

The Role of Amtrak's Intercity Passenger Rail Services in New Jersey

June 2004

Report prepared and published by: Alan M. Voorhees Transportation Center

Funded by: **The J.C. Kellogg Foundation**



PURPOSE AND BACKGROUND

This report, funded by a grant from the J.C. Kellogg Foundation, examines intercity rail travel to and from New Jersey and weighs its importance to the state's citizens and economy. The analysis considers all Amtrak rail trips with one or both trip ends inside New Jersey; *Clocker* trips are excluded from the analysis. The report is the first of three funded by the J.C. Kellogg Foundation to examine Amtrak through the prism of New Jersey's interests.

The northeastern United States, from Washington, D.C., to Boston, contains the greatest concentration of commercial activity and residential development in the country. The Amtrak intercity passenger rail system serving this area, known as the Northeast Corridor, is unparalleled in the United States in terms of passenger volume and the frequency, speed, and quality of service. As a result, in no other region of the United States are such large concentrations of population and economic activity so heavily dependent on a single intercity rail corridor.

At the heart of the Northeast Corridor is the state of New Jersey, the most densely populated state in the nation. The Northeast Corridor traverses the state from the Delaware River bridge in Trenton to the southwest, to the Hudson River tunnels into New York City to the northeast. With major stations at Newark, Metropark, and Trenton, stations with fewer Amtrak stops at New Brunswick and Princeton Junction, and a new intermodal station serving Newark Liberty International Airport, Amtrak directly serves some of the most important centers of commerce in the state. In addition, heavily populated residential areas are within the catchment area of the stations, making it possible for New Jersey residents to use Amtrak for either business or leisure trips.

Another reason for New Jersey's interest in Amtrak intercity train operations is that the State of New Jersey has invested substantially in the upkeep and improvement of the Amtrak-owned Northeast Corridor facilities used jointly by Amtrak's intercity trains and NJ TRANSIT's commuter trains. Between 1992 and 2003, NJ TRANSIT invested \$488 million to improve stations, track infrastructure, signal and power systems, and fire and life safety systems in New York Penn Station. This does not include another \$551 million for the Secaucus Junction station and Kearny Connection (MidTOWN DIRECT) projects which serve NJ TRANSIT trains exclusively, or the \$415 million invested by the Port Authority of New York and New Jersey to build the Newark Airport Station.

In 2003, the United States Department of Transportation proposed significant changes in the institutional and financial arrangements for Northeast Corridor rail passenger service. Although Congress did not act on the department's proposal, the recommended changes could have a major impact on intercity as well as commuter rail

¹ The analysis excludes all *Clocker* trips because the vast majority of those trips are for purposes of daily commutation. The analysis distinguishes between trips within the Northeast Corridor (i.e., between Washington, D.C., and Boston) and all other Amtrak intercity trips with one trip end inside the state of New Jersey.

service within New Jersey and throughout the Northeast. Each year, the issue of an appropriate level of federal funding for Amtrak, including its Northeast Corridor services, is intensely debated. As the state approaches these related legislative issues, it is important for decision makers to appreciate the contribution of Amtrak's intercity service to New Jersey.

REPORT STRUCTURE

The analysis is divided into a number of sections.

- First, we compare Amtrak's intercity market share, to and from New Jersey, with the market share of air travel. The strength of the New Jersey–Washington south-end market and the potential for growth in the New Jersey–Boston northend market are particularly important.
- 2) Second, we briefly describe the various services Amtrak operates in New Jersey, including the frequency of those services.
- 3) The third section includes a description of data sources and methodology.
- 4) In the fourth section, we analyze ridership trends at New Jersey stations for the period 1997 to 2003, noting the significant growth that took place in Amtrak ridership.
- 5) The fifth section provides a brief analysis of the top city destinations of passengers boarding Amtrak trains at New Jersey stations. Washington, D.C., is clearly the dominant destination.
- 6) In the sixth section, we analyze Amtrak ridership for the fiscal year 2002, with particular emphasis on the three major New Jersey rail stations—Newark, Metropark, and Trenton. The dominance of the New Jersey—Washington rail-trip market is underscored. In the same section we also present data from a 1998 ridership profile survey of Amtrak's Northeast Corridor passengers who used the Newark, Metropark, Trenton, New Brunswick, and Princeton Junction rail stations. This analysis includes socioeconomic characteristics and travel patterns.
- 7) In the seventh section, we examine Amtrak's pricing policy with respect to the smaller, intermediate markets, noting how trips between those markets and New Jersey are priced less competitively than trips to and from the large endpoint markets of Washington, D.C. and Boston.

We conclude by noting a number of important policy issues facing Amtrak's Northeast Corridor intercity rail service and by emphasizing the valuable contribution of Amtrak's intercity rail services to New Jersey.

ANALYSIS

Market Shares

Amtrak rail service enjoys a competitive advantage over air travel between New Jersey and Washington, D.C., making Washington much more important to New Jersey than any other rail market.² In 2002, Amtrak captured an overwhelming 67 percent share of the air/rail market between New Jersey and Washington (see table 1).3

This advantage reflects competitive trip times (measured door-to-door), frequent departures, all-weather reliability, greater onboard comfort, fewer security restrictions, and Amtrak's pricing policy, which favors trips between large urban markets. However, the potential for significantly growing the rail market between New Jersey, Washington, and intermediate points is constrained because of the large market share already owned by passenger rail service.

One explanation for the large market share enjoyed by intercity rail is that regularly scheduled air travel between New Jersey and Washington, D.C., is limited. No air shuttle service operates between Newark Liberty International Airport and Ronald Reagan Washington National Airport (DCA), although Continental Airlines offers 10 weekday, nonstop flights to DCA. Shuttle flights to DCA are frequently available from New York's LaGuardia airport, but this airport is hardly convenient from most New Jersey locations.

A round-trip Acela Express ticket between Newark and Washington is less expensive than a round-trip air ticket booked from Newark Liberty International Airport to DCA: Amtrak charges approximately \$300 for a weekday trip on the premium *Acela Express* service, while Continental charges about \$420 for a weekday economy-class air ticket or \$640 for a business-class ticket.4

Amtrak's New Jersey–Boston market is much smaller than the New Jersey–Washington market. In fiscal year 2002, Amtrak captured about 17 percent of the total air/rail passenger market between New Jersey and Boston. Nevertheless, the north-end Boston destination is an important market that has the potential for much growth.

