45	---	---	4:51	5:01	5:19	5:24
A4.31	---	---	---	---	---	---	---	---	---	A4.36	4:40	4:49	4:55	4:59	5:02	5:12	---	5:31	5:36
4:45	4:51	5:08	5:17	---	---	5:23	---	---	---	---	---	---	5:09	---	---	5:15	5:25	5:43	5:48
A4.59	5:04	---	5:21	5:27	5:30	5:40	5:47	5:56	6:02	5:00	5:04	5:13	5:19	5:23	5:26	5:36	5:46	6:04	6:08
5:15	5:20	5:36	5:45	5:51	5:54	6:04	6:10	6:19	6:24	5:25	5:29	5:38	5:44	5:48	5:51	6:01	6:10	6:28	6:30
5:40	5:45	6:01	6:09	6:14	6:17	6:25	6:31	6:40	6:45	5:51	5:55	6:04	6:09	6:13	6:16	6:25	6:34	6:50	6:54
6:05	6:10	6:26	6:34	---	---	6:40	---	6:52	7:01	6:18	6:21	6:30	6:35	6:39	6:42	6:51	7:00	7:16	7:20
6:30	6:35	6:51	6:59	---	---	7:05	---	7:17	7:26	6:45	6:48	6:57	7:02	7:06	7:09	7:18	7:27	7:43	7:46
6:56	7:01	7:17	7:25	---	---	7:31	---	7:42	7:50	7:21	7:24	7:33	---	---	7:40	7:49	7:56	8:10	8:13
7:29	7:33	7:47	7:54	---	---	8:00	---	8:11	8:19	7:51	7:54	8:02	---	---	8:09	8:18	8:25	8:39	8:42
7:58	8:02	8:16	8:23	---	---	8:29	---	8:40	8:48	8:25	8:28	8:36	---	---	8:43	8:52	8:59	9:13	9:16
8:27	8:31	8:45	8:52	---	---	8:58	---	9:09	9:17	9:05	9:08	9:16	---	---	9:23	9:32	9:39	9:53	9:56
8:56	9:00	9:14	9:21	---	---	9:27	---	9:38	9:46	9:51	9:54	9:57	---	---	9:58	10:07	10:14	10:28	10:31
9:39	9:43	9:57	10:04	---	---	10:10	---	10:21	10:29	10:01	10:04	10:12	---	---	10:19	10:28	10:35	10:49	10:52
10:34	10:38	10:52	10:59	---	---	11:05	---	11:12	11:17	11:00	11:03	11:11	---	---	11:20	11:28	11:35	11:47	11:50
11:31	11:35	11:48	11:55	---	---	12:01	---	12:08	12:13	---	---	---	---	---	---	---	---	---	---
AFTER MIDNIGHT SERVICE																			
12:30	12:34	12:46	12:53	---	---	12:58	1:05	1:10	1:17	12:05	12:08	12:15	---	---	12:22	12:29	12:35	12:46	12:49
1:30	1:34	1:46	1:53	---	---	1:58	---	2:09	2:16	1:05	1:08	1:15	---	---	1:22	1:29	1:35	1:46	1:49
---	---	---	---	---	---	---	---	---	---	2:05	2:08	2:15	---	---	2:22	2:29	2:35	2:46	2:49
A - Trip operates via the Auto Mall and Eastwick Industrial Park														A - Trip operates via the Auto Mall and Eastwick Industrial Park					
														Bus leaves 84th & Crane Av 3:12 PM to Broad St & Snyder Av					

