Southern New Jersey to Philadelphia Mass Transit Expansion Alternative Analysis Study

Final Report
October 2009

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Prepared by:

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TABLE OF CONTENTS

TABLE OF FIGURES

TABLES

1 INTRODUCTION

This report documents the analysis and findings of the Southern New Jersey to Philadelphia Mass Transit Expansion Alternatives Analysis, referred to as "the AA study" throughout this report. The project sponsors have completed a comprehensive study to identify and evaluate the need and potential for expanded rapid transit service for the congested corridor between Philadelphia, Pennsylvania and communities located in Camden, Gloucester and Cumberland counties in Southern New Jersey. This AA study is a continuation of the Southern New Jersey to Philadelphia Transit Study completed in October 2005, which strongly endorsed pursuing increased rail transit options in the corridor to address transportation and mobility needs. It is also an outgrowth of the 1997 Burlington, Camden and Gloucester Transit Major Investment Study, prepared by NJ TRANSIT, which also identified the need for transit accessibility in this corridor.

This AA study is sponsored by the Port Authority Transit Corporation (PATCO), a subsidiary of the Delaware River Port Authority (DRPA), and by the New Jersey Department of Transportation (NJDOT). Additional coordination relative to this AA study occurred with the following agencies: the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA), the South Jersey Transportation Authority (SJTA), New Jersey TRANSIT (NJ TRANSIT), the Delaware Valley Regional Planning Commission (DVRPC), and the South Jersey Transportation Planning Organization (SJTPO).

1.1 Description of the Study Area

In defining the AA study area, an "immediate study area" was identified that set the maximum limits of any major transit investments. Also identified was an "extended study area" that includes the origins and destinations of potential trips to and from the AA study area. This trip information was input to the travel demand analysis.

The AA study area (see Figure 1-1) encompasses approximately 700 square miles, and extends from Center City Philadelphia to Cumberland County, New Jersey. It is approximately 42 miles long and 26 miles wide, and includes the entire counties of Gloucester, Camden and Cumberland, as well as portions of Atlantic and Salem counties. Within these counties, the 85 municipalities listed in Table 1-1 and Table 1-2 comprise the AA study area.

Table 1-1 - Immediate AA Study Area Municipalities

Study Area Municipalities		
Borough of Bellmawr	Franklin Township	Pittsgrove Township
City of Bridgeton	Borough of Glassboro	Borough of Runnemede
Borough of Brooklawn	Gloucester City	Upper Deerfield Township
Borough of Buena	Gloucester Township	Upper Pittsgrove Township
City of Camden	Harrison Township	City of Vineland
Borough of Chesihurst	Mantua Township	Washington Township
Borough of Clayton	City of Millville	Borough of Wenonah
Deerfield Township	Monroe Township	West Deptford Township
Deptford Township	Borough of Mount Ephraim	Borough of Westville
East Greenwhich Township	Borough of National Park	Winslow Township
Elk Township	Borough of Newfield	City of Woodbury
Borough of Elmer	Borough of Pitman	Borough of Woodbury Heights

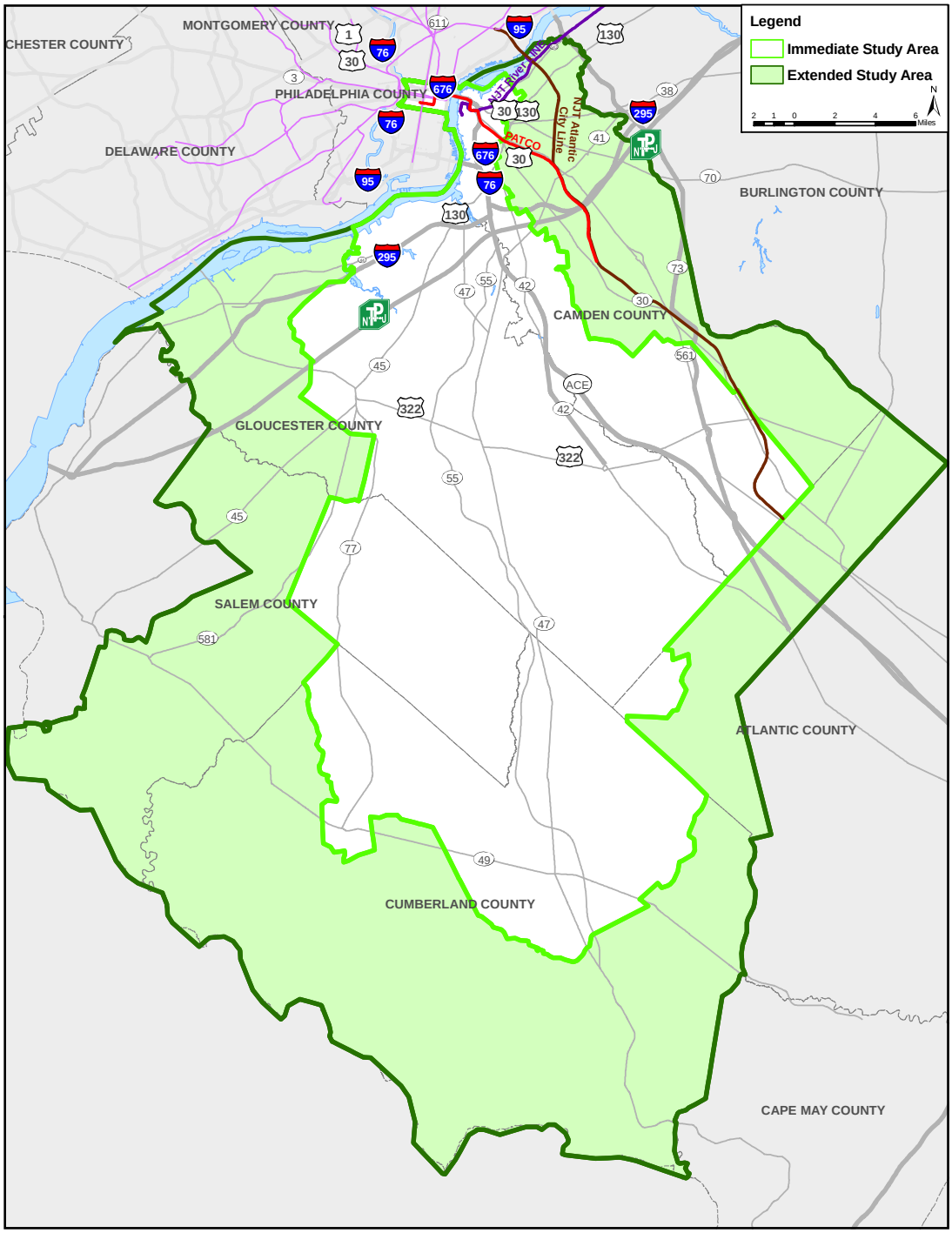
Table 1-2 - Extended AA Study Area Municipalities

Extended Area Municipalities		
Alloway Township	Haddon Township	Pennsauken Township
Borough of Audubon	Borough of Haddonfield	Borough of Pine Hill
Borough of Audubon Park	City of Hammonton	Borough of Pine Valley
Borough of Barrington	Borough of Hi-Nella	Quinton Township
Borough of Berlin	Hopewell Township	Borough of Shiloh Borough
Berlin Township	Borough of Laurel Springs	Borough of Somerdale
Buena Vista Township	Borough of Lawnside	South Harrison Township
Cherry Hill Township	Lawrence Township	Stow Creek Township
Borough of Clementon	Borough of Lindenwold	Borough of Stratford
Borough of Collingswood	Logan Township	Borough of Swedesboro
Commercial Township	Lower Alloways Creek Township	Borough of Tavistock
Downe Township	Borough of Magnolia	Voorhees Township
Fairfield Township	Mannington Township	Waterford Township
Borough of Folsom	Maurice River Township	Borough of Woodlynne
Borough of Gibbsboro	Borough of Merchantville	Woolwich Township
Greenwich Township	Borough of Oaklyn	
Borough of Haddon Heights	Borough of Paulsboro	

Center City Philadelphia and downtown Camden, New Jersey anchor the Immediate AA Study Area to the north, and Millville and Vineland, New Jersey anchor it to the south. The AA study area includes: university campuses, such as Rutgers University, Rowan University, Camden County College and Gloucester County College; medical complexes, such as Cooper Hospital

in Camden and Underwood Hospital in Woodbury City; technology complexes, such as the South Jersey Technology Park; and rapidly growing areas, such as Mantua, Sewell, East Greenwich, Winslow Township, and Harrison Township/Mullica Hill. The AA study area also includes the older communities of Camden, Gloucester City, Westville, Woodbury, Pitman and Glassboro, which have lost population and employment, but are focused on renewed economic growth in the future.

Figure 1-1 – AA Study Area



1.2 Previous Transportation Studies

This AA study is the culmination of years of planning studies that have proposed passenger rail service to Southern New Jersey, with improved transit access to Center City Philadelphia. Dating back to the early 1930's, these studies, as listed in Table 1-3, have progressed from an initial mix of railroad and transit proposals to implementation of rail rapid transit service. The quantity and frequency of these studies is indicative of a continuing, long-term interest to introduce new high-quality public transportation service to the AA study area and Southern New Jersey.

Table 1-3 – Previous Transportation Studies for Southern New Jersey

Title	Date	Study Summary
Report to the Senate and General Assembly, State of New Jersey	1931	Recommended construction of rapid transit over the Delaware River Bridge (now the Ben Franklin Bridge) and a tunnel under the Delaware River between NJ and PA.
Report to the Senate and General Assembly, State of New Jersey	1932	Recommended giving authority to the DRBJC to construct bridges and tunnels and for joint operation of West Jersey Seashore Railroad and the AC Railroad.
Final Report to the Senate and General Assembly, State of New Jersey	1933	Recommended electrifying the line, increasing train speed and adding lighter weight cars, without raising fares. Revised the physical consolidation plan.
Proposed SNJT Lines	1938	Examined four branches for the Bridge High Speed Line. Low-cost alternatives using existing tracks.
Rapid Transit in SNJ	1946	Examined multi-branch operation using existing railroad rights-of-way and alternate river crossings.
Supplementing Previous Reports on the Proposed SNJ Rapid Transit Lines.	1948	Reviewed previous report, including existing facilities, compared Southern New Jersey's growth to other areas with rapid transit and revised cost estimates, ridership and revenue.
SNJ Mass Transportation Survey	1956	Surveyed a 35-mile radius of additional transit facilities in Camden.
Plan For High Speed Mass Transit System Between PA and SNJ	1959	Recommended connection of the Bridge Line to three suburban railroads to improve transportation in the area and save the rights-of-way.
Rapid Transit System for SNJ and PA	1960	Proposed six rapid transit lines from central PA to NJ across Ben Franklin Bridge.
Proposed SNJ Haddonfield-Kirkwood Line Rapid Transit	1960	Recommended the feasibility of a high-speed line to Haddonfield and Kirkwood, based on previous studies.
SNJ Rapid Transit System - Haddonfield-Kirkwood Line	1961	Proposed Woodcrest Station site and transit lines. Eventually led to construction of PATCO.
DRPA Mass Transportation Development Program	1975	Recommended rail branches to Moorestown and Glassboro, extension from Lindenwold to Berlin and Atco.
Market Street West Transportation Study Final Report	1978	Investigated transit access needs in the Market West area in Philadelphia. Recommended a new Market-Frankford Station between 19th and 22nd Streets.
Lindenwold Hi-Speed Transit Line	1990	Examined management and operations issues during the first 20 years of PATCO.
Feasibility Study for the Construction of a New Market-Frankford Line Station	1991	Examined locations and layouts for new station on the Market-Frankford Line between 19th and 22nd Streets.

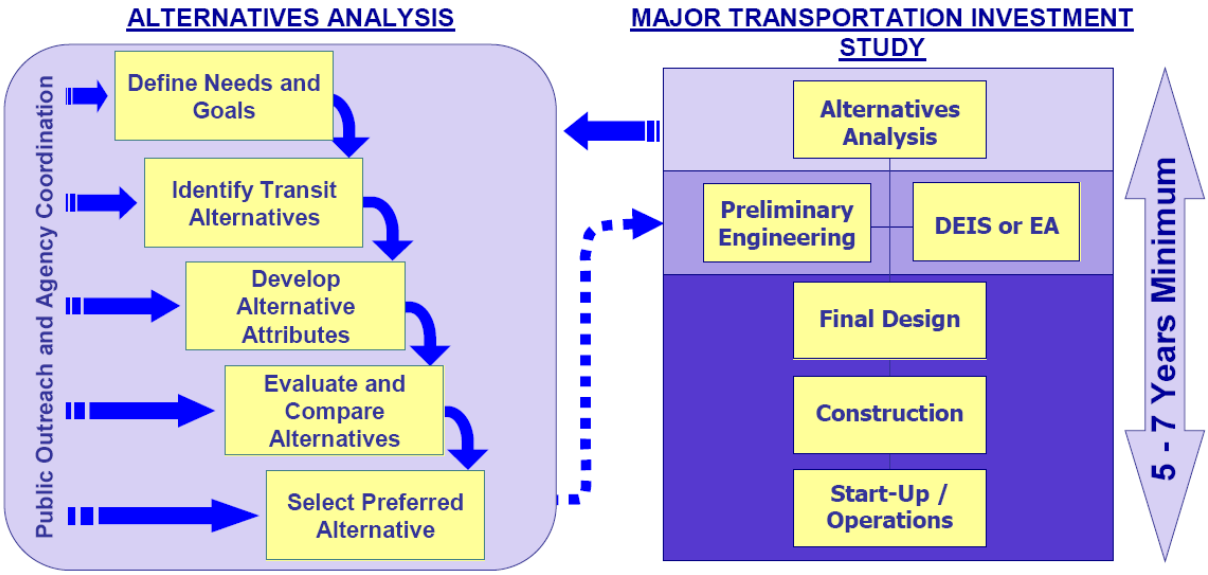
Title	Date	Study Summary
Burlington-Gloucester Corridor Assessment Study	1993	Prepared a Final Draft Report for NJT recommending further study of a proposed three-branch system.
Burlington-Camden-Gloucester Major Investment Study	1994	Examined three-branch system serving the Camden Waterfront.
Camden-Trenton Rail Corridor, Special Study No. 2	1996	Investigated the feasibility of transit along the Bordentown Secondary (Riverside Line).
SNJ Light Rail Transit System, Project Definition, Revision 2.2	1997	Resulted in construction of the Southern New Jersey Light Rail Transit System (River LINE) from Camden to Trenton.
PATCO Speed Line Extension Study	1998	Investigated ways to extend PATCO to serve 30th Street Station and University City, Philadelphia.
South Jersey Regional Rail Study	2002	Investigated four corridors for rail service in South Jersey, including from Winslow Junction to Vineland and Bridgeton, and from Glassboro to Vineland and Millville. (SJPTO sponsored)
Southern New Jersey to Philadelphia Transit Study	2005	Studied needs for improved transit in two market areas in New Jersey and two in Pennsylvania. Identified feasible alternatives meriting further study in New Jersey for the line-haul commuter market and Philadelphia distribution services. Set stage for Southern NJ Transit Expansion Alternatives Analysis.

While these previous studies confirmed the need for transit service, this AA study has established a Recommended Alternative for the corridor, and has defined its basic service characteristics, alignment, station locations, and supporting transit network. This Recommended Alternative will be advanced to the Draft and Final Environmental Impact Statements (Draft and Final EIS) phase, with these documents prepared in accordance with National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), and FTA guidelines. Supporting the EIS preparation will be conceptual engineering design of the alignment, stations, and ancillary facilities.

1.3 AA Study Process and Components

The AA study process is illustrated in Figure 1-2, based on recommending a specific transportation investment and corridor after rigorous comparative evaluation of alternatives, relative to satisfying the articulated needs and goals of the AA study area. This analysis and decision-making was advanced through an open environment that featured extensive public and stakeholder outreach and agency coordination, from initial through final tasks. This outreach and coordination sought input regarding prevailing conditions and demonstrated needs, which served as a basis for developing and evaluating public transportation opportunities and selecting a Recommended Alternative.

Figure 1-2 – Alternatives Analysis Study Process



To achieve these objectives, the AA study was comprised of the following components**:**

- **Needs Assessment** - Identification of existing transportation and economic conditions within the AA study area.
- **Project Purpose and Need Statement** – Reasons for the AA study and need for transit improvements.
- **Definition of Alternatives** – Identification and development of public transportation alternatives that address and satisfy the AA study area needs.
- **Evaluation of Alternatives** – Application of qualitative and quantitative measures, resulting in a Short List of Alternatives for technical analysis, and selection of a Recommended Alternative.
- **Technical Analysis** – Assessment of the shortlisted alternatives, based on operating costs, capital costs, ridership projections, land use planning and economic development potential, and environmental impact potential.
- **Public and Agency Outreach and Coordination** – General and targeted public outreach and agency coordination to foster project involvement, input, feedback, and consensus among alternatives.
- **Next Project Development Phases** – Guidance on the next phases of project development, including preparation of the Draft EIS addressing the Recommended Alternative.

2 EXISTING STUDY AREA CONDITIONS

2.1 Population and Employment

Existing and future population, employment, and other study area demographic indicators have been identified and analyzed, as a basis for understanding relevant study area trends. Demographic estimates and projections were obtained from DVRPC and SJTPO, which are the metropolitan planning organizations (MPO's) covering the study area. These estimates were initially based on the 2000 US Census, and then were adjusted to reflect more recent trends in school enrollment, building permits, and office occupancy, among other factors. Expected population and employment growth was then allocated to particular geographic sectors of the study area, based on the availability of land, zoning and prescribed densities of development, and availability and characteristics of transportation infrastructure.

Demographics of the study area were analyzed by travel analysis zone (TAZ), a geographic division of an area used in travel demand modeling. The TAZ correlates to major trip producers or attractors, and is based on population, employment, and other factors.

2.1.1 Population and Population Density

According to 2005 data, over 673,000 persons live in the study area. This population is expected to grow by about 17 percent to almost 788,000 by 2030, reflecting an annual growth rate of approximately 0.7 percent. Approximately 614,000 persons live within the Southern New Jersey portion of the study area, which does not include Philadelphia County. That population is expected to grow by about 17.3 percent (to about 720,000) by 2030. (see Table 2-1).

Table 2-1 – Estimated Study Area Population

County*	Area (sq. mi.)	Total Persons		2005-2030 Change		Population Density (per Square Mile)	
		2005	2030	Persons	Percent	2005	2030
Gloucester	239.2	251,064	317,509	66,445	26.5	1,050	1,327
Camden	96.1	224,310	231,831	7,521	3.4	2,334	2,412
Atlantic	7.1	3,897	4,086	189	4.8	549	575
Cumberland	155.9	121,004	150,482	29,478	24.4	776	965
Salem	81.0	13,866	16,324	2,458	17.7	171	202
Philadelphia	3.2	59,173	67,464	8,291	14.0	18,492	21,083
Study Area TOTAL	**582.5**	**673,314**	**787,696**	**114,382**	**16.99%**	**1,156**	**1,352**

Source:: DVRPC and SJTPO Demographic Forecasts
* Data shown only for portions of each county located within the study area

Greatest population growth is expected to occur in Gloucester and Cumberland counties, with an estimated respective increase of about 26 and 24.5 percent, greater than the growth projected for the entire study area. Meanwhile, the City of Camden and other municipalities along the existing PATCO high-speed transit line are expected to experience more modest gains in population. The greatest density (persons per square mile) in the study area, with the exception of the City of Philadelphia, is expected to be in Gloucester and Camden counties. Such higher densities, and their continued increase over time, often exhibit greater ridership potential, and are consistent with New Jersey "Smart Growth" programs and policies that encourage planned growth in already developed communities, rather than "sprawl" in open

space and farmland areas that lack required supporting infrastructure (see Figure 2-1). The population of the Philadelphia portion of the study area in 2005 was approximately 59,200, and is projected to grow by about 14.0 percent to just over 67,400 by 2030. This trend is also consistent with policies that encourage planned growth in already developed areas.

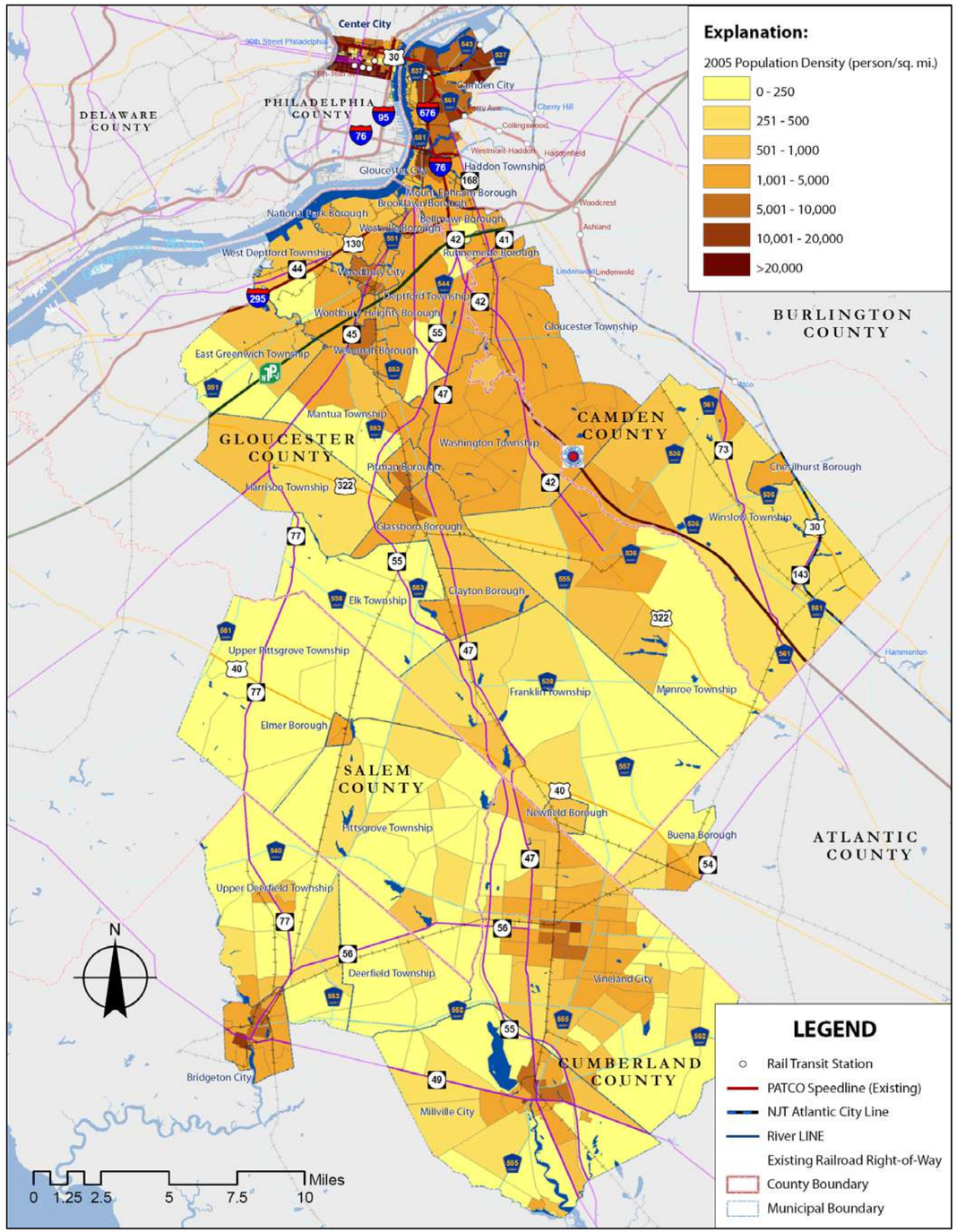
Population growth for study area municipalities in Southern New Jersey is shown in Table 2-2. Winslow Township and Gloucester City in Camden County are expected to experience the greatest percent of population growth by 2030, while Chesilhurst and Runnemede are expected to lose the greatest percent of population in that county. Harrison and Elk townships in Gloucester County are predicted to gain between 70 and 80 percent more residents by 2030, while more established municipalities in that county, including Woodbury and Woodbury Heights, would gain much smaller percentages of population. Municipalities within the study area in Cumberland County are expected to experience between 22 and almost 26 percent population growth by 2030.

The greatest percentages of population growth within the study area, in general, are expected to occur in municipalities with fewer persons per square mile than the study area average. These lower-density communities within the study area that are projected to experience a population increase by 2030 are listed in Table 2-2.

Population growth in less dense communities often occurs on undeveloped or underdeveloped land, such as farmland or open space. Adding housing or other development in these rural or undeveloped areas likely results in a net gain in regional travel (and roadway traffic) demand. Most of these communities in the study area are not well served by existing transit systems; therefore, they are likely to experience roadway traffic increases related to this development by 2030. Additionally, if development continues to occur in suburban or rural locales, rather than in established communities, trip lengths and travel times will also increase.

While the more densely developed municipalities in the study area are located generally closest to the regional urban core of Philadelphia and Camden (see Table 2-2), other municipalities, such as Woodbury, Pitman, Westville, and Bridgeton exhibit greater densities than the majority of municipalities within the study area, except for the City of Philadelphia. Existing and projected population density in the study area is shown on Figure 2-1.

