

## Appendix 3

# Intercity Passenger Rail System

## Introduction

The Pennsylvania Intercity Passenger and Freight Rail Plan provides a strategic framework for creating a 21<sup>st</sup>-century rail network. The Plan visualizes the passenger and freight rail network in 2035 and offers strategies and objectives to achieve its vision. The purpose of Appendix 3 is to provide background information on existing passenger rail service in Pennsylvania with a concentration on existing intercity passenger rail service and performance.



## Intercity Rail Definitions

There are numerous interpretations of what constitutes “intercity passenger rail.” In a recent publication, *Achieving the Vision: Intercity Passenger Rail*, the American Association of State Highway and Transportation Officials (AASHTO) urged Congress to enact a National Rail Policy that should address the development of a national intercity

passenger rail system, including:

- **High-Speed Rail Corridors** (110 mph and above) – Corridors under 500 miles with travel demand, population density, and congestion on competing modes that warrant high-speed rail service.
- **Regional Corridors** (79 to 110 mph) – Corridors under 500 miles, with frequent, reliable service competing successfully with auto and air travel.
- **Long-Distance Service** – Corridors greater than 500 miles that provide basic connectivity and a balanced national transportation system.

In a report to Congress, *Vision for High-Speed Rail in America*, dated April 2009, the Federal Railroad Administration (FRA) provided the following definitions:

- **High-Speed Rail (HSR) and Intercity Passenger Rail (IPR) HSR – Express.** Frequent, express service between major population centers 200 to 600 miles apart, with few intermediate stops.<sup>1</sup> Top speeds of at least 150 mph on completely grade-separated, dedicated rights-of-way (with the possible exception of some shared track in

<sup>1</sup> Corridor lengths are approximate; slightly shorter or longer intercity services may still help meet strategic goals in a cost-effective manner.



terminal areas). Intended to relieve air and highway capacity constraints.

- **HSR – Regional.** Relatively frequent service between major and moderate population centers 100 to 500 miles apart, with some intermediate stops. Top speeds of 110 to 150 mph, grade-separated, with some dedicated and some shared track (using positive train control technology). Intended to relieve highway and, to some extent, air capacity constraints.
- **Emerging HSR.** Developing corridors of 100 to 500 miles, with strong potential for future HSR Regional and/or Express service. Top speeds of up to 90 to 110 mph on primarily shared track (eventually using positive train control technology), with advanced grade crossing protection or separation. Intended to develop the passenger rail market, and provide some relief to other modes.
- **Conventional Rail.** Traditional intercity passenger rail services of more than 100 miles with as little as one to as many as 7 to 12 daily frequencies; may or may not have strong potential for future high-speed rail service. Top speeds of 79 mph to as high as 90 mph, generally on shared track. Intended to provide travel options and to develop the passenger rail market for further development in the future.

It is evident from these descriptions and other interpretations that there is no single clear definition of intercity rail. For the purposes of this Plan, intercity rail is defined as passenger rail service that leaves a metropolitan area to connect with another city. This is basically consistent with PennDOT’s interpretation of intercity passenger rail as defined in their *Pennsylvania Statewide Passenger Rail Needs Assessment* publication, dated December 2001. Rail service that remains within a single metropolitan area would be classified as a metropolitan or commuter

train, called a “Regional Rail” train in the nomenclature of the SEPTA system.

For Pennsylvania, intercity passenger rail should not be specified by route length. Due to historic settlement patterns, many cities in Pennsylvania are very close together, yet they remain distinct economic, social, and political regions.

The intercity rail system is also comprised of feeder buses which extend rail service to communities that are not presently or will not be served by actual rail service. These bus lines are an integral part of the overall rail service plan, because they provide a significant number of potential riders to the trains themselves, while ensuring accessibility to the system statewide.



In this Plan, “commuter rail” is a rail service whose primary purpose is to move commuters, who make the same trip every day, usually at peak hours, to a central city. However, an intercity train can also carry commuters, especially over sections of the route. Often, a corridor may carry mostly commuters and business travelers during peak hours, but carry other types of travelers during midday periods. Also, weekend travel purposes may be very different than weekday travel, but have similar benefits to the economy and mobility of the state. A corridor can thus have aspects of both commuter rail and intercity rail.

This Plan also considers metropolitan rail in the context of intercity travel. In some cases, a metropolitan train may be doing intercity work. For example, the SEPTA connection to Philadelphia International Airport can



make it possible to add the airport as an intercity destination through a coordinated transfer between Amtrak or SEPTA.

## Passenger Rail in Pennsylvania

Passenger rail service in Pennsylvania is provided by three systems: the Southeastern Pennsylvania Transportation Authority (SEPTA – Rapid Transit, Trolley and Light Rail, and Commuter Rail); the Port Authority of Allegheny County (PAAC – Light Rail); and Amtrak (Intercity Passenger Rail). A brief description of these services follows.

### SEPTA

#### *Rapid Transit*

- Market – Frankford Line (Blue Line): Subway and elevated line from the Frankford Transportation Center (rebuilt in 2003) in the Frankford section of Philadelphia to 69th Street Terminal in Upper Darby, via Center City Philadelphia. Weekday ridership averaged 171,813 in FY 2008.
- Broad Street Line and Broad – Ridge Spur (Orange Line): Subway line along Broad Street in Philadelphia from Fern Rock Transportation Center to Pattison Avenue/Sports Complex, via Center City Philadelphia. Weekday ridership averaged 134,349 in FY 2008.

#### *Trolley and Light Rail*

- Subway – Surface Trolley Lines (Green Line): Five trolley routes—10, 11, 13, 34, and 36—that run in a subway in Center City and diverge out on street-level trolley tracks in west and southwest Philadelphia. Weekday ridership averaged 86,889 in FY 2008.
- Routes 15, 23, and 56: Three surface trolley routes that were suspended in 1992. Routes 23 and 56 are currently operated with buses. Trolley service on Route 15 resumed as of September 2005. Route 15 average weekday ridership was 10,742 in FY 08.
- Route 100 (Norristown High-Speed Line): Formerly known as the Philadelphia & Western (P&W) Railroad, this interurban rapid transit is considered a light rail line. Weekday ridership averaged 9,442 in FY 2008.
- Routes 101 and 102 (Suburban Trolley Lines): Two trolley routes in Delaware County which run mostly on private rights-of-way and also within the street right-of-way. Weekday ridership averaged 7,859 in FY 2008.