To **SAVE** Money on Your Commute visit www.thecommuterschoice.com

SEPTA Bus Route 37 Saturday Schedule

SATURDAYS															
WESTBOUND								EASTBOUND							
Broad St and Snyder Av	20th St and Passyunk Av	Island Av and Lindbergh Blvd	PNC Center	International Airport Term. B Arrivals	Gov. Printz Blvd and Wanamaker Av	Harrah's Chester	Chester Transportation Center	Chester Transportation Center	Harrah's Chester	Gov. Printz Blvd and Wanamaker Av	International Airport Term. B Arrivals	PNC Center	Island Av and Lindbergh Blvd	20th St and Passyunk Av	Broad St and Snyder Av
AM SERVICE															
2:21	2:25	2:37	2:44	2:49	3:00	3:07	---	---	3:12	3:20	3:28	3:36	3:42	3:53	3:56
3:21	3:25	3:37	3:44	3:49	4:00	4:07	---	---	4:12	4:20	4:28	4:36	4:42	4:53	4:56
4:21	4:25	4:37	4:44	4:49	5:00	5:07	---	---	5:12	5:20	5:28	5:36	5:42	5:53	5:56
5:01	5:05	5:17	5:24	5:29	5:40	5:47	5:52	6:05	6:08	6:16	6:25	6:33	6:40	6:53	6:56
5:48	5:52	6:04	6:12	6:18	6:30	6:37	6:42	6:55	6:58	7:06	7:15	7:23	7:30	7:43	7:46
6:38	6:42	6:54	7:02	7:08	7:20	7:27	7:32	7:45	7:48	7:56	8:05	8:13	8:20	8:33	8:37
7:28	7:32	7:44	7:52	7:58	8:10	8:17	8:22	---	---	---	---	---	---	---	---
7:52	7:56	8:08	8:16	---	---	---	---	8:35	8:39	8:48	8:58	9:07	9:14	9:30	9:34
8:14	8:18	8:31	8:40	8:47	8:59	9:07	9:12	---	---	---	---	9:32	9:39	9:55	9:59
8:39	8:43	8:56	9:05	---	---	---	---	9:25	9:29	9:38	9:48	9:57	10:04	10:20	10:24
9:04	9:08	9:21	9:30	9:37	9:49	9:57	10:02	---	---	---	---	10:22	10:29	10:45	10:49
9:28	9:32	9:45	9:54	---	---	---	---	10:15	10:19	10:28	10:38	10:40	10:56	11:12	11:16
9:52	9:56	10:09	10:18	10:25	10:37	10:46	10:52	---	---	---	---	---	---	---	---
10:15	10:19	10:33	10:43	---	---	---	---	11:05	11:09	11:18	11:29	11:40	11:47	12:03	12:07
10:39	10:44	10:58	11:08	11:15	11:27	11:36	11:42	---	---	---	---	---	---	---	---
11:04	11:09	11:23	11:33	---	---	---	---	---	---	---	---	12:05	12:12	12:28	12:32
11:29	11:34	11:48	11:58	12:05	12:17	12:26	12:32	11:55	11:59	12:08	12:19	12:30	12:37	12:53	12:57
11:54	11:59	12:13	12:23	---	---	---	---	---	---	---	---	---	---	---	---
PM SERVICE															
12:19	12:24	12:38	12:48	12:55	1:07	1:16	1:22	---	---	---	---	---	---	---	---
12:44	12:49	1:03	1:13	---	---	---	---	1:35	1:39	1:48	1:59	2:10	2:17	2:33	2:37
1:09	1:14	1:28	1:38	1:45	1:57	2:06	2:12	---	---	---	---	---	---	---	---
1:34	1:39	1:53	2:03	---	---	---	---	2:25	2:29	2:38	2:49	3:00	3:07	3:23	3:27
1:59	2:04	2:18	2:28	2:35	2:47	2:56	3:02	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	3:15	3:19	3:28	3:39	3:51	3:58	4:14	4:18
2:24	2:29	2:43	2:53	---	---	---	---	---	---	---	---	4:16	4:23	4:36	4:40
2:49	2:54	3:08	3:18	3:25	3:37	3:46	3:52	---	---	---	---	---	---	---	---
3:14	3:19	3:33	3:43	---	---	---	---	4:05	4:09	4:18	4:29	4:41	4:48	5:01	5:05
3:39	3:44	3:58	4:08	4:15	4:27	4:36	4:42	---	---	---	---	5:06	5:13	5:26	5:30
4:04	4:09	4:23	4:33	---	---	---	---	4:55	4:59	5:08	5:19	5:31	5:38	5:51	5:55
---	---	---	---	---	---	---	---	---	---	---	---	5:56	6:03	6:16	6:20
4:29	4:34	4:48	4:58	5:05	5:17	5:26	5:32	---	---	---	---	---	---	---	---
4:54	4:59	5:13	5:23	---	---	---	---	5:45	5:49	5:58	6:09	6:21	6:28	6:41	6:45
5:19	5:24	5:38	5:48	5:55	6:07	6:16	6:22	---	---	---	---	6:46	6:53	7:05	7:08
5:44	5:49	6:03	6:13	---	---	---	---	6:35	6:38	6:48	7:00	7:11	7:18	7:30	7:34
6:12	6:17	6:31	6:39	6:46	6:57	7:06	7:12	---	---	---	---	7:36	7:43	7:55	7:58
---	---	---	---	---	---	---	---	---	---	---	---	---	8:01	8:08	8:24
6:38	6:42	6:56	7:04	---	---	---	---	7:25	7:28	7:38	7:50	---	---	---	---
7:03	7:07	7:21	7:29	7:36	7:47	7:56	8:02	8:15	8:18	8:28	8:40	8:51	8:58	9:10	9:14
7:53	7:57	8:11	8:19	8:26	8:37	8:46	8:52	9:05	9:08	9:18	9:30	9:41	9:48	10:00	10:04
8:46	8:50	9:04	9:11	9:18	9:29	9:37	9:42	10:00	10:03	10:13	10:25	10:36	10:43	10:55	10:59
9:39	9:43	9:57	10:04	10:11	10:22	10:30	10:35	11:00	11:03	11:10	11:19	11:27	11:34	11:46	11:49
10:33	10:37	10:51	10:58	11:05	11:16	11:24	11:29	---	---	---	---	---	---	---	---
11:31	11:35	11:48	11:55	12:01	12:12	12:19	12:23	12:05	12:08	12:15	12:22	12:29	12:35	12:46	12:49
AFTER MIDNIGHT SERVICE															
12:30	12:34	12:46	12:53	12:58	1:09	1:16	1:20	1:05	1:08	1:15	1:22	1:29	1:35	1:46	1:49
1:30	1:34	1:46	1:53	1:58	2:09	2:16	2:20	2:05	2:08	2:15	2:22	2:29	2:35	2:46	2:49