Figure 2-1 – 2005 Population Density vs 2030 Population Density



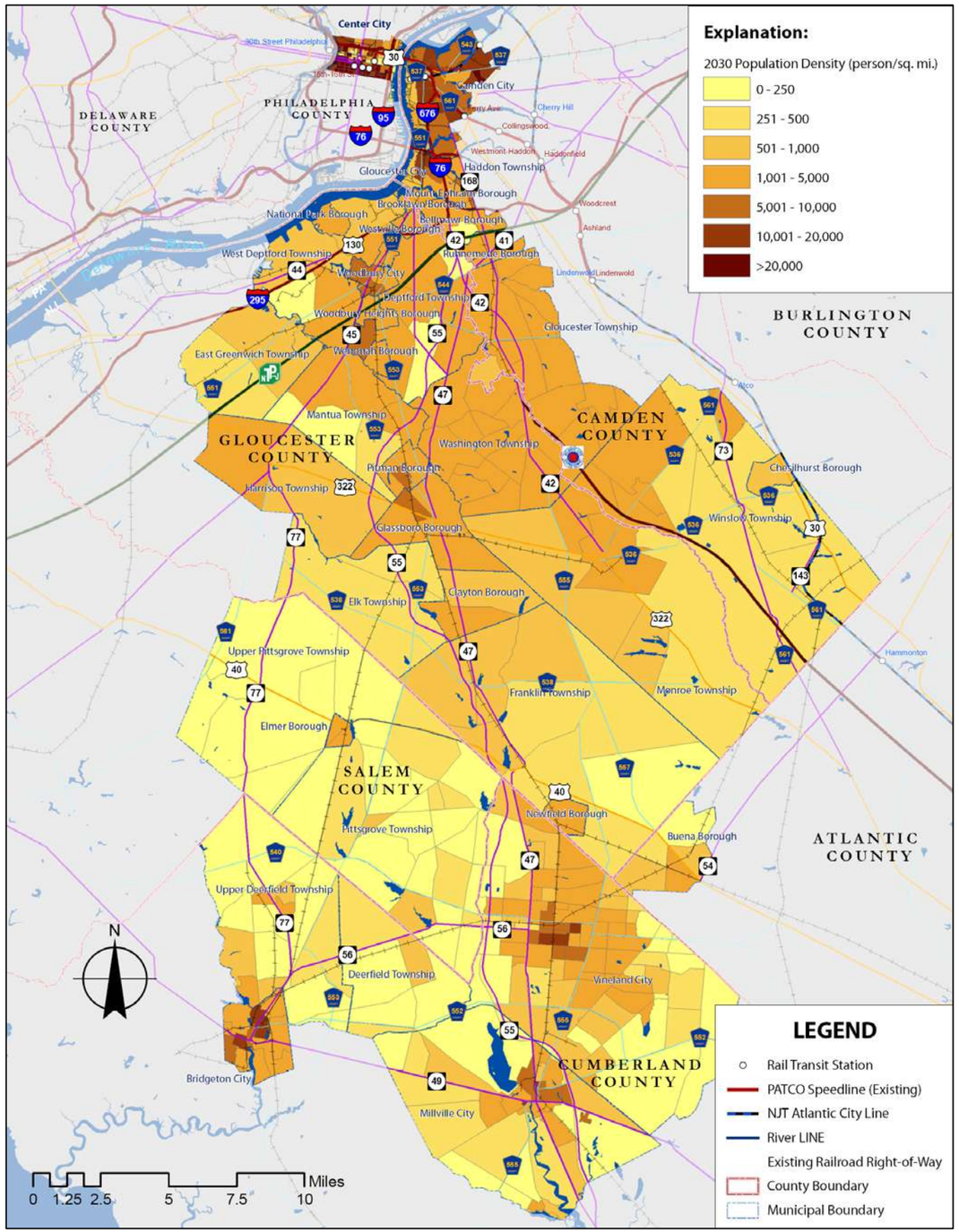


Table 2-2 – Estimated Population of Study Area Municipalities

County*	Municipality	2005 Population	2005 Persons Per Square Mile	2030 Projected Population	Population 2005-2030 (%)Change,
Philadelphia	Philadelphia	59,173	18,492	67,464	14.0
Atlantic	Borough of Buena	3,897	549	4,086	4.8
	Borough of Bellmawr	11,190	3,693	11,051	-1.2
	Borough of Brooklawn	2,301	4,896	2,305	0.2
	Camden	79,715	9,038	79,199	-0.6
	Borough of Chesilhurst	1,753	1,019	1,689	-3.7
	Gloucester City	11,509	5,231	11,516	0.1
	Gloucester Township	66,026	2,847	69,991	6.0
	Haddon Township	1,636	3,557	1,632	-0.2
	Borough of Mount Ephraim	4,439	5,044	4,415	-0.5
	Borough of Runnemede	8,467	4,085	8,263	-2.4
Camden	Winslow Township	37,274	646	41,770	12.1
	Bridgeton	23,570	3,660	28,784	22.1
	Deerfield Township	3,043	181	3,824	25.7
	Millville	27,951	628	34,910	24.9
	Upper Deerfield Township	7,849	251	9,722	23.9
Cumberland	Vineland	58,591	851	73,242	25.0
	Borough of Clayton	7,274	1,013	9,920	36.4
	Deptford Township	29,457	1,683	34,217	16.2
	East Greenwich Township	6,206	421	8,230	32.6
	Elk Township	3,755	191	6,766	80.2
	Franklin Township	16,498	295	21,800	32.1
	Borough of Glassboro	19,103	2,074	25,015	30.9
	Harrison Township	11,291	590	19,147	69.6
	Mantua Township	15,028	945	21,712	44.5
	Monroe Township	31,156	669	44,521	42.9
	Borough of National Park	3,192	3,192	3,395	6.4
	Borough of Newfield	1,645	968	1,745	6.1
	Borough of Pitman	9,162	4,001	9,947	8.6
	Washington Township	56,527	2,738	63,905	13.1
	Borough of Wenonah	2,310	2,381	2,593	12.3
	West Deptford Township	20,710	1,303	26,078	25.9
	Borough of Westville	4,423	4,607	4,916	11.1
	Woodbury	10,334	4,968	10,466	1.3
Gloucester	Borough of Woodbury Heights	2,993	2,433	3,136	4.8
	Borough of Elmer	1,381	1,573	1,342	-2.8
	Pittsgrove Township	8,981	194	10,779	20.0
	Upper Pittsgrove Township	3,504	87	4,203	19.9
Salem					
STUDY AREA TOTAL		**673,314**	**1,155.89**	**787,696**	**17.0**

Source: DVRPC and SJTPO Demographic Forecasts

* Data shown only for portions of each county located within the study area

2.1.2 Minority and Low-Income Population

The study area contains sectors in which the existing average Hispanic population and/or the average Minority population exceed the population averages for the respective counties. Similarly, the median household income of the population in some of the study area sectors is less than 50 percent of the respective median county incomes, denoting the presence of low-income populations. This information is important relative to the availability of reliable and competitive transit access to these populations now and in the future for employment and non-employment purposes. These minority and low-income sectors are depicted on maps of the proposed station areas appearing in Appendix B. The data displayed on the maps is summarized below.

Minority Populations

Sectors in the study area containing relatively high concentrations of Hispanic and overall Minority populations are located within municipalities along three transportation corridors: the existing Conrail freight rail right-of-way; the existing rights-of-way of I-676, I-76, Route 42 and the Atlantic City Expressway; and the existing right-of-way of Route 55. Those municipalities along the freight rail right-of-way include: Camden, Westville, West Deptford Township, Woodbury, Woodbury Heights, Deptford Township, Wenonah, Mantua Township, Pitman, and Glassboro. Those municipalities along I-676, I-76, Route 42 and the Atlantic City Expressway include: Camden, Bellmawr, Gloucester Township, Washington Township, Monroe Township, and Winslow Township. Those municipalities along Route 55 include: Deptford Township, Harrison Township, Mantua Township, and Glassboro.

Low-Income Populations

Sectors in the study area containing relatively high concentrations of low-income populations are located within municipalities along each of the three above-referenced transportation corridors. Those municipalities containing these sectors along the freight rail right-of-way include: Camden, Gloucester City, Woodbury, and Glassboro. Camden is the only municipality containing these low-income sectors along I-676, I-76, Route 42 and the Atlantic City Expressway. Glassboro Borough is the only municipality containing these low-income sectors along Route 55.

2.1.3 Employment Density

Center City Philadelphia is the primary employment activity center in the region, and is expected to remain in that capacity through 2030, as shown in Table 2-3. Although every county in the region is expected to experience employment growth through 2030, the southern New Jersey counties are projected to grow faster than Center City Philadelphia and will increase their share of jobs from 44.1 percent in 2005 to 48.1 percent by 2030. Leading this increase in anticipated employment growth are Cumberland and Gloucester Counties, with anticipated employment increases of 41.5 and 27.4 percent, respectively.

This trend in employment growth from urban to suburban locales will increase demands on mobility within the study area. An increase in suburb-to-suburb work trips will further tax an

existing transportation system that is designed to best link Southern New Jersey communities with Philadelphia, not with each other.

As of 2005, the persons-to-jobs ratio in the study area was 1.30. This ratio is anticipated to increase to 1.35 by 2030, indicating that population growth within the study area is anticipated to slightly outpace employment growth. Cumberland County is anticipated to experience a job growth of 41.5 percent over the next 25 years, with this job growth outpacing population growth. The City of Camden maintains a relatively significant employment density. The lowest concentrations of jobs exist in the largely rural southern portions of the study area in Southern New Jersey, as shown on Figure 2-2.

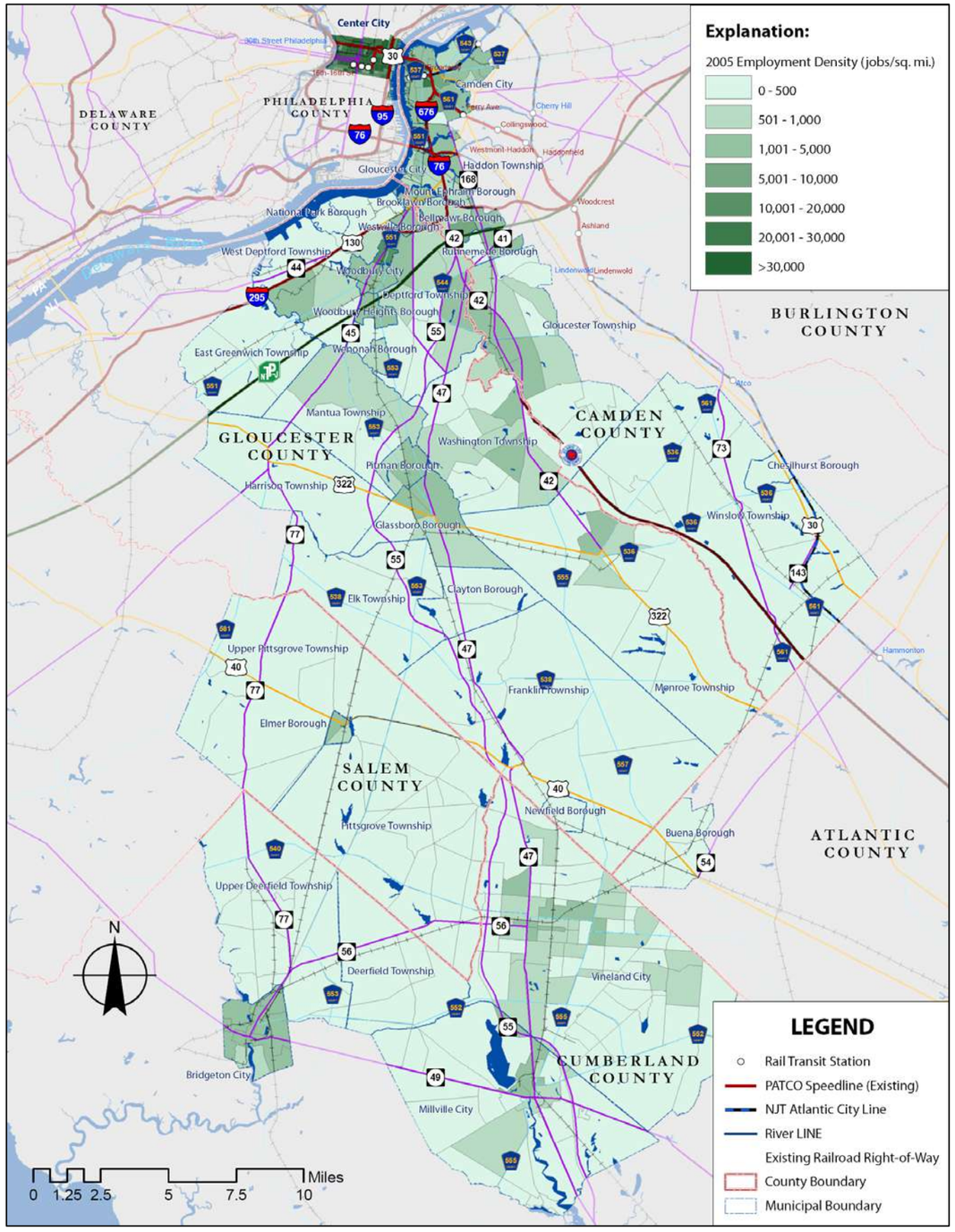
Table 2-3 – Estimated Study Area Employment

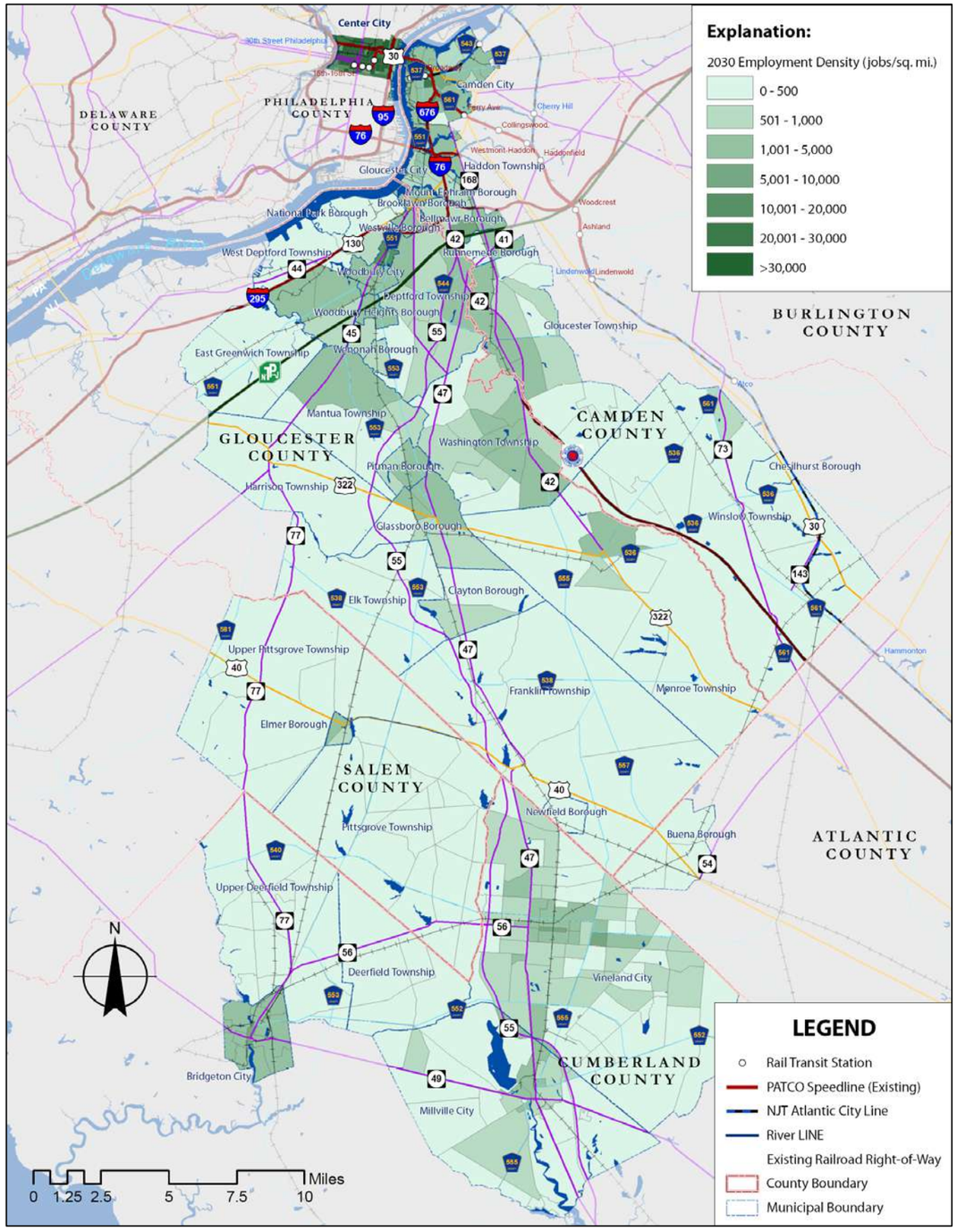
County*	Area (sq. mi.)	Total Jobs		2005-2030 Change	
		2005	2030	Jobs	Percent
Gloucester	239.2	92,270	117,516	25,246	27.4
Camden	96.1	72,167	73,675	1,508	2.1
Atlantic	7.1	1,415	1,613	198	14.0
Cumberland	155.9	60,175	85,142	24,967	41.5
Salem	81.0	2,680	3,056	376	14.0
Philadelphia	3.2	289,865	303,342	13,477	4.6
Study Area TOTAL	**582.5**	**518,572**	**584,344**	**65,772**	**12.7**

Source: DVRPC and SJTPO Demographic Forecasts

* Data shown only for portions of each county located within the study area

Figure 2-2 – 2005 Employment Density vs 2030 Employment Density





2.2 Land Use

Besides identifying the number and expected growth of residents and job opportunities in the region, the types of land uses and their locations within the study area have been examined. This information identifies where the study area population lives and works, where transportation facilities and services exist, and what potential benefits to these land uses may occur if new transit facilities are introduced. Land use information presented in this chapter and in maps in Appendix B is based on secondary sources on the county and municipal level, supplemented by field reconnaissance and discussions with elected officials and other stakeholders. The information is organized into three generally north-south transportation corridors that traverse the Study Area:

- the existing Conrail freight railroad right-of-way from Camden to Glassboro
- the Routes I-676 and 76, Route 42 and Atlantic City Expressway highway rights-of-way from Camden and Gloucester City to Williamstown Road
- the Route 55 highway right-of-way from Route 42 to Delsea Drive

2.2.1 Land Uses by Corridor

Conrail Freight Railroad Right-of-Way from Camden to Glassboro

This corridor has developed as contiguous concentrations of residential and non-residential land use focused within municipalities accessed by major highways and a network of county and local roads. Land use also developed historically along the Conrail freight rail right-of-way, which at one time supported passenger rail service.

Camden - In the northern portion of the corridor, land use in Camden is characterized by: higher-density residential and commercial development; parking and transportation facilities, such as the Walter Rand Transportation Center; manufacturing particularly along the Delaware River; and institutional uses, such as Cooper Hospital. Moving south in Camden, similar land use patterns are found, including light manufacturing uses adjacent to the freight rail right-of-way and local community services and recreation facilities.

Gloucester City - Land use in Gloucester City west of the freight rail right-of-way is similar in type to that found in Camden, with higher-density residential development, retail commercial along major streets and manufacturing near the Delaware River. Land use east of this rail right-of-way is less dense, including single-family residential and community services facilities.

Brooklawn, Bellmawr and Westville - Single-family residential and retail commercial uses characterize these municipalities, along with Little Timber Creek and Big Timber Creek as major tributaries of the Delaware River. Manufacturing uses exist west of the rail right-of-way along Route 130 to the Delaware River, as do wooded areas just north of I-295 and its intersection with the rail right-of-way.

Woodbury – Single-family residential and retail commercial uses characterize this municipality, particularly along the rail right-of-way and along Route 45. Woodbury Creek also traverses this municipality as a tributary of the Delaware River. As the seat of Gloucester County, Woodbury contains governmental and institutional uses located in the Central Business District, including Underwood Hospital.

Woodbury Heights – Low density of development exists throughout the municipality, with single-family residential and open space as the predominant uses. Commercial uses also are located along the freight rail right-of-way in the borough and along Route 45, which traverses West Deptford Township to the west.

Deptford Township and Wenonah – Similar patterns exist moving south into these municipalities, with single-family residential development and open space, along with some commercial use, occurring in these municipalities.

Mantua Township – Less dense development occurs in this municipality, including single-family residential, commercial, open space, and some agricultural use. In the vicinity of Route 55 and Route 635 and the rail right-of-way, manufacturing and commercial uses exist, along with open space and pockets of single-family residential development. This overall development trend also extends into Sewell and Pitman Borough.

Glassboro – Rowan University is the dominant use just east of the rail right-of-way on both sides of Route 322. Single-family residential use exists west of the rail right-of-way, along with some commercial use along Route 641, Route 47 and Route 553 to the east. Agriculture and manufacturing also exist south of Route 641.

Routes I-676 and 76, Route 42 and Atlantic City Expressway Highway Rights-of-way from Camden and Gloucester City to Williamstown Road

This corridor has also developed as contiguous concentrations of residential and non-residential land use focused within municipalities accessed by major highways and a network of county and local roads. The development density of this corridor is much less than the freight rail right-of-way referenced above, and of a more recent vintage.

Haddon Township - Accessed by the interstates, as well as Route 130, single-family residential use and commercial use dominate, with commercial use oriented to Route 130. Newton Creek and its branches also traverse the township.

Bellmawr – South of I-295, manufacturing and utility uses dominate, along with single-family residential to the east and open space associated with Big Timber Creek. This open space, along with recreation use, continues along Route 42 south of the New Jersey Turnpike in Runnemede Borough.

Gloucester Township – Commercial use and open space are the dominant uses along Route 42 and Route 706, including in the vicinity of the Route 42/Route 168 interchange. Located west of these routes is primarily single-family development and to the east is recreation use and multi-family residential development. Moving further south in the township, single-family

residential use is located on both sides of Route 42, along with agricultural and commercial use north of College Drive and open space and commercial use south of College Drive. Agricultural use and single-family use continue through the township to Route 689.

Winslow Township – From Route 689 south, single-family use and open space dominate in the corridor, with some commercial use located on the south side of Route 689. This pattern of single-family development and open space continues past Route 536, with multi-family housing on the north side of Route 536, along with commercial uses on the north and south sides.

Route 55 Highway Right-of-way from Route 42 to Delsea Drive

This corridor varies considerably in land use moving from north to south, and is the least developed of the three corridors described in this subsection. It includes considerable land remaining in agricultural use and in open space.

Deptford Township – Manufacturing and commercial uses are located on both sides of Route 55 in the vicinity of Route 544, with open space added to this mix from Route 544 to Route 706. South of this point, single-family residential use dominates. South to Route 603 through Sewell, the character of land use changes, with open space and agriculture consuming most of the land. Some commercial use is located east of Route 55 along Routes 41, 47, and 603.

Washington, Mantua and Harrison townships – Agriculture and open space occupy most of the land in Washington Township near Route 55 south of Route 603, with some pockets of single-family residential use. Agriculture and open space, with some single-family residential use, comprise the land use types in Mantua Township. Once reaching Harrison Township, south of Route 322, single-family residential and open space uses are interspersed, with primarily agricultural use on the east and west sides of Route 55.

2.2.2 Major Activity Centers in the Study Area

In addition to the more locally-oriented uses in each corridor, major activity centers exist, with a high concentration of a specific use with influence throughout the region. These nodes with high levels of employment, commercial, or recreational opportunities are listed in Table 2-4. Of the activity centers, the Camden Waterfront, L-3 Communications, Cooper University Hospital, Camden County College, Rutgers University-Camden, and Echelon Mall are served by rapid transit (either by PATCO or by the NJ TRANSIT River LINE running from Camden to Trenton). Major employment centers that currently have no public transportation access include the Delaware Valley Floral Group and Sony Music.

Table 2-4 –Major Study Area Activity Centers

Activity Center	Description	Available Transit Service(s)
Camden County College	Includes the Camden City Campus at 200 N. Broadway and the Blackwood Campus off NJ Route 42. Roughly 34,000 students and thousands more non-credit students enrolled annually. Employs approximately 500 persons full-time, including approximately 140 faculty/teaching professionals.	PATCO River LINE NJT Bus 400, 403, 459
Camden Waterfront	Has recently experienced significant public reinvestment. Recent projects include: the Adventure Aquarium (600,000 visitors yearly); the Children's Garden; the Susquehanna Bank Center, an open-air amphitheater with indoor performance area; Camden Riversharks at Campbell's Field, 6,000-seat minor league baseball stadium; and the permanent docking of the U.S.S. Battleship New Jersey museum.	PATCO River LINE NJT Bus 452, 453, 457
Cooper University Hospital, Camden	Located near Route I-676 exit 5A/5B. Provides medical services to patients from the inner city and the suburbs, as well as visitors to the City of Camden's attractions, such as the Camden Waterfront. Approximately 4,000 employees work at this facility. An ongoing $222 million facility expansion is anticipated to provide better services and more local job opportunities.	PATCO River LINE NJT Bus 317, 403, 405, 408, 409, 412
Rutgers University-Camden	Located near the Camden Waterfront and metro Philadelphia region. The 40- acre campus provides 35 undergraduate and 16 graduate programs. Enrolls approximately 5,400 students each semester and supports some 700 full-time and part-time positions.	PATCO River LINE NJT Bus 317, 403, 405, 408, 409, 412
Campbell's Soup	Located near Route I-676 exit 5A. A global manufacturer and marketer of high-quality foods and simple meals located in Camden. Approximately 1,400 employees work at this facility.	PATCO River LINE NJT Bus 317, 400, 403, 404, 405, 409, 412
L-3 Communications	Located near the Camden Waterfront and metro Philadelphia region. Is a prime defense contractor in Intelligence, Surveillance and Reconnaissance (ISR), secure communications, government services, training and simulation and aircraft modernization and maintenance. Approximately 1,250 employees work at this facility.	PATCO River LINE NJT Bus 400, 403, 405, 409, 413, 453, 457
Virtua Health	Located off Atlantic Avenue in Camden. Provides comprehensive primary care and specialty health services. Approximately 3,000 employees work at this facility.	PATCO River LINE NJT Bus 400, 452
Our Lady of Lourdes Hospital	Located off Haddon Avenue in Camden. Primary health care and specialty health services provider. Approximately 1,900 employees work at this facility.	PATCO River LINE NJT Bus 403, 451
Echelon Mall	Located in Echelon near Route I-295 and within a half mile from the Ashland PATCO Station. Comprised of two large anchor stores and centered in a planned residential and office complex. Employment expected to double by 2030.	PATCO NJT Bus 403, 451, 459
Deptford Mall	Largest retail area in Southern New Jersey, located near the intersection of NJ Routes 55 and 42 in Deptford. Comprised of 140 stores, including four large anchor stores, with approximately 1 million square feet of gross leasable floor area.	NJT Bus 400, 455
Underwood Memorial Hospital	Located off Route 45 in Woodbury. Primary health care and specialty health services provider. Approximately 1800 employees work at this facility.	NJT Bus 401, 410, 412, 455
Delaware Valley Floral Group	Located in Sewell off Mantua Boulevard. Whole sale floural distributer for retail florists from Boston to Northern Virginia. Employs 300 persons.	No public transit access
Sony Music	Located in Pitman off Woodbury - Glassboro Road, is a leading manufacturer of audio, video, communications, and information technology products for the consumer and professional markets. Employs 550 persons.	No public transit access

Activity Center	Description	Available Transit Service(s)
Gloucester County College	Located in Sewell off Route 55 outside Wenonah. Enrolls about 6,200 students annually and employs about 700 faculty and staff.	NJT Bus 463
Rowan University	Formerly Glassboro State College, located near the center of Glassboro. Enrolls more than 9,500 students, many of whom live on-campus. Employs about 2,500 faculty and staff.	NJT Bus 313, 412
Cumberland County College, Vineland	Located near NJ Route 55 on 100 acres. Employs 135 full-time and 90 part- time persons. Founded in 1966. More than 66,000 students have graduated and close to 3,000 students are enrolled each semester.	NJT Bus 553
Cumberland Mall	Located at Exit 27 of NJ Route 55. Comprised of 942,000 square feet of gross leasable floor area, including more than 80 retail shops and several anchors. Employs roughly 800 to 1,000 persons.	NJT Bus 553
South Jersey Healthcare Medical Center, Vineland	A 262-bed, 441,000 square-foot facility built in 2004 on 62.5 acres. Located at the intersection of NJ Route 55 and Route 552. Employs approximately 2,700 persons, including 500 physicians and other health care providers.	NJT Bus 553

2.3 Transportation Network

Highway and transit facilities comprise the study area's transportation network. Travel patterns and existing congested corridors within this network are described below to highlight specific mobility issues that have been addressed in this AA study.