Amtrak competes against a stronger flight schedule between Newark and Boston, with flights scheduled between Newark and Boston than between Newark and Washington, D.C.. Continental Airlines schedules 10 nonstop flights from Newark to Boston each

² For purposes of this air/rail comparison, air passengers were counted from Newark Liberty International Airport only. Consequently, the analysis does not count some portions of the New Jersey market. Presumably, southern New Jersey residents, who live significantly closer to Philadelphia than to Newark, would be more likely to use either Philadelphia's Thirtieth Street Rail Station or Philadelphia International Airport. Similarly, some northern New Jersey residents, especially Bergen County residents, were likely to opt to travel from Penn Station, New York, or New York's LaGuardia Airport before the opening of Secaucus Junction.

³ The count for rail passengers is for Amtrak's fiscal year, October 1, 2001, to September 30, 2002; the count for air passengers is for calendar year 2002.

These were the prices quoted on the Amtrak and Continental Airlines Web sites on October 29, 2003.

weekday; American Airlines schedules five. This more frequent service supports a greater mode share for air carriers.

For many years, before the completion of electrification and the introduction of high-speed Acela service, train travel to Boston and intermediate points in New England was less attractive and less frequent than it is today. The completion of electrification from New Haven to Boston and the introduction of the high-speed *Acela Express* service has brought significant reductions in travel times as well as increased frequency and higher-quality service. In addition, Amtrak has supported the development of New England travel through its pricing policy. However, the air carriers' intramodal competition for passengers has lowered prices on the Newark to Boston route. The cost of a round-trip weekday ticket on *Acela Express* between Newark and Boston is about \$200, while a round-trip, weekday economy air ticket from Newark Liberty International Airport to Logan Airport costs approximately \$460 on American or \$490 on Continental Airlines.⁵

Table 1. Rail and Air Travel between New Jersey and Washington DC/Boston in 2002

	Rail Passengers	Air Passengers	Rail Market Share (%)
New Jersey–Washington, D.C.	444,248	220,983	66.8
New Jersey-Boston	132,174	637,702	17.2

Sources: For air data, the source is USDOT Intermodal Transportation Database, Form 41, T-100 Domestic Market. For rail data the source is Amtrak FY2002 Ridership Counts.

Note: Boston includes Boston South Station, Boston Back Bay Station and Boston Route 128 Station.

5

⁵ These were the prices quoted on the Amtrak, Continental, American, and Delta Web sites on October 29, 2003.

Amtrak Train Services

The most heavily used Amtrak trains in New Jersey are those that serve destinations along the Northeast Corridor between Washington, D.C., and Boston. However, Amtrak also serves New Jersey with a variety of long-distance trains, providing direct access to such destinations as Florida, Vermont, Chicago, Atlanta, and New Orleans. In fiscal year 2002, 14 distinct Amtrak services operated in New Jersey, four of which served primarily Northeast Corridor travelers: *Acela Express, Metroliner, Acela Regional*, and *Keystone*. The *Acela Express, Metroliner*, and *Keystone* trains serve primarily business travelers. The *Acela Regional* train carries both business and non business travelers.

Acela Express

Acela Express is Amtrak's premier rail service, featuring new trains that were designed to cater to business travelers. It is America's first high-speed service and operates between Boston and Washington, D.C., at speeds of up to 150 miles per hour. Acela Express is an increasingly popular choice for travel between major cities in the Northeast Corridor, particularly for business travelers since the introduction of security measures after the terrorist attacks of September 11, 2001. In New Jersey, all Acela Express trains stop at Newark Penn Station, while selected trains also stop at Metropark and Trenton. The 26 weekday trains that originate and/or terminate in Washington and Boston also serve intermediate stations outside New Jersey. Stops en route to Boston include New York City, Stamford, New Haven, New London, and Providence. Trains traveling to Washington stop at Philadelphia, Wilmington, Baltimore, Baltimore/Washington International Airport Rail Station (BWI) and New Carrollton. In the Boston area, these trains serve Boston-South Station, Boston-Back Bay, and Boston-Route 128.

Acela Express service between Newark and Washington, D.C., takes about two and a half hours making the trip by rail, significantly faster than driving and comparable to flying, if security time and travel time to the airport are added to the one-hour flight time. Travel by Acela Express between Newark and Boston takes approximately four hours, once again faster than driving but, in this case, slower than flying; the flight time is one hour and five minutes.

Metroliner

Formerly the premier service in the Northeast Corridor, the *Metroliner* continues its Washington–New York City express run, though on a less frequent schedule (10 trains each weekday) since the introduction of *Acela Express*. The *Metroliner* supplements express service between Washington and New York, the most heavily traveled portion of the Northeast Corridor. All *Metroliner* trains serve Newark Penn Station, and most serve Metropark and Trenton. In addition, a few trains each weekday serve Princeton Junction, which is not served by *Acela Express*. At two hours and forty-five minutes, the trip between Newark and Washington on the *Metroliner* is only marginally longer than

the trip on the *Acela Express*, but it is \$20 cheaper and still a popular and familiar choice for the business traveler.

Acela Regional

Replacing the *NortheastDirect* service, Amtrak's *Acela Regional* trains have been refurbished and offer a high-frequency, accessible service. These trains run from Springfield, Massachusetts and Boston to Washington, D.C., with some trains continuing to Richmond and Newport News, Virginia. *Acela Regional* trains stop at Newark and Trenton and, frequently, at Metropark. They also stop once a day at Princeton Junction, in each direction, and in New Brunswick, in the southbound direction only. These trains stop several times a day at Newark Liberty International Airport station, offering a rail connection between the airport and points throughout the Northeast Corridor. The *Acela Regional* trip from Newark to Washington takes approximately three hours, while the trip to Boston takes approximately five hours. The *Acela Regional* service offers lower fares and stops at smaller stations such as Hartford and Aberdeen, Maryland. Though not likely to be used by time-sensitive businesspeople traveling to major destinations, *Acela Regional* accounts for the highest volume of travel on Amtrak's Northeast Corridor services.

Keystone

The primary purpose of Amtrak's *Keystone* service, which is subsidized by the Commonwealth of Pennsylvania, is to serve eastern Pennsylvania on the route between Harrisburg, Philadelphia, and New York City. However, *Keystone* trains also serve an important role between New Jersey stations and Philadelphia and New York. The trains' infrequent stops and equipment provide a faster, more comfortable alternative to NJ TRANSIT trains.