Subject To Change

SEPTA Bus Route 37 Sunday Schedule

SUNDAYS															
WESTBOUND								EASTBOUND							
Broad St and Snyder Av	20th St and Passyunk Av	Island Av and Lindbergh Blvd	PNC Center	International Airport Term. B Arrivals	Gov. Printz Blvd and Wanamaker Av	Harrah's Chester	Chester Transportation Center	Chester Transportation Center	Harrah's Chester	Gov. Printz Blvd and Wanamaker Av	International Airport Term. B Arrivals	PNC Center	Island Av and Lindbergh Blvd	20th St and Passyunk Av	Broad St and Snyder Av
AM SERVICE								AM SERVICE							
2:21	2:25	2:37	2:44	2:49	3:00	3:07	---	---	3:12	3:20	3:29	3:37	3:43	3:54	3:57
3:21	3:25	3:37	3:44	3:49	4:00	4:07	---	---	4:12	4:20	4:29	4:37	4:43	4:54	4:57
4:21	4:25	4:37	4:44	4:49	5:00	5:07	---	---	5:12	5:20	5:29	5:37	5:43	5:54	5:57
5:01	5:05	5:17	5:24	5:29	5:40	5:47	5:52	6:07	6:10	6:18	6:27	6:35	6:41	6:54	6:57
5:47	5:51	6:03	6:11	6:17	6:29	6:36	6:42	6:57	7:00	7:08	7:17	7:25	7:32	7:44	7:47
6:37	6:41	6:53	7:01	7:07	7:19	7:26	7:32	7:47	7:50	7:58	8:07	8:15	8:22	8:34	8:38
7:27	7:31	7:43	7:51	7:57	8:09	8:16	8:22	---	---	---	---	8:44	8:51	9:04	9:08
7:50	7:54	8:06	8:14	---	---	---	---	8:37	8:41	8:50	9:00	9:09	9:16	9:29	9:33
8:15	8:19	8:31	8:40	---	8:58	9:06	9:12	---	---	---	---	9:34	9:41	9:54	9:58
8:39	8:43	8:55	9:04	---	---	---	---	9:27	9:31	9:40	9:50	9:59	10:06	10:19	10:23
9:05	9:09	9:21	9:30	9:36	9:48	9:56	10:02	---	---	---	---	10:24	10:31	10:46	10:50
9:29	9:33	9:45	9:54	---	---	---	---	10:15	10:19	10:28	10:39	10:49	10:56	11:11	11:15
9:54	9:58	10:10	10:19	10:25	10:37	10:46	10:52	---	---	---	---	11:14	11:21	11:36	11:40
10:18	10:22	10:35	10:44	---	---	---	---	11:05	11:09	11:18	11:29	11:39	11:46	12:01	12:05
10:41	10:47	11:00	11:09	11:15	11:27	11:36	11:42	PM SERVICE							
11:06	11:12	11:25	11:34	---	---	---	---	---	---	---	---	12:04	12:11	12:26	12:30
11:31	11:37	11:50	11:59	12:05	12:17	12:26	12:32	11:55	11:59	12:08	12:19	12:29	12:36	12:51	12:55
11:56	12:02	12:15	12:24	---	---	---	---	---	---	---	---	12:54	1:01	1:16	1:20
PM SERVICE								12:45	12:49	12:58	1:09	1:19	1:26	1:41	1:45
12:21	12:27	12:40	12:49	12:55	1:07	1:16	1:22	---	---	---	---	1:44	1:51	2:06	2:10
12:46	12:52	1:05	1:14	---	---	---	---	1:35	1:39	1:48	1:59	2:09	2:16	2:31	2:35
1:11	1:17	1:30	1:39	1:45	1:57	2:06	2:12	---	---	---	---	2:34	2:41	2:56	3:00
1:36	1:42	1:55	2:04	---	---	---	---	2:25	2:29	2:38	2:49	2:59	3:06	3:21	3:25
2:01	2:07	2:20	2:29	2:35	2:47	2:56	3:02	---	---	---	---	3:24	3:31	3:43	3:47
2:27	2:33	2:46	2:55	---	---	---	---	3:15	3:19	3:28	3:39	3:49	3:56	4:08	4:12
2:52	2:58	3:11	3:20	3:26	3:38	3:47	3:52	---	---	---	---	4:14	4:21	4:33	4:37
3:19	3:25	3:38	3:46	---	---	---	---	4:06	4:10	4:19	4:29	4:39	4:46	4:58	5:02
3:44	3:49	4:02	4:10	4:16	4:28	4:37	4:42	---	---	---	---	5:04	5:11	5:23	5:27
4:10	4:15	4:28	4:36	---	---	---	---	4:56	5:00	5:09	5:19	5:29	5:36	5:48	5:52
4:34	4:39	4:52	5:00	5:06	5:18	5:27	5:32	---	---	---	---	5:54	6:01	6:13	6:17
5:00	5:05	5:18	5:26	---	---	---	---	5:46	5:50	5:59	6:09	6:19	6:26	6:38	6:42
5:24	5:29	5:42	5:50	5:56	6:08	6:17	6:22	---	---	---	---	6:44	6:51	7:03	7:07
5:50	5:55	6:08	6:16	---	---	---	---	6:39	6:42	6:50	7:00	7:09	7:16	7:28	7:32
6:17	6:22	6:35	6:42	6:48	6:59	7:07	7:12	---	---	---	---	7:34	7:41	7:53	7:57
6:43	6:47	7:00	7:07	---	---	---	---	7:29	7:32	7:40	7:50	7:59	8:06	8:18	8:22
7:08	7:12	7:25	7:32	7:38	7:49	7:57	8:02	8:21	8:24	8:32	8:42	8:51	8:58	9:10	9:14
7:58	8:02	8:15	8:22	8:28	8:39	8:47	8:52	9:11	9:14	9:22	9:32	9:41	9:48	10:00	10:04
8:46	8:50	9:03	9:10	9:16	9:27	9:35	9:40	10:01	10:04	10:12	10:22	10:31	10:38	10:50	10:54
9:39	9:43	9:56	10:03	10:09	10:20	10:28	10:33	11:00	11:03	11:11	11:20	11:28	11:35	11:47	11:50
10:33	10:37	10:50	10:57	11:03	11:14	11:22	11:27	AFTER MIDNIGHT SERVICE							
11:31	11:35	11:48	11:55	12:01	12:12	12:19	12:23	12:05	12:08	12:15	12:22	12:29	12:35	12:46	12:49
AFTER MIDNIGHT SERVICE								1:05	1:08	1:15	1:22	1:29	1:35	1:46	1:49
12:30	12:34	12:46	12:53	12:59	1:10	1:17	1:21	2:05	2:08	2:15	2:22	2:29	2:35	2:46	2:49
1:30	1:34	1:46	1:53	1:59	2:10	2:17	2:21								