2.3.1 Highway Facilities

The highway system in the study area is under the jurisdiction of various regional, state and local agencies, including NJDOT, SJTA and DRPA. NJDOT oversees highways in New Jersey other than the Atlantic City Expressway (ACE); SJTA oversees the Atlantic City Expressway; and DRPA operates and maintains the highways and bridges that cross the Delaware River. Major roadways and bridges are summarized below and described in more detail in Appendix A.

Three major bridges provide access across the Delaware River in the study area (from north to south): the Ben Franklin Bridge (I-676 / US 30); the Walt Whitman Bridge (I-76); and the Commodore Barry Bridge (US 322). The toll for westbound passenger vehicles on each bridge is $4.00. Significantly higher tolls are charged for freight traffic on the bridges.

- Ben Franklin Bridge (I-676 / US 30) – This bridge provides access to several major urban highways along its New Jersey approach, including Route I-676, a north-south freeway providing access to downtown Camden. Admiral Wilson Boulevard (US Route 30) is also a major arterial that approaches the Ben Franklin Bridge along the Cooper River in Camden and links to both NJ Routes 38 and 70. In Philadelphia, the bridge ramps provide access to the city near 5th and Race Streets, with nearby connections to Routes I-95 and I-676.

- Walt Whitman Bridge (I-76) – This bridge provides access to several regional freeways along its New Jersey approach, including Route I-676 to the north, NJ Routes 42, 55, and 168 and US 130 to the south, and Route I-295 and the New Jersey Turnpike to the east. In Philadelphia, the bridge provides access to Route I-95, the Sports Complex, and the Schuylkill Expressway serving University City and western suburbs.

- Commodore Barry Bridge (US 322) – This bridge connects Route I-95 with Route I 295. The approaches of US Route 322 on either side of the bridge are multi-lane for short distances, but US Route 322 is predominately a two-lane facility within Gloucester County as it crosses from east to west.

Major freeways in the study area include:

- Route I-676 – A north-south freeway providing access to downtown Camden and several major highways via its connection to US Route 30.

- Route I-295 – A northeast-southwest freeway that provides access to inner-ring suburbs between Trenton, New Jersey and Wilmington, Delaware.

- New Jersey Turnpike – A northeast-southwest freeway, parallel to Route I-295 with more distantly spaced interchanges, which provides inter-regional access between northern Delaware and the New York metropolitan area.

- NJ Route 42 – A northeast-southeast freeway that provides access to Williamstown, New Jersey and the Atlantic City Expressway (Route 446), with continuing access to Atlantic City.

- NJ Route 55 – A north-south freeway that provides access to Glassboro, Clayton, Vineland and Millville, New Jersey, with connections to local roadways for continuing access to Cape May, New Jersey.

In addition to these facilities, several other New Jersey state routes provide local and/or rural access within the study area:

- North-South Routes

    - NJ Route 45 - Runs from Westville to Salem passing through West Deptford Township, Woodbury and Harrison Township

    - NJ Route 47 – Runs from Brooklawn to Wildwood passing through Westville, Deptford Township, Glassboro, and Vineland

    - US Route 130 – Parallels I-295 passing through West Deptford Township, Westville, Brooklawn, Gloucester City, and parts of Camden County in the study area

- East-West Routes

    - US Route 30 – Runs from the Ben Franklin Bridge, crossing the study area in the process, to Atlantic City

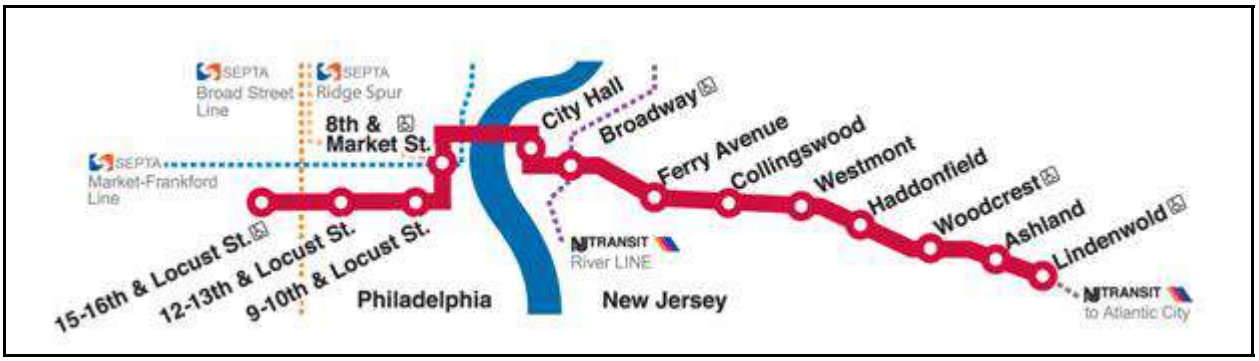
2.3.2 Public Transportation

Three agencies operate and maintain public transit systems in the study area: PATCO, NJ TRANSIT, and the Southeastern Pennsylvania Transportation Authority (SEPTA). Major routes within the existing transit network in the New Jersey portion of the study area are summarized below, with details provided in Appendix A, along with their average service frequency and weekday ridership.

PATCO - This 14.2-mile commuter rail operation, located between Center City Philadelphia and Lindenwold, New Jersey, opened originally as the "Camden Bridge Line" in 1936 between Broadway in Camden and 8th & Market Streets in Philadelphia. It was later extended to its present terminus in 1969. The line serves the northern and eastern edges of the study area. PATCO maintains 13 stations on its route, nine in New Jersey and four in Center City Philadelphia. PATCO passengers are offered a discounted transfer to the Market-Frankford Line, the Broad Street Subway and designated surface routes in Philadelphia, allowing access to many SEPTA routes. In New Jersey, PATCO connects with the NJ TRANSIT River LINE at the Walter Rand Transportation Center in Camden. Additionally, the PATCO Camden and Lindenwold stations offer connections to various NJ TRANSIT bus lines. PATCO provides 24-

hour rail service, 7 days a week, and accommodates approximately 33,000 daily boardings. The PATCO route is shown on Figure 2-3.

Figure 2-3 – The PATCO System



NJ TRANSIT – As New Jersey's public transportation corporation, NJ TRANSIT operates within a service area covering 5,325 square miles in New Jersey, New York and Philadelphia. NJ TRANSIT operates 236 bus routes and eleven rail lines statewide, accommodating about 223 million passenger trips each year. This agency is the nation's third largest provider of bus, rail and light rail transit. Approximately 30 of its bus lines and one light rail line serve the study area. Many of its bus lines in the study area provide access to Philadelphia and Camden from the New Jersey suburbs. The River LINE light rail system provides service from Trenton to Camden, where riders can transfer to PATCO.

Much of the NJ TRANSIT service within the study area operates between Southern New Jersey and Center City Philadelphia. Of the 30 regular bus routes operated by NJ TRANSIT within the study area, 19 of them are Philadelphia-oriented. Because work-related travel in the study area is becoming increasingly scattered, and the share of jobs for workers living within the study area is shifting from Philadelphia to other parts of the study area and region, the current NJ TRANSIT service provides limited suburb-to-suburb connectivity.

SEPTA - This agency operates subway, bus, commuter rail and trolley service within the Pennsylvania portion of the study area. It does not operate in the New Jersey portion of the study area, but provides transfer opportunities to both NJ TRANSIT and PATCO within the City of Philadelphia.

2.4 Travel Patterns

The demographic, land use, and transportation conditions discussed in this chapter provide input to the Travel Demand Model, which is applied to predict future traffic flows between origins and destinations in the study area. For AA study purposes, the study area has been divided into 16 separate analysis districts—four in Center City Philadelphia, two in the City of Camden, and twelve in suburban Southern New Jersey. These districts are depicted in Appendix A.

Travel patterns in the study area produced by the Travel Demand Model are comprised of intra-study area travel (both trip origination and destination within the study area) and external travel (either trip origin or destination outside the study area). Based upon analysis of existing and projected travel patterns involving communities in the study area, the following observations and predictions are evident:

- Residents of each county are traveling more often to work-related destinations outside of their home county. Similarly, the percentage of study area residents that work outside of their home county is increasing.

- An increasing share of work-related trips is occurring within the New Jersey portion of the study area as the number of New Jersey-based jobs increases.

- Within the study area, Gloucester County is increasing in importance as a work-related commute destination. From 2005 to 2030, the percentage of intra-study area work-related travel to Gloucester County is projected to increase, while this type of travel is projected to decrease for both the portions of Camden County and Philadelphia County located within the study area.

- The portions of the study area projected to experience major increases in work-related travel are also anticipated to gain in population. For example, daily work-related travel from Gloucester County is expected to increase by over 25 percent by 2030.

- Time spent commuting in the study area as a whole is increasing, with the overall increase in travel time of Gloucester County residents outpacing the study area average.

- The heaviest roadway congestion in the study area generally occurs during the 6-9 AM and 3-7 PM peak periods. Work- and school-related travel is responsible for the majority of the demand for roadway capacity during these periods of peak traffic volume. This condition illustrates the strong linkage between employment levels and traffic intensity in the study area.

2.4.1 Trip Origins and Destinations

As described earlier in this chapter, population and employment in the study area are projected to increase by 2030. With little available highway capacity, the travel demand associated with these increases will create a challenge for a highway system already under stress.

Nearly 685,000 person trips are completed within the study area each day. By 2030, that number is expected to increase by 21 percent to over 826,000. Most of this growth will occur in

intra-suburban travel. Although absolute employment is projected to increase significantly in Center City (22,810 jobs added by 2030), its overall share of inbound person trips is projected to decline relative to the rest of the study area (with the exception of the City of Camden and the communities immediately surrounding it) and Philadelphia's outer suburbs.

The change in county-to-county travel patterns for the study area, as measured in 2005 and projected for 2030, are shown in Table 2-5. These figures show the increasing importance of Camden and Gloucester counties as trip generators compared to Center City Philadelphia.

Table 2-5- Change in County-to-County Person-Trip Travel Flows, 2005 to 2030

Differential Absolute (Percentage)		Number of Trips To				
		Center City Philadelphia	Camden	Gloucester	Salem	Cumberland
Number of Trips From	Center City Philadelphia	12,240 (15%)	30 (4%)	90 (25%)	0 (0%)	0 (0%)
	Camden	510 (7%)	17,590 (14%)	6,890 (12%)	-10 (-20%)	30 (4%)
	Gloucester	1,310 (18%)	10,510 (20%)	87,940 (28%)	-30 (-11%)	260 (7%)
	Salem	0 (0%)	0 (0%)	70 (16%)	160 (18%)	250 (10%)
	Cumberland	-10 (-10%)	30 (8%)	630 (23%)	70 (8%)	2,800 (10%)

Table 2-6 provides a district-level comparison of travel demand projections for the study area in 2030. (More data and a detailed explanation of these district-level travel projections is provided in Appendix A.) This data suggests that person-trip flows between Center City Philadelphia and portions of the study area in suburban New Jersey are low compared to intra-suburban flows. Philadelphia-produced trips tend to stay in Philadelphia, and New Jersey district trips tend to stay in New Jersey. Also, within New Jersey, generally half or more of the person trips stay within their own district.

Table 2-6 – Daily Study Area Person-Trip Production and Attraction - 2030

From/To:		Person-Trip Production				Person-Trip Attraction			
		To: Center City and Camden CBD[1]		To: Suburban Districts[2]		From: Center City and Camden CBD		From: Suburban Districts	
District		Total	Share (%)	Total	Share (%)	Total	Share (%)	Total	Share (%)
1	Center City West	25,159	99.0	261	1.0	14,436	86.4	2,264	13.6
2	Center City	42,404	98.9	489	1.1	59,650	85.1	10,483	14.9
3	Center City East	16,793	98.6	231	1.4	12,946	84.5	2,380	15.5
4	Center City North	7,767	98.3	138	1.7	5,320	79.4	1,383	20.6
5	Camden CBD	2,751	43.0	3,646	57.0	2,523	16.3	12,938	83.7
6	Inner Camden	9,765	27.4	25,831	72.6	2,447	9.2	24,264	90.8
7	Central Camden (South)	5,334	4.7	107,982	95.3	809	0.7	109,545	99.3
8	Outer Camden (South)	1,350	2.3	57,603	97.7	40	0.1	53,502	99.9
9	Outer Gloucester (South)	2,488	2.0	122,804	98.0	52	0.1	93,739	99.9
10	Central Gloucester (East)	2,343	2.5	91,497	97.5	139	0.1	95,992	99.9
11	Inner Gloucester	4,973	4.0	118,433	96.0	944	0.6	147,565	99.4
12	Central Gloucester	2,037	2.3	88,182	97.7	133	0.1	95,177	99.9
13	Central Gloucester (West)	1,021	2.3	43,731	97.7	39	0.1	35,774	99.9
14	East Salem	10	0.2	4,256	99.8	9	0.4	2,254	99.6
15	North Cumberland - West Atlantic	102	0.5	18,644	99.5	116	0.5	22,101	99.5
16	Central Cumberland	26	0.1	18,141	99.9	37	0.2	17,179	99.8

[1] Center City consists of the Center City North, Center City East, Center City, and Center City West districts within the Philadelphia portion of the Study Area.

[2] i.e., non-Center City and Camden CBD districts (Districts 6 through 16)

Existing and projected travel behavior demonstrates that the study area population is increasingly mobile with respect to work destinations and daily travel. By 2030, the greatest overall absolute and percentage increases in daily person trips produced and attracted will likely occur in low-density suburban areas that are difficult to serve with transit, including central Gloucester County (excluding Glassboro and Pitman), southern Gloucester County, and the southern-central and southeastern portions of Camden County.

With the exception of trips to/from Center City Philadelphia, the vast majority of trips within the study area (96.4 percent in 2005) are completed by non-transit modes (overwhelmingly automobile, with a minor share of bicycle and pedestrian). Forecasts from the combined DVRPC/SJTPO travel demand model indicate that transit usage in the study area is not likely to change much in the future, although by 2030, an increasing demand will exist to provide transit options for the growing number of intra-New Jersey trips in the study area.

2.4.2 Travel Time

Another measure of the way in which people travel is work-related travel time. In the Southern New Jersey portion of the study area, which has a greater disparity of geographic work locations, limited transit access, daily traffic congestion and growing population, it can be expected that average travel time should increase.

According to US Census data, the mean travel time for a work-related trip in Gloucester County increased from 26.4 minutes in 2002 to 27.6 minutes in 2006. As seen in Table 2-7, the mean travel time for trips in the study area as a whole increased from 28.1 minutes in 2002 to 28.5 minutes in 2006. Additionally, reported average work-related travel time changes identified by study area counties are shown in Table 2-8.

Table 2-7 - Mean Travel Time for Study Area Work-Related Trips (2002 vs. 2006)

County	2002 (minutes)	2006 (minutes)
Gloucester	26.4	27.6
Camden	27.0	26.4
Atlantic	21.1	22.9
Cumberland	n/a	26.7
Salem	n/a	28.2
Philadelphia	30.3	31.4
AVERAGE	**28.1**	**28.5**

Source: US Census Bureau, American Community Survey, 2002 and 2006

Table 2-8 – Work-Related Travel Time Changes (2002 vs. 2006)

County	0-14 minutes		15-29 minutes		30-44 minutes		45+ minutes	
	2002 (%)	2006 (% + chg.)	2002 (%)	2006 (% + chg.)	2002 (%)	2006 (% + chg.)	2002 (%)	2006 (% + chg.)
Gloucester	25.8	26.6 (↑0.8)	34.3	30.6 (↓3.7)	22.1	23.0 (↑0.8)	17.8	19.8 (↑2.0)
Camden	22.1	24.7 (↑2.6)	37.3	37.5 (↑0.2)	22.7	21.5 (↓1.2)	17.9	16.2 (↓1.7)
Cumberland	n/a	31.8	n/a	34.6	n/a	11.8	n/a	21.8
Atlantic	34.2	26.7 (↓7.5)	43.4	44.3 (↑0.9)	13.3	19.1 (↑5.8)	9.1	9.9 (↑0.8)
Salem	n/a	23.9	n/a	34.7	n/a	20.4	n/a	21.0
South Jersey Counties	*25.9*	*25.7 (↓0.2)*	*38.0*	*37.4 (↓0.6)*	*20.3*	*21.3 (↑1.0)*	*15.8*	*15.6 (↓0.2)*
Philadelphia	16.0	15.5 (↓0.5)	34.4	33.6 (↓0.8)	26.9	26.2 (↓0.7)	22.7	24.7 (↑2.0)
Study Area TOTAL	**20.5**	**21.1 (↑0.6)**	**36.0**	**35.3 (↓0.7)**	**23.9**	**23.1 (↓0.8)**	**19.5**	**20.4 (↑0.9)**

This data shows that in Gloucester County, the percentage of work-related travel that exceeds 30 minutes rose between 2002 to 2006. For the region as a whole, the percentage of work-related travel that exceeds 45 minutes rose from 19.5 percent in 2002 to 20.4 percent in 2006.

In general, travel times for Camden County residents decreased, while travel times in Gloucester and Atlantic Counties increased. This condition suggests that Camden County, as a more densely developed county, did not experience the degree of longer-distance work-related travel as Gloucester and Atlantic counties. In addition, residents of Gloucester and Atlantic counties are more likely to travel on NJ Route 42/Route I-76/Route I-676, which is congested at peak travel periods, to access the urban job core comprised of Philadelphia, Camden and Northern Gloucester counties.

2.4.3 Congested Corridors

The primary spine of the study area is NJ Route 42, Route I-676, and Route I-76—the North-South Freeway. The trunk of this roadway, from its split with NJ Route 55 on the south to the Benjamin Franklin Bridge on the north, experiences congestion in both the AM and PM "rush hour" periods, causing travel to be frustrating and time-consuming. This route serves as a key approach to the Walt Whitman and Benjamin Franklin Bridges, the most-heavily used bridges in the region.

Traffic operations of this corridor and several other "congested corridors" in the study area can be characterized by comparing the volume of peak hour traffic and the designed capacity of the roadways. Current traffic volumes and levels of congestion on key regional corridors, expressed by time of day and level of service (LOS) for the AM and PM peak periods, are shown in

Appendix A. Level of service is identified by a letter, ranging from A (free-flowing traffic) to F (frequently-stopped traffic). In general, level of service D refers to conditions where traffic is flowing, but speed and mobility are restricted. Level of service E represents a roadway condition at or near capacity, with occasional backups.

Traffic congestion within these corridors has not only reached unacceptable levels, but it is projected to increase by 2030. Levels of congestion on key corridors, expressed by time of day and level of service (LOS) for the AM and PM peak periods, are summarized in Table 2-9. Existing (2005) and projected (2030) congestion on roads throughout the study area during both the AM peak period and the PM peak period are depicted in Appendix A.

Table 2-9 – Peak Period Traffic Conditions on the North-South Freeway Corridor and Related Links, 2005 vs. 2030

Roadway	From	To	AM Peak LOS		PM Peak LOS	
			2005	2030	2005	2030
Ben Franklin Bridge	Philadelphia	N. 7th Street, Camden	F	F	B	B
I-676	Atlantic Avenue, Camden	Morgan Blvd., Camden	D	F	B	C
Walt Whitman Bridge	Philadelphia	I-76/Collings Ave., Camden	F	F	F	F
I-76	I-76/Collings Ave., Camden	US 130, Mt. Ephraim	F	F	F	F
I-76	US 130, Mt. Ephraim	Browning Rd., Bellmawr	F	F	F	F
I-76/NJ 42	Browning Rd., Bellmawr	NJ 55, Deptford	F	F	F	F
NJ 42	NJ 55, Deptford	Clements Bridge Rd., Deptford	E	F	E	F
NJ 42	Coles Rd., Blackwood	Blackwood Rd., Blackwood	E	F	E	F
NJ 42	Greentree Rd., Sicklerville	Ganttown Rd., Turnersville	E	F	D	F
NJ 55	NJ 42, Deptford	Deptford Center Rd., Deptford	E	E	D	F
NJ 47	I-295, Westville	County 664, Woodbury	F	F	F	F
NJ 47	Fish Pond Rd., Glassboro	High Street, Glassboro	F	F	F	F
I-295	I-76, Camden	Black Horse Pike, Mt. Ephraim	F	F	F	F
Black Horse Pike	I-295, Bellmawr	NJ Turnpike, Runnemede	F	F	F	F

Predicted residential and employment growth, coupled with the lack of transit options, is projected to result in an increased intensity of traffic congestion, compromised mobility and an increase in transportation-related air pollutants in the study area. By 2030, conditions on key segments of roadways—such as Route 42, Route I-295, Route 47, Route 41 and Route 55—are expected to degrade to conditions of severe congestion and increased delays, which negatively affect the quality of life of individuals traveling on these roadways.

2.5 Environmental Conditions

This section contains information about prevailing and projected environmental conditions in the study area that contributed to establishing the Purpose and Need and the Goals and Objectives of this AA study.. The information presented in this section and as graphics in Appendix B is based on secondary sources from regional, state and federal sources. Where necessary, secondary information collection was supported by field reconnaissance and discussions with stakeholders. The information is described below by the same three generally north-south transportation corridors referenced in earlier sections of this chapter:

- the existing Conrail freight railroad right-of-way from Camden to Glassboro
- the Routes I-676 and 76, Route 42 and Atlantic City Expressway highway rights-of-way from Camden and Gloucester City to Williamstown Road
- the Route 55 highway right-of-way from Route 42 to Delsea Drive

Conrail Freight Railroad Right-of-Way from Camden to Glassboro

Camden

Historic and Cultural Resources: Camden contains numerous historic neighborhoods near this corridor, including the Cooper Street Historic District, the Market Street Historic District, the Cooper Plaza Historic District, the William Stanley Ablett Village Historic District, the Pulaski Park Historic District, the Fairview Historic District and the South Camden Historic District. Cultural resources include the Newton Friends Meeting House, the RCA Victor Building, the Walt Whitman Neighborhood, the USS New Jersey, and St. Joseph's Polish Catholic Church.

Environmentally Sensitive Resources: Locations are known to contain property or groundwater contamination caused by a former site occupant or by a succeeding property owner or user still active on the site. The former Camden Coke Plant site on Front Street, the Adams Oil Company site north of the Cooper River, Cutler Metals site off Diamond Street and the Crystal Cleaners site off Newton Avenue are some of these contaminated sites.

Water resources include the Delaware River, Newton Creek and the Cooper River, along with existing or emergent surrounding floodplain or wetlands.

Gloucester City

Historic and Cultural Resources: These resources include the Mill Blocks homes, the Gloucester City Water Works, and St. Mary's Roman Catholic Church.

Environmentally Sensitive Resources: Locations are known to contain property or groundwater contamination caused by a former site occupant or by a succeeding property owner or user still active on the site. These sites include the Liquid Carbonic Specialty Gas Corporation site near Brick Street, Gloucester Gas Works site, the Gloucester City Waste Water Treatment Plant, Gloucester Titanium Company site, and D'Andrea Tire, Inc.

Water resources include the Delaware River, Little Timber Creek and Big Timber Creek, along with existing or emergent surrounding floodplain or wetlands.

Brooklawn, Bellmawr and Westville

Historic and Cultural Resources: These resources include the Westville Riverfront District, the Thomas West House, and the Westville Flint Glass Works.

Environmentally Sensitive Resources: These resources in the three boroughs include numerous parks and recreation areas, Beaver Brook, the Delaware River and Big Timber Creek (along with existing or emergent surrounding floodplain or wetlands). Contaminated sites include the Fazzio Landfill and the Pride Electro Painting site.

Woodbury

Historic and Cultural Resources: Woodbury contains numerous historic neighborhoods near this corridor, including the Woodbury Historic District, the Newton Historic District, the Charles Walton House, the Broad Street Historic District, the Glover Historic District, the Delaware Street Historic District, and the Green Era Historic District. Other historical and cultural resources include the Charles Walton House, the Parrish-Moore House, the Mickle House, the Low-Cowan House, City Hall, the Chew House and the Nathan Ward House.

Environmentally Sensitive Resources: Contaminated sites include the Polyrez Inc. site, and the West Deptford Municipal Dump site. Parks and recreation areas include Hendrickson Park and Stewart Park. Water resources include Broad Street Lake, Woodbury Creek and Stewart Lake, along with existing or emergent surrounding floodplain or wetlands.

Woodbury Heights

Historic and Cultural Resources: These resources include the Jericho neighborhood, Ladd's Castle, La Pann House and the Greenwood neighborhood.

Environmentally Sensitive Resources: These resources include Glen Lake, while the Mantua Metal Products site on Grandview Avenue and the Woodbury Gas Works on Elm Avenue are known contaminated sites.

Deptford Township and Wenonah

Historic and Cultural Resources: These resources include the Wenonah Historic District, the Benjamin Clark House, and the Moffit House.

Environmentally Sensitive Resources: Known contaminated sites in Deptford include the Sears Roebuck site, the Bill's Auto Repair site at Route 534 and Mobil site near Charles Lane.

Water resources include Big Timber Creek, Monongahela Brook and Almonesson Creek, along with existing or emergent surrounding floodplain or wetlands.

Mantua Township

Historic and Cultural Resources: These resources include the Jess Chew House and Mantua Boulevard.

Environmentally Sensitive Resources: Mantua Creek is a water resource, while the Helen Kramer Landfill site off Jessup Mill Road is a known contaminated site.