Most people who ride the *Keystone* trains to New York City depart from Trenton. The trains run from Trenton to New York City in approximately one hour, a saving of about 20 minutes over NJ TRANSIT's local commuter service and 10 minutes over NJ TRANSIT's express commuter service. Seven southbound and eight northbound *Keystone* trains run each weekday, offering ample service at fares identical to Amtrak's Acela Regional Service. *Keystone* trains run throughout the day at intervals of one to three hours. All *Keystone* trains stop at Newark and Trenton, with frequent stops at all other New Jersey Amtrak train stations. Significant numbers of travelers, primarily from Princeton Junction and Metropark, use this service for travel to Philadelphia.

Service Frequency at New Jersey Stations

The frequency of Amtrak's weekday service to New Jersey stations breaks down into three categories: frequent (Newark, Penn Station), moderate (Trenton, Metropark, and Newark Liberty International Airport), and occasional (Princeton Junction and New Brunswick). Table 2 summarizes the frequency of the various Amtrak Northeast Corridor weekday intercity services provided to New Jersey stations, excluding

Clockers. Newark, Penn Station, the largest station in New Jersey, is served by 85 weekday Amtrak trains on the Northeast Corridor. Trenton and Metropark are next in importance, with 55 and 42 weekday Amtrak trains, respectively. Newark Liberty International Airport station is served by 31 weekday Amtrak trains, though none are Acela Express trains or Metroliner trains. Finally, Princeton Junction and New Brunswick are served by only 13 and 4 weekday Amtrak trains, respectively. Nearly all of the Amtrak trains serving Princeton Junction and New Brunswick are Keystone trains, highlighting the stations' primary role as commuter stations with only a small role in intercity rail passenger service.

Table 2. Trains per Weekday, November 2003

	Acela E	xpress	Metro	oliner	Acela Re	gional	Keys	tone ^a	Total
	Northbound (NB) ^b	Southbound (SB)	NB	SB	NB ^b	SB	NB	SB	
NWK	13	13	4	6	18	15	8	7	85
EWR	0	0	0	0	12	12	4	3	31
MET	4	5	1	4	11	15	2	0	42
NBK	0	0	0	0	0	1	3	0	4
PJC	0	0	1	1	1	1	6	3	13
TRE	2	2	2	1	18	15	8	7	55

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

Note: NWK=Newark; EWR=Newark Liberty International Airport; MET=Metropark; NBK=New Brunswick; PJC=Princeton Junction; TRE=Trenton.

a Includes Keystone trains and northbound and southbound Pennsylvanian and Three Rivers trains.

b Includes northbound trains terminating at both New York, Penn Station, and Boston South Station.

Other Trains

Several other long-distance trains also serve New Jersey:

- Vermonter, between Washington, D.C., and St. Albans, Vermont
- Three Rivers, between New York City and Chicago
- Pennsylvanian, between New York City and Pittsburgh
- Silver Star, Silver Meteor, and Palmetto, between New York City and various locations in Florida
- Crescent, between New York City, Atlanta, and New Orleans
- Carolinian, between New York City and North Carolina
- Federal overnight service between Boston and Washington

These trains, because of their long travel times, frequent stops, and once-a-day service, do not serve many business passengers. They are, however, important for leisure travel and can be a pleasant way for individuals and families to travel when taking vacations or visiting friends. Some of the long-distance trains stop only to discharge passengers at stations between Washington, D.C., and New York.

Data Sources and Methodology

The data for the analyses undertaken in this report came from three different sources provided by Amtrak:

- 1. total Amtrak ridership (boarding and disembarking) at each station for fiscal year 1997 to fiscal year 2003;
- 2. Amtrak ridership from fiscal year 2002, broken down by origin/destination pairs and train service; and
- 3. 1998 profiles of riders using Amtrak's Northeast Corridor services on *Metroliner*, *Acela Regional*, *Keystone*, and *Clocker* trains. (Ridership profiles were not conducted for the long-distance trains.)

Because the profile data are not compatible with the ridership data, each data set has been used separately to illuminate different ridership trends and characteristics.

The Northeast Corridor ridership profiles were conducted in 1998 at the Newark, Metropark, Trenton, and Princeton Junction stations. The profiles contain information on the demographic and socioeconomic characteristics of Amtrak riders aboard Northeast Corridor trains (*Metroliner, Acela Regional, Keystone*, and *Clocker* trains), trip characteristics, and ways of accessing the station. The following demographic and socioeconomic data are included:

- breakdown by gender
- percentage by age cohort
- percentage college graduates
- percentage fully employed
- number employed in certain major economic sectors
- percentage of students and retirees
- percentage with a household income over \$75,000, in addition to the average household income

Data related to trip characteristics include the percentage of business trips, broken down by commutation and business travel; non business trips, broken down by trip purpose; percentage of first-time Amtrak users; and percentage traveling alone or traveling in groups with family or business associates. The data for station access distinguishes between local residents and visitors and shows how many people in each of these groups used automobiles and transit or walked to reach the station. The automobile statistic is further broken down into the number of people using personal automobiles, getting dropped off or picked up at the station, or using a taxi.

Ridership at New Jersey Stations

Ridership on Amtrak's Northeast Corridor intercity passenger trains to and from New Jersey increased over the six-year period between fiscal year 1997 and fiscal year 2003 and at a faster rate than Amtrak was experiencing nationally. After removing all *Clocker* ridership, the total number of passengers boarding or disembarking at New Jersey stations increased by 27.9 percent (or 332,632 passengers), growing from 1,194,053 in fiscal year 1997 to 1,526,686 in fiscal year 2003 (see table 3). Amtrak ridership growth nationally grew 19 percent, from 20.2 million in fiscal year 1997 to 24 million in fiscal year 2003.

Peak ridership involving New Jersey stations occurred in fiscal year 2002, with 1,538,014 riders recorded; ridership in fiscal year 2003 was 0.7 percent below the fiscal year 2002 figure. In fiscal year 2003 ridership declined at all New Jersey stations except Newark Liberty International Airport. That station, which opened in fall 2001, experienced a substantial increase in ridership in fiscal year 2003, growing by 80 percent (or 29,196 passengers) over the fiscal year 2002 level of 36,539 passengers (see figure 1).