#### *Commuter Rail*

- Regional Rail (Commuter Rail): SEPTA's commuter rail service is run by the SEPTA Regional Rail Division. This division operates 13 lines serving more than 150 stations covering most of the five-county southeastern Pennsylvania region. It also runs trains to Newark, Delaware; Trenton, New Jersey; and West Trenton, New Jersey. Weekday ridership averaged 123,854 in FY 2008. The SEPTA Rail System Map appears in Figure 3.1.



Figure 3-1: SEPTA Rail System Map



Source: [http://www.septa.org/maps/click\\_map.html](http://www.septa.org/maps/click_map.html)



## PAAC

### *Light Rail*

PAAC operates a 25-mile light rail system, called the T, which provides service to Downtown Pittsburgh and several communities south of the city. PAAC's T routes are listed below along with the communities they serve.

- 42C Castle Shannon via Beechview: Downtown, Beltzhoover, Beechview, Dormont, Mount Lebanon, Castle Shannon
- 42S South Hills Village via Beechview: Downtown, Beltzhoover, Beechview, Dormont, Mount Lebanon, Castle Shannon, Bethel Park
- 47L Library: Downtown, Carrick, Overbrook, Bethel Park, South Park Township
- 47S South Hills Village via Overbrook: Downtown, Carrick, Overbrook, Castle Shannon, Bethel Park
- 52 Allentown: Downtown, Allentown, Beltzhoover

PAAC's average weekday light rail ridership is 26,200 passengers. The PAAC Rail System Map appears in Figure 3-2.

## Amtrak

### *Intercity Passenger Rail*

- **The Capitol Limited** connects Washington, D.C., to Chicago via Pittsburgh and Cleveland with only two Pennsylvania stops: Connellsville and Pittsburgh. The entire route is 780 miles and takes 18 hours to complete. A connection to *The Pennsylvanian* is available in Pittsburgh, however, the waiting time is lengthy. The service runs daily.
- **The Lake Shore Limited** connects Chicago with New York City and Boston (the train consist splits in Albany/Rensselaer). The service makes only one stop in Pennsylvania, at Erie. Other large cities on the route include Cleveland and Buffalo. The entire route is 959 miles from Chicago to New York City and takes 19 hours and 30 minutes to travel. Service runs daily.
- **The Pennsylvanian** connects Pittsburgh and central Pennsylvania communities to Harrisburg, Philadelphia, and New York City. The entire route is 444 miles long and takes 9 hours and 20 minutes to travel. Connections to other Amtrak services are available at Pittsburgh, Harrisburg, Lancaster, and Philadelphia. The service runs daily.
- **The Keystone Corridor** connects Harrisburg to Philadelphia. The corridor is 104 miles long. Many corridor trains continue on to New York City, which is an additional 91 miles. The continuing trains are also named Keystone trains in the Amtrak timetable, even though they operate on the Northeast Corridor. The service is 134 daily round trips.
- **The Northeast Corridor (NEC)** connects Washington, D.C., on the south end to Boston on the north end, via Baltimore, Wilmington, Philadelphia, Trenton, New York City, Stamford, New Haven, Providence, and other intermediate points. Some Northeast Regional trains operate as far south as Richmond and Newport News, Virginia. Amtrak's Northeast Regional and Acela Express services operate on the Northeast Corridor as do numerous long-distance trains to New England, Chicago, and the South. The service is 20 daily Regional and 16 Acela round trips. The Amtrak Intercity Passenger Rail System Map appears in Figure 3.3.