Pitman

Historic and Cultural Resources: These resources include the Pitman Grove Historic District and the Jessup-Lodge House.

Environmentally Sensitive Resources: Bethel Mill County Park and Alcyon Park are open space/parkland resources, while the Lipari landfill site off US Route 322 is a known contaminated site. Water resources include Chestnut Branch and Plank Run, along with existing or emergent surrounding floodplain or wetlands.

Glassboro

Historic and Cultural Resources: These resources include the Fellowship House, Stanger Glass Works, Olive Glass Works, Harmony Glass Works, the Glassworks residential district, Chestnut Ridge estates, the Whitney Mansion, the Millville and Glassboro Railroad Historic Districts, the Glassboro House, and Saint Thomas Episcopal Church. Glassboro is also the home of Rowan University.

Environmentally Sensitive Resources: Known contaminated sites are located primarily near automobile service stations. Water resources include Plank Run and Chestnut Branch, along with existing or emergent surrounding floodplain or wetlands.

Routes I-676 and 76, Route 42 and Atlantic City Expressway Highway Rights-of-way from Camden and Gloucester City to Williamstown Road

Haddon Township

Historic and Cultural Resources: These resources include Saddlertown, the home of escaped slave Joshua Saddler.

Environmentally Sensitive Resources: Known contaminated sites are located near Nicholson Road, primarily near automobile service stations. Water resources include the Cooper River and the South Branch, along with existing or emergent surrounding floodplain or wetlands.

Bellmawr

Historic and Cultural Resources: No historic or cultural resources are located in Bellmawr Borough near the Routes I-676 and 76, Route 42 and Atlantic City Expressway corridor.

Environmentally Sensitive Resources: Big Timber Creek, along with existing or emergent surrounding floodplain or wetlands, are located in the borough.

Gloucester Township

Historic and Cultural Resources: These resources include the Blackwood Historic District, Chew-Powell House, Gabriel Davies Tavern House, and The Marquadant-Johnson Farm House.

Environmentally Sensitive Resources: The Pure Stream site on Fairmont Avenue, as well as numerous parks and recreational areas, are located in the township. Water resources include Little Lebanon Branch, Signey Run, Pines Run, Stone Bridge Branch, Bull Run and Nash's Lake, along with existing or emergent surrounding floodplain or wetlands.

Winslow Township

Historic and Cultural Resources: No historic or cultural resources are located in Winslow Township near the Routes I-676 and 76, Route 42 and Atlantic City Expressway corridor.

Environmentally Sensitive Resources: Known contaminated sites are located near Williamstown Road, primarily near automobile service stations. Water resources include Atco Lake and the Four Mile Branch, along with existing or emergent surrounding floodplain or wetlands.

Route 55 Highway Right-of-way from Route 42 to Delsea Drive

Deptford Township

Historic and Cultural Resources: These resources include the Jonas Cattel gravesite, the Stranger's Burying Ground, the Cooper-Moore House and the Pierce-Jaggard House.

Environmentally Sensitive Resources: Almonessen Creek is located in the township, along with existing or emergent surrounding floodplain or wetlands.

Sewell

Historic and Cultural Resources: These resources include the Barnsboro Historic District and Tyler's Mill.

Environmentally Sensitive Resources: Monongahela Brook and Bees Branch, along with existing or emergent surrounding floodplain or wetlands, are located in Sewell.

2.6 Planned Study Area Initiatives

Planned and proposed capital investments, including highways, transit systems and real estate developments, would influence the study area's transportation network. These planned initiatives are identified below, along with their respective project sponsors and estimated costs.

2.6.1 Planned Highway and Transit System Improvements

Capital roadway and transit improvements planned in the study area are listed in Table 2-10. These projects were obtained from the following sources:

- Delaware Valley Regional Planning Commission: FY 2008-2011 Transportation Improvement Plan (TIP)
- South Jersey Transportation Planning Organization: FY 2008-2011 TIP
- New Jersey Department of Transportation: Capital Investment Strategy (CIS): FY 2008-2012
- New Jersey Department of Transportation: FY 2008 Transportation Capital Program
- New Jersey Department of Transportation: FY 2008-2011 Statewide TIP

Table 2-10 – Major Planned Study Area Highway and Transit Improvements

Project	MPO/ Sponsor	Municipality	Description	Estimated Cost
HIGHWAY				
Route 295, Route 45 to Haddonfield-Berlin Road	DVRPC/ NJDOT	Gloucester County	Construction to increase the length of substandard auxiliary lanes and auxiliary shoulders.	$63.5 million
Route 295, Tomlin Station Road to Route 45	DVRPC/ NJDOT	Greenwich Twp., East Greenwich Twp., West Deptford Twp.	Rehabilitation/reconstruction of I-295 from the vicinity of Tomlin Station Road to Route 45.	$101 million
Route I-295/Route 42, Missing Movements	DVRPC/ NJDOT	Bellmawr Borough, NJ	New ramps and related improvements to enable movements between I-295 and Route 42.	$86 million
Route I-295/Route 42/I-76, Direct Connection	DVRPC/ NJDOT	Bellmawr Borough, NJ	Construction of four-lane viaduct to carry I-295 through the interchange with I-76 and Route 42. Draft Environmental Impact Statement in progress.	$12 million
Route 42	DVRPC/ NJDOT	Gloucester Twp, NJ	Consideration of a new interchange at Grenloch-Little Gloucester Road (AKA College Road) to relieve congestion and improve safety.	$15 million
Route 47	DVRPC/ NJDOT	Glassboro Borough	Intersection improvements at Route 47 and Chapel Heights Avenue and Route 47 and East Holly Avenue.	$11 million
Almond Road, Centerton Road to the Maurice River	SJTPO/ NJDOT	Pittsgrove Twp., NJ	Resurfacing and rehabilitation of Almond Road	$3.5 million

Project	MPO/ Sponsor	Municipality	Description	Estimated Cost
Route 49/55, Interchange Improvements at Route 55	SJTPO/ NJDOT	Millville, NJ	Lengthening of the Route 55 southbound off-ramp to Route 49 plus additional left-turn lanes and widening of Route 49.	$11.5 million
Sherman Avenue	SJTPO/ NJDOT	Vineland, NJ	Raising of approach roads to the railroad crossing; drainage improvements, grade crossing, signalization, paving and striping.	$1.5 million
TRANSIT				
Camden Ferry System	DVRPC/ DRPA	Camden, NJ-Philadelphia, PA	Design and construction of one or more ferry docks along the Camden waterfront on the Delaware River.	$4 million
DRPA – Rehabilitate Viaducts	DVRPC/ DRPA	Lindenwold Twp., Collingswood Twp., Haddon Twp., NJ	Replacement of direct fixation system, including track fasteners, anchors, concrete and guard rail on Lindenwold, Collingswood and Westmont Viaducts.	$23 million
OTHER				
Campbell Revitalization Area	DVRPC/ NJDOT & Campbell Soup	Camden, NJ	Various roadway improvements in the vicinity of the Campbell World Headquarters in Camden.	$13 million
Haddon Avenue Streetscape Improvements	DVRPC/ NJDOT	Haddon Twp., NJ	Streetscape improvements on Haddon Avenue from Cuthbert Boulevard to Glenwood Avenue.	$0.2 million
Haddon Avenue Transportation Enhancement Project	DVRPC/ Camden County	Berlin Twp., NJ	Streetscape improvements on Haddon Avenue from Luke Avenue to Lucas Avenue.	$1.2 million

Programmed highway improvements listed in Table 2-10 include intersections and interchanges, minor roadway projects, streetscape projects, and added travel and auxiliary lanes, but otherwise are limited to general upkeep of existing facilities. Planned transit improvements include design and construction of a ferry dock along the Camden waterfront and rehabilitation of DRPA viaducts along their existing system. These improvements are not likely to remedy study area congestion problems, heightening the need for expanded transit options to the public transportation network.

2.6.2 Planned Real Estate Developments

Short-term and long-term land development is expected to continue shaping the built environment within the study area. Several existing activity centers are slated for expansion and proposed large-scale developments in Southern New Jersey have the potential as key trips origins and/or destinations to increase the need for more transit services. Some of the largest developments proposed in the study area are listed in Table 2-11.

Table 2-11 – Planned Major Study Area Real Estate Developments

Planned Development	Description
Radio Lofts, Camden	On-going redevelopment of the RCA Victor ("Nipper") building near the Camden Waterfront. Condominiums and retail space in an adjacent 10-story manufacturing building.
Renaissance Walk, Pennsauken	Proposed development by Scarborough Properties on 35 acres at the intersection of Route 73 and Route 130. Residential units and commercial space.
Rowan University, Glassboro	Quadrupling the campus size with a technology center, athletic fields and student housing at cost of $530 million over next 10 years.
Millville Retail Center, Millville	$40 million shopping center near the Millville Town Center on Route 47, providing up to 1,000 jobs.
River Winds Complex, West Deptford	Located along Delaware River. Phase Two consists of River Winds Hotel and Conference Center with 30,000 sq ft conference facilities and 250-room hotel.
PATCO Transit-Oriented Development	Located around most of its heavy rail stations to complement other developments near station locations (Collingswood, Haddonfield and Woodcrest Stations).
Bellmawr Waterfront Development	Located near the I-295 and NJ Route 42 interchange, Proposal consists of several retail and hotel developments and new arena
Route 42/College Drive	Proposed residential and commercial development around a new interchange at NJ Route 42 and College Drive
Lumber Yard Condos, Collingswood	Residential development near PATCO Lindenwold Line in Collingswood with 120 condominiums and around 20 commercial shops

3 PUBLIC OUTREACH AND AGENCY COORDINATION

This study was prepared in an open environment with extensive and continuous public outreach and agency coordination. Residents, employers, public officials, community groups, institutions, agency representatives and other stakeholders have been proactively engaged throughout the process, with particular sensitivity to addressing the geographical extent and diversity of the study area. Various strategies and venues were employed throughout the study, including: public open houses; elected officials briefings; meetings with the project Technical Advisory Committee (TAC); targeted outreach and agency coordination; newsletters and a project website; press releases and media announcements. In total, approximately 94 meetings (see Table 3-1) were conducted during the course of the study. The following discussion elaborates on these key components of public outreach.

Table 3-1 – Type and Number of Meetings Held

Type of Meeting	Number of Meetings
Public Open House	9
Targeted Outreach	53
Elected Officials	28
Technical Advisory Committee	2
Media	2
Total	**94**

3.1 Public Open Houses

Two rounds of community outreach meetings were conducted: one at the beginning and one toward the end of the study. The purpose of the public open houses was to provide an opportunity for the general public to learn about the Alternatives Analysis process, for the study team to receive information and gain an understanding of the area needs from those persons who live and work there, and to receive comments on transit opportunities and designated alternatives along the Route 42 and Route 55 corridors and along the Conrail right-of-way. At the meetings, presentation boards were displayed with information on the study process, study area, project goals, transit mode characteristics, and rail alternatives. DRPA representatives and study team staff were deployed to explain the study process, answer questions and receive comments. To support the informational boards and displays at the public open houses, a video displaying study area characteristics was shown throughout the open house. The final station during each open house consisted of an area in which the public could fill out comment forms about the information presented. The locations were chosen to provide easy access to different communities within the study area during each round (see Table 3-2).

Table 3-2 – Public Open Houses

Date	Location
ROUND 1	
November 27, 2007	Deptford Mall Deptford, NJ
November 28, 2007	Cumberland County Mall Vineland, NJ
November 29, 2007	Glassboro Municipal Building Glassboro, NJ
December 4, 2007	Cold Springs School Gloucester City, NJ
December 6, 2007	Monroe Township Municipal Building Williamstown, NJ
ROUND 2	
June 10, 2009	Rutgers University Camden, NJ
June 11, 2009	Woodbury Junior/Senior High School Woodbury, NJ
June 17, 2009	Camden County College Blackwood, NJ
June 18, 2009	Rowan University Glassboro, NJ

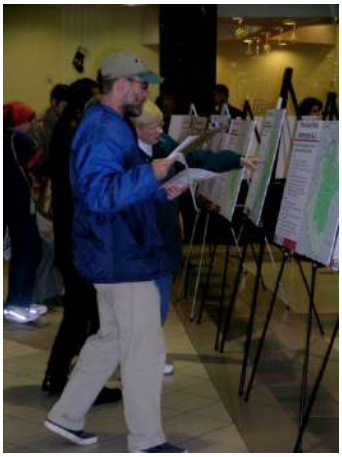
Prior to the two rounds of public open houses, flyers advertising the events were distributed throughout the study area (see Appendix C). The distribution list included Chambers of Commerce, colleges and universities, libraries, community centers, transportation organizations, municipal buildings and other public buildings and institutions. The flyers were also posted on the project website.

Public notices of the open houses were placed in study area newspapers (see Appendix C), including The Daily Journal in Cumberland County, The Gloucester County Times in Gloucester County and The Courier Post in Camden County. News releases announcing the open houses were also sent to media contacts.

Public notices were also sent out via e-mail to increase the overall exposure of the project. Roughly 385 email addresses of interested parties in the study area were also compiled and maintained during the study. These email addresses, as well as DRPA/PATCO frequent email updates, which included over 6,000 recipients, were utilized to announce open house locations, dates and times.

Round 1

The first round of open houses introduced the Alternatives Analysis process to gain feedback on existing transit and highway networks, review study area needs, reintroduce alternatives carried over from the feasibility assessment, explain the various rail characteristics, and provide an overall study schedule. Over 400 persons attended the first round of open houses held in the fall of 2007. Locations included Deptford (Gloucester County), Vineland (Cumberland County), Glassboro (Gloucester County), Gloucester City (Camden County) and Williamstown (Gloucester County).



For the 2007 public open houses, respondents clearly indicated that improved public transportation is needed in Southern New Jersey. Many respondents indicated that existing transit was not a practical option to the auto; however, when needed, PATCO was the mode of choice. Improved access to Camden and Philadelphia was also expressed as an important concern. More than one-half of these respondents indicated that congestion affects their mobility within the study area while traveling to or from work. This concern was further supported by the majority of these respondents indicating that reducing traffic congestion is the most important reason for planning rail service. In addition, the majority of these respondents preferred a transit improvement located in the existing Conrail right-of-way. A total of 298 surveys/comment forms were completed during this round of open houses. A copy of the comment form and compiled results are included in Appendix C.

Round 2

The second round of open houses presented the results of the evaluated alternatives and the recommended alternative, provided information on transit's role in economic development, and presented additional transit needs for Southern New Jersey that included Bus Rapid Transit (BRT) along Routes 42 and 55 and improvements to the NJ TRANSIT Atlantic City Rail Line. Over 300 persons attended the second round of open houses held in the spring of 2009. Locations included the City of Camden (Camden County), Woodbury (Gloucester County), Blackwood (Camden County) and Glassboro (Gloucester County).

For the 2009 public open houses, respondents clearly indicated support for the Recommended Alternative. The majority of respondents live and/or work in Gloucester and Camden Counties, use some form of mass transit (PATCO rated the highest), and stated that they would use the proposed light rail system. Respondents believed that the light rail would directly benefit them and improve their quality of life through congestion relief, increased business opportunities, environmental conservation, and improved access to work and school. A total of 193 project

surveys were completed during this round of open houses. A copy of the comment form and compiled results are included in Appendix C.

3.2 Technical Advisory Committee

This group of agency representatives, county engineers and planners, and other technical specialists was created and assembled to coordinate continuously and meet periodically with DRPA/PATCO representatives and the study team to discuss the study process, project needs, alternatives and evaluation results. This committee was also convened prior to the two rounds of public open houses to discuss study results and the Recommended Alternative and to be apprised of the proposed open houses format and content. The members of the TAC include:

- Cumberland County Planning and Government
- Cumberland County Board of Freeholders
- Camden County Planning and Government
- Central Philadelphia Development Corporation & Center City District
- Cross County Transportation Management Association
- Delaware Valley Regional Planning Commission
- Federal Transit Administration
- Gloucester County Board of Freeholders
- Gloucester County Planning and Government
- Gloucester County Board of Freeholders
- New Jersey Department of Transportation
- New Jersey Transit
- City of Philadelphia Transportation & Utilities
- Southeastern Pennsylvania Transportation Authority
- South Jersey Transportation Planning Organization
- Rowan University
- New Jersey DCA Office of Smart Growth
- New Jersey Office of Economic Development
- New Jersey Department of Environmental Protection
- New Jersey Governor's Authorities Unit
- Camden County Improvement Authority
- Philadelphia Industrial Development Corporation
- Pennsylvania Department of Transportation
- Philadelphia City Planning Commission
- South Jersey Transportation Authority

3.3 Elected Officials Briefing

A total of 28 elected official meetings were hosted throughout this study. A database of over 580 elected officials was compiled and employed to encourage participation throughout this study. One-on-one meetings, as well as general open format meetings, took place during key study milestones. These information sessions reviewed the study process, project needs and associated goals, alternatives review, Recommended Alternative, and evaluation results. Meetings included the participation of the following elected delegations:

- Federal Representatives, including US Senators Menendez and Lautenberg & US Representative Andrews
- South Jersey Legislative Delegation Members
- South Jersey Freeholder Delegation Members, including Camden, Gloucester and Cumberland counties
- Southern New Jersey Mayors and Council Members
- Philadelphia City Council Members

3.4 Targeted Outreach and Agency Coordination

Traditional public meetings and notification channels do not always result in the involvement and education of those parties that are affected by the proposed project. Therefore, a database of over 300 organizations and key stakeholders was developed throughout this study. Some 53 meetings were hosted by the study team where project information was dispensed and feedback was sought. A complete list of the targeted outreach meetings appears in the Appendix C.

3.5 Project Newsletter and Website

3.5.1 Newsletters

Two editions of a project newsletter (Illustrated in Figure 3-1) were published and distributed throughout the study area, one issue (500 copies) prior to the Public Open Houses in 2007 and one issue (1,000 copies) prior to the Public Open Houses in 2009. The first newsletter highlighted the purpose of this study, reintroduced the recommended alternatives from the feasibility assessment, and introduced the transportation needs of the project area. The second newsletter focused on the five alternatives that were evaluated, the evaluation results, and the recommendation of Alternative 4 - Diesel Light Rail between Camden and Glassboro. Copies of the two newsletters are included in Appendix C.

Figure 3-1 – Project Newsletter Cover

3.5.2 Website

To increase public access to recent events, latest study developments, products, and input opportunities, a project website was developed: www.patconjexpansion.com. The website (illustrated in Figure 3-2) provided information on the study, including the study area map, study process, project background, proposed alternatives, frequently asked questions, open house dates and materials, a section for public comments, and documents and downloads. Information on the website was updated periodically, and documents such as the feasibility study,

Figure 3-2 – Project Website Home Page

complete sets of open house boards, both newsletters, TAC presentations, and the preliminary alternatives maps could be downloaded by the general public. The project website received approximately 35,500 hits throughout the study.

3.6 Regional Project Support

The Delaware Valley Regional Planning Commission (DVRPC) and the South Jersey Transportation Planning Organization (SJTPO) are the Metropolitan Planning Organizations within the study area. The DVRPC region covers Philadelphia, Gloucester and Camden Counties and the SJTPO region covers Atlantic, Cape May, Cumberland and Salem Counties within the study area.

DVRPC has adopted and released the long-range plan for the Philadelphia region designated *2035 Connections - The Regional Plan for a Sustainable Future*. This comprehensive plan addresses land use, environmental, economic competitiveness and transportation policies, and includes a set of fiscally constrained transportation projects for the region. Under the Major Regional Projects section of the plan, the Southern New Jersey to Philadelphia Mass Transit Expansion Alternatives Analysis is identified as ”Transit Line to Gloucester County,” and is highlighted as an important element of the region’s transportation system.

In addition to being included in the DVRPC long-range plan, the project has received support throughout the region from a diverse group of entities including municipalities, businesses (large and small), chambers of commerce, county governing bodies and transportation organizations. Letters of support and/or resolutions were received from numerous stakeholders, including government agencies, municipalities, health and education institutions, local businesses, Chambers of Commerce, as well as others.

4 PROJECT PURPOSE AND NEED

This chapter explains the study area needs identified during the project and the goals developed to serve as targets for the proposed solutions. Building upon the analysis of existing conditions in the study area and the input received through the public outreach process, a set of needs of the study area was developed. These needs are the transportation, economic, environmental, and other problems that the proposed alternatives aim to improve. A set of goals was then developed, describing the improvements on which the project would focus and the specific objectives to fulfill these goals.

4.1 Statement of Needs

The transportation and associated physical, economic, social and environmental needs of the study area have been identified and developed through public outreach and agency coordination in concert with a comprehensive inventory and interpretation of existing and proposed conditions and technical analysis. General themes regarding the need for improved transportation accessibility emerged through these Alternatives Analysis components, which laid the groundwork for the following study area needs and actions to address them:

Need 1: Improved Transit Service and Accessibility

The study area suffers from poor levels of transit service and access. Transit access in the area is low, with connections difficult between major residential and employment areas. The quality of transit service also lags, with service between many older and developing communities limited to a few low-service bus routes. The study area needs new, reliable transit options that are competitive with auto travel, structured for the desired trips between activity centers, and available to all residents.

Need 2: Reduced Congestion in the Region

Travel in the study area is dominated by the auto, with the major roadways experiencing congestion in peak hours. Moreover, greater travel demands are predicted for the future, associated with anticipated growth in population and employment. The region needs viable alternatives to single-occupancy-vehicle trips to offset this congestion. Transit options that are competitive in cost, time, and comfort with auto travel are needed to divert trips from auto to transit, alleviating congestion.

Need 3: Transit Options that Use Existing Resources and Infrastructure

Though the study area encompasses urban, suburban, and rural developments, New Jersey is the country's densest state. Options for new transit rights-of-way are limited and can be expensive. Therefore, new transit options must take advantage of existing infrastructure, primarily the study area's railroads and highways, and work to avoid expensive and complicated right-of-way requirements.

Need 4: Transit Options that Minimize Impacts and Support Smart Land Use

The transportation system in the study area does not effectively support state and regional Smart Growth initiatives. New transit options should work in concert with these initiatives, minimizing impacts and encouraging smart land use. Emissions and noise levels should be reduced by considering environmentally friendly modes, reducing vehicle miles traveled, and providing for pedestrian and bicycle access. Existing transportation resources and rights-of-way should be used to minimize disturbances to land use and the environment during construction and operations. Transit investment locations and designs need to be integrated with major activity centers, as well as regional and local planning strategies.

4.2 Goals and Objectives

The statement of goals and objectives described below is an essential component of the Alternatives Analysis process, and is directly linked to the study area needs listed above. The study goals are, by nature, comprehensive to address the diverse neighborhoods, residents, activity centers and jurisdictions of the study area. The goals were derived from the needs, and reflect the plans and desires of the study area communities and the greater Camden-Philadelphia region, as articulated during the extensive public outreach and agency coordination process and needs assessment analyses.

Goal 1: Provide More Transit Choices and Improved Quality of Service: Since the study area lacks high quality, readily available transit service, transit investments should be focused on improving service and increasing access. The objectives to attain this goal are:

- Improve and/or expand transit service to complement existing and proposed investments and address transportation access deficiencies
- Improve the attractiveness of transit by affording fast, reliable and convenient service
- Improve access to developing areas of Southern New Jersey and to Philadelphia
- Expand opportunities for transit access to low-income and minority populations

Goal 2: Develop a Transit Network that Improves Links between People and Activity Centers: Cost-effective transit improvements that are integrated with residential areas and employment centers will increase both convenience and productivity, as well as encourage its use. The objectives to attain this goal are:

- Connect and enhance existing transportation rights-of-way around which population and employment has located and will continue to locate
- Improve the productivity and convenience of the transit system to increase its attractiveness
- Locate stations/transit stops in the vicinity of existing and proposed residential and non-residential development to maximize ridership potentials

Goal 3: Reduce Highway Congestion with Competitive Transit Investments: Transit investment in the study area should also be directed at reducing congestion. By offering new transit solutions, reductions in vehicle miles traveled, traffic congestion, air pollution and energy consumption can be achieved. The objectives to attain this goal are:

- Provide effective and attractive service as a competitive and reliable option to auto use for employment and non-employment trips
- Reduce vehicle miles traveled in the study area and the region
- Reduce travel time between residential origins and employment and non-employment destinations

Goal 4: Maximize Existing Transportation Assets and Minimize Impacts to the Environment: It is desirable to invest in transit projects that minimize and reduce impacts to environmental resources, promote less land-consumptive development, and utilize existing rail or highway rights-of-way. The objectives to attain this goal are:

- Encourage more concentrated and planned/controlled residential, commercial and institutional development rather than "sprawl"
- Utilize environmentally friendly transit vehicles and modes
- Increase pedestrian and bicycle activity in the vicinity of transit stations and to/from nearby activity centers
- Promote transit improvements that utilize and preserve/enhance existing and underutilized transportation rights-of-way

Goal 5: Support State and Local Planned Growth Initiatives: Transit improvements should also encourage planned and controlled growth, consistent with the "Smart Growth" program and policies on the State and regional level and master planning/zoning on the municipal level. The objectives to attain this goal are:

- Locate transit improvements in established communities, where supporting infrastructure and services are already in place, and pedestrian and bicycle access to stations is feasible
- Avoid creating new transit rights-of-way and associated development where open space and farmland need to be preserved
- Provide an impetus for communities along the transit improvement to provide for higher-density development in the vicinity of transit stations

***Goal 6: Promote Economic Development and Improve Quality of Life*:** Developing alternative transit improvements provides the opportunity to encourage economic development and enhance quality-of-life conditions. To retain and attract residents and encourage economic

growth, the transit improvements must offer competitive and reliable service to important destinations. The objectives to attain this goal are:

- Provide the means to encourage transit-oriented development around new or refurbished stations to strengthen older established communities as centers of economic opportunity
- Use transit service to encourage livable communities by investing in established town centers where mixed-use development and walkable environments already exist

5 DEFINITION OF ALTERNATIVES

This chapter discusses the five alternatives developed at the outset of the Alternatives Analysis. The first part of the chapter describes the previous studies conducted and the process by which the current set of alternatives was established. The second portion of the chapter defines the location and characteristics of each alternative, including estimates of their performance and cost. These definitions will provide a starting point for the comparison and evaluation of the attributes in the next chapter.

5.1 Alternatives Development

5.1.1 Southern New Jersey to Philadelphia Transit Study

In 2003 to 2005, a transit study was prepared by DRPA that identified, defined and evaluated a "long list" of alternatives within four sub-areas of a 700-square-mile study area extending from Millville, New Jersey to Center City Philadelphia. One of these sub-areas was designated as "Southern New Jersey," which encompassed Camden and Gloucester counties and areas of Vineland and Millville. Major transportation routes, such as NJ Route 55 and NJ Route 42, as well as the PATCO Speedline, were included in this sub-area.