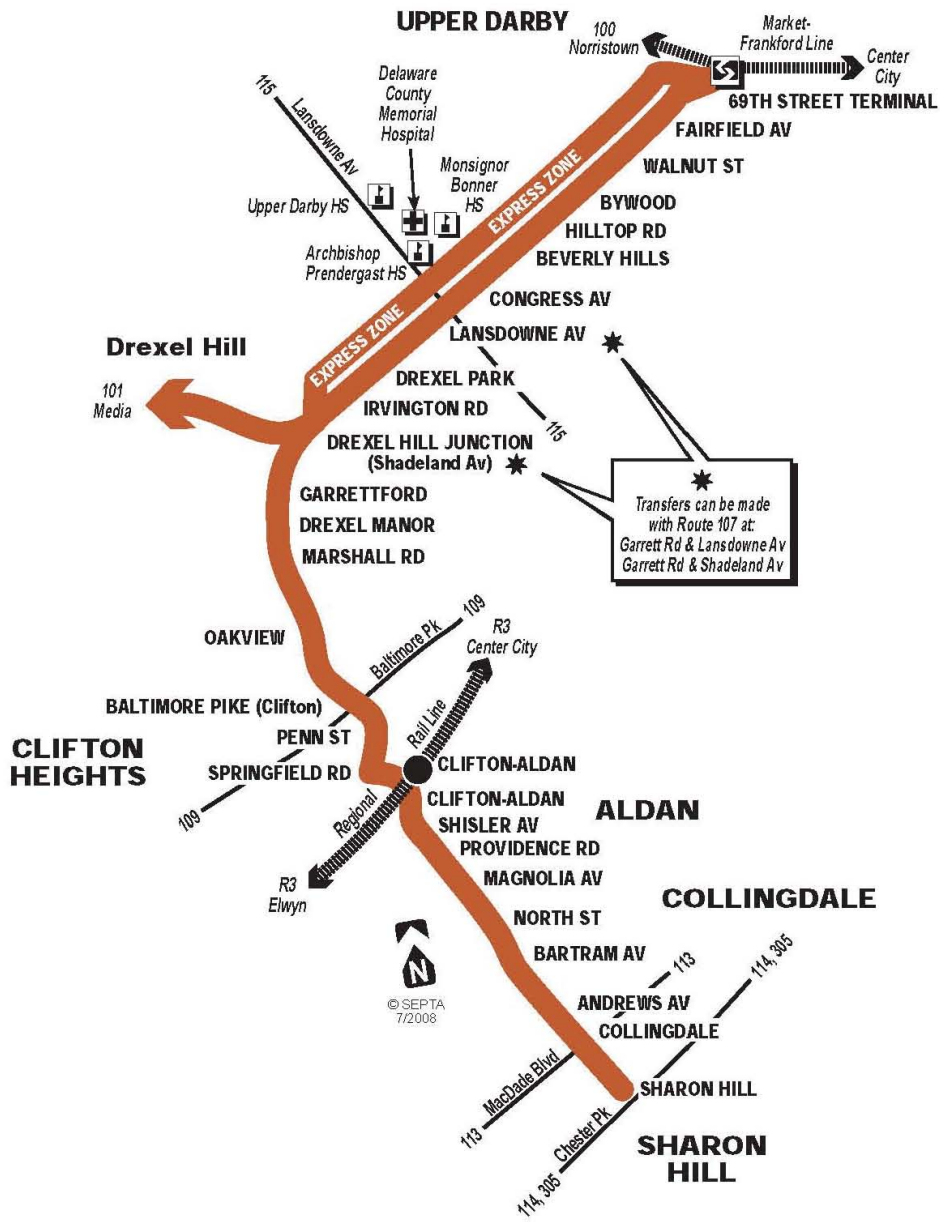
Sunday schedule will be operated on New Year's, Memorial, Independence, Labor, Thanksgiving, and Christmas days.