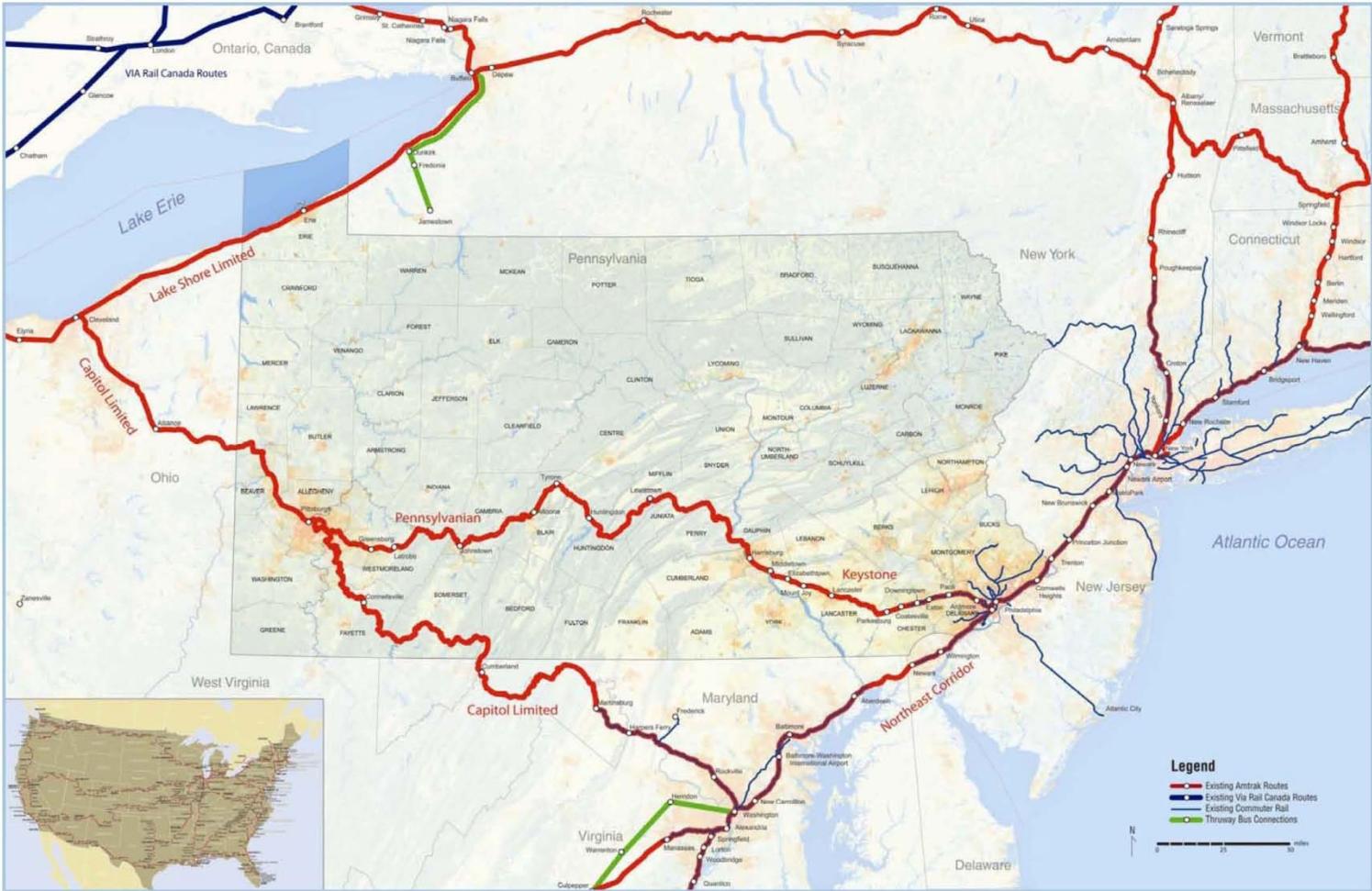
Figure 3-2: PAAC Rail System Map



Source: Port Authority of Allegheny County



Figure 3-3: Amtrak Intercity Passenger Rail System Map



Source: Amtrak



## Existing Intercity Passenger Rail Services Operation and Performance

### Capitol Limited

#### Services Provided

Amtrak’s Capitol Limited offers coach, roomette, and bedroom accommodations between Washington, D.C., and Chicago. Full meal service is available in a dining car and snacks are available in the sightseer lounge car. Checked baggage service is available at selected stations.

#### Stations/Ridership

- Pittsburgh
  - 142,828 boardings and alightings in 2008
  - Station listed on the National Register of Historic Places
  - Station building with waiting room
  - Outside platforms
  - Direct connection to local transit
  - Thruway bus connection to New Castle, Pennsylvania
- Connellsville
  - 4,531 boardings and alightings in 2008
  - A shelter is provided
  - Single-side platform

#### Route Issues

The Capitol Limited operates along CSX and Norfolk Southern right-of-way in Pennsylvania. The route follows very important freight corridors for both railroads. Table 3-1 provides performance statistics for the Capitol Limited.

### Improvements/Expansion Plans

Amtrak received American Recovery and Reinvestment Act of 2009 (ARRA) funds to refurbish idled Superliner cars, which could be used on the Capitol Limited to increase capacity, but there are no immediate plans for expansion of this service at this time.

Table 3-1: Performance Statistics – Capitol Limited

On-Time Performance		Primary Causes of Delay July 2009			Average Speed in PA
July 2009	Last 12 Months	Track & Signals	Operational	Train Interference	
75.8%	75.9%	24.0%	18.4%	28.7%	38 mph
		NS: 55.1%	NS: 76.5%	NS: 77%	
		CSX: 42%	CSX: 21.7%	CSX: 20.9%	
		Amtrak: 2.9%	Amtrak: 1.7%	Amtrak: 2.1%	

Source: [http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP\\_Route\\_List&cid=1202243059386](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP_Route_List&cid=1202243059386)

### Lake Shore Limited

#### Services Provided

Amtrak’s Lake Shore Limited service offers coach and Viewliner sleeping accommodations between Chicago and New York City/Boston. Complete meals are available in a dining car. Snacks are available in a lounge car. Amtrak offers checked baggage service at selected stations.

#### Stations/Ridership

- Erie
  - 11,855 boardings and alightings in 2008
  - Station building with waiting room
  - Center island platform



**Route Issues**

The Lake Shore Limited operates through Pennsylvania on a portion of CSX’s “Water-Level Route”. This route was the original New York Central route from New York City to Chicago and is an extremely important freight corridor for New York and New England. The route experiences congestion in Chicago as well as on a single-track segment between Rensselaer and Schenectady, New York. Within Pennsylvania, much of the right-of-way is double-track or better, causing few of the delays on the Lake Shore Limited to stem from this portion of the route. Table 3-2 provides performance statistics for the Lake Shore Limited.

**Improvement/ Expansion Plans**

New York State submitted two ARRA grant requests to double-track the route between Rensselaer and Schenectady and install new signals at the Rensselaer station, which could modestly improve the on-time performance and travel time of this route.

**Performance**

**Table 3-2: Performance Statistics – Lake Shore Limited**

On-Time Performance		Primary Causes of Delay July 2009			Average Speed in PA
July 2009	Last 12 Months	Track & Signals	Operational	Train Interference	
65.3%	77.4%	27.6%	14.2%	37.8%	54 mph
		CSX: 77.8%	CSX: 89.9%	CSX: 66.1%	
		NS: 17.4%	NS: 8.6%	NS: 25.1%	
		MetroNorth: 2.8%	MetroNorth: 0.8%	MetroNorth: 5.1%	

Source:  
[http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP\\_Route\\_List&cid=1202243059386](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP_Route_List&cid=1202243059386)

**Pennsylvanian**

**Services Provided**

Amtrak’s Pennsylvanian service offers coach and business class accommodations between Pittsburgh and New York City. Food is available in a café car. There is no checked baggage service.

**Stations/Ridership**

- Pittsburgh
  - 142,828 boardings and alightings in 2008
  - Station listed on the National Register of Historic Places
  - Station building with waiting room
  - Outside platforms
  - Direct connection to local transit
  - Thruway bus connection to New Castle, Pennsylvania
  - Trains standing at this station often occupy a main line track because several tracks through the station have been removed. A bypass track has been evaluated in previous studies.
- Greensburg
  - 12,882 boardings and alightings in 2008
  - Station building with waiting room
  - Outside platforms
- Latrobe
  - 4,253 boardings and alightings in 2008
  - Station building with waiting room
  - Outside platforms
  - Direct connection to local transit
- Johnstown
  - 19,206 boardings and alightings in 2008



- Station building with waiting room
- Center platform
- Altoona
  - 25,415 boardings and alightings in 2008
  - Station building with waiting room
  - Single-side platform
  - Direct connection to local transit
- Tyrone
  - 2,985 boardings and alightings in 2008
  - Shelter
  - Single-side platform
- Huntingdon
  - 5,290 boardings and alightings in 2008
  - Station building with waiting room
  - Single-side platform
- Lewistown
  - 10,674 boardings and alightings in 2008
  - Station building with waiting room
  - Single-side platform

*For Harrisburg and stations east, see Keystone Corridor.*

### **Route Issues**

West of Harrisburg, the Pennsylvanian operates on Norfolk Southern’s main line trackage. Much of this route was originally a four-track railroad but has since been reduced to triple- or double-track operation. The route travels across Pennsylvania’s Allegheny Mountains, offering spectacular scenery. However, the mountainous topography creates long travel times. Norfolk Southern does a very good job dispatching

Pennsylvanian trains as is evidenced by “On-Time Performance” data for 2009.

East of Harrisburg, the Pennsylvanian follows Amtrak’s Keystone Corridor and Northeast Corridor to New York City. These routes have been improved to 110 mph and 125 mph service respectively, providing a fast journey with relatively little delay.