Six alternatives were developed for the Southern New Jersey sub-area. These options consisted of either one phase of construction or two phases, and connected: Glassboro to Camden to Center City Philadelphia; Williamstown to Camden to Center City Philadelphia; or Grenloch Lake and Gloucester Township to Camden to Center City Philadelphia. One of the two-phase options also provided limited service from Millville or Williamstown to Glassboro. The alternatives were aligned either along NJ Route 55, the Conrail Right-of-Way, a combination of both of these rights-of-way, as an extension of the PATCO Speedline, or the Grenloch Railroad Right-of-Way. Potential modes included:

- PATCO, a heavy-rail mode with a fully-separated right-of-way and powered electrically via third-rail (or a PATCO option, modified to receive both third-rail and overhead power)
- Diesel Light Rail, a mode similar to NJ TRANSIT River LINE technology, where vehicles generate their own power and operate on a partially- or fully-separated right-of-way.

Following technical analyses and public and agency involvement, five alternatives and variations thereof in the Southern New Jersey sub-area were advanced to a "reduced list". This list was then further analyzed and discussed, and in some cases reconfigured, resulting in a "short list" of three alternatives for the Southern New Jersey sub-area that were further evaluated based on overall feasibility, community impacts, and cost-effectiveness:

- PATCO from Williamstown to Camden and Philadelphia via the Atlantic City Expressway, NJ Route 42 and Route I-676
- PATCO from Glassboro and Millville to Camden and Philadelphia via NJ Route 55, NJ Route 42 and Route I-676
- PATCO from Glassboro and Millville to Camden and Philadelphia via Conrail RR Right-of-Way

Results of this last evaluation indicated a consensus by the public to move forward in developing transit alternatives in the study area. These alternatives were carried forward into the Alternatives Analysis.

5.1.2 Southern New Jersey Transit Expansion Alternatives Analysis

The three alternatives listed above were carried forward into the Alternatives Analysis and served as a starting point for public outreach activities. Building upon public and stakeholder input, two additional alternatives were added:

- PATCO from Glassboro to Philadelphia via NJ Route 55 and the Conrail RR Right-of-Way
- Diesel Light Rail from Glassboro to Camden via the Conrail RR Right-of-Way

These five alternatives, numbered 1 through 4, are described in detail later in this section. They have been compared, based on an array of evaluation criteria, with the results described in Chapters 6 of this report.

The five alternatives considered are:

- **Alternative 1** – PATCO from Philadelphia to Williamstown via Route I-676, NJ Route 42 and the Atlantic City Expressway
- **Alternative 2** – PATCO from Philadelphia to Glassboro via Route I-676, NJ Route 42 and NJ Route 55
- **Alternative 2A** – PATCO from Philadelphia to Glassboro via Route I-676, NJ Route 42, NJ Route 55 and the Conrail RR Right-of-Way
- **Alternative 3** – PATCO from Philadelphia to Glassboro via the Conrail Right-of-Way
- **Alternative 4** - Diesel Light Rail from Camden to Glassboro via the Conrail Right-of-Way

5.2 Definition and Attributes of Alternatives

In this section, the attributes of each alternative are described and relevant analyses are explained to show the potential characteristics of the alternative once in service. These attributes and characteristics include:

- A physical description of each alternative, including the alignment and proposed station locations
- The technology to be employed in the new service
- Assumed operating and service characteristics
- Ridership estimates based on the travel demand model
- Estimated capital and annual operating and maintenance (O&M) costs to build and run the new service

A description of the methods used to develop the ridership and cost estimates is included in Appendix D: Methodology.

5.2.1 Alternative 1 – PATCO from Philadelphia to Williamstown via Route I-676, NJ Route 42 and the Atlantic City Expressway

Alignment and Stations

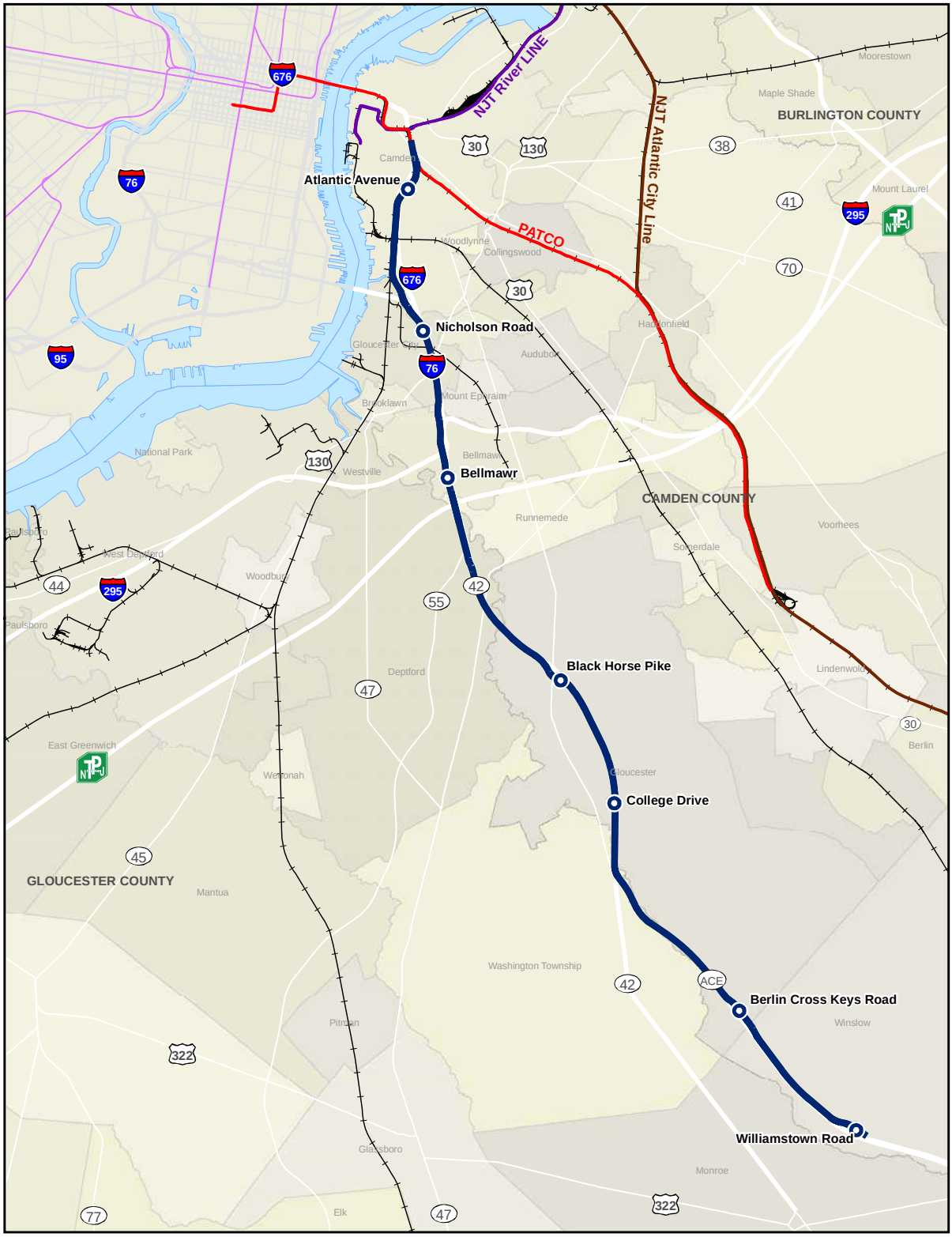
As shown on Figure 5-1, Alternative 1 consists of PATCO rapid transit rail service that would operate from 16th and Locust Street in Center City Philadelphia to Williamstown Road in Winslow Township, New Jersey. This service would operate along the existing PATCO alignment from Center City Philadelphia to Camden. The alignment would diverge from the existing PATCO Speedline in the vicinity of Pine Street and Mt. Ephraim Avenue and follow the Conrail right-of-way to the Walt Whitman Bridge interchange. At this point, the alignment would shift north and travel adjacent to the southbound travel lanes of Route I-676 and Route 42. The alignment would then shift into the median of Route 42 just past the Route 55 interchange and prior to the Clements Bridge Road interchange. The alignment would then leave the median for a short distance to serve the proposed Black Horse Pike station located southeast of the interchange. The alignment would re-enter the median just prior to reaching the Coles Road interchange and continue in the median of Route 42 and the Atlantic City Expressway (ACE) until reaching the Cross Keys Road interchange. At this interchange, the alignment would leave the median and travel on the northbound side of ACE until reaching its terminus at Williamstown Road.

Proposed stations include Atlantic Avenue (Camden), Nicholson Road (Gloucester City), Bellmawr (Bellmawr Borough), Black Horse Pike (Gloucester Township), College Drive (Gloucester Township), Berlin-Cross Keys Road (Winslow Township) and Williamstown Road (Winslow Township). Spacing of stations along the proposed new alignment would be approximately one to two miles in the north segment and approximately three to four miles in the south segment, with an average station spacing of about 2.75 miles. The proposed service would integrate with the existing PATCO Speedline, stopping at the following stations: Broadway (Walter Rand Transportation Center) in Camden; City Hall in Camden; and 8th & Market, 9th/10th & Locust, 11th/12th & Locust, and 15th/16th & Locust in Philadelphia.

Technology

Alternative 1 technology would be similar to the existing PATCO Speedline, which would include: a grade-separated double-track alignment (avoiding conflicts with automobile, pedestrian and freight rail traffic); electric propulsion via a third rail; stainless steel air-conditioned vehicles; and stations with high-level platforms for easy passenger access and egress, including the elderly and handicapped. This technology is characterized by frequent and rapid service from both park-and-ride stations and smaller urban area stations that would have no or minimal park-and-ride access. Stations would be fully automated with fare collection equipment, elevators and escalators.

Figure 5-1 – Alternative 1: PATCO from Philadelphia to Williamstown via Route 42



Travel Time and Service Characteristics

The length of the proposed new alignment between Camden and Winslow Township is approximately 19 miles, while the length of the entire alignment between 16th & Locust and Winslow Township is approximately 23 miles. An average one-way running time for the entire length is estimated at about 38 minutes. Alternative 1 would operate on a 24-hour basis every day, similar to the existing PATCO service. Service frequency is estimated at 7.5 minutes during peak periods and 15 minutes during the off-peak.

Ridership Estimates

The DVRPC regional travel demand model, as applied for this study, projected 23,800 daily boardings in 2030 for this alternative. Of these trips 7,000 are new transit trips, or trips that would otherwise be completed entirely by automobile. The remainder of the boardings reflects a re-distribution of existing transit trips from the PATCO Lindenwold Line (9,900) and from NJ TRANSIT bus service (6,900).

Capital Costs

Capital costs for this alternative are shown in Table 5-1. They include construction of 18.7 miles of new double-track transit line, acquisition of additional vehicles, right-of-way acquisition, contingencies and soft costs. The fully grade-separated configuration of this alternative requires extensive bridges, structures, and embanked sections of alignment, especially in areas where the alignment crosses existing waterways and highways and traverses highway interchanges, such as the Walt Whitman Bridge interchange and the I-295/Rt-42 interchange. Construction elements include guideway, structures, track, seven new stations with park-and-ride facilities, a storage and light maintenance facility, associated sitework and modifications to adjacent or crossing infrastructure, as well as electrification, train control, and communication systems. Construction cost of the alternative is estimated at $1.67 billion. A net increase of 18 vehicles to the existing PATCO fleet is required for operation of this service and the existing PATCO service. Non-construction costs including vehicle acquisition, right-of-way, soft costs and contingencies add $752 million, for a total estimated project cost of $2.4 billion in 2008. The year of expenditure cost is estimated to be $3.0 billion. The equivalent annualized capital cost is $179 million.

Table 5-1 – Capital Costs, Alternative 1

Category	Cost
Guideway, Structures, Track	$ 891 M
Stations	$ 309 M
Support Facilities	$ 17 M
Sitework & Special Conditions	$ 79 M
Systems	$ 372 M
Construction Subtotal	***$ 1,667 M***
Right-of-Way	$ 7 M
Vehicles	$ 75 M
Soft Costs	$ 450 M
Contingencies	$ 220 M
Non Construction Subtotal	***$ 752 M***
Total Project Cost	**$ 2,420 M**
Year of Expenditure Cost	$ 3,018 M
Annualized Cost	$ 179 M

Operating and Maintenance Costs

As shown in Table 5-2, O&M costs for Alternative 1 were based on four variables: annual train hours, annual vehicle miles, peak vehicles, and route miles. Unit costs were applied to the change in these quantities to calculate the change in annual costs from the No Build. Quantities for the new service to Williamstown via Route 42 were estimated based on a round trip travel time of 76 minutes along a route of 22.5 miles (including 18.73 miles of new track). The change in quantities for the existing PATCO service to Lindenwold is due to a decrease in service frequencies on that service; as ridership estimates show many travelers switching to the new Williamstown service, a reduced frequency to Lindenwold will be sufficient and will balance capacity across the Ben Franklin Bridge and into Center City between the two lines. These quantities were multiplied by the appropriate unit costs, producing a reduction in annual costs on the Lindenwold line of $7.35 million and $45.96 million in new annual costs for the Williamstown Line. The result is a system-wide increase in O&M costs of $38.61 million over the No Build.

Table 5-2 – Net O&M Costs, Alternative 1

	PATCO (to Lindenwold)				PATCO (to Williamstown)			
	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles
Change in Annual Quantities	-7,005	-1,230,681	-30	0	41,698	5,107,420	66	18.7
Unit Costs	$470.08	$1.59	$70,279	$727,173	$470.08	$1.59	$70,279	$727,173
Change in Annual Cost	-$3.29 M	-$1.95 M	-$2.11 M	$0.00 M	$19.60 M	$8.10 M	$4.64 M	$13.62 M
Total Change in Annual Cost	-$7.35 M				$45.96 M			
Net Annual Cost	$38.61 M							

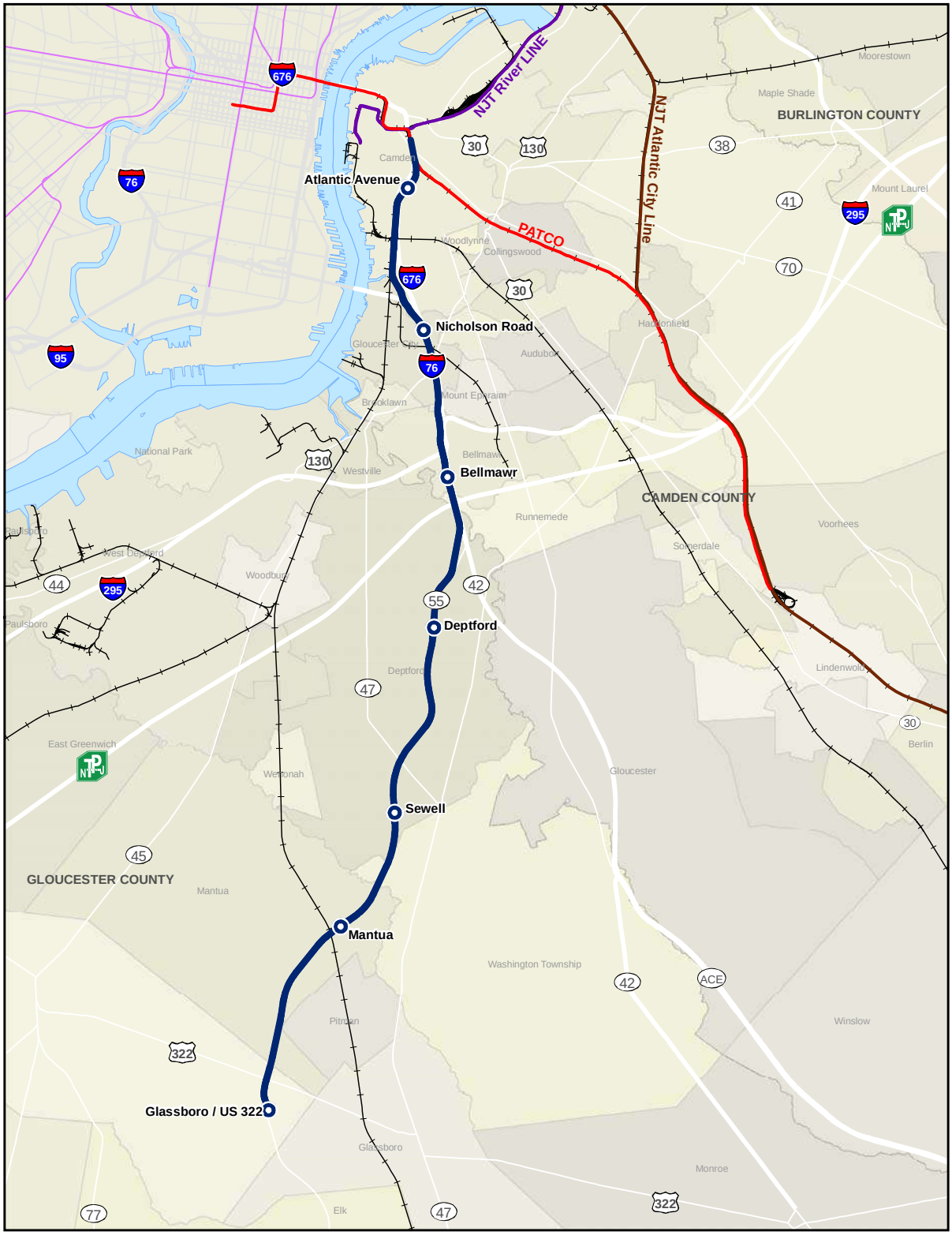
5.2.2 Alternative 2 – PATCO from Philadelphia to Glassboro via Route I-676, NJ Route 42 and NJ Route 55

Alignment and Stations

As shown on Figure 5-2, Alternative 2 consists of PATCO rapid transit rail service that would operate from 16th and Locust Street in Center City Philadelphia to the Route 55/US 322 interchange in Harrison Township, New Jersey. This service would operate along the existing PATCO alignment from Center City Philadelphia to Camden. The line would diverge from the existing PATCO Speedline in the vicinity of Pine Street and Mt. Ephraim Avenue and follow the Conrail right-of-way to the Walt Whitman Bridge interchange. At this point, the alignment would shift north and travel adjacent to the southbound travel lanes of Route I-676, Route 42 and Route 55. The alignment would shift into the median of Route 55 just prior to the Almonesson Road overpass. The alignment would continue in the median of Route 55 to US Route 322, where it would leave the median and terminate along the northbound side of Route 55.

Proposed stations include Atlantic Avenue (Camden), Nicholson Road (Gloucester City), Bellmawr (Bellmawr Borough), Deptford (Deptford Township), Sewell (Deptford Township), Mantua (Mantua Township), and Glassboro/US 322 (Harrison Township). Spacing of stations along the proposed new alignment would be approximately one to two miles in the north segment and approximately two to three miles in the south segment, with an average station spacing of about 2.5 miles. The service would integrate with the existing PATCO Speedline, stopping at the following stations: Broadway (Walter Rand Transportation Center) in Camden, City Hall in Camden; and 8th & Market, 9th/10th & Locust, 11th/12th & Locust, and 15th/16th & Locust in Philadelphia.

Figure 5-2 – Alternative 2: PATCO from Philadelphia to Glassboro via Route 55



Technology

Alternative 2 technology would be similar to the existing PATCO Speedline, which would include: a grade-separated double-track alignment (avoiding conflicts with automobile, pedestrian and freight rail traffic); electric propulsion via a third rail; stainless steel air-conditioned vehicles; and stations with high-level platforms for easy passenger access and egress, including the elderly and handicapped. This technology is characterized by frequent and rapid service from both park-and-ride stations and smaller urban area stations that would have no or minimal park-and-ride access. Stations would be fully automated, with fare collection equipment, elevators and escalators.

Travel Time and Service Characteristics

The length of the proposed new alignment between Camden and Harrison Township is approximately 17 miles, while the length of the entire alignment between 16th & Locust and Harrison Township is approximately 21 miles. An average one-way running time for the entire length is estimated at approximately 36 minutes. Alternative 2 would operate on a 24-hour basis every day, similar to existing PATCO service. Service frequency is estimated at 7.5 minutes during peak periods and 15 minutes during the off-peak.

Ridership Estimates

The DVRPC regional travel demand model, as applied for this study, projected 23,000 daily boardings in 2030 for this alternative. Of these trips 8,100 are new transit trips, or trips that would otherwise be completed entirely by automobile. The remainder of the boardings reflects a re-distribution of existing transit trips from the PATCO Lindenwold Line (6,900) and from NJ TRANSIT bus service (8,000).

Capital Costs

Capital costs for this alternative are shown in Table 5-3. They include construction of 17 miles of new double-track transit line, acquisition of additional vehicles, right-of-way acquisition, contingencies and soft costs. The fully grade-separated configuration of this alternative requires extensive bridges, structures, and embanked sections of alignment, especially in areas where the alignment crosses existing waterways and highways and traverses highway interchanges, such as the Walt Whitman Bridge interchange and the I-295/Rt-42 interchange. Construction elements include guideway, structures, track, seven new stations with park-and-ride facilities, a storage and light maintenance facility, associated site work and modifications to adjacent or crossing infrastructure, as well as electrification, train control, and communications systems. Construction cost of the alternative is estimated at $1,440 million. A net increase of 18 vehicles to the existing PATCO fleet is required for operation of this service and the existing PATCO service. Non-construction costs including vehicle acquisition, right-of-way, soft costs and contingencies add $662 million for a total estimated project cost of $2.1 billion in 2008. The year of expenditure cost is estimated to be $2.6 billion. The equivalent annualized capital cost is $156 million.

Table 5-3 – Capital Costs, Alternative 2

Category	Cost
Guideway, Structures, Track	$ 706 M
Stations	$ 298 M
Support Facilities	$ 17 M
Sitework & Special Conditions	$ 82 M
Systems	$ 337 M
Construction Subtotal	***$ 1,440 M***
Right-of-Way	$ 7 M
Vehicles	$ 75 M
Soft Costs	$ 389 M
Contingencies	$ 191 M
Non Construction Subtotal	***$ 662 M***
Total Project Cost	**$ 2,102 M**
Year of Expenditure Cost	$ 2,622 M
Annualized Cost	$ 156 M

Operating and Maintenance Costs

As shown in Table 5-4, O&M costs for Alternative 2 were based on four variables: annual train hours, annual vehicle miles, peak vehicles, and route miles. Unit costs were applied to the change in these quantities to calculate the change in annual costs from the No Build. Quantities for the new service to Glassboro via Route 55 were estimated based on a round trip travel time of 72 minutes along a route of 20.8 miles (including 17.03 miles of new track). The change in quantities for the existing PATCO service to Lindenwold is due to a decrease in service frequencies on that service; as ridership estimates show many travelers switching to the new PATCO service, a reduced frequency to Lindenwold will be sufficient and will balance capacity across the Ben Franklin Bridge and into Center City between the two lines. These quantities were multiplied by the appropriate unit costs, producing a reduction in annual costs on the Lindenwold line of $7.35 million and $43.08 million in new annual costs for the Glassboro Line. The result is a system-wide increase in O&M costs of $35.73 million over the No Build.

Table 5-4 – Net O&M Costs, Alternative 2

	PATCO (to Lindenwold)				PATCO (to Glassboro)			
	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles
Change in Annual Quantities	-7,005	-1,230,681	-30	0	39,503	4,720,667	66	17.0
Unit Costs	$470.08	$1.59	$70,279	$727,173	$470.08	$1.59	$70,279	$727,173
Change in Annual Cost	-$3.29 M	-$1.95 M	-$2.11 M	$0.00 M	$18.57 M	$7.49 M	$4.64 M	$12.38 M
Total Change in Annual Cost	-$7.35 M				$43.08 M			
Net Annual Cost	$35.73 M							

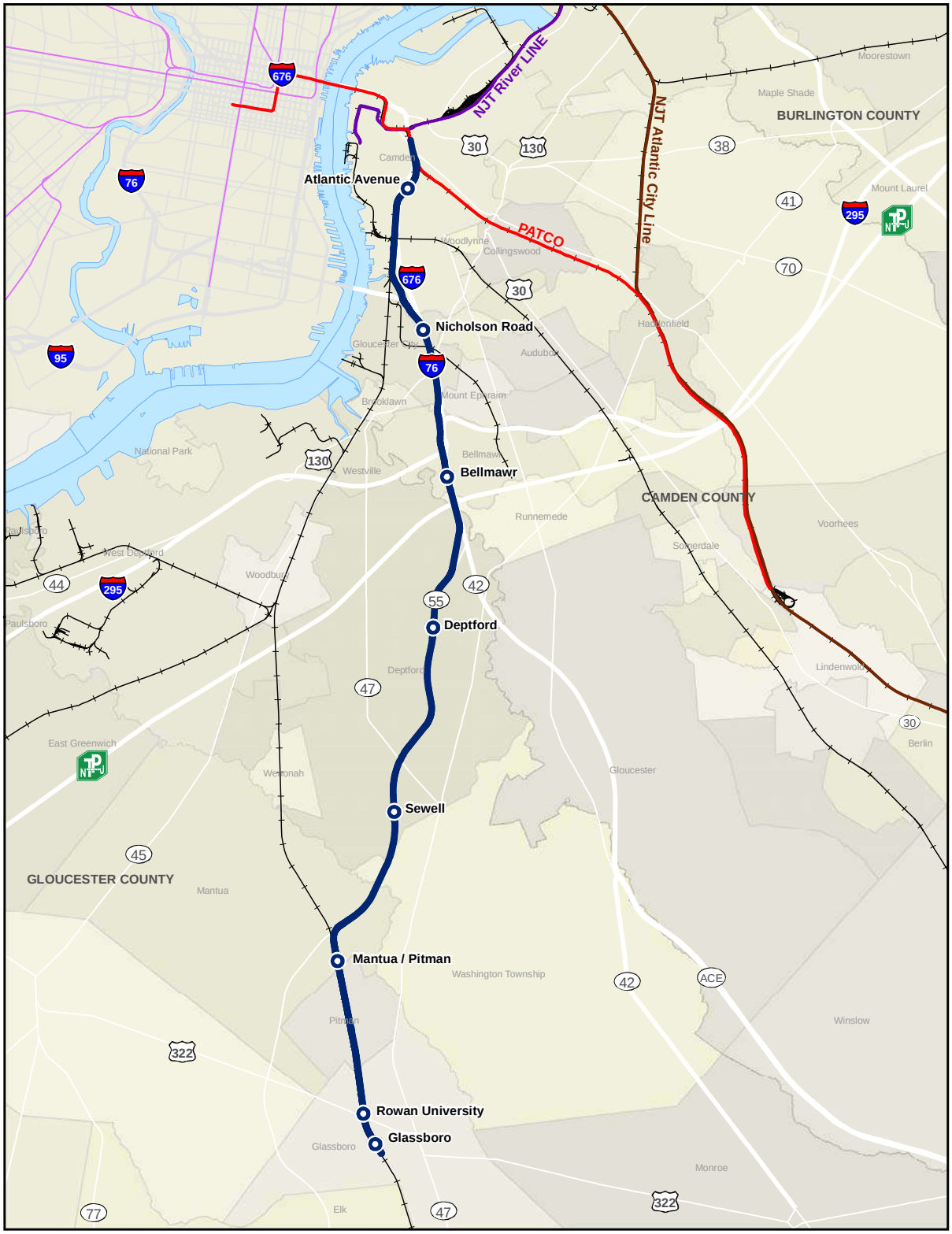
5.2.3 Alternative 2A – PATCO from Philadelphia to Glassboro via Route I-676, NJ Route 42, NJ Route 55 and the Conrail RR Right-of-Way

Alignment and Stations

As shown on Figure 5-3, Alternative 2A consists of PATCO rapid transit rail service that would operate from 16th and Locust Street in Center City Philadelphia to Ellis Street in Glassboro, New Jersey. This service would operate along the existing PATCO alignment from Center City Philadelphia to Camden. The line would diverge from the existing PATCO Speedline in the vicinity of Pine Street and Mt. Ephraim Avenue and follow the Conrail right-of-way to the Walt Whitman Bridge interchange. At this point, the alignment would shift north and travel adjacent to the southbound travel lanes of Route I-676, Route 42 and Route 55. The alignment would shift into the median of Route 55 just prior to the Almonesson Road overpass. The alignment would continue in the median of Route 55 until reaching the Woodbury-Glassboro Road interchange. Past this interchange, the alignment would shift from the median, crossing over the northbound lanes of Route 55 and onto the Conrail right-of-way. The alignment would then follow the Conrail right-of-way to Glassboro.