APPENDIX C

SEPTA Trolley Maps



Trolley Route 37

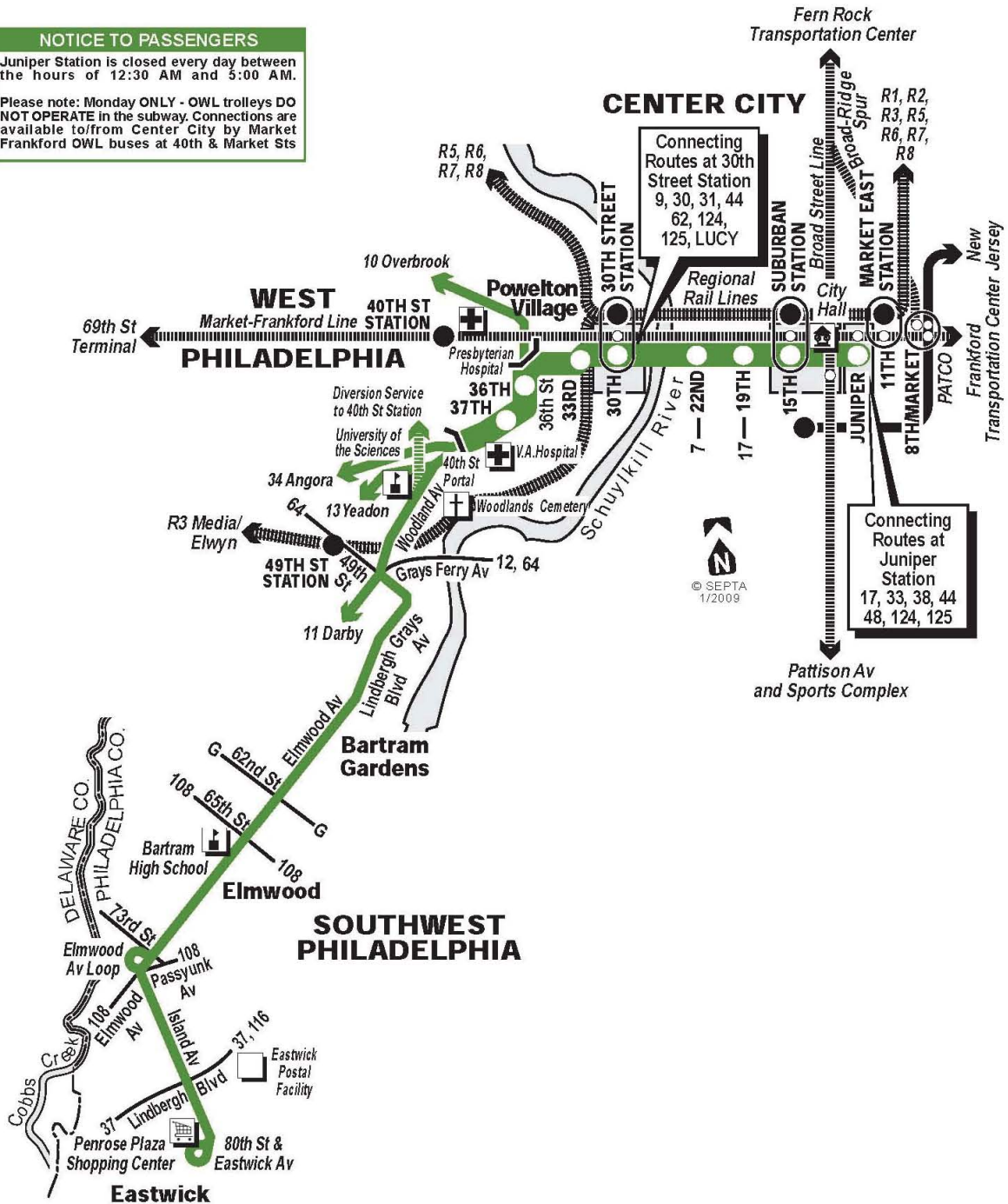


Trolley Route 36