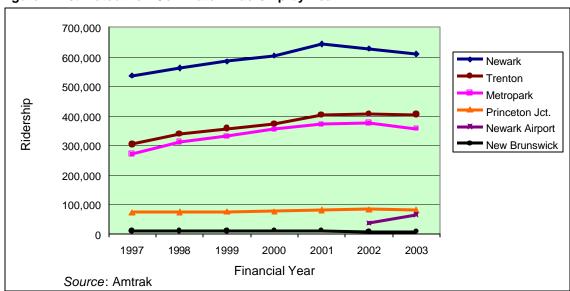


Figure 1. Estimated Non-Commuter Ridership by Year

Newark Penn Station is by far the busiest Amtrak station in New Jersey, accounting for 40 percent of Amtrak's total intercity ridership in New Jersey. The station recorded 609,998 passengers in fiscal year 2003. Trenton station is next, with 404,931 passengers, closely followed by Metropark station with 356,538 passengers. Ridership at Princeton Junction station is much smaller (81,930 passengers). New Brunswick

10

-

⁶ *Clocker* ridership for each station was available only for fiscal year 2002. Consequently, we calculated the percentage of non–*Clocker* ridership for each station for fiscal year 2002 and applied this percentage to fiscal year 1997 through fiscal year 2003 to calculate non–*Clocker* ridership at each station for time period.

station recorded 7,554 passengers and was the only station to show a loss in total ridership over the six-year period.

Trenton station led the way in ridership growth during the period, increasing by 33.2 percent (or 100,870 trips) over the fiscal year 1997 level of 304,061 passengers. Ridership at Metropark station grew nearly as fast (31.9 percent). Newark station, which also recorded a large increase in the number of passengers, showed a smaller percentage increase (13.7 percent) because it started from a significantly larger ridership base in fiscal year 1997.

The growth in New Jersey Amtrak ridership probably occurred for a number of reasons. Most significant was the economic boom of the late 1990s, which increased travel in general, and business travel, in particular. Second, the large increase in ridership in fiscal year 2001 was probably the result of the startup of the *Acela Express* service, which added more seats to the Northeast Corridor intercity service and encouraged ridership growth, especially in the New England market. On a local level, the improvement of parking facilities at the Trenton and Metropark stations and marketing efforts by Amtrak, specifically at Metropark, may have induced some additional travel.

Table 3. Growth in Estimated Ridership at New Jersey Stations 1997–2003

Station	Fiscal Year 1997	Fiscal Year 2003	Change	Percent Change (%)
Newark	536,572	609,998	73,426	13.7
Trenton	304,061	404,931	100,870	33.2
Metropark	270,227	356,538	86,311	31.9
Princeton Jct.	73,515	81,930	8,415	11.5
Newark Airport	_	65,735	_	_
New Brunswick	9,678	7,554	-2,124	-21.9
Total	1,194,053	1,526,686	332,632	27.9

Source: Amtrak.

Notes: See footnote 6 for description of method used to calculate ridership numbers.

Destinations

Washington, D.C., is by far the dominant destination for Amtrak intercity (non-Clocker) passengers leaving from New Jersey stations (see table 4). Approximately 30 percent of all rail passengers out of New Jersey stations are traveling to Washington. That share is almost double the share of the next most popular destination, Philadelphia, which accounts for 17 percent of New Jersey's intercity ridership (or 122,826 passengers). New York and Boston, which follow Philadelphia as destinations, have considerably smaller ridership shares, at 9 percent each (or 66,326 and 64,670 passengers, respectively).

The New Jersey–Boston rail passenger market is much smaller, reflecting, in part, less frequent service and relatively longer travel times. However, with the recent completion of electrification from New Haven to Boston and the introduction of high-speed service, New England is emerging as a more competitive market for New Jersey rail travel. Other destination stations, such as Baltimore, BWI, and Wilmington, have even smaller ridership shares.

Table 4. Top City Destinations from New Jersey Stations for FY2002

Destination	FY 2002 Trips	Share (%)
Washington, DC	222,103	29.7
Philadelphia, PA	122,826	16.5
New York, NY	66,326	8.9
Boston, MA ^a	64,670	8.7
Baltimore, MD	44,368	5.9
BWI Airport, MD	31,395	4.2
Wilmington, DE	26,904	3.6
Providence, RI	15,298	2.1
New Carrollton, MD	15,183	2.0
New Haven, CT	12,324	1.7
Stamford, CT	8,327	1.1
Other Stations	117,032	15.7
Total	746,756	100.0

Source: Amtrak.

Notes: Clocker passengers are not included in the table.

a. Boston includes Boston South Station, Boston Back Bay Station and Boston Route 128 Station.

Station Profiles

New Jersey's rail stations each have a distinct profile that is a consequence of their geographical location, the socioeconomic setting, and transportation accessibility. Newark Penn Station, New Jersey's premier intercity train station, is proximate to a business and population centers and accessible by transit. It has the largest mix of nonbusiness travelers. The Metropark rail station, conveniently located close to the intersection of several of New Jersey's most used highways, is easily reached by a large population and is thus well situated to serve business travelers using the *Acela Express* and *Metroliner* services, especially to Washington, D.C. The Trenton station, New Jersey's second most active rail station, is an important business and government link in the New Jersey to Washington market, although it is used less frequently than Metropark station as a point of embarkation/disembarkation for business travelers. It also attracts the most substantial number of riders traveling to New York City. This section profiles each of the New Jersey rail stations served by Amtrak.

Newark Penn Station

Station Characteristics

Every Amtrak train traveling through New Jersey stops at Newark Penn Station, where transfers are available to NJ TRANSIT train and bus services, the Newark City Subway, and PATH trains to Jersey City and Manhattan. The station, which opened in 1937, has five tracks for use by Amtrak trains serving the Northeast Corridor and major cities in the South and the Midwest. The same tracks are also used heavily by NJ TRANSIT trains serving Penn Station, New York; the Northeast Corridor commuter stations; the Jersey Shore via the North Jersey Coast Line; and central New Jersey via the Raritan Valley Line. In addition to the Amtrak riders who drive to the station from the populous northern region of the state, many riders arrive from the Jersey Shore and Middlesex, Union, Somerset, and western Essex Counties via local rail and bus services.

Although Newark Penn Station is easily accessible from much of the state, it had been difficult to reach by rail from Bergen County, New Jersey's most populous county. With the opening of the Secaucus Junction station on the Northeast Corridor, residents of Bergen, Passaic, and Rockland Counties are now able to leave from local stations and transfer at Secaucus Junction to a Newark Penn Station—bound train.