The Broadway Limited service, annulled in 1995, provided through service to Chicago and to New Castle, Pennsylvania. The Philadelphia – Pittsburgh portion of the Broadway Limited remained in service as the Three Rivers, which was subsequently extended to Chicago. The Three Rivers service was discontinued entirely in 2005. Riders destined for Chicago must transfer in Pittsburgh to connect to Capitol Limited trains. Table 3-3 provides performance statistics for the Pennsylvanian.

### **Improvement/Expansion Plans**

Federal legislation requires Amtrak to evaluate improving frequency, speed, and service quality on the Keystone Corridor west of Harrisburg, i.e., the route of the Pennsylvanian.



**Performance**

**Table 3-3: Performance Statistics – Pennsylvanian**

On-Time Performance		Primary Causes of Delay July 2009			Average Speed in PA
July 2009	Last 12 Months	Track & Signals	Operational	Train Interference	
95.2%	96.9%	32.8%	26.2%	23.9%	46 mph
		Amtrak: 22.1%	Amtrak: 20.6%	Amtrak: 21.2%	
		NS: 77.9%	NS: 79.4%	NS: 78.8%	

Source: [http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP\\_Route\\_List&cid=1202243059386](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP_Route_List&cid=1202243059386)

**Keystone Corridor**

**Services Provided**

Amtrak’s Keystone Service operates coach-only between Harrisburg and New York City. There is no onboard food service available.

**Station/Ridership**

- Harrisburg
  - 527,056 boardings and alightings in 2008
  - National Historic Landmark station
  - Station building with waiting room
  - Platforms for every track
  - Mix of high and low platforms
  - Direct connection to local transit
  - Thruway bus connection to Reading and Scranton, PA
  - Some platforms not in service
- Middletown
  - 51,149 boardings and alightings in 2008

- Shelter
- Single-sided platform with cross-track access

- Elizabethtown
  - 90,644 boardings and alightings in 2008
  - Shelter
  - Outside platforms – could potentially be restored to center island platforms
  - Historic structure was built as part of the adjacent Mason’s Home. Currently under renovation.



- Mount Joy
  - 53,828 boardings and alightings in 2008
  - Minimal shelter
  - Outside platforms
  - Station has severe access limits as it is located in a deep trench with access via steep stairs.
- Lancaster
  - 484,102 boardings and alightings in 2008
  - Station listed on the National Register of Historic Places
  - Shelter
  - Outside platforms available for both tracks – could be restored to center island platforms for four-track operation with extra room for center express tracks.
  - High platforms
  - Connection to local transit
  - Thruway bus connection to York and King of Prussia, Pennsylvania, four times per day.



- Parkesburg
  - 40,650 boardings and alightings in 2008
  - Shelter
  - Outside platforms
- Coatesville
  - 12,705 boardings and alightings in 2008
  - Shelter
  - Outside platforms
- Downingtown
  - 50,255 boardings and alightings in 2008
  - Shelter
  - Outside platforms on two-track railroad shared with SEPTA
- Exton
  - 74,913 boardings and alightings in 2008
  - Shelter
  - Outside platforms on four-track railroad shared with SEPTA
- Paoli
  - 130,744 boardings and alightings in 2008
  - Station building with waiting room
  - Outside platforms on four-track railroad shared with SEPTA
  - Plans for construction of new station with center island platforms
  - Connections to local transit
- Ardmore
  - 46,333 boardings and alightings in 2008
  - Station building with waiting room
  - Outside platforms on four-track railroad shared with SEPTA
  - Plans for construction of new station with outside platforms
  - Connections to local transit

*For Philadelphia 30<sup>th</sup> Street Station, North Philadelphia Station, and Cornwells Heights Station, see Northeast Corridor.*

### **Route Issues**

Amtrak’s Keystone Corridor service is designated as a national best practice for passenger rail revitalization. After years of neglect, electric service had been replaced by diesel locomotives. Tracks were constructed of bolted rails, and riding conditions were extremely rough, limiting speeds. A partnership between Amtrak and the Commonwealth of Pennsylvania was forged to improve service on this line by bringing the infrastructure up to a state of good repair and increasing train frequency. The initial phase of this project was completed in 2006. Continuous welded rail and concrete ties were installed. Amtrak dispatches the line and its trains have a relatively high on-time performance. East of Thorndale, Amtrak shares the line with SEPTA’s R5 service. Because of restrictive station platform configurations and dense schedules, Keystone trains are not allowed to operate at maximum authorized speed throughout the entire corridor. Table 3-4 provides performance statistics for the Keystone Corridor.



### **Improvement/Expansion Plans**

In 2006, Amtrak and the Commonwealth of Pennsylvania completed the \$140 million Keystone Corridor Improvement Project to renovate the Keystone Corridor between Harrisburg and Philadelphia. This project brought the line up to 110 mph service by replacing jointed rail with continuous welded rail, installing concrete ties, and restoring electric



locomotive service. The number of daily round trip trains was increased from 11 to 14. An additional \$200 million is slated for replacing interlockings and other state of good repair improvements over the next several years in Pennsylvania. The goal is to increase the Keystone Corridor to 125 mph service by eliminating three remaining grade crossings in Lancaster County and improving signal systems.

**Performance**

**Table 3-4: Performance Statistics – Keystone Corridor**

On-Time Performance		Primary Causes of Delay July 2009			Average Speed in PA
July 2009	Last 12 Months	Track & Signals	Operational	Train Interference	
92.5%	90.6%	28.6%	26.7%	25.1%	66 mph

Source: [http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP\\_Route\\_List&cid=1202243059386](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP_Route_List&cid=1202243059386)

**Northeast Corridor (NEC)**

**Services Provided**

Amtrak’s Northeast Regionals offer coach and business class service. Snacks are available in a café car.

Acela Express offers only First and Business Class accommodations. First Class passengers receive complimentary at-seat meals. A café car is available for all passengers. Some seats are arranged to face each other across a work table.