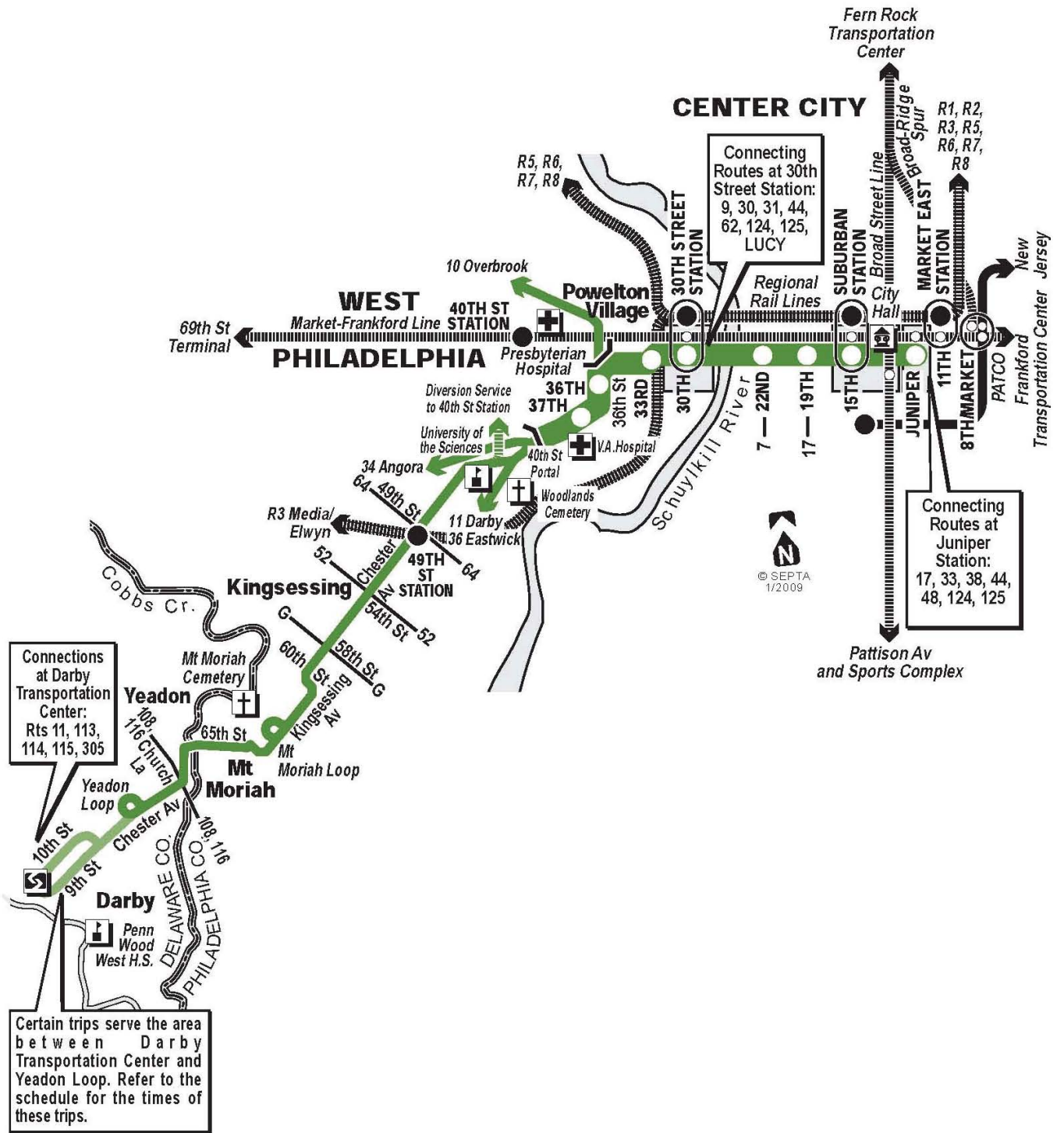
NOTICE TO PASSENGERS

Juniper Station is closed every day between the hours of 12:30 AM and 5:00 AM.