The area surrounding Newark Penn Station is economically and socially diverse, with a wide variety of office, commercial, and industrial uses nearby. Newark Penn Station is a convenient disembarkation point for many travelers. Some are likely to be traveling within the northern New Jersey region and can transfer at Newark to the various public transit services. Others are commuters or business travelers going to work or visiting offices in downtown Newark or the business districts of Jersey City and Lower Manhattan via the PATH service.

⁷ The PATH trains provide service to Midtown and Lower Manhattan. The Lower Manhattan station, which had been out of service since September 11, 2001, reopened in November 2003.

Intercity Passenger Trips

Newark Penn Station is the most active Amtrak station in New Jersey. It has the largest ridership and the most diverse ridership profile. In fiscal year 2002, 627,331 intercity Amtrak trips either began or ended at Newark Penn Station; 517,657 of those trips were within the Northeast Corridor, and 109,674 (or 17 percent) had one trip end outside the Northeast Corridor (see table 5). Approximately 226,000 traveled on the *Acela Express* and *Metroliner* services, while approximately 276,000 rode the *Acela Regional* trains. In addition, about 32,000 rode Keystone trains, the third largest service.

Washington, D.C., is the predominant origin/destination city for Amtrak travel to and from Newark, accounting for 163,773 or 26 percent of total Amtrak trips in fiscal year 2002. That total trips was 61 percent greater than the number of trips recorded for the next city paired with Newark—Philadelphia—which accounted for 101,997 trips. Philadelphia was followed by Boston, which accounted for almost 10 percent of the intercity rail passenger trips. Baltimore followed Boston and, thereafter, a number of smaller cities, including New Carrollton, Maryland, just north of Washington. The smaller cities in Connecticut were outside the top 10; in fact, Stamford, a sizable business center, at number 16, was lower in ranking than non–Northeast Corridor points such as Orlando (11), Chicago (12), and Newport News (15).

Table 5. Top City Pairs with Newark Station FY2002

Top City Pairs with	Fiscal Year	Top Acela Express/Metroliner	Fiscal Year
Newark Penn Station	2002 Trips	Pairs with Newark Penn Station	2002 Trips
1. Washington, DC	163,773	 Washington, DC 	93,046
Philadelphia, PA	101,997	Philadelphia, PA	32,498
 Boston, MA^a 	60,400	 Boston, MA^a 	29,734
4. Baltimore, MD	39,601	Baltimore, MD	20,923
Wilmington, DE	29,835	BWI Airport, MD	16,803
BWI Airport, MD	28,417	Wilmington, DE	13,427
7. New York, NY	21,480	7. Providence, RI	7,101
8. Providence, RI	14,440	8. New York, NY	4,544
New Carrollton, MD	13,525	New Carrollton, MD	3,459
10. New Haven, CT	10,087	10. New Haven, CT	2,614
16. Stamford, CT	6,504	11. Stamford, CT	937
Total	627,331	Total	225,591

Source: Amtrak.

Notes: The table excludes Clocker trips.

a. Boston includes Boston South Station, Boston Back Bay Station and Boston Route 128 Station.

Washington's predominance as a city pair with Newark was even more pronounced in the case of *Acela Express/Metroliner* trips; Washington - Newark accounted for 41 percent of all *Acela Express/Metroliner* trips. These trips are particularly attractive to business passengers, who tend to choose the faster *Acela Express* service over the more reasonably priced but slower *Acela Regional* service. The Washington–Newark total (93,046 trips) is nearly three times the Philadelphia–Newark (32,498 trips)—

⁸ The Boston number includes rail trips to and from three stations—Boston South Station, Boston Back Bay Station, and the Boston Route 128 Station.

Philadelphia was the second most frequent city pair with Newark for *Acela Express/Metroliner* trips. Boston and Baltimore followed Philadelphia as a city pair with Newark for *Acela Express/Metroliner* trips.

Ridership Characteristics

Because of its accessibility to the rest of New Jersey's transit infrastructure, it is not surprising that Newark Penn Station's Northeast Corridor riders demonstrated the most diverse characteristics in the 1998 station ridership profiles. For example, Newark Penn Station had the highest percentage (44 percent) of trips taken for nonbusiness purposes and the lowest percentage (68 percent) of passengers who traveled alone. The station's Northeast Corridor passengers were mostly middle-aged, with about half (53 percent) between the ages of 35 and 54. Most were well educated; only 13 percent had not attended college. Common employment sectors included professional, marketing/sales, FIRE,⁹ and government. Approximately 15 percent were students or retirees. While still high by regional and national standards, the average household income (\$99,000) was the lowest among the three New Jersey stations profiled.

Newark Penn Station passengers reported by far the highest transit usage to and from a station, reflecting the station's superior connectivity with New Jersey's other public transit. Seventeen percent of local residents and 58 percent of visitors said they used public transit to get to and from Newark Penn Station, each statistic by far the highest for the New Jersey stations.

Metropark

Station Characteristics

Metropark rail station's assets are its accessibility to major highways, location at the center of a large sending area, and a large supply of relative inexpensive parking. These characteristics make it an attractive alternative to Newark Liberty International Airport for serving the business population of central New Jersey that travels to and from Washington, D.C.

Located near the intersection of the New Jersey Turnpike and the Garden State Parkway, and close to I-287, Metropark station is easy to reach by automobile from points throughout central and northern New Jersey. Thus, Metropark station draws from a large, densely populated, and relatively affluent area of New Jersey—an area where the pharmaceutical and telecommunications industries maintain a significant presence. The counties of central New Jersey are among the fastest growing in the state, and they will likely feed future growth at this station.

One of Metropark station's most important characteristics is the availability of parking at attractive rates. The station serves as a major park-and-ride facility for NJ TRANSIT,

⁹ FIRE—Finance, Insurance, and Real Estate.

with a 3,600-space garage immediately adjacent to the platform. Spaces are available at \$5 a day for Amtrak intercity customers and can be purchased for multiple days.

Intercity Passenger Trips

In fiscal year 2002, 376,162 Amtrak passengers boarded or disembarked at Metropark station (see table 6). Of those passengers, 360,323 (or 96 percent) were Northeast Corridor passengers, and the remaining 15,859 trips (or 4 percent) continued beyond the Northeast Corridor.