**Stations/Ridership**

- 30<sup>th</sup> Street Station
  - 3,968,278 boardings and alightings in 2008

- Station listed on the National Register of Historic Places
- Station building with waiting room and shops
- 10 passenger tracks and five platforms
- High-level platforms
- Direct connections between multiple Amtrak services, SEPTA Regional Rail (upper level), and NJ Transit’s (NJT’s) Atlantic City Rail Line service
- Connections to local transit

- North Philadelphia Station
  - 349 boardings and alightings in 2008
  - Station building with waiting room
  - Center island platforms on four-track railroad shared with SEPTA
  - Connections to SEPTA Regional Rail and local transit
- Cornwells Heights Station
  - 6,843 boardings and alightings in 2008
  - Shelter
  - Outside platforms on four-track railroad shared with SEPTA

**Route Issues**

The NEC is an extremely busy corridor with significant congestion issues. Within Pennsylvania, Amtrak shares the NEC with SEPTA, NJT, and CSX. SEPTA’s trains generally run on the outside local tracks, but dispatching conflicts arise near interlockings used by the R2 at University City and the R8 at North Philadelphia. R2 trains terminating at Marcus Hook need to cross three tracks to do so. NJT’s Atlantic City service has to cross three tracks after





entering Philadelphia from the Delair Bridge and NJT’s NEC trains heading to Morrisville Yards need to access the center express tracks to do so. Portions of the NEC in Pennsylvania could accommodate higher speed operations, but aging catenary and electrical systems restrict top speeds to about 125 mph. Table 3-5 provides performance statistics for Northeast Corridor Regionals and Table 3-6 provides statistics for Acela Express.

**Improvement/Expansion Plans**

Amtrak has begun preliminary design work to reconfigure Acela café cars to accommodate more seating. Other than ordering new cars, this is the only way to increase seating capacity in the near-term.

Amtrak has received ARRA funds to refurbish dozens of Amfleet coaches, which could be placed into service on Northeast Regional trains to expand capacity in the near-term.

**Performance**

**Table 3-5: Performance Statistics – Northeast Corridor Regionals**

On-Time Performance		Primary Causes of Delay July 2009			Average Speed in PA
July 2009	Last 12 Months	Track & Signals	Operational	Train Interference	
80.9%	81.1%	34.6%	14.0%	22.9%	68 mph
		Amtrak: 55.7%	Amtrak: 69%	Amtrak: 51.2%	
		CSX: 33%	CSX: 25.8%	CSX: 31.7%	
		MetroNorth: 11.3%	MetroNorth: 5.2%	MetroNorth: 17%	

Source: [http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP\\_Route\\_List&cid=1202243059386](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP_Route_List&cid=1202243059386)

**Table 3-6: Performance Statistics - Acela Express**

On-Time Performance		Primary Causes of Delay July 2009			Average Speed in PA
July 2009	Last 12 Months	Track & Signals	Operational	Train Interference	
86.4%	87.4%	40.5%	12.2%	20.9%	74 mph
		Amtrak: 79.9%	Amtrak: 90.4%	Amtrak: 52.6%	
		MetroNorth: 20.1 %	MetroNorth: 9.6%	MetroNorth: 47.4%	

Source: [http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP\\_Route\\_List&cid=1202243059386](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/OTP_Route_List&cid=1202243059386)



## Benchmarking Pennsylvania’s High-Speed Intercity Rail Corridors

In order to draw conclusions about the current condition of Pennsylvania’s corridor rail service, it is useful to compare the state to others in the nation.

### The Northeast Corridor

This corridor is truly not comparable to any other American rail service. It is electrified (unlike other Amtrak service). No other corridor is as long, as fast, as densely populated, or used as intensively. Few corridors host so many intercity trains mixed with local commuter runs and freight operations. The Northeast Corridor is a world-class railroad that is best compared to international examples where passenger rail is more prevalent. While Pennsylvania has a strong stake in the success of the Northeast Corridor, that success is shared with many other states.

Amtrak is currently undertaking a master plan for the long-term success of the corridor, and Pennsylvania has been participating in the development of the plan.

### The Keystone Corridor

This corridor is comparable to other state-supported corridors. This Plan provides a comparison to three other state-supported routes that have similar characteristics to the Keystone Corridor:

- **The Hiawatha Corridor** connects Milwaukee, Wisconsin, and Chicago, Illinois.
- **The Capitol Corridor** connects Sacramento, Oakland, Berkeley, and San Jose, California.
- **The Downeaster** connects Portland, Maine, to Boston,

Massachusetts.

As shown in Figure 3-4, the four corridors are between 86 and 133 miles long (the Capitol Corridor has one train per day that continues to Auburn, but this distance is not included in the corridor length statistic).

### Comparing Average Speeds

For the purpose of comparison, all-stop trains are compared for travel speeds (the Keystone has a few express trains that are faster). The four corridors all have a maximum speed of 79 mph except the Keystone, which can reach 110 miles per hour. The Keystone also has the fastest average speed of the four corridors; however, the Hiawatha Corridor is virtually identical in speed, despite being operated with diesel locomotives and with a much lower top speed. This is because the stations are more than twice as far apart on the Hiawatha line, helping the trains maintain high average speeds. The Keystone Corridor has a limited number of express trains per day, and these trains average up to 69 mph. Figure 3-4 shows average speeds and station spacing for the four rail corridors.

### Comparing Ridership

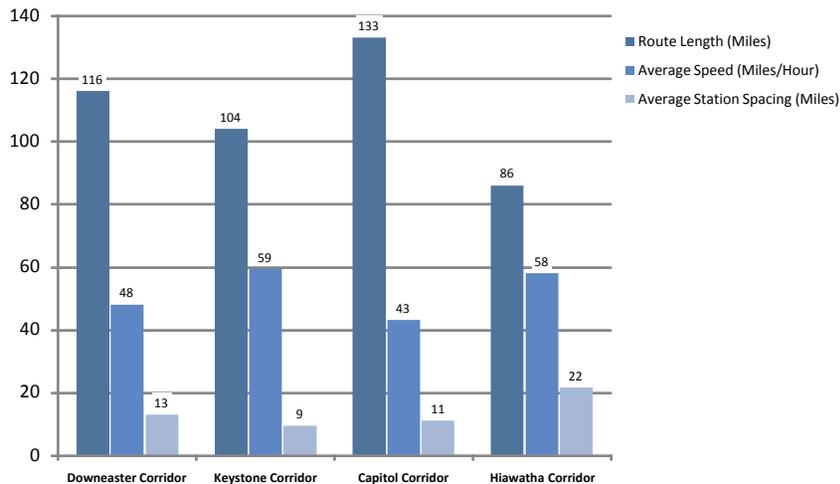
It can be difficult to compare ridership between rail corridors because they have unique characteristics and operating patterns that make comparisons less relevant. One of the primary factors in generating ridership is frequency of service. A comparison of annual ridership of the four study corridors shows that corridor ridership correlates closely with the number of trains per weekday. In other words, overall ridership growth probably cannot be sustained without increases in the number of trains per day. A greater number of departures tend to increase ridership, probably due to the flexibility of travel arrangements for passengers. While the Keystone and the Capitol Corridors have a higher



frequency of service, they began service with much lower frequencies. Figure 3-5 compares service and ridership for the four state-supported corridors in FY 2008.