Proposed stations include Atlantic Avenue (Camden), Nicholson Road (Gloucester City), Bellmawr (Bellmawr Borough), Deptford (Deptford Township), Sewell (Deptford Township), Mantua/Pitman (Mantua Township), Rowan University (Glassboro) and Glassboro (Glassboro). Spacing of stations along the proposed new alignment would be approximately one to two miles in the north segment and approximately two to three miles in the south segment, with an average station spacing of about 2.2 miles. The service would integrate with the existing PATCO Speedline, stopping at the following stations: Broadway (Walter Rand Transportation Center) in Camden; City Hall in Camden; and 8th & Market, 9th/10th & Locust, 11th/12th & Locust, and 15th/16th & Locust in Philadelphia.

Figure 5-3 – Alternative 2A: PATCO from Philadelphia to Glassboro via Route 55 and Conrail ROW



Technology

Alternative 2A technology would be similar to the existing PATCO Speedline, which would include: a grade-separated double-track alignment (avoiding conflicts with automobile, pedestrian and freight train traffic); electric propulsion via a third rail; stainless steel air - conditioned vehicles; and stations with high-level platforms for easy access and egress, including the elderly and handicapped. This technology is characterized by frequent and rapid service from both park-and-ride stations and smaller urban area stations that would have no or minimal park-and-ride access. Stations would be fully automated, with fare collection equipment, elevators and escalators.

Travel Time and Service Characteristics

The length of the proposed new alignment between Camden and Glassboro is approximately 17 miles, while the length of the entire alignment between 16th & Locust and Glassboro is approximately 21 miles. An average one-way running time for the entire length is estimated at approximately 38 minutes. Alternative 2A would operate on a 24-hour basis every day, similar to the existing PATCO service. Service frequency is estimated at 7.5 minutes during peak periods and 15 minutes during the off-peak.

Ridership Estimates

The DVRPC regional travel demand model, as applied for this study, projected 22,700 daily boardings in 2030 for this alternative. Of these trips 7,700 are new transit trips, or trips that would otherwise be completed entirely by automobile. The remainder of the boardings reflects a re-distribution of existing transit trips from the PATCO Lindenwold Line (6,900) and from NJ TRANSIT bus service (8,100).

Capital Costs

Capital costs for this alternative are shown in Table 5-5. They include construction of 17.3 miles of new double-track transit line, acquisition of additional vehicles, right-of-way acquisition, contingencies and soft costs. The fully grade-separated configuration of this alternative requires extensive bridges, structures, and embanked sections of alignment, especially in areas where the alignment crosses existing waterways and highways and traverses highway interchanges, such as the Walt Whitman Bridge interchange and the I-295/Rt-42 interchange. Additionally, in the railroad right-of-way portion from Mantua to Glassboro, a mix of elevated and depressed sections are required to avoid crossing roadways and physical impacts to the adjacent communities. Construction elements include guideway, structures, track, eight new stations with park-and-ride facilities, storage and light maintenance facility, associated site work and modifications to adjacent or crossing infrastructure, as well as electrification, train control, and communications systems. Construction cost of the alternative is estimated at $1.7 billion. A net increase of 18 vehicles to the existing PATCO fleet is required for operation of this service and the existing PATCO service. Non-construction costs including vehicle acquisition, right-of-way, soft costs and contingencies add $782 million, for a total estimated project cost of $2.5 billion in

2008. The year of expenditure cost is estimated to be $3.1 billion. The equivalent annualized capital cost is $183 million.

Table 5-5 – Capital Costs, Alternative 2A

Category	Cost
Guideway, Structures, Track	$ 874 M
Stations	$ 375 M
Support Facilities	$ 17 M
Site work & Special Conditions	$ 92 M
Systems	$ 345 M
Construction Subtotal	***$ 1,703 M***
Right-of-Way	$ 21 M
Vehicles	$ 75 M
Soft Costs	$ 460 M
Contingencies	$ 226 M
Non Construction Subtotal	***$ 782 M***
Total Project Cost	**$ 2,485 M**
Year of Expenditure Cost	$ 3,099 M
Annualized Cost	$ 183 M

Operating and Maintenance Costs

As shown in Table 5-6, O&M costs for Alternative 2A were based on four variables: annual train hours, annual vehicle miles, peak vehicles, and route miles. Unit costs were applied to the change in these quantities to calculate the change in annual costs from the No Build. Quantities for the new service to Glassboro via Route 55 and the Conrail right-of-way were estimated based on a round trip travel time of 76 minutes along a route of 21.0 miles (including 17.3 miles of new track). The change in quantities for the existing PATCO service to Lindenwold is due to a decrease in service frequencies on that service; as ridership estimates show many travelers switching to the new PATCO service, a reduced frequency to Lindenwold will be sufficient and will balance capacity across the Ben Franklin Bridge and into Center City between the two lines. These quantities were multiplied by the appropriate unit costs, producing a reduction in annual costs on the Lindenwold line of $7.35 million and $44.39 million in new annual costs for the Glassboro Line. The result is a system-wide increase in O&M costs of $37.04 million over the No Build.

Table 5-6 – Net O&M Costs, Alternative 2A

	PATCO (to Lindenwold)				PATCO (to Glassboro)			
	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles
Change in Annual Quantities	-7,005	-1,230,681	-30	0	41,698	4,779,817	66	17.3
Unit Costs	$470.08	$1.59	$70,279	$727,173	$470.08	$1.59	$70,279	$727,173
Change in Annual Cost	-$3.29 M	-$1.95 M	-$2.11 M	$0.00 M	$19.60 M	$7.58 M	$4.64 M	$12.57 M
Total Change in Annual Cost	-$7.35 M				$44.39 M			
Net Annual Cost	$37.04 M							

5.2.4 Alternative 3 – PATCO from Philadelphia to Glassboro via the Conrail Right-of-Way

Alignment and Stations

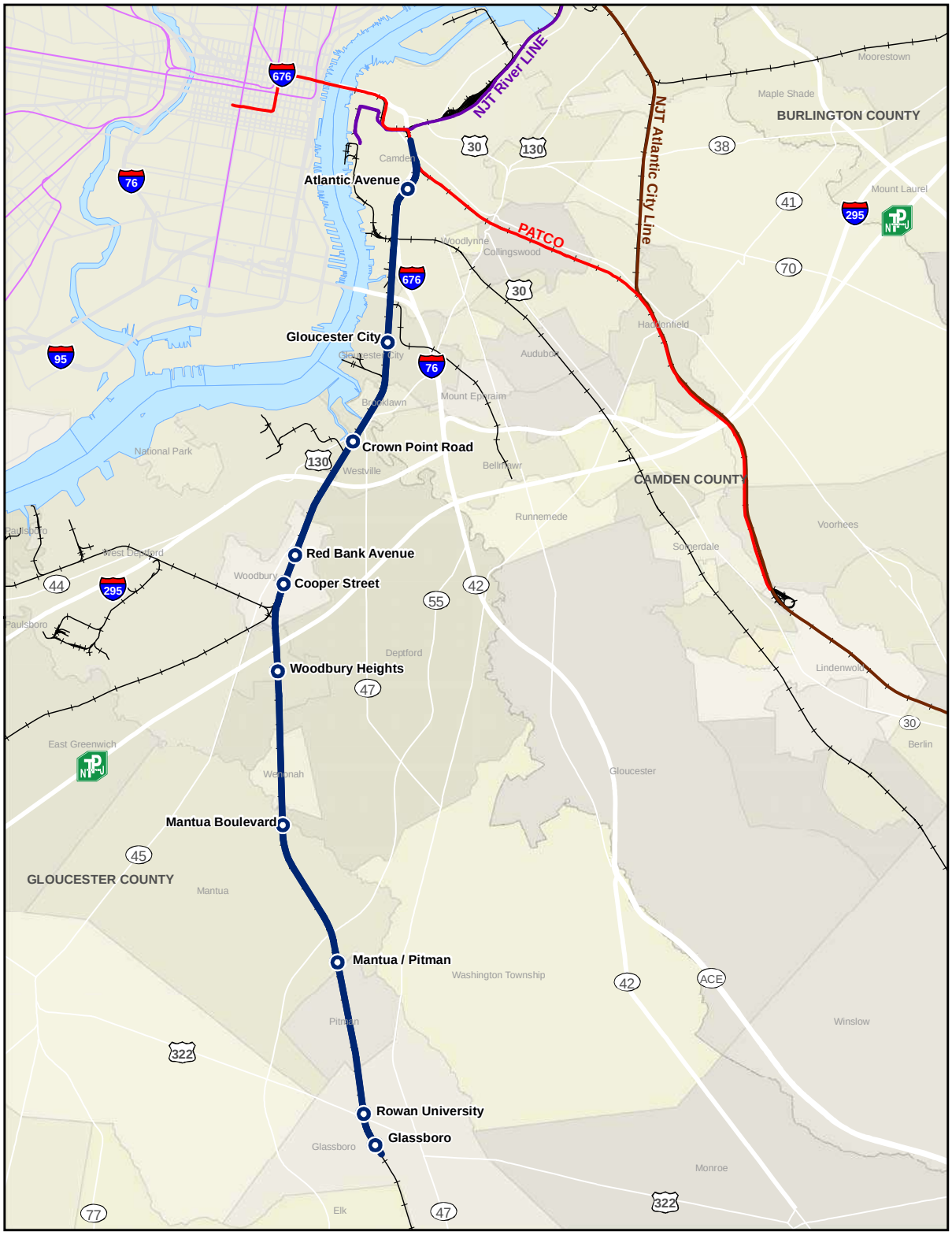
As shown on Figure 5-4, Alternative 3 consists of PATCO rapid transit rail service that would operate from 16th and Locust Street in Center City Philadelphia to Glassboro, New Jersey. This service would operate along the existing PATCO alignment from Center City Philadelphia to Camden. The alignment would diverge from the existing PATCO Speedline in the vicinity of Pine Street and Mt. Ephraim Avenue and then follow the Conrail right-of-way to Glassboro.

Proposed stations include Atlantic Avenue (Camden), Gloucester City (Gloucester City), Crown Point Road (Westville Borough), Red Bank Avenue (Woodbury), Cooper Street (Woodbury), Woodbury Heights (Woodbury Heights), Mantua Boulevard (Mantua Township), Mantua/Pitman (Mantua Township), Rowan University (Glassboro) and Glassboro (Glassboro). Station spacing along the proposed new alignment would be approximately one to two miles, with an average station spacing of about 1.8 miles. The proposed service would integrate with the existing PATCO Speedline, stopping at the following stations: Broadway (Walter Rand Transportation Center) in Camden; City Hall in Camden; and 8th & Market, 9th/10th & Locust, 11th/12th & Locust, and 15th/16th & Locust in Philadelphia.

Technology

Alternative 3 technology would be similar to the existing PATCO Speedline, which would include: a grade-separated double-track alignment (avoiding conflicts with automobile, pedestrian and freight train traffic); electric propulsion via a third rail; stainless steel air-conditioned vehicles; and stations with high-level platforms for easy passenger access and egress, including the elderly and handicapped. This technology is characterized by frequent and rapid service from both park-and-ride stations and smaller urban area stations that would have no or minimal park-and-ride access. Stations would be fully automated with fare collection equipment, elevators and escalators.

Figure 5-4 – Alternative 3: PATCO from Philadelphia to Glassboro via Conrail ROW



Travel Time and Service Characteristics

The length of the proposed new alignment between Camden and Glassboro is approximately 17 miles, while the length of the entire alignment between 16th & Locust and Glassboro is approximately 21 miles. An average one-way running time for the entire length is estimated at about 40 minutes. Alternative 3 would operate on a 24-hour basis every day, similar to the existing PATCO service. Service frequency is estimated at 7.5 minutes during peak periods and 15 minutes during the off-peak.

Ridership Estimates

The DVRPC regional travel demand model, as applied for this study, projected 23,700 daily boardings in 2030 for this alternative. Of these trips 10,200 are new transit trips, or trips that would otherwise be completed entirely by automobile. The remainder of the boardings reflects a re-distribution of existing transit trips from the PATCO Lindenwold Line (4,700) and from NJ TRANSIT bus service (8,800).

Capital Costs

Capital costs for this alternative are shown in Table 5-7. They include construction of 17.1 miles of new double-track transit line, acquisition of additional vehicles, right-of-way acquisition, contingencies and soft costs. The fully grade-separated configuration of this alternative within the Conrail right-of-way requires extensive bridges, aerial structures, embanked sections, and depressed sections of alignment to avoid conflicts with numerous at-grade crossings and with adjacent communities built up on either side of the alignment. As a result, this alternative requires the greatest amount of grade-separated alignment construction. Construction elements include guideway, structures, track, nine new stations with park-and-ride facilities, a storage and light maintenance facility, associated site work and modifications to crossing roadways and other infrastructure including freight rail modifications. Additionally, the construction items include electrification, train control, and communications systems. Construction cost of the alternative is estimated at $2,049 million. A net increase of 25 vehicles to the existing PATCO fleet is required for operation of this and the existing PATCO service. Non-construction costs including vehicle acquisition, right-of-way, soft costs and contingencies add $998 million, for a total estimated project cost of $3.0 billion in 2008. The year of expenditure cost is estimated to be $3.8 billion. The equivalent annualized capital cost is $223 million.

Table 5-7 – Capital Costs, Alternative 3

Category	Cost
Guideway, Structures, Track	$ 1,117 M
Stations	$ 444 M
Support Facilities	$ 18 M
Sitework & Special Conditions	$ 122 M
Systems	$ 347 M
Construction Subtotal	***$ 2,049 M***
Right-of-Way	$ 65 M
Vehicles	$ 104 M
Soft Costs	$ 553 M
Contingencies	$ 277 M
Non Construction Subtotal	***$ 998 M***
Total Project Cost	**$ 3,047 M**
Year of Expenditure Cost	$ 3,800 M
Annualized Cost	$ 223 M

Operating and Maintenance Costs

As shown in Table 5-8, O&M costs for Alternative 3 were based on four variables: annual train hours, annual vehicle miles, peak vehicles, and route miles. Unit costs were applied to the change in these quantities to calculate the change in annual costs from the No Build. Quantities for the new service to Glassboro via the Conrail right-of-way were estimated based on a round trip travel time of 80 minutes along a route of 20.8 miles (including 17.08 miles of new track). The change in quantities for the existing PATCO service to Lindenwold is due to a decrease in service frequencies on that service; as ridership estimates show many travelers switching to the new PATCO service, a reduced frequency to Lindenwold will be sufficient and will balance capacity across the Ben Franklin Bridge and into Center City between the two lines. These quantities were multiplied by the appropriate unit costs, producing a reduction in annual costs on the Lindenwold line of $7.35 million and $45.62 million in new annual costs for the Glassboro Line. The result is a system-wide increase in O&M costs of $38.27 million over the No Build.

Table 5-8 – Net O&M Costs, Alternative 3

	PATCO (to Lindenwold)				PATCO (to Glassboro)			
	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles
Change in Annual Quantities	-7,005	-1,230,681	-30	0	43,893	4,732,042	72	17.1
Unit Costs	$470.08	$1.59	$70,279	$727,173	$470.08	$1.59	$70,279	$727,173
Change in Annual Cost	-$3.29 M	-$1.95 M	-$2.11 M	$0.00 M	$20.63 M	$7.51 M	$5.06 M	$12.42 M
Total Change in Annual Cost	-$7.35 M				$45.62 M			
Net Annual Cost	$38.27 M							

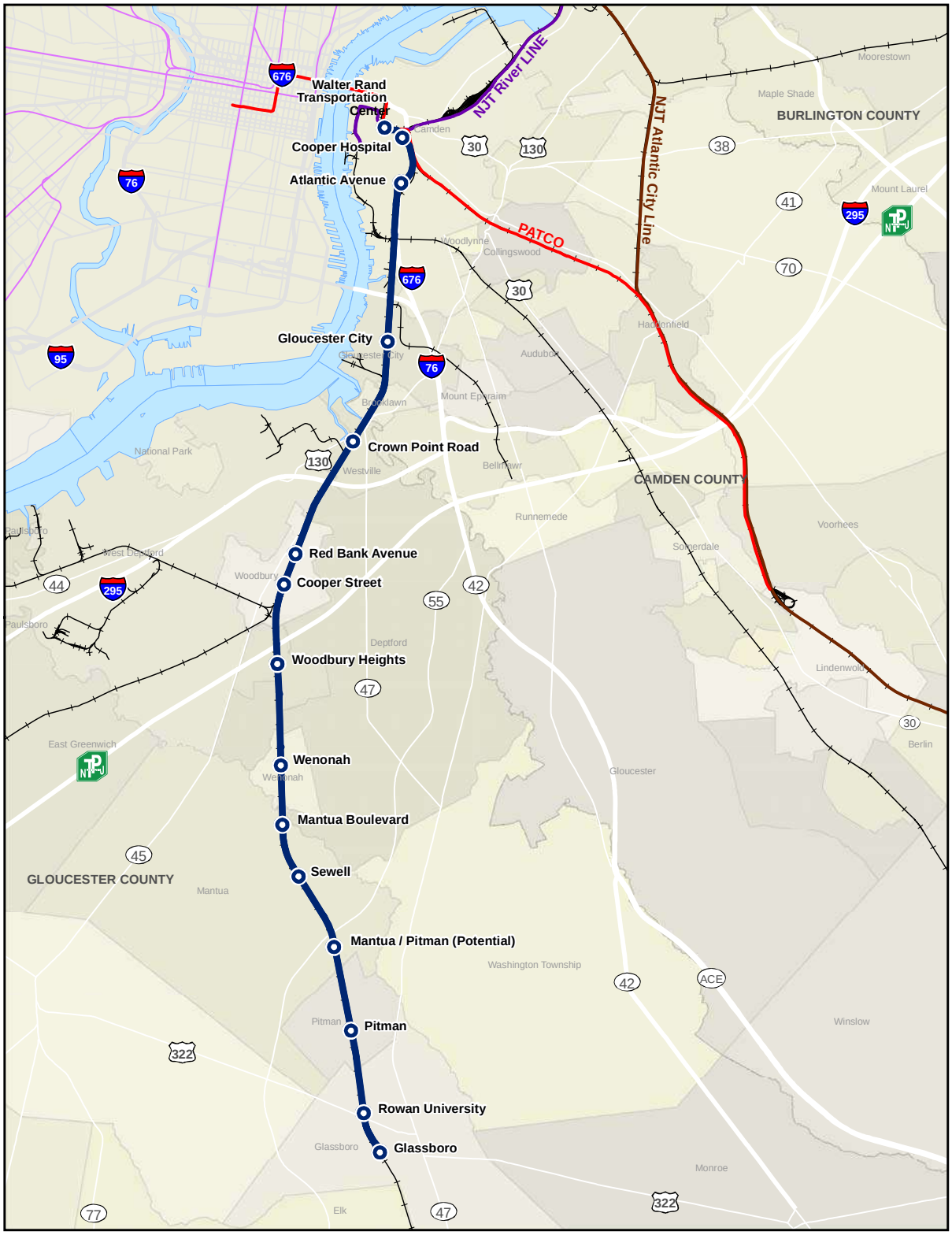
5.2.5 Alternative 4 – Diesel Light Rail from Philadelphia to Glassboro via the Conrail Right-of-Way

Alignment and Stations

As shown on Figure 5-5, Alternative 4 consists of diesel light rail service that would operate from the Walter Rand Transportation Center (WRTC) in Camden to Ellis Street in Glassboro. This service would leave WRTC and travel within public right-of-way along Martin Luther King Boulevard and Haddon Avenue to I-676. The service would then follow a newly acquired right-of-way, first between 676 and 9th Street, and then following alongside I-676 crossing Chestnut Street, Sycamore Street, 8th Street, and Kaighns Avenue before reaching the intersection of Railroad and Atlantic Avenues. The alignment would then cross Atlantic Avenue and shift to the Conrail right-of-way, following the railroad to Glassboro.

Proposed stations include Walter Rand Transportation Center (Camden), Cooper Hospital (Camden), Atlantic Avenue (Camden), Gloucester City (Gloucester City), Crown Point Road (Westville Borough), Red Bank Avenue (Woodbury), Cooper Street (Woodbury), Woodbury Heights (Woodbury Heights), Wenonah (Wenonah Borough), Mantua Boulevard (Mantua Township), Sewell (Mantua Township), Mantua/Pitman (Mantua Township), Pitman (Pitman Borough), Rowan University (Glassboro) and Glassboro (Glassboro). Stations along the proposed new alignment would be spaced approximately one mile apart. A transfer to PATCO at WRTC would be necessary for travel to 8th & Market, 9th/10th & Locust, 11th/12th & Locust, and 15th/16th & Locust in Center City Philadelphia.

Figure 5-5 – Alternative 4: Diesel LRT from Philadelphia to Glassboro via Conrail ROW



Technology

Alternative 4 technology would be similar to the technology used on the River LINE from Camden to Trenton. These vehicles generate their own electric power via an on-board diesel engine, eliminating any third rail or overhead electric power infrastructure. This technology can operate on an exclusive guideway or in-street (as in Camden), but could not merge with the PATCO Speedline to access Center City Philadelphia. Stations would have low-level platforms, and fare collection would be based on a proof-of-payment method.

Travel Time and Service Characteristics

The length of the new alignment between Camden and Glassboro is approximately 17 miles. An average one-way running time for the entire length is estimated at about 37 minutes. Alternative 4 would operate from early morning until late in the evening, approximately 19-20 hours per day. Service frequency is estimated at 7.5 minutes during weekday peak periods and 15 minutes during the off-peak.

Ridership Estimates

The DVRPC regional travel demand model, as applied for this study, projected 18,600 daily boardings in 2030 for this alternative. Of these trips 10,900 are new transit trips, or trips that would otherwise be completed entirely by automobile. The remainder of the boardings reflects a re-distribution of existing transit trips from the PATCO Lindenwold Line (700) and from NJ TRANSIT bus service (7,000).

Capital Costs

Capital costs for this alternative are shown in Table 5-9. They include construction of 17.4 miles of new transit line, acquisition of additional vehicles, right-of-way acquisition, contingencies and soft costs. The initial portion of this alignment in the City of Camden will follow public roadways at grade. Within the Conrail right-of-way, costs reflect the addition of two new tracks from Camden to Woodbury, and the addition of one new track and full upgrade/replacement of the existing freight track from Woodbury to Glassboro. Costs reflect an alignment that is generally at-grade and include improvements and modifications to at-grade roadway crossings along the line. An allowance has been included for a limited portion of grade separation to cross Conrail freight tracks or other roadways where special conditions preclude an at-grade alignment. Capital costs also include an allowance for modifications to the PATCO Lindenwold line to support increased service capacity for the ridership that will transfer to PATCO from the Light Rail service.

Construction elements include guideway, structures, track, 14 new stations, park-and-ride facilities, storage and light maintenance facility, associated site work and modifications to adjacent or crossing infrastructure including modifications to freight tracks. Additionally, the construction elements include communications and train control systems including new grade crossing protection. Construction cost of the alternative is estimated at $800 million. A fleet of 27 diesel light rail vehicles are required for the proposed operation between Camden and Glassboro. Non-construction costs including vehicle acquisition, right-of-way, soft costs and

contingencies add $530 million, for a total estimated project cost of $1.3 billion in 2008. The year of expenditure cost is estimated to be $1.6 billion. The equivalent annualized capital cost is $101 million.

Table 5-9 – Capital Costs, Alternative 4

Category	Cost
Guideway, Structures, Track	$ 452 M
Stations	$ 94 M
Support Facilities	$ 18 M
Site work & Special Conditions	$ 116 M
Systems	$ 120 M
Construction Subtotal	***$ 800 M***
Right-of-Way	$ 62 M
Vehicles	$ 130 M
Soft Costs	$ 216 M
Contingencies	$ 121 M
Non Construction Subtotal	***$ 530 M***
Total Project Cost	**$ 1,329 M**
Year of Expenditure Cost	$ 1,627 M
Annualized Cost	$ 101 M

Operating and Maintenance Costs

As shown in Table 5-10, O&M costs for Alternative 4 were based on four variables: annual train hours, annual vehicle miles, peak vehicles, and route miles. Unit costs were applied to the change in these quantities to calculate the change in annual costs from the No Build. The quantities for the new service to Glassboro via Conrail were estimated based on a round trip travel time of 74 minutes along a route of 17.4 miles of new track. The change in quantities for the existing PATCO service to Lindenwold is due to an increase in service to provide capacity for transferring riders. Ridership estimates show that many travelers will transfer from the new service to PATCO to reach Center City Philadelphia, so an increase in passenger capacity during the peak was necessary. Peak train lengths on PATCO were increased to 8 cars from 6 cars, producing the observed increase in annual vehicle miles and peak vehicles. Measured quantities were multiplied by the appropriate unit costs, producing an increase in annual costs on the Lindenwold line of $2.62 million and $26.18 million in new annual costs for the light rail line. The result is a system-wide increase in O&M costs of $28.80 million over the No Build.