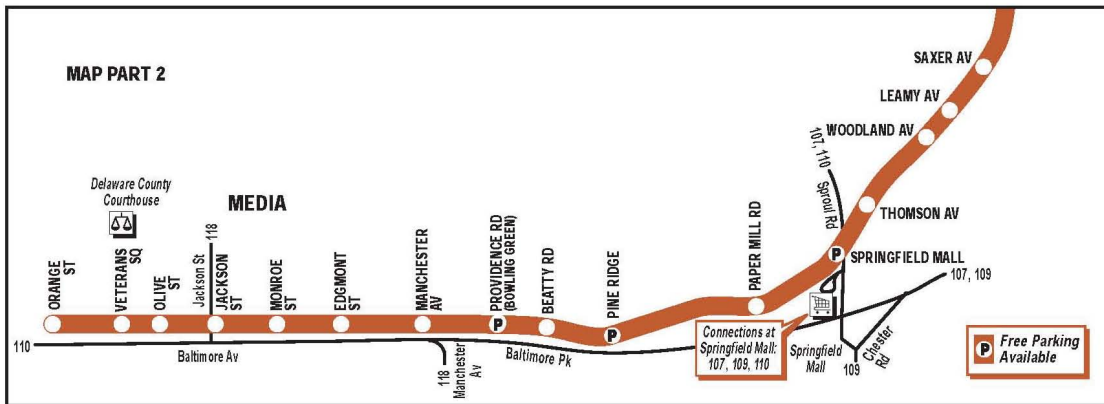
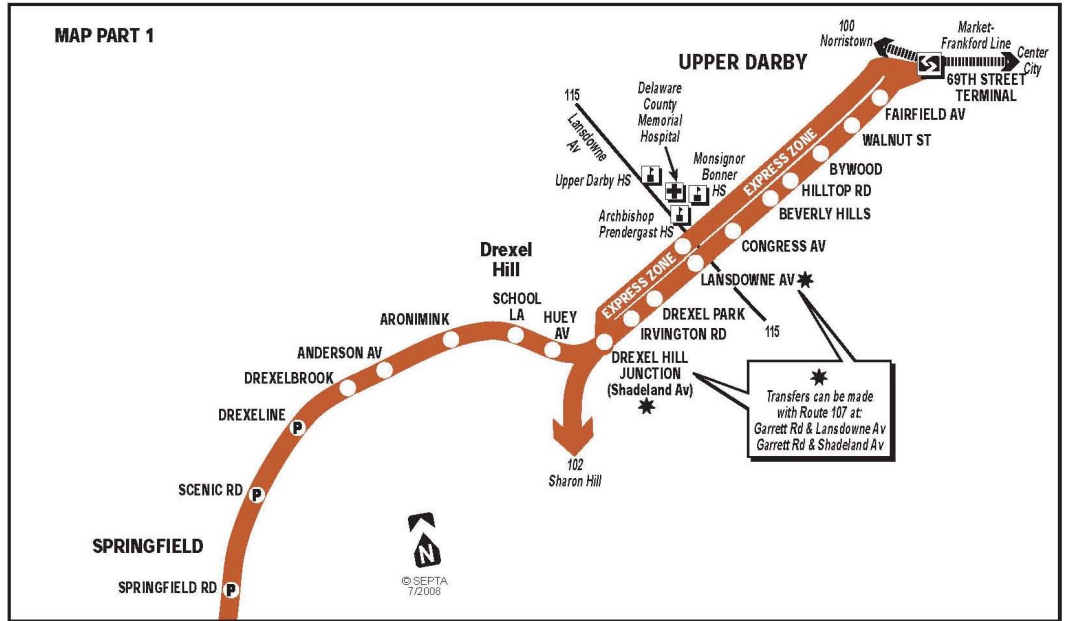
Please note: Monday ONLY - OWL trolleys DO NOT OPERATE in the subway. Connections are available to/from Center City by Market Frankford OWL buses at 40th & Market Sts