All four corridors in the sample have showed significant ridership increases between fiscal years 2003 and 2008. Ridership on the Keystone Corridor increased by 34 percent between 2003 and 2008, and reached approximately 1.2 million trips per year. The five-year ridership trend for the Keystone Corridor is illustrated in Figure 3-6. Figure 3-7 depicts ridership trends for the four corridors from FY 2003 to 2008.

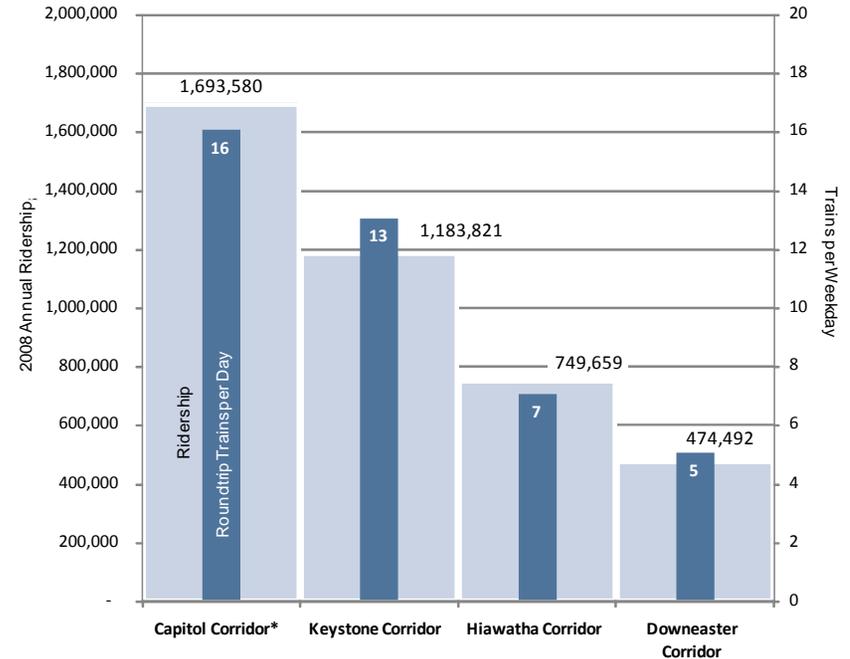
**Figure 3-4: Comparison of Four State-Supported Intercity Corridors – Corridor Length, Speed, and Station Spacing**



Source: Amtrak Timetables: [http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/Schedules\\_Index\\_Page&c=Page&cid=1080072922206&ssid=3](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/Page/Schedules_Index_Page&c=Page&cid=1080072922206&ssid=3)

Note: For the purposes of this graph, the Capitol Corridor consists of the route from San Jose to Sacramento. One train per day also continues to Auburn, California.

**Figure 3-5: Comparison of Four State-Supported Intercity Corridors – Service and Ridership**

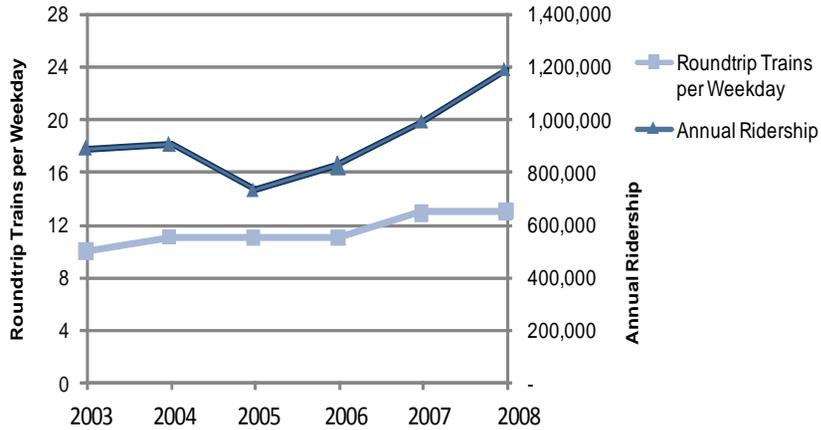


Source: Amtrak Timetables, "Amtrak National Facts," Amtrak Monthly Performance Reports: [http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/am2Copy/Title\\_Image\\_Copy\\_Page&c=am2Copy&cid=1081442674477&ssid=322](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/am2Copy/Title_Image_Copy_Page&c=am2Copy&cid=1081442674477&ssid=322)  
[http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/am2Copy/Title\\_Image\\_Copy\\_Page&c=am2Copy&cid=1081442674300&ssid=542](http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/am2Copy/Title_Image_Copy_Page&c=am2Copy&cid=1081442674300&ssid=542)

Note: Ridership figures for the Capitol Corridor include ridership on the line segment to Auburn.

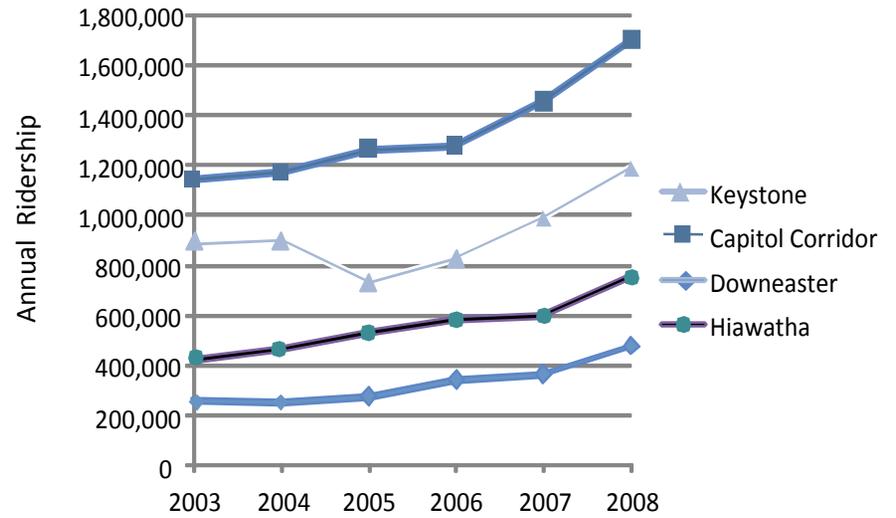


Figure 3-6: Keystone Corridor Ridership Trend – FY 2003 to 2008



Source: Amtrak Monthly Performance Reports, PennDOT

Figure 3-7: Comparison of Four State-Supported Intercity Corridors – Ridership Trends – FY 2003 to 2008