Table 5-10 – Net O&M Costs, Alternative 4

	PATCO (to Lindenwold)				DLRT (to Glassboro)			
	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles	Annual Train Hours	Annual Vehicle Miles	Peak Vehicles	Route Miles
Change in Annual Quantities	0	497,582	26	0	36,803	1,232,198	22	17.4
Unit Costs	$470.08	$1.59	$70,279	$727,173	$281.23	$4.38	$360,356	$144,071
Change in Annual Cost	$0.00 M	$0.79 M	$1.83 M	$0.00 M	$10.35 M	$5.40 M	$7.93 M	$2.51 M
Total Change in Annual Cost	$2.62 M				$26.18 M			
Net Annual Cost	$28.80 M							

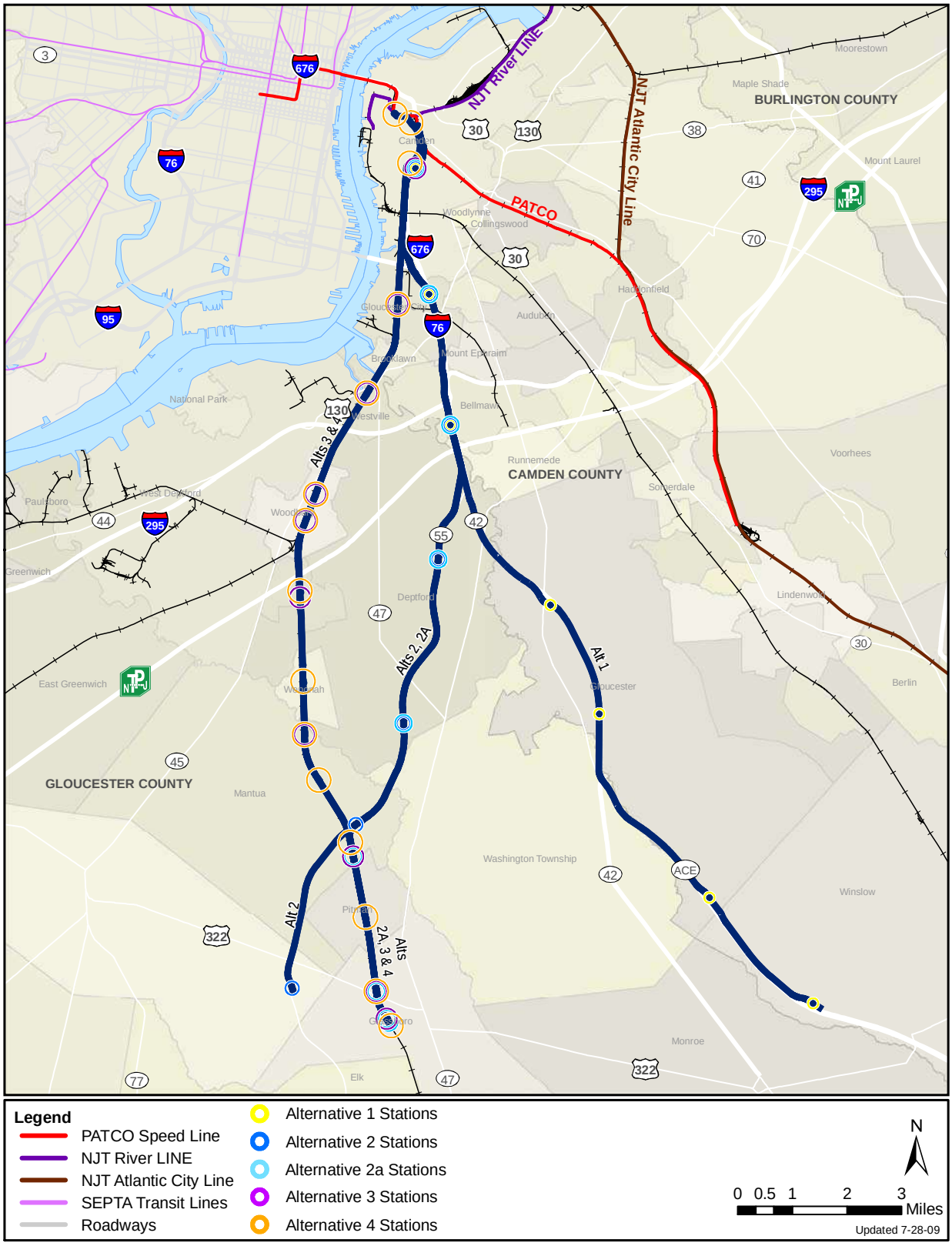
5.2.6 Summary of the Alternatives

Table 5-11 provides a summary of the key characteristics defining each alternative. In the next chapter, the alternatives are analyzed and evaluated in light of these system structure, cost, and ridership characteristics. Figure 5-6 shows the relative locations of all five alternatives.

Table 5-11 - Summary of the Alternatives

Alternative	Alt 1	Alt 2	Alt 2A	Alt 3	Alt 4
Mode	PATCO	PATCO	PATCO	PATCO	Diesel LRT
From-To	Philadelphia-Williamstown	Philadelphia-Glassboro	Philadelphia-Glassboro	Philadelphia-Glassboro	Camden-Glassboro
Via	NJ42 & ACE	NJ42 & NJ55	NJ55 & Conrail	Conrail	Conrail
Project Route Length					
New	18.7 mi	17.0 mi	17.3 mi	17.1 mi	17.4 mi
Total	22.5 mi	20.8 mi	21.0 mi	20.8 mi	17.4 mi
Project Stations					
Existing NJ	2	2	2	2	1
Existing PA	4	4	4	4	0
New	7	7	8	10	14
Total	13	13	14	16	15
2030 Daily Ridership	**23,800**	**23,000**	**22,700**	**23,700**	**18,600**
New Transit Trips	7,000	8,100	7,700	10,200	10,900
From PATCO	9,900	6,900	6,900	4,700	700
From NJT BUs	6,900	8,000	8,100	8,800	7,000
Capital Cost Estimate					
Present Value	$2.4 B	$2.1 B	$2.5 B	$3.0 B	$1.3 B
Year of Expenditure	$3.0 B	$22.6 B	$3.1 B	$3.8 B	$1.6 B
Operating Cost Estimate					
Incremental Annual O&M	$39 M	$36 M	$37 M	$38 M	$29 M
Total Run Time	29 min	27 min	29 min	30 min	37 min
To Walter Rand TC from	*Williamstown*	*Glassboro*	*Glassboro*	*Glassboro*	*Glassboro*

Figure 5-6 – Transit Alternatives



6 EVALUATION OF THE ALTERNATIVES

This chapter documents the analysis and evaluation of the five transit alternatives based on 18 criteria that relate to transportation, economics, planning or environmental considerations. Results of this evaluation provide a basis for ranking the alternatives as to their performance with respect to these criteria, and to the degree to which they satisfy the study area transportation needs and associated goals and objectives.

6.1 Identification and Definition of Evaluation Criteria

Daily Ridership – This estimate of daily passengers for each alternative in 2030 is derived from the travel demand model and consists of the number of current transit riders who would use the new service and new transit riders who would divert from auto trips to the new service. This measure indicates the overall attractiveness of the alternative both in choices offered and quality of service.

New Transit Trips – This measure, the number of trips by new transit riders on a daily basis, is a function of the attractiveness of the new transit service. It is derived from the travel demand model and indicates the number of travelers diverting from auto trips and potentially reducing congestion on study area roadways.

Potential for Intra-New Jersey Trips – This criterion represents the ability of the new service to generate trips between communities within the New Jersey portion of the study area. It is derived from the number of existing and new stations that would exist on the respective transit lines, the location of these stations in highly developed communities containing residential use and major employment centers, and frequency of operation in peak and non-peak periods. These factors indicate the degree to which the proposed service encourages links between persons and activity centers within Southern New Jersey and the study area.

Change in Daily Auto Vehicle Miles Traveled – This measure represents the decrease in total vehicle miles traveled on a daily basis after the introduction of new transit service. The travel demand model estimates this change based on the diversion of motorists from auto to transit, the length of the trips that these motorists had been taking by auto, and the length of the trip (if such a trip is still needed) that these motorists would be taking after project implementation to reach the new transit stations. This measure is an indicator of the potential congestion reductions due to new transit service and the related reductions in emissions and environmental impacts.

Change in Daily Transit Passenger Miles – This measure, also derived from the travel demand model, represents the increase in the amount of transit usage per day in the study area after the introduction of new service. This measure is a function of the number of new passengers attracted to transit options and the length of these new trips, as well as changing travel patterns for existing transit riders that shift to the new service. This measure is an indicator of the improvement in productivity of transit in the study area.

Capital Cost - This criterion consists of the cost to implement the project, expressed in current dollars and for the expected year of expenditure. It includes "hard" costs—such as structures, track work, facilities, vehicles, and right-of-way—and "soft" costs—such as environmental mitigation, project engineering, construction management, insurance and contingency funds.

Operations and Maintenance Cost - This measure includes the annual net cost over the No Build of operating the new service on a daily basis and maintaining the system in a state of good repair. O&M costs include labor, fuel or electricity, vehicle maintenance, non-vehicle maintenance, fare collection, insurance and administrative costs.

Capital Cost per New Rider - This measure, the ratio of capital costs to new transit riders in the study area, indicates the ability of the project to attract new riders for an estimated cost of implementation.

Capital Cost per Route Mile – This measure, the ratio of capital costs to the length of the new service, indicates the relative complexity of the project for its length.

Population within ¼ and ½ Mile of Proposed Stations – This criterion represents the total population and its demographic breakdown living near the proposed stations. These persons residing near the new transit lines will have access by walking or bicycling or by a short auto trip (parking or kiss-ride scenarios). These measures can include total population, low-income and minority population, and zero-car households. This criterion reflects potential increased accessibility, including for those particular population groups that may not have use of an auto and are dependent on transit.

Employment within ¼ and ½ Mile of Proposed Stations - This criterion represents the total number of job opportunities near the proposed stations. These workers will have access to their place of employment via the new transit services. This measure reflects the potential increase in job accessibility and mobility for those living in the region.

Physical Scale Consistent with Surroundings – This criterion considers the scale (height and mass) and complexity of the project and its components (stations; structures; vehicles) compared to the scale of the communities that the project traverses. It is an indicator of the land use and community impacts of the proposed new service.

Extent of Proposed Project within Existing Rights-of-way – This criterion is a function of the scale and complexity of the project, i.e., a measure of the extent to which new tracks, structures, stations and other facilities can be installed within the boundaries of existing rail rights-of-way or highways, and either requiring or not requiring property acquisition. It is an indicator of the potential land use impacts of the proposed new service.

Impacts to Natural Resources – The project is evaluated with regard to its proposed direct or indirect impact on existing natural features within or near the project corridor. These features can include: air quality; terrestrial or aquatic resources, including wetlands; and contaminated materials sites. It is an indicator of the potential overall environmental impacts of the proposed new service.

Impacts to Social Resources – The project is evaluated with regard to its proposed direct or indirect impact on existing features within or near the project corridor. These features can include: noise/vibration receptors; parklands or open space; utilities; archaeological resources; and historic resources. It is an indicator of the potential overall environmental impacts of the proposed new service.

Consistency with State and Local Planned Growth Initiatives – Regional, state and local planning agencies have developed plans that generally promote development in established communities to preserve open space and encourage "smart growth". DVRPC, in its 2035 long-range plan, calls for development of in-fill areas and redevelopment of existing in existing areas to limit sprawl and encourage concentrated development. The NJ Office of Smart Growth has encouraged development plans that work to conserve the state's natural resources and open spaces. The degree to which project alternatives support these strategies is another evaluation criterion.

Extent of Public and Agency Support – Public outreach has been a major component of the AA Study. At public meetings and open houses, and through written and electronic correspondence, public opinions for or against the project have been expressed, and positions of jurisdictional agencies have been presented. This criterion reflects the extent and nature of this input.

Economic Development and Livability - Any introduction of new transit service would trigger some level of development around the new stations; however, the location of the stations and the alignment dictates the level of density, the need for new supporting infrastructure, and the level to which the existing community and new developments connect and interact with the transit service. State and regional plans call for "transit-oriented development" that focuses dense growth and redevelopment around new transit services. Livability is a defining feature of these revitalized communities, and this type of growth is well-suited to established municipalities (such as Gloucester City, Woodbury, Pitman, and Glassboro).

The following chart, Table 6-1, summarizes the relationships between the evaluative criteria described above and the stated goals of the project. Additionally, the evaluative criteria related to cost are considered together; these criteria ensure that the project can be implemented and is operationally sustainable.

Table 6-1 - Evaluation Criteria Grouped by Goal Area

Goal	Evaluation Criteria
More Transit Choices and Improved Quality of Service	• Total Daily Ridership • New Transit Trips • Change in Daily Transit Passenger Miles
Transit Network that Links Persons and Activity Centers	• Potential for Intra-New Jersey Trips • Population within ½ and ¼ mile of Proposed Stations • Employment Centers within ½ and ¼ mile of Proposed Stations
Reduce Highway Congestion	• Change in Daily Auto Vehicle Miles Traveled • New Transit Trips

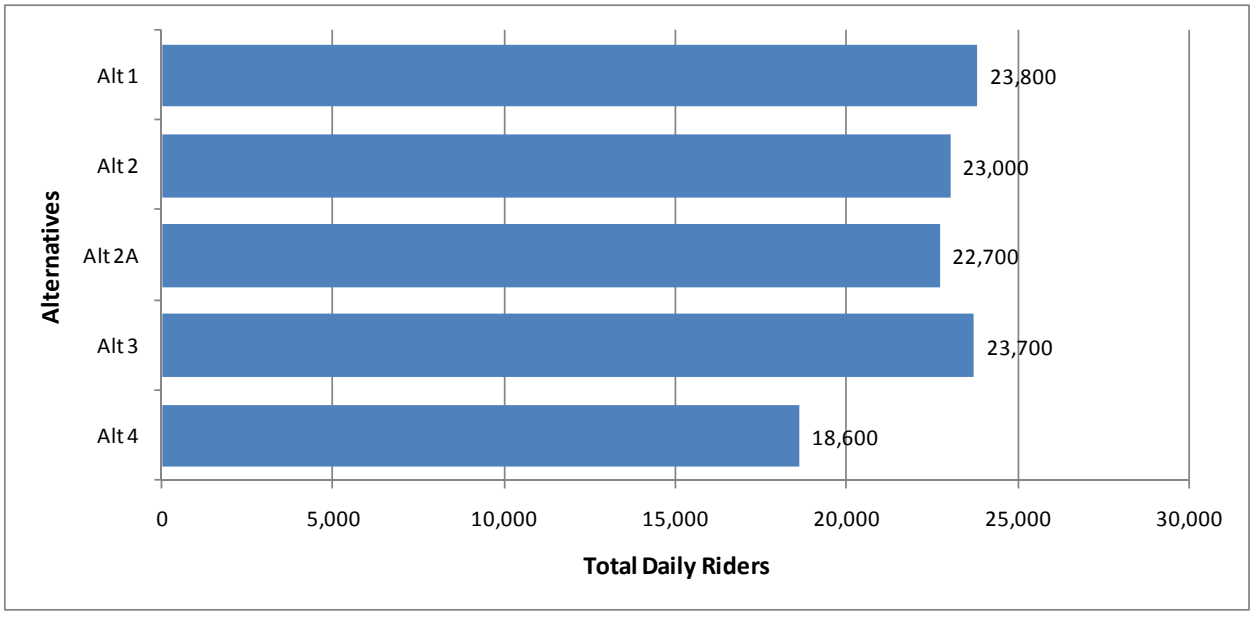
Goal	Evaluation Criteria
Minimize Environmental and Land Use Impacts	• Physical Scale Consistent with Surroundings • Extent of Proposed Project within Existing Rights-of-way • Impacts to Natural Resources • Impacts to Social Resources
Support State and Local Smart Growth Initiatives	• Consistency with State and Local Planned Growth Initiatives • Extent of Public and Agency Support
Promote Economic Development and Quality of Life	• Economic Development and Livability
Cost Characteristics	• Total Capital Cost • Annual Operating and Maintenance Cost • Capital Cost per New Rider • Capital Cost per Route-mile

6.2 Comparison of the Alternatives Relative to the Evaluation Criteria

Results of the evaluation of the five alternatives with respect to the 18 evaluation criteria are presented below.

Daily Ridership – As shown in Figure 6-1, the four PATCO alternatives are predicted to generate the greatest daily ridership (between 22,700 and 23,800), as they serve Philadelphia with a one-seat ride. Alternative 4, the diesel LRT option, is predicted to have lower ridership than the other alternatives, in part because a transfer to PATCO will be necessary in Camden to reach Center City Philadelphia.

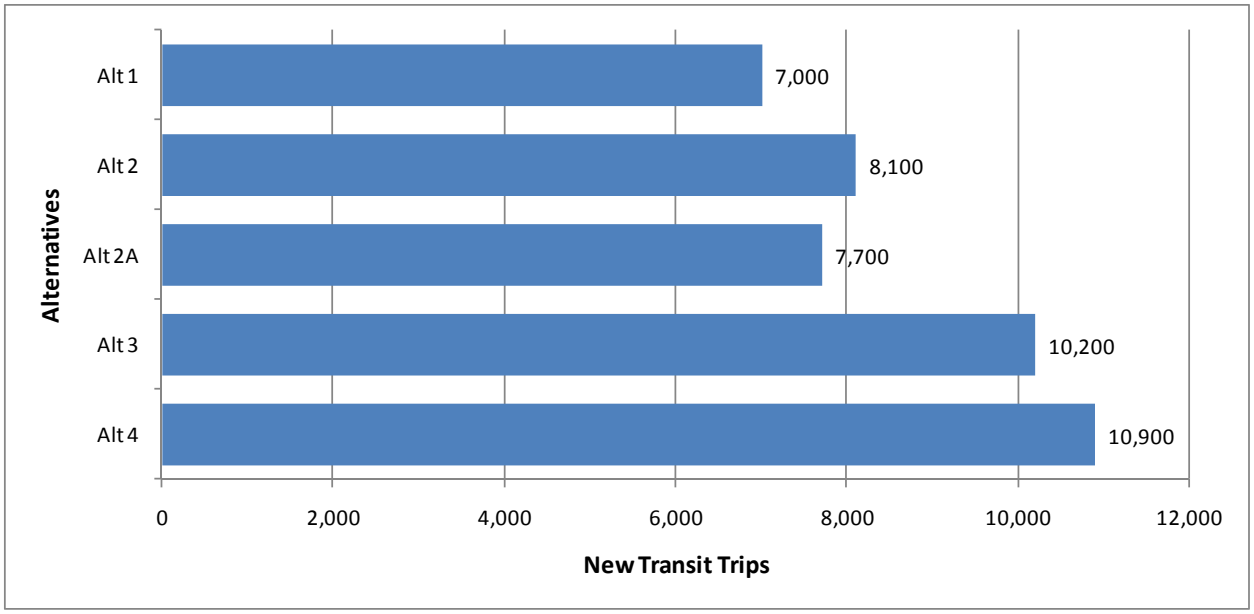
Figure 6-1 – Estimated Daily Ridership by Alternative



New Transit Trips - Each of the five alternatives would provide an attractive option to auto usage, especially with average travel speeds of the transit vehicles comparable to roadway

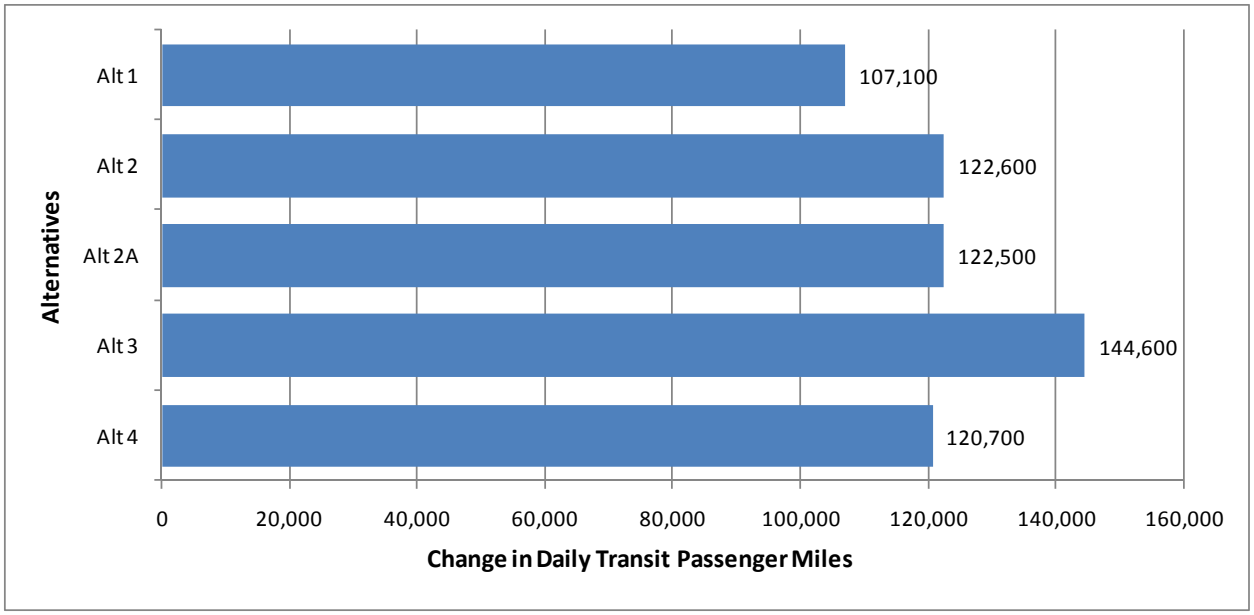
vehicle speeds in congested conditions. The primary reason that Alternatives 1, 2, and 2A are predicted to have fewer new transit trips is their relative proximity to existing PATCO service. Additionally, their stations would be located in less dense areas where it is more difficult to access the service from residences and places of employment. Alternatives 3 and 4, located within the Conrail right-of-way amid developed communities, would be more attractive for non-motorized access to stations and for short-length kiss-ride drop-offs, and would encourage the highest diversion from auto to transit. The difference in new riders between Alternatives 3 and 4 is a product of the greater number of stations for Alternative 4, providing easier access to the service and a greater number of potential destinations. (See Figure 6-2)

Figure 6-2 – Daily New Transit Trips by Alternative



Change in Daily Transit Passenger Miles – As shown in Figure 6-3, Alternative 3 is estimated to generate the greatest increase in the amount of travel using transit in the study area, while Alternatives 2, 2A, and 4 show somewhat smaller increases. Alternatives 1 is expected to generate the smallest increase in transit usage on a mileage basis; this is a factor of the low number of new transit riders using Alternative 1.