Though intercity rail service at the station is not as frequent as at the Newark or Trenton stations, Metropark is second only to Newark in serving *Acela Express* and *Metroliner* passengers traveling to and from Washington, D.C. Almost 147,000 passengers rode the *Acela Express/Metroliner* services, while approximately 184,000 trips were on *Acela Regional* trains

Washington is the overwhelmingly predominant city pair for Amtrak passengers using Metropark station. In fact, the predominance of Washington in the overall ridership to and from Metropark was much greater than its predominance when paired with either Newark or Trenton. There were nearly as many trips between Metropark and Washington (153,096 trips) as there were between Newark Penn Station and Washington (163,773 trips), despite the Newark station's large advantage in total trips (71 percent more tips were recorded for Newark Penn Station).

Acela Express/Metroliner travel between Metropark and Washington accounted for 57 percent of all Acela Express/Metroliner trips to and from Metropark station. In comparison, travel between Newark Penn Station and Washington accounted for 41 percent of all Acela Express/Metroliner trips to and from the Newark station; travel between Trenton and Washington accounted for 48 percent of all Acela Express/Metroliner trips to and from Trenton Station. As was the case for Newark Penn Station, the next three cities paired with Metropark for all Amtrak trips were Philadelphia, Boston, and Baltimore.

The number of trips between Metropark and Washington was approximately two and a half times the number of trips than between Metropark and Philadelphia Boston captured almost 12 percent of all the intercity trips and about 11 percent of all the *Acela Express/Metroliner* passenger travel to and from Metropark station, making Boston–Metropark the second most frequent city pair from Metropark on these trains. Boston had about one-fifth the number of *Acela Express/Metroliner* trips to and from Metropark station that Washington had. This is attributed, in part, to relative travel times and the lower frequency of service to Boston, which served only by the *Acela Express*.

There were more trips between Metropark and the Connecticut stations at New Haven and Stamford than between Newark Penn Station and the Connecticut stations. The only station outside the Northeast Corridor on the top city pair list was Richmond (11),

¹⁰ The Boston number includes rail trips to and from three stations – Boston South Station, Boston Back Bay Station and the Boston Route 128 Station.

which surpassed Stamford as an origin/destination city for passengers using Metropark station. Several of the destinations outside the Northeast Corridor that appeared on Newark's list were not found at Metropark. For example, Orlando and Chicago were not on Metropark's list because the station is served by neither the *Silver Star* nor the *Three Rivers* trains.

Table 6. Top City Pairs with Metropark Station FY2002

Top City Pairs with	Fiscal Year	Top Acela Express/Metroliner	Fiscal Year
Metropark Station	2002 Trips	Pairs with Metropark Station	2002 Trips
 Washington, DC 	153,096	1. Washington, DC	83,072
Philadelphia, PA	63,246	2. Boston, MA ^a	16,766
 Boston, MA^a 	43,855	3. Philadelphia, PA	11,861
Baltimore, MD	25,673	4. Baltimore, MD	11,520
5. BWI Airport, MD	20,114	5. BWI Airport, MD	10,096
Wilmington, DE	11,553	Wilmington, DE	4,474
7. New Carrollton, MD	9,443	7. Providence, RI	3,599
8. Providence, RI	9,370	8. New Carrollton, MD	1,928
9. New York, NY	6,366	9. New York, NY	1,436
10. New Haven, CT	5,429	10. New Haven, CT	1,162
12. Stamford, CT	2,307	11. Stamford, CT	402
Total	376,162	Total	146,533

Source: Amtrak

Ridership Characteristics

The profile of Metropark's Northeast Corridor passengers showed a somewhat younger, more business-oriented, and affluent ridership than the profile of the ridership at Newark Penn Station. Some 56 percent of the trips were for business travel, and 76 percent of the passengers traveled alone. The riders were younger than at Newark station, with half between the ages of 35 and 45 and nearly another third (31 percent) aged 34 and younger. Educational characteristics were similar to Newark: 87 percent had attended college and 72 percent graduated. Employment sectors included professionals, marketing/sales, and FIRE, but manufacturing also appeared on the list at 8 percent. Ten percent of the riders were students, while 7 percent were retirees. The average household income of Amtrak's Northeast Corridor customers at Metropark was \$106,000; more than 70 percent of the customers reported incomes above \$75,000.

Metropark is a suburban station with excellent highway links. As a result it is reached primarily by automobile; only 1 percent of local residents and 3 percent of visitors used transit to travel to or leave from Metropark station.

Trenton

Station Characteristics

Trenton station is New Jersey's second most heavily used intercity rail station, after Newark Penn Station. It is located in downtown Trenton, near U.S. Route 1, and is

a. Boston includes Boston South Station, Boston Back Bay Station, and Boston Route 128 Station.

relatively close to major state government buildings. Trenton station serves state employees traveling on business to Washington, D.C., Newark, or New York; private-sector workers employed along the U.S. Route 1 Corridor in the Princeton–West Windsor–Plainsboro area; and university-affiliated personnel and students. More amenities are offered here than at Metropark station because Trenton has a significantly larger station building. A \$45 million renovation project at Trenton station, scheduled to be completed by the end of 2006, will extensively upgrade the facility and its amenities. Office, retail, and community space will be added. Parking for approximately 1,800 cars is currently available at a cost of \$8 a day.

Trenton station also is important as a transfer location for the regional rail system, providing accessibility to intermediate stations between both Trenton and New York City and Trenton and Philadelphia. NJ TRANSIT's Northeast Corridor service to New York and SEPTA's R7 line to Philadelphia both originate/terminate in Trenton. Coordinated schedules make it relatively easy to transfer from one train to the next. However, both SEPTA and NJ TRANSIT trains take longer to reach their ultimate destinations (New York City and Philadelphia) than do the Amtrak intercity trains. Hence, Amtrak intercity trains compete with the interstate transit service from Trenton—the Amtrak trains run about 20 minutes faster than SEPTA to Philadelphia and about 30 minutes faster than NJ TRANSIT to New York City. The recent opening of the light rail River Line, which connects Trenton to Camden, will increase Trenton's role as a transfer location. A new light rail station across the street makes Trenton station more accessible to residents living in the southern New Jersey counties of Burlington and Camden.

Intercity Passenger Trips

Most of the Amtrak intercity train service at Trenton is provided by *Acela Regional* and Keystone trains which account for 48 of the 55 Amtrak trains that stop at Trenton daily (see table 2). On the other hand, Trenton is served by only seven *Acela Express* and *Metroliner* trains daily, considerably fewer than the number that serve either Newark or Metropark.