Source: Amtrak Monthly Performance Reports, PennDOT



### Financial Performance

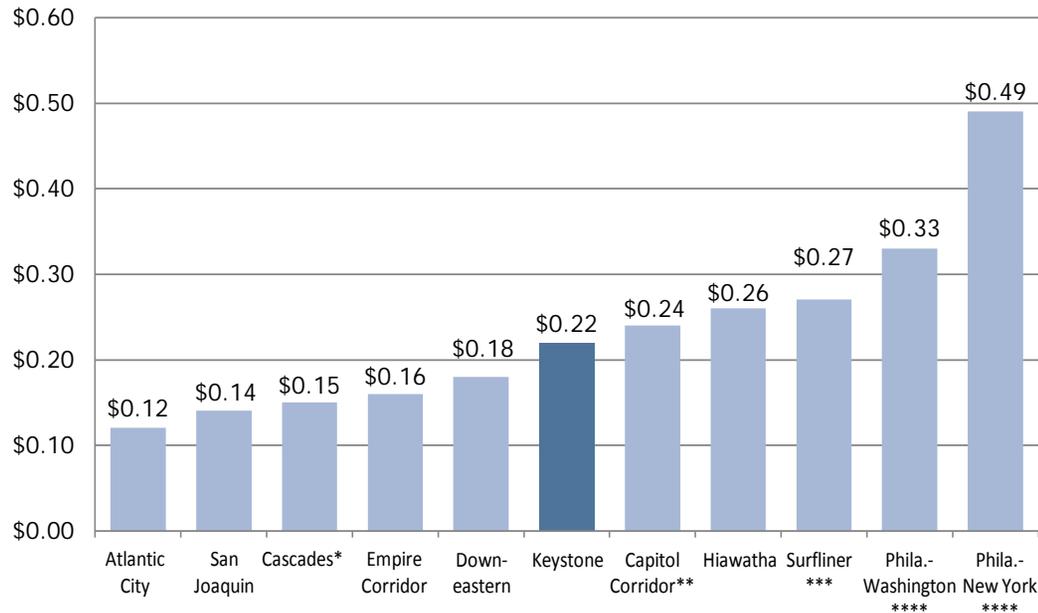
Keystone fares are in line with other passenger rail corridors. As shown in Figure 3-8, the price per mile to travel on the Keystone (from end to end) is comparable to other corridor trips, with the exception of the Northeast Corridor service, which is considerably higher than other ticket prices. However, it should be noted that most corridor trains offer food service. Only the Keystone, NJ Transit’s Atlantic City line, and the Hiawatha do not have a café car. However, several of the other corridors have longer travel times.

### Intercity Passenger Rail Service Objectives

In order to comply with the requirements of Section 207 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), the FRA and Amtrak—in consultation with the Surface Transportation Board—were required to develop performance metrics and standards for intercity passenger rail. The document, entitled “Proposed Metrics and Standards for Intercity Passenger Rail Service” is still in draft form and is open to comments from the Surface Transportation Board (STB), railroads, states, Amtrak employees, nonprofit organizations representing Amtrak employees, and groups representing rail passengers.

**Figure 3-8: Price per Mile of Various Passenger Corridors**

Source: <http://www.amtrak.com>



Notes:

All prices reflect cheapest itinerary for the next weekday.

\* Seattle to Portland

\*\* Sacramento to San Jose

\*\*\*San Diego to Los Angeles

\*\*\*\*Prices reflect Amtrak’s sale price.



The metrics and standards proposed in response to Section 207 will have multiple practical implications for determining which existing and proposed intercity passenger rail routes receive funding for new service, expansion, or improvement projects under the auspices of PRIIA. This section describes some of the proposed metrics and standards discussed in the document.

The metrics described in Section 207 of PRIIA fall into four basic categories:

- Financial and operating
- On-time performance (OTP)
- Other service quality
- Service availability/connectivity

### Financial and operating

Financial metrics must account for an enormous variety of factors including existing subsidies for competing transport modes. In terms of financial performance, the FRA document proposes simple targets of continuous year-over-year improvement. In terms of operating standards, ridership per train-mile operated is the preferred metric for evaluation. Again, the FRA proposed a standard of continuous year-over-year improvement for this metric.

Proposed metrics for financial and operating performance include:

- Percent of short-term avoidable operating cost covered by passenger-related revenue
- Percent of fully-allocated operating cost covered by passenger-related revenue

- Long-term avoidable operating loss per passenger-mile (PM)
- Passenger-miles per train-mile (PM/TM)
- Adjusted loss per passenger-mile

### On-Time Performance

A 2008 report<sup>2</sup> by the Inspector General of the USDOT found that poor on-time performance costs Amtrak over \$100 million per year in lost revenues and increased costs. The language of PRIIA requires that on-time performance and causes of delay be reported by host carrier and route, and that standards be set. The intent of this category is to allow the STB to use its regulatory authority to administer fines to railroads that cause poor on-time performance for Amtrak services.

Proposed metrics and standards for on-time performance are tied to different route lengths and causes of train delay. Graduated on-time performance targets are set for 2009 and 2013.

### Other Service Quality

“Other service quality” refers to factors such as stations, on-board services, facilities, equipment, and other services offered by Amtrak. These service quality factors (in addition to on-time performance) have a significant impact on the overall customer experience. Poor customer service, overflowing bathrooms, food shortages, broken air conditioning and other similar conditions can lead to poor reviews and negative word-of-mouth messages about Amtrak services. Evaluations of service quality issues are difficult to quantify, so the FRA proposes standards for “other

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<sup>2</sup> *Effects of Amtrak’s Poor On-Time Performance*, Federal Railroad Administration, Report Number CR-2008-047, March 28, 2008.



service quality” that are heavily based upon the results of customer surveys.

Proposed metrics for “other service quality” include the number of maintenance-related service interruptions and customer satisfaction with various factors including customer service, on-board comfort, cleanliness, and food service quality. The standards for most of these factors are yet to be determined, but they will likely be in the form of percent of passengers answering “Very Satisfied” on customer surveys.

### Service Availability/Connectivity

In the PRIIA legislation, Congress expressed concern for the connectivity of small, remote communities to the national transportation network. Expansions of long-distance service to serve communities that are currently isolated from the rail network will require additional funding from public sources, making it difficult for Amtrak to significantly improve service availability and connectivity to such communities in the near term. Therefore, the FRA is hesitant to assign standards for benchmarking this category.

Potential metrics that could be evaluated in the future include the percent of passengers connecting to and from other routes and the percent of passenger trips to and from underserved communities.