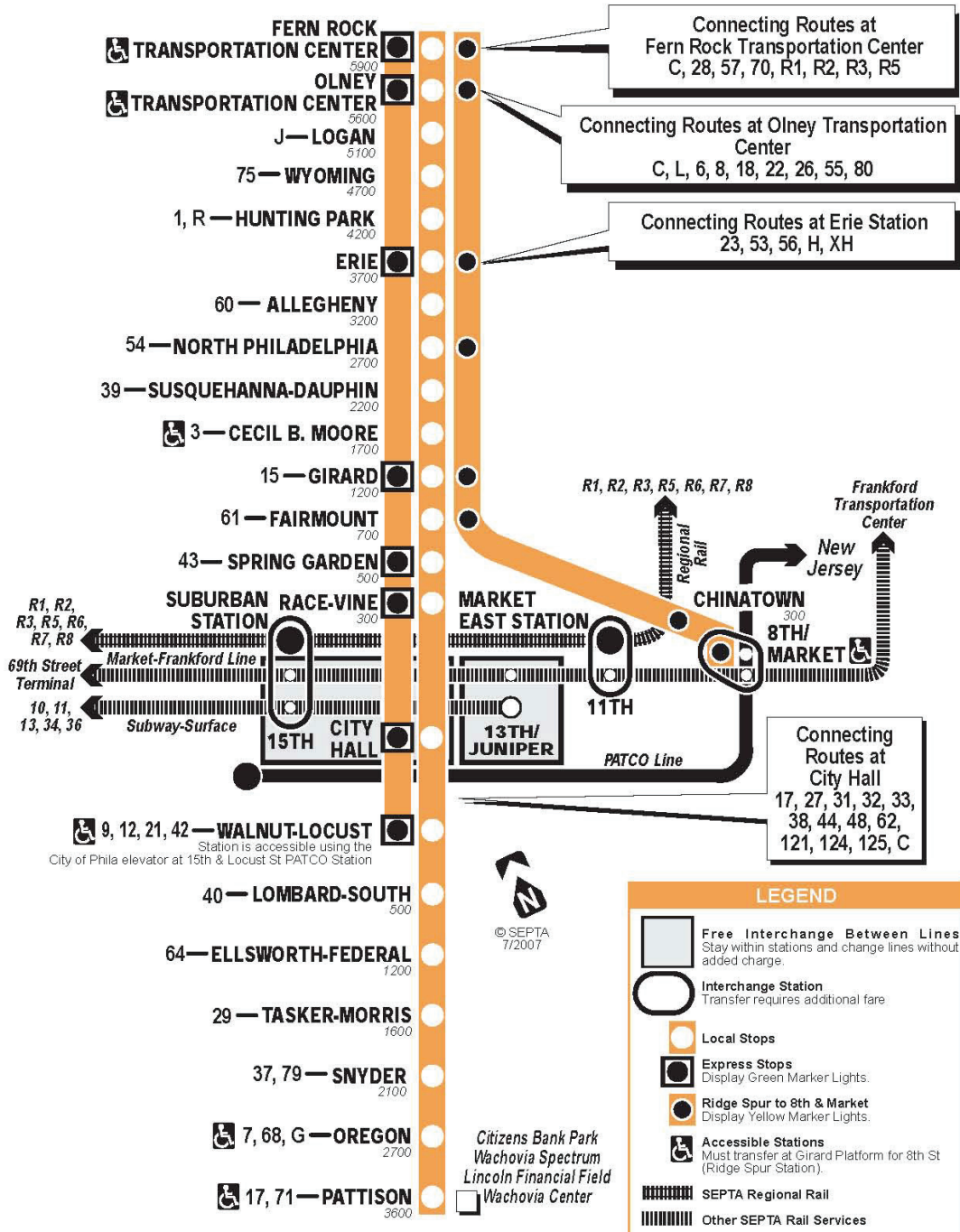
Trolley Route 13



Trolley Route 101



SEPTA Broad Street Line



Abstract Page

Publication Number: 08079

Publication Title: Philadelphia International Airport Transit Access Analysis

Date Published: February 2011

Geographic Area Covered: DVRPC region and U.S. Northeast Corridor

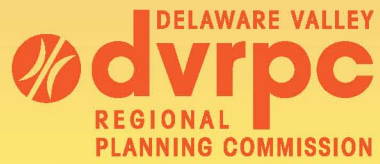
Key Words: Airport access transit modes, private car mode, PHL, SEPTA trains and buses, Amtrak, airport capital expansion

Abstract: This report presents the results of a study examining passenger ground options and access choices to Philadelphia International Airport (PHL). Passenger behavior and modal choices available at other major hubs domestically and internationally were compared to Philadelphia to establish service criteria present at airports with high transit usage and diverse options. PHL transit access is provided primarily by Southeastern Pennsylvania Transportation Authority (SEPTA). SEPTA bus routes to PHL are almost exclusively to serve airport-related employees. Private car access to the airport is currently the dominant mode and a major revenue producer for the airport, as parking facilities continue to expand. Future airport air operations expansion will limit parking expansion and encourage future passenger growth, and both factors will require more transit access to the airport. Several opportunities exist to modify existing transit service and introduce new service to improve attractiveness, market coverage, and connectivity.

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