In fiscal year 2002, 406,609 intercity Amtrak trips either began or ended at Trenton station; 367,813 (or 90 percent) of these trips were Northeast Corridor trips and 38,796 (or 10 percent) were outside the Northeast Corridor (see table 7). The number of Northeast Corridor travelers using Trenton station was just 2 percent greater than the number using Metropark. The *Acela Express* and *Metroliner* premium services, with a total of only seven weekday trains, served 45,621 passengers at Tenton station, a substantially fewer than the number of passengers served by those services at Metropark (146,533 passengers) and Newark Penn Station (225,591 passengers). Approximately 263,000 trips were on the *Acela Regional* service, which provided 33 weekday trains for passengers using Trenton station. That number is close to Newark Penn Station's *Acela Regional* ridership (276,000 passengers).

As a result of Amtrak's 30-minute advantage over NJ TRANSIT in travel time to New York City (excluding *Clockers*), the Trenton–New York City pairing dominates the list of city pairs for Trenton station in terms of the total number of Amtrak trips. Washington,

D.C., however, was also a major market for trips to and from Trenton. Indeed, it is, by far, the largest market for the *Acela Express* and *Metroliner* services, accounting for more than twice as many trips as the New York City market and five times as many trips as the Boston market. Washington captured 26 percent of all intercity passenger trips and 48 percent of *Acela Express* and *Metroliner* travel to and from Trenton. Boston, Philadelphia, and Baltimore are much smaller markets and of lesser importance for Trenton. About 6 percent of all Trenton intercity trips were to and from Boston, and about 10 percent of the premium *Acela Express/Metroliner* travel was to and from Boston. Because of its proximity to Trenton and the competitive commuter rail service, Philadelphia is not as important a destination from Trenton as it is from Newark Penn Station and Metropark station.

Table 7. Top City Pairs with Trenton Station FY2002

Top City Pairs With Trenton Station	Fiscal Year 2002 Trips	Top Acela Express/Metroliner Pairs with Trenton Station	Fiscal Year 2002 Trips
1. New York, NY	132,724	1. Washington, DC	21,996
2. Washington, DC	104,151	2. New York, NY	9,984
 Boston, MA^a 	26,030	3. Boston, MA ^a	4,397
4. Philadelphia, PA	19,162	4. Baltimore, MD	2,239
Baltimore, MD	17,682	5. BWI Airport, MD	1,691
6. BWI Airport, MD	11,103	6. Stamford, CT	1,219
7. New Haven, CT	8,995	7. Providence, RI	1,207
8. Wilmington, DE	8,074	8. New Haven, CT	1,093
9. Stamford, CT	7,548	9. Wilmington, DE	546
10. Providence, RI	6,647	10. New Carrollton, MD	503
11. Newark, NJ	6,631	11. Philadelphia, PA	475
12. New Carrollton, MD	6,413	12. Newark, NJ	259
Total	406,609	Total	45,621

Source: Amtrak

Note: The table excludes *Clocker* trips.

a Boston includes Boston South Station, Boston Back Bay Station and Boston Route 128 Station.

Ridership Characteristics

Amtrak Northeast Corridor customers using Trenton station were the most highly educated and the wealthiest of the riders profiled in the 1998 survey. They were overwhelmingly male and middle-aged, with roughly two-thirds falling into these categories. Eighty-six percent of the riders had a college degree, 95 percent were employed full time—mostly in the marketing, FIRE, and professional sectors—and only three percent were students or retirees. The average household income was \$119,000, the highest recorded at any of the three stations that were profiled.

Transit access at Trenton station was greater than access at Metropark station but still relatively small when compared with transit access at Newark station. Among local users, 3 percent used public transit to access the station; among visitors, that share

¹¹ The Boston number includes rail trips to and from three stations—Boston South Station, Boston Back Bay station and the Route 128 station.

rose to 9 percent. A negligible share of residents walked to the station, while 7 percent of the visitors did so, quite likely to or from government offices or business locations in the downtown core of Trenton. While located in an urban area, Trenton station obviously draws from its environs, including the Route 1 Corridor in Mercer and Middlesex Counties and parts of Bucks County in Pennsylvania. As these areas are not nearly as well served by transit as the urban core surrounding Newark station, there is limited reliance on transit access by Trenton station's Amtrak passengers.

Princeton Junction, New Brunswick

The train stations at Princeton Junction and New Brunswick serve lesser roles in intercity rail travel than Newark Penn Station, Metropark, or Trenton station. Both stations are commuter-oriented, with few non-Clocker trains each day. Nine Keystone trains and one *Acela Regional* train serve Princeton Junction on weekdays. There is also one weekday *Metroliner* train. New Brunswick is served by only one southbound *Acela Regional* train per weekday and three northbound *Keystone* trains.

Princeton Junction station served only 83,000 non-*Clocker*, standard Amtrak service passengers in fiscal year 2002. New Brunswick saw fewer than 8,000 intercity passengers—less than the number recorded in fiscal year 1997.

Newark Liberty Airport Access

In the fall of 2001, a new intermodal station opened on the Northeast Corridor at Newark Liberty International Airport. The station is a collaborative effort of Amtrak, NJ TRANSIT, and the Port Authority of New York and New Jersey. The station is linked to the airport by rail and monorail. There is no parking or road access to the station. The station is served primarily by *Acela Regional* trains, with additional service provided by *Keystone* trains and the *Three Rivers* and *Vermonter* trains. The opening of the station greatly increased the connectivity of the Northeast Corridor's transportation system, providing easy access to and from Newark Liberty International Airport.

Continental Airlines, which has a major hub at Newark Liberty International Airport, recognized the benefit of allowing its passengers to use the train to reach the airport. It instituted a code-sharing plan with Amtrak, allowing passengers on *Acela Regional* and *Keystone* trains from Hartford, Stamford, Philadelphia, and Wilmington to book Amtrak tickets with their flights and earn OnePass frequent-flier miles. The Amtrak trip is treated as another leg of the flight. This code-sharing agreement went into effect on March 11, 2002, and served more than 3,600 passengers in its first nine months. The use of this station by Amtrak passengers has grown swiftly. In fiscal year 2002, 36,000 Amtrak riders used the station; in fiscal year 2003, it was used by 65,735 passengers, an increase of 80 percent. This is an encouraging sign and bodes well for the future for both Amtrak and the Port Authority of New York and New Jersey.