### Intercity Passenger Rail Asset Condition – Amtrak

A key goal for Amtrak is to reduce its state of good repair backlog, that is, investments that are needed to renew Amtrak assets and return them to a state of good repair. Except for a period from 1977 to 1982, along the Northeast Corridor, Amtrak’s minimal annual recapitalization requirements have not been met. This underfunding, combined with

increased growth in service levels and congestion, has resulted in a backlog of state of good repair investments that is currently estimated to be \$5 billion.

In 2003, Amtrak initiated a very aggressive FY 2004-2008 Strategic Plan with focus on stabilizing the existing railroad and returning facilities to a state of good repair. The plan called for an investment of \$1.788 billion in infrastructure to initiate restoration of old/poorly-maintained assets.

The PRIIA provided additional capital funding to Amtrak and required a collaborative plan for bringing the Northeast Corridor to a state of good repair by 2018. More recently, through the American Recovery and Reinvestment Act of 2009 (ARRA), \$1.3 billion was allocated to Amtrak. The ARRA funds are intended for projects related to rebuilding and modernizing Amtrak’s infrastructure and equipment as well as security and safety initiatives.

Although much was done to invest in deteriorating assets, there remains a significant backlog in state of good repair initiatives. An example is the condition of Amtrak bridges as recently reported by the Philadelphia Inquirer in an article on September 20, 2009. The article reports that nearly half of Amtrak’s 302 bridges in the Philadelphia region have some elements rated as “poor” or worse, according to Amtrak’s bridge-inspection reports, prepared over the past two years. The inspections show that 143 bridges—47.4 percent—received “poor” or lower marks for such defects as deteriorated metal plates or decaying stone walls. Some have eroded support piers, others badly worn girder elements and missing rivets. Although the bridges remain safe for travel according to Amtrak officials, decades of deferred maintenance mean that the aging bridges will require hundreds of millions of dollars to repair.

The situation is similar elsewhere in the country, where Amtrak owns



approximately 1,400 bridges, largely in the Northeast. As noted previously, lacking money to meet all its repair and maintenance needs, Amtrak has deferred an estimated \$5 billion in capital and infrastructure maintenance spending.

**Northeast Corridor (NEC)**

The Amtrak Northeast Corridor infrastructure deteriorated greatly in the years following completion of the federally-funded Northeast Corridor Improvement Project in the early 1980s. Very little was spent to upgrade the capital facilities on the NEC other than the funds to electrify the track north of New Haven in the 1990s.

The state of disrepair changed starting in mid-2003, with a new emphasis placed on bringing Amtrak’s equipment and infrastructure closer to a state of good repair. Amtrak began the process of ramping up a significant capital program and has made substantial progress in addressing the backlog of capital needs throughout its system.

Amtrak had a minimal capital program until mid-2003, when the Engineering Department shifted the focus from emergency repair to production. Due to the need to reorganize the workforce and the difficulty in getting the necessary supplies and materials, the capital program took over a year to get fully ramped up and it was not until the summer of 2004 that Amtrak’s capital program reached a peak level of production. Table 3-7 includes examples of capital work completed since then.

**Table 3-7: Amtrak Capital Work Completed in Northeast Corridor – FY 2004 to 2008**

Category	FY 04	FY 05	FY06	FY07	FY08
Concrete ties installed	152,000	159,657	111,299	83,683	98,725
Wood ties installed	59,000	45,172	90,362	93,779	63,101
Continuous welded track installed (miles)	240	75	35	31	34
Undercutting (track foundation, track miles)	40	17	8	1	0
Shoulder cleaner (track miles)	35	43	24	137	143
Signal cable replaced (miles)	11	3	2	10	15
Electric catenary hardware renewed (miles)	77	74	61	61	42
Undergrade bridges improved	17	18	12	11	22

*Source: Amtrak’s Northeast Corridor Facts and Background Information, Amtrak Government Affairs, February 2009*

Continuation of the state of good repair program through PRIIA and ARRA funding is allowing Amtrak to rebuild its infrastructure and equipment with many positive benefits to its bottom line and riders. However, as stated earlier, a significant funding gap still exists to deal with years of deferred maintenance.



Amtrak is also conducting a strategic initiative intended to develop greater cooperation between Amtrak, the nine regional rail operators, including SEPTA, and seven freight companies operating on the northeast rail corridor (NEC) between Boston and Richmond. The aim is to better forecast anticipated increased service levels on the corridor and develop an appropriate capital plan to respond to increasing demand. Stakeholder working groups, including railroads, state DOTs, the FRA, and Amtrak, have been established to define objectives and direct development of the master plan. The Phase I Project Development Report is complete and a Phase II Interim Report was presented to the NEC Master Plan Executive Committee in February 2009.



### Keystone Corridor

Amtrak and PennDOT collaborated and shared the \$166-million cost of the Keystone Corridor Improvement Project between Philadelphia and Harrisburg, during Fiscal Years 2000 through 2006. This work resulted in restoration of electric-powered train service, an increase in train frequency from 11 to 14 weekday round-trip trains, and a reduction in express train travel times from 120 to 95 minutes, effective in October 2006. Since the beginning of the project ridership has increased by 74 percent, and ridership increased by 20 percent in each of the two years since the project.

Amtrak and SEPTA are also sharing the cost of improvements from Zoo Interlocking (west of Amtrak’s 30th Street Station) westward to the Paoli Station in Chester County. SEPTA funds provide for improvements between Zoo Interlocking and Paoli Station. This project will be advanced in phases over a multi-year period. Amtrak-SEPTA Phase 1, which was completed in Calendar Year 2007, included the installation of 85,000 concrete crossties and new continuous welded rail, track surfacing, and track realignment (Tracks 1 and 4). Phase 2 includes the design and construction of three track interlockings (Paoli, Villanova, and Wynnefield) and a new bi-directional train signal system. The construction of Phase 2 improvements will be addressed over a four-year period starting in the Calendar Year 2010. The scope of work for Phase 3 is under development and will include additional track interlocking modifications, deletions and additions, as well as improvements to power substations, the power distribution system, and track beds. Capital investments currently completed, planned and under consideration for this rail corridor will enhance the train services provided by both SEPTA and Amtrak, as well as significantly improve the quality of ride for current and future customers.

Additionally, PennDOT has requested \$ 489.8 million for upgrades to the Philadelphia to Harrisburg section of the Keystone Corridor as part of ARRA. The funding is for track, signal, power, and catenary improvements, and the addition of a third express track that would allow trains to reach speeds of 125 mph, up from the current 110 mph.