Intermediate Markets, Distance and Fare Structure

Amtrak's pricing policy favors the large endpoint markets of Washington and Boston over smaller intermediate markets such as Providence, Stamford, and Wilmington. The relatively limited ridership between New Jersey and these midpoint markets may be a consequence of this pricing strategy. Because Amtrak prices intermediate market travel less competitively than travel to its endpoint markets, travel to cities such as Wilmington or Stamford can be undertaken at a lower cost by automobile or on a combination of the local regional rail services. Although the local regional rail trips are not nearly as fast, convenient, or comfortable as Amtrak trips, a latent market probably exists for such travel. If priced competitively and served frequently, this medium-length rail market could grow.

The disparity in Amtrak's pricing policy between large endpoint markets and intermediate stations is illustrated by comparing the per mile fare for a trip from Newark to Boston with the fare for a trip from Newark to Stamford and the per mile fare for a trip from Newark to Washington with the fare for a trip from Newark to Wilmington. A Newark-to-Boston trip on an Acela Regional train had a one-way fare of \$64 on October 29, 2003, or approximately \$0.27 per mile. A Newark-to-Stamford trip was priced at approximately \$0.72 per mile to cover less than one-fifth of the distance of the Newarkto-Boston trip (see table 8). The disparity is less extreme to the south, but a trip from Newark to Wilmington is still significantly more expensive on a per mile basis than a Newark to Washington rail trip—\$0.52 compared with \$0.33.

Table 8. Fares and Distances from Newark to Northeast Corridor Locations for Amtrak's Regional Service

	Distance (in miles)	Amtrak Regional Service Fare (\$)	Price/Mile (\$)	Equivalent Local Transit Fare (\$)
Newark to Boston	241	64	0.27	<u> </u>
Newark to Stamford	46	33	0.72	14.80
Newark to Wilmington	106	55	0.52	12.65
Newark to Washington, D.C.	216	72	0.33	_

Sources: For fare data, the source is http://www.amtrak.com. For distance data the source is the Amtrak System Timetable, Fall 2003/Winter 2004. For transit fares, the sources are http://www.njtransit.com, http://www.mta.info/mnr/index.html, and http://www.septa.com.

The differences between the pricing policies of Amtrak and those of the regional NJ TRANSIT and SEPTA commuter rail services are illustrated in examples comparing Amtrak fares with a combined NJ TRANSIT/SEPTA fare from Newark to Wilmington and a combined NJ TRANSIT/Metro-North fare for a comparable rail trip from Newark to Stamford.¹² A one-way trip between Newark and Wilmington would cost \$55, or \$0.52 per mile, aboard Amtrak; the same trip would cost \$12.65, or \$0.12 per mile, using NJ

¹² The Newark to Stamford example is a hypothetical one because it assumes that Metro-North is operating out of Penn Station, New York, allowing for an easy transfer from NJ TRANSIT to Metro-North. In fact, Metro-North operates only out of Grand Central Terminal.

TRANSIT and SEPTA. A one-way trip between Newark and Stamford would cost \$33 (\$0.72 per mile) aboard Amtrak, while the same trip using the hypothetical services of NJ TRANSIT/Metro-North would cost \$14.80 (\$0.32 per mile).

In addition, one-seat Amtrak service between New Jersey and New England is limited. Of 110 trains daily that serve New Jersey, only 36 originate or terminate in Boston. While each of those trains stop in Newark, other New Jersey stations receive more limited service. For instance, only 11 southbound trains weekdays from Boston stop in Metropark and 10 in Trenton; northbound, just eight trains weekdays depart Trenton for New England and seven leave Metropark. Only six of the seven trains from Metropark to New England stop in Stamford. Two of those are premium *Acela Express* service with an \$83 one-way coach fare and a third is an overnight train that leaves Metropark at 1:32 a.m. and arrives in Stamford at 4:04 a.m. From Trenton, there is a four-hour gap between 2:25 p.m. and 6:25 p.m. in service to Stamford.

CONCLUSION

Amtrak's intercity passenger rail service is critical to the mobility of New Jersey's citizens and visitors and to the economy of the state and the region. In the densest state in the United States, intercity rail travel is vital to maintaining a smoothly running and a high quality of life. It provides the most important link between the state's regulated businesses (pharmaceutical, telecommunications, insurance, and financial) and state government and the federal government in Washington, D.C. A reliable, all-weather link between New Jersey's most productive economic regions and the boardrooms of New York, Philadelphia, and Boston, Amtrak intercity rail service has become even more vital in the wake of the air-travel security restrictions imposed after September 11, 2001. The frequent, high-volume service provided by Amtrak in the Northeast Corridor removes cars from the overcrowded I-95 corridor. Furthermore, the rail system's electric-powered service does not produce emissions or consume oil. Significantly, the alternative of intercity rail also eases the need to accommodate thousands of additional shuttle and short-hop flights out of Newark Liberty International Airport, releasing gate space for other flights. Offering competitive trip times and frequent departures, quality rail service has been shown to reduce dependency on air travel that is inefficient at such short distances.

Conversely, New Jersey is critical to the future of Amtrak. New Jersey's ridership is a dynamic component of Northeast Corridor intercity service and the state is a major contributor to the Corridor's capital upgrading. Ridership growth in New Jersey, excluding *Clocker* commuter service, at 28 percent between 1997 and 2003, has outpaced Amtrak's system-wide growth of 19 percent. New Jersey ridership is a keystone for Amtrak's premium *Acela Express* and *Metroliner* services. Nearly \$1.5 billion in capital has been invested since 1992 to upgrade Amtrak's Northeast Corridor in New Jersey. As such, it is essential, that New Jersey have a voice in any restructuring of Amtrak, and in particular, any alteration in the federal government's funding and institutional relationship to the Northeast Corridor.

Amtrak intercity ridership from New Jersey stations to intermediate stations, such as Wilmington, Philadelphia, Stamford, and New Haven, lags far behind travel to and from Washington, D.C. One reason may be Amtrak's fare structure, and another is the infrequency of one-seat service to points north of Penn Station New York from New Jersey stations. On a per-mile basis, fare levels are considerably higher between these intermediate points than between New Jersey and Washington, D.C. Another is the limited amount of one-seat service through New York Penn Station.

A subject for future policy consideration would be creation of new contractual arrangements by public agencies from Delaware to Connecticut to operate integrated sub-regional interstate service at commuter rail fare levels. NJ TRANSIT's takeover of the *Clocker* service in 2006 could serve as the vehicle for such a policy initiative.