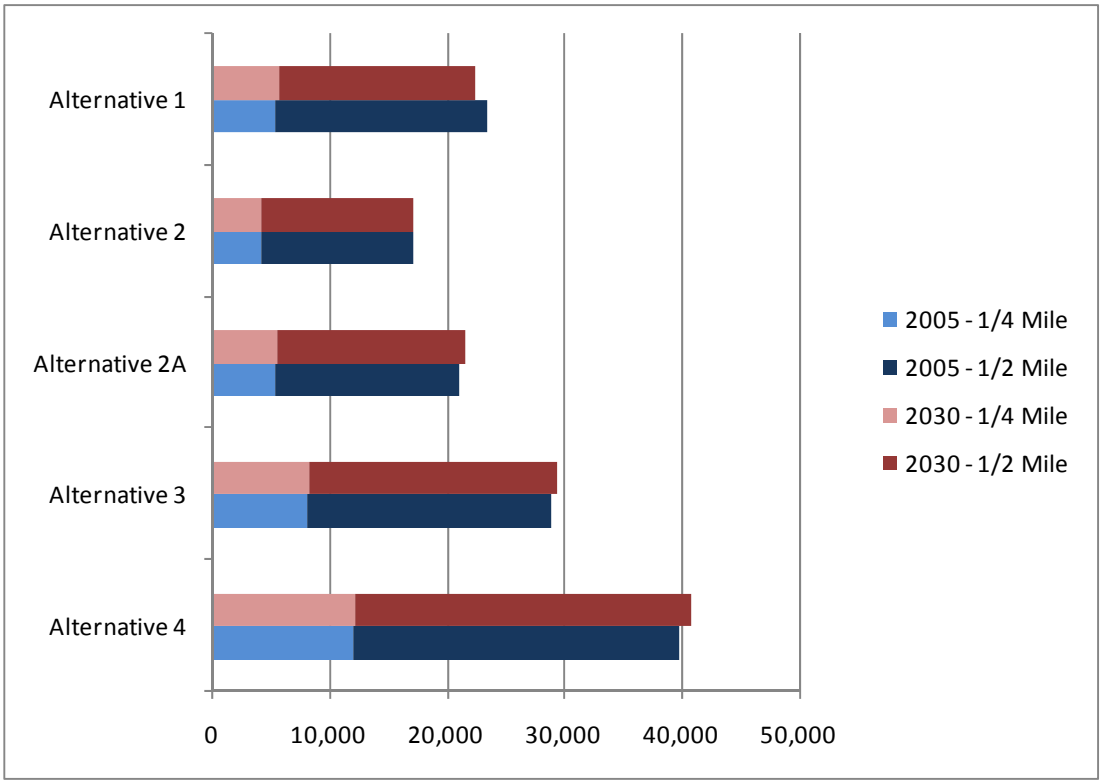
Figure 6-3 – Change in Daily Transit Passenger Miles by Alternative



Potential for Intra-New Jersey Trips – Alternative 4 is proposed to have the greatest number of new stations (14) in New Jersey, with their proposed locations mainly in developed communities where residential and non-residential development is located near these stations. Recalling the previous criteria, Alternative 4 would carry the smallest daily ridership because of the transfer required for trips to Philadelphia, but still produces the greatest number of new transit trips. This implies that Alternative 4 has a very high potential for trips between communities within New Jersey. The PATCO alternatives, with fewer stations proposed in New Jersey and a one-seat ride available to Philadelphia, would be more oriented to longer interstate trips

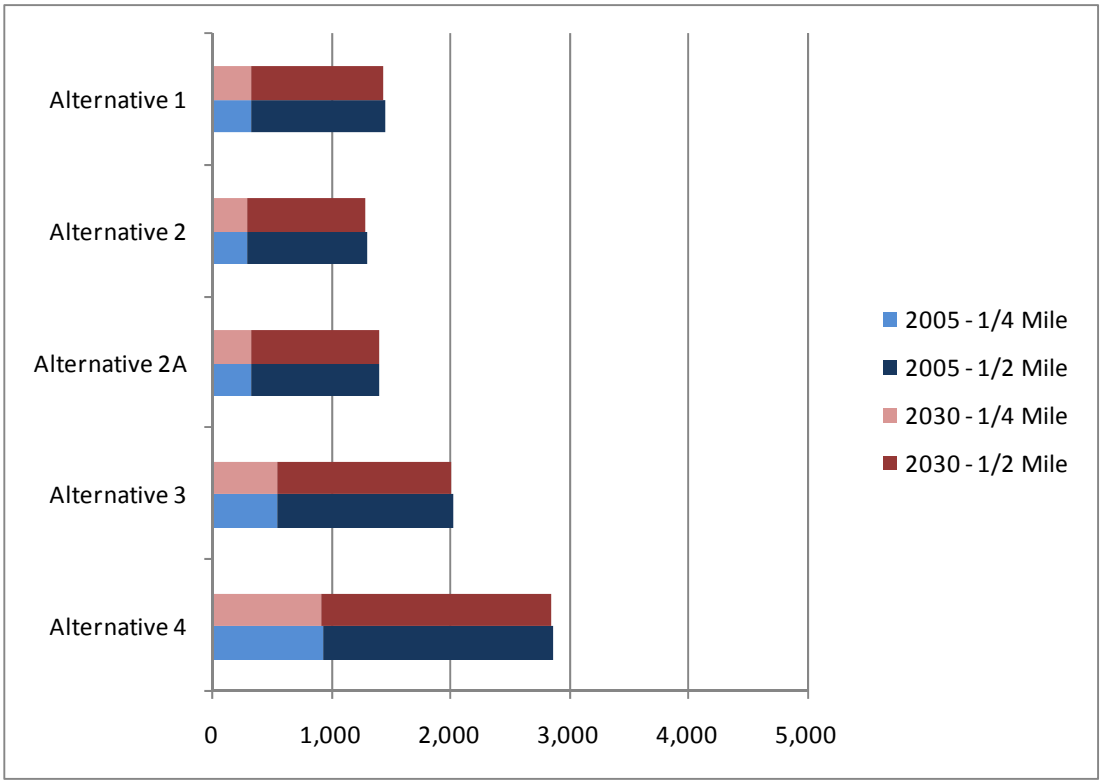
Population within ¼ and ½ Mile of Proposed Stations – As shown in Figure 6-4, the total population near proposed stations is greatest for Alternative 4, while Alternative 3 exhibits the highest population among the PATCO alternatives. This relationship reflects development patterns along the Conrail right-of-way with the proposed stations located amid the area's established communities.

Figure 6-4 – Total Population within 1/4 and 1/2 Mile of Proposed Stations



Similarly, the proposed stations of Alternatives 3 and 4 would be located near a greater number of zero-car households than the other alternatives, as shown in Figure 6-5. This relationship indicates that the Conrail right-of-way Alternatives (3 and 4) would potentially serve a greater number of transit-dependent users.

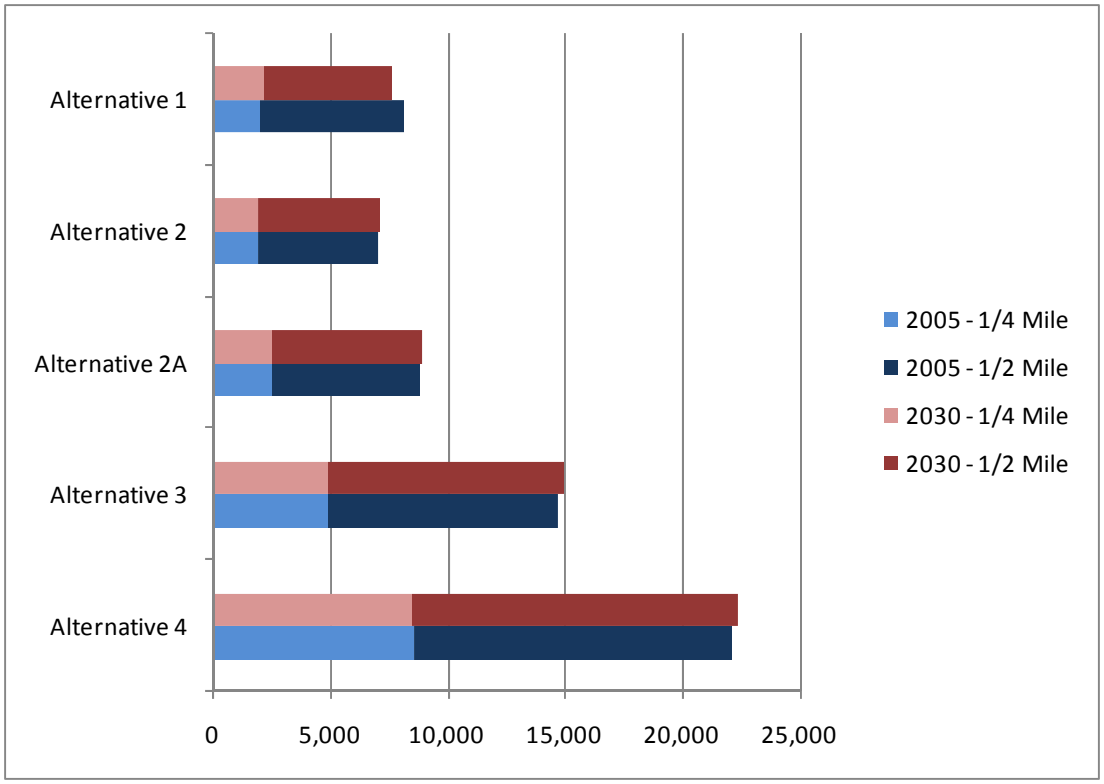
Figure 6-5 – Total Number of Zero-Car Households within 1/2 and 1/4 Mile of Proposed Stations



As depicted in the Appendix and described in Chapter 2, each of the five alternatives would traverse areas containing sectors that exhibit income characteristics below county averages or minority characteristics above county averages. These sectors would be of particular note relative to the benefits associated with increased transit choices and accessibility other than by automobile. Alternatives 3 and 4 would traverse the greatest number of these sectors, and would, therefore, be most desirable relative to providing increased access to these population groups.

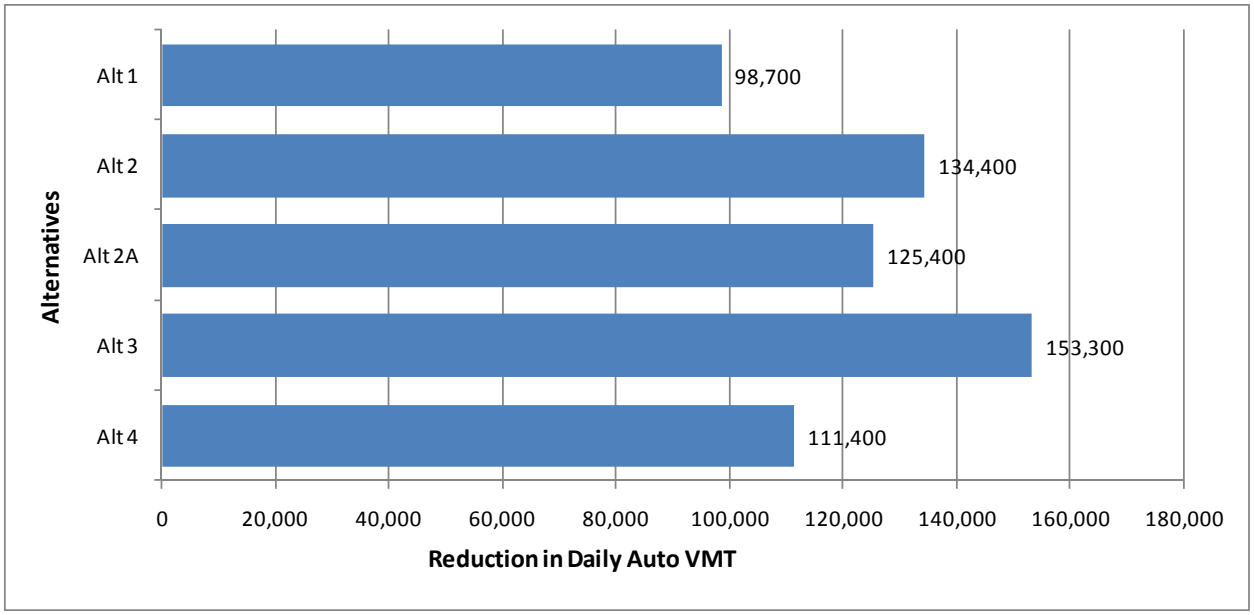
Employment within ¼ and ½ Miles of Proposed Stations – Figure 6-6 shows the number of job opportunities located near the proposed stations of each alternative. Given its station locations in developed communities along the Conrail right-of-way, Alternative 4 exhibits the highest number of potential jobs near its stations. Alternative 3 exhibits the second highest total, with the other alternatives showing fewer jobs.

Figure 6-6 – Total Number of Job Opportunities within 1/4 and 1/2 Mile of Proposed Stations



Change in Daily Auto Vehicle Miles Traveled – Figure 6-7 shows that Alternative 3 is estimated to experience the greatest reductions in daily auto vehicle miles traveled (VMT), and therefore, is predicted to have the greatest reductions in emissions. Alternatives 2, 2A, and 4 fall in the middle of the predicted VMT reductions, with Alternative 1 expected to experience the smallest reductions. This is a factor of the low number of new transit riders using Alternative 1

Figure 6-7 – Change in Daily Auto VMT



Physical Scale Consistent with Surroundings – PATCO Alternatives 1, 2, and 2A, although featuring a grade-separated alignment and elevated stations, would be located in highway corridors with low-density development removed from the highway rights-of-way. As such, their physical presence could be absorbed by the openness of their immediate surroundings. PATCO Alternative 3 would also consist a of grade-separated alignment and components, but would traverse the densely developed corridor of the Conrail right-of-way, and would be inconsistent with the scale of these mature communities that have developed immediately adjacent to the right-of-way. Located in that same developed corridor, the at-grade Alternative 4 would be consistent with and complement the land use that abuts or is located near the Conrail right-of-way.

Extent of Proposed Project within Existing Rights-of-way - Because of the at-grade alignment, modest station design, and adjacent area configuration of Alternative 4, this alternative would be contained predominantly within the existing right-of-way. Therefore, property acquisition would be minimized. PATCO Alternative 3, located within the same corridor, would require much greater property acquisition than Alternative 4 because of the required grade-separated alignment and elevated stations associated with PATCO-type operation. PATCO Alternatives 1, 2, and 2A would be located within the existing medians and shoulders of highway rights-of-way, requiring less private property acquisition than Alternative 3.

Impacts to Natural Resources – Each of the five alternatives would have the potential to impact existing environmental resources within or near the respective project corridors. These identified "sensitivities" by corridor include:

- air quality
- terrestrial or aquatic resources, including wetlands
- contaminated materials sites

A basic analysis and screening was conducted considering these factors, and it was determined that each alternative would have some level of impact in these areas. A more thorough analysis will be conducted during the EIS phase of the project.

Impacts to Social Resources – Each of the five alternatives would have the potential to impact existing environmental resources within or near the respective project corridors. These identified "sensitivities" by corridor include:

- noise/vibration receptors
- parklands or open space
- utilities
- archaeological resources
- historic resources

A basic analysis and screening was conducted based on these factors, and it was determined that each alternative would have some level of impact in these areas. Alternatives 3 and 4 would be expected to experience the greatest noise impacts, with residences and businesses located close to the Conrail right-of-way. Alternative 2A would cause some of these impacts near its Glassboro terminus, while Alternatives 1 and 2 would cause less impacts given their use of highway right-of-ways. A more thorough analysis of potential impacts to social resources will be conducted during the EIS phase of the project.

Consistency with State and Local Planned Growth Initiatives - Alternatives 1, 2, and 2A would be built in highway corridors far from established communities; these options would encourage more growth in undeveloped areas and would require more open land to be developed. This pattern is contrary to the "smart growth" plans of DVRPC and the NJ Office of Smart Growth. PATCO Alternative 3 and LRT Alternative 4 would be located amid developed communities along the Conrail right-of-way, would encourage development and redevelopment in established areas and, therefore, would be most consistent with these planning initiatives. The NJ Office of Smart Growth has endorsed Alternatives 3 and 4 because of their location in the rail right-of-way and their potential to encourage controlled growth within ¼ mile (walking or biking distance) to ½ mile (short auto trips for kiss-ride drop-offs) of the proposed stations.

Extent of Public and Agency Support – As mentioned previously, the NJ State Office of Smart Growth has endorsed the Conrail corridor for transit expansion in Southern New Jersey. This clear indicator of agency support demonstrates the favorability of Alternatives 3 and 4.

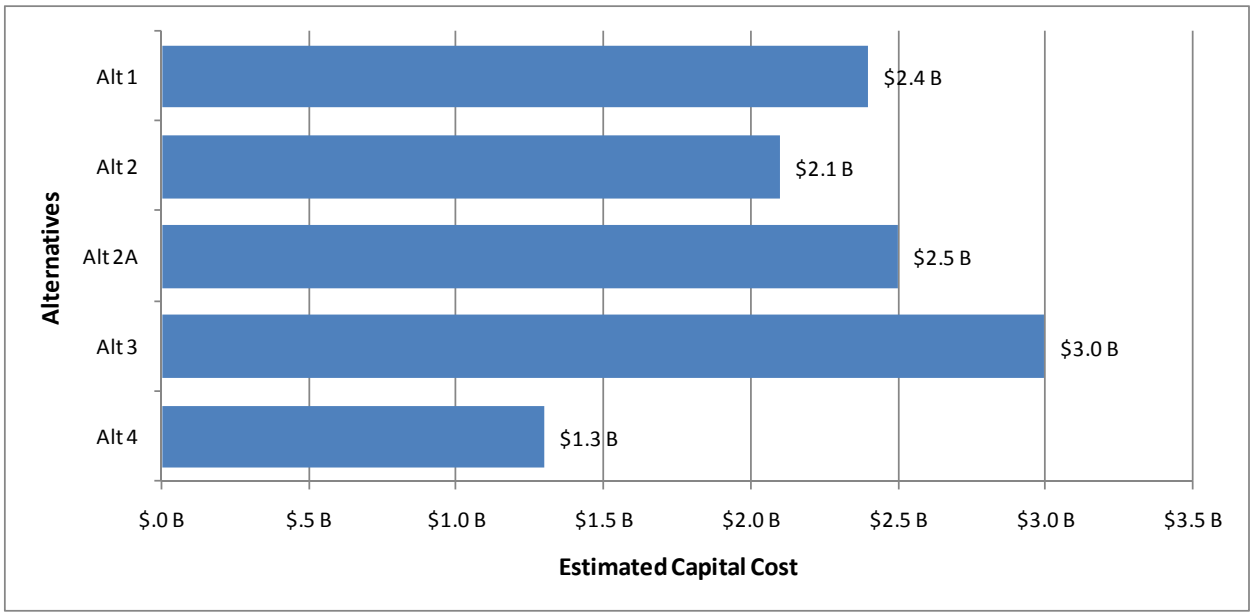
At public meetings and open houses, and through written and electronic correspondence, opinions for or against the project were expressed by the public. The results of public commenting at the Round 1 Open House show that nearly 60% of participants preferred the Conrail alignment (then referred to as NJ-3). Comments received in favor of Alternatives 3 and 4 within the Conrail right-of-way identify the number of persons in those developed communities who would benefit from this new transit service.

Economic Development Potential - Considering their location along the denser Conrail corridor through existing developed communities, PATCO Alternative 3 and LRT Alternative 4 would exhibit the greatest potential to encourage dense, mixed-use, transit-oriented economic

development. Such development in these mature communities would be controlled by zoning as to location and intensity. Growth within the less dense corridors of PATCO Alternatives 1, 2, and 2A would be controlled by larger-lot zoning and would require new infrastructure. This type of development, while generating some economic development, would encourage more auto travel and more growth in sprawl patterns.

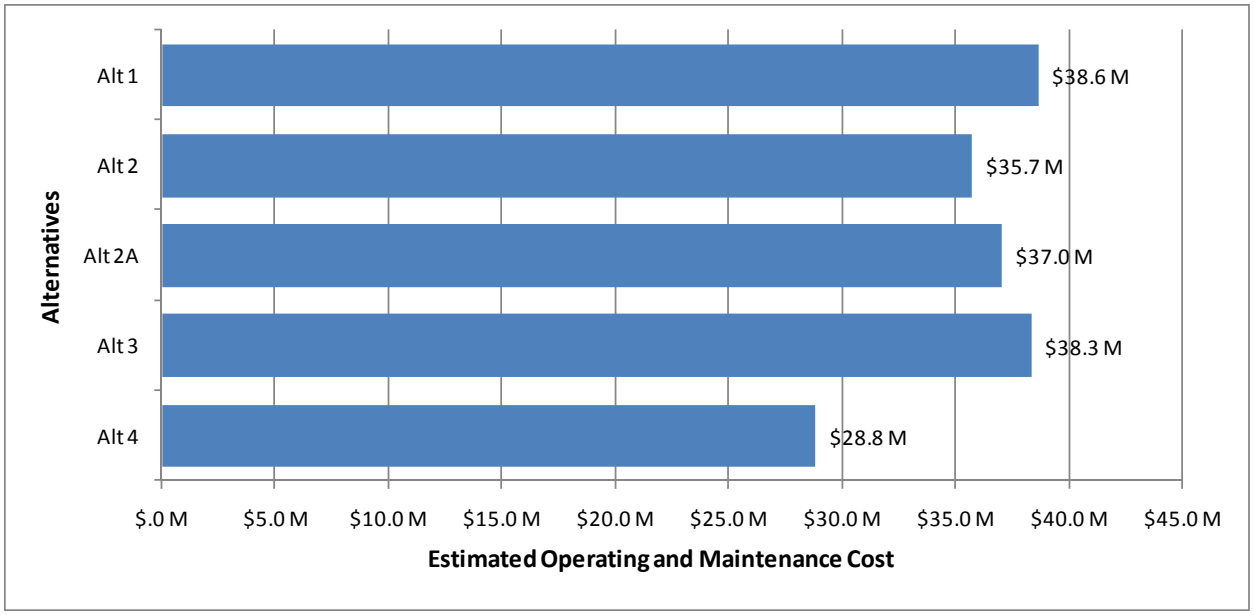
Capital Cost – Capital costs of Alternatives 1, 2, 2A and 3 are estimated in excess of $2 billion; this level is a product of the grade-separation, complex stations, and supporting infrastructure required for the PATCO alternatives. Capital costs for Alternative 4 are estimated at $1.3 billion, lower than the PATCO alternatives because of the at-grade configuration and simpler stations needed for light rail service. (see Figure 6-8)

Figure 6-8 – Estimated Capital Cost by Alternative



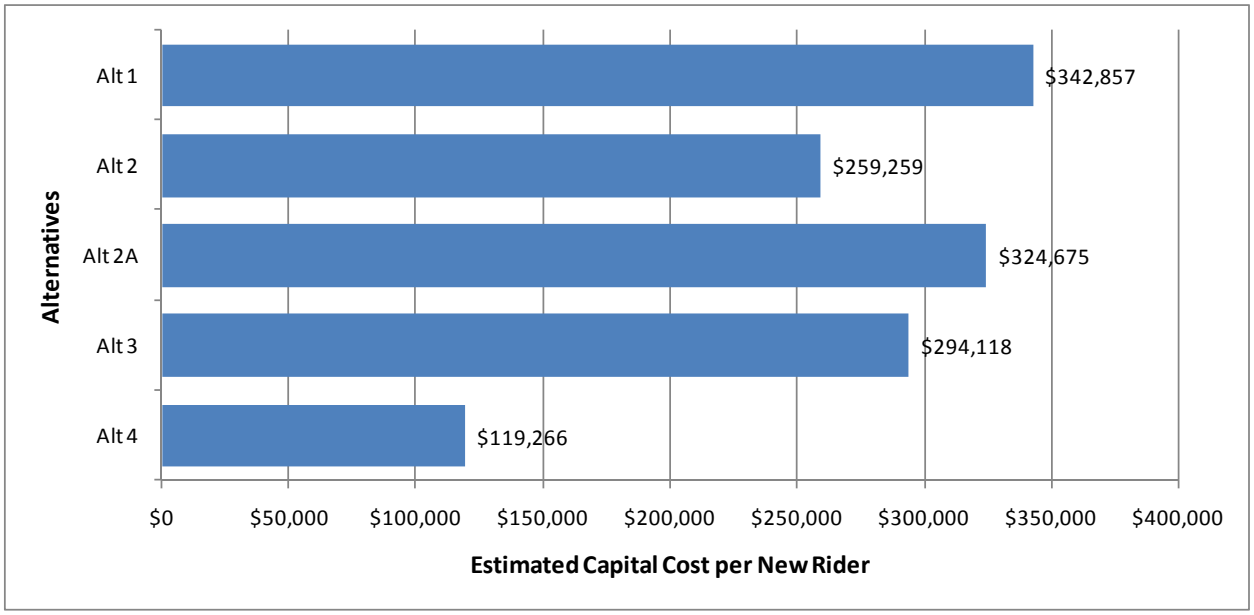
Operations and Maintenance Costs – Annual net operating costs over the No Build for the PATCO alternatives are estimated at over $35 million, while costs for Alternative 4 are estimated at $28.8 million. The higher operating costs for the PATCO alternatives are due to their greater line length and higher ridership, with trips to Philadelphia. (see Figure 6-9)

Figure 6-9 – Estimated Net Operating and Maintenance Cost by Alternative



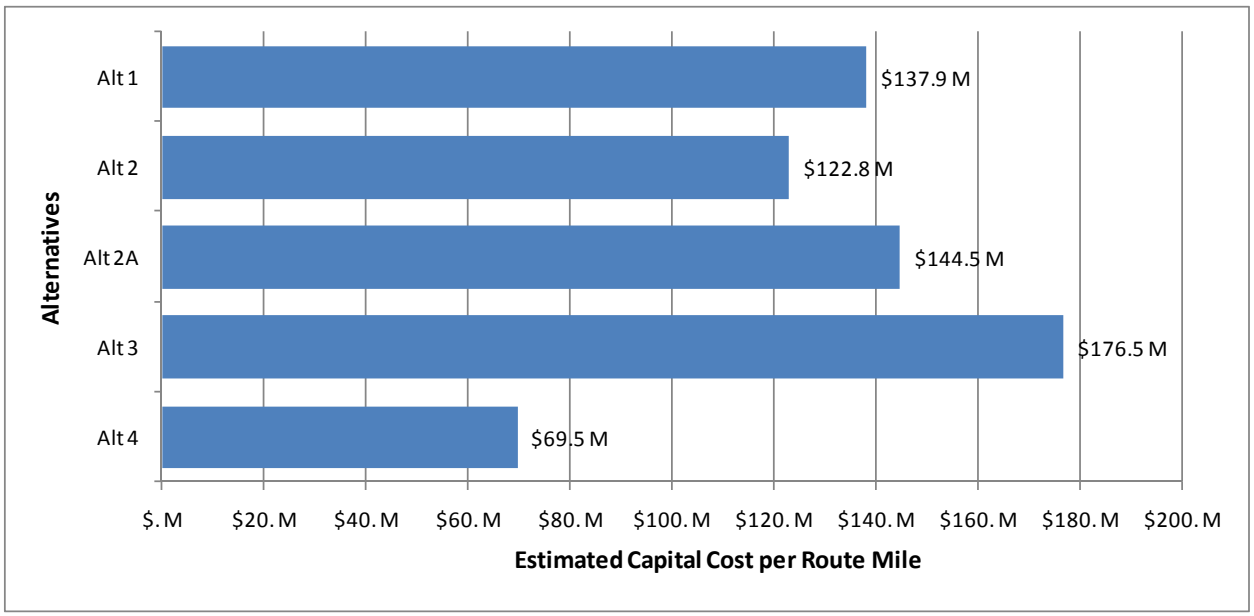
Capital Cost per New Rider – With the greatest predicted number of new riders (10,900) and the least capital cost ($1.3 billion), Alternative 4 exhibits the lowest ratio among the five alternatives. (see Figure 6-10)

Figure 6-10 – Estimated Capital Cost per New Rider



Capital Cost per Route Mile – Although the shortest of the five alternatives (17.4 miles), the low capital cost of Alternative 4 creates the lowest ratio among the five alternatives. (see Figure 6-11)

Figure 6-11 – Estimated Capital Cost per Route Mile



6.3 Selection of a Recommended Alternative

Upon completion of the comprehensive alternatives identification, analysis and evaluation process (AA) described in earlier chapters of this report, Alternative 4, the light rail transit system (LRT) located mainly within the Conrail freight rail right-of-way from Camden to Glassboro, was selected as the Recommended Alternative. It is recommended that this alternative be advanced to the Draft Environmental Impact Statement phase of the project, to be assessed along with the No-Action Alternative and a Transportation System Management Alternative.

Selection of the LRT as the Recommended Alternative was based on the comparative evaluation of five transit alternatives with respect to a myriad of physical, social, economic and environmental criteria. Those favorable qualities of the LRT, which enabled it to be selected for further environmental assessment and associated conceptual engineering, included:

- Total capital costs of the LRT are the least, between 43% and 62% of the other four alternatives.
- Annual operating costs of the LRT are also the least, between 75% and 80% of the other four alternatives.
- New transit riders on the LRT exceed levels predicted for the other four alternatives by between 7% and 56%.
- The LRT has received the greatest support among the studied alternatives from the public, transportation and planning agencies, the communities and counties traversed, and elected officials, as particularly expressed during the AA public outreach program.

- The LRT is most consistent with statewide “Smart Growth” policies and programs, which advocate planned growth in established communities, rather than invasive “sprawl” in open space and farmland, where new supporting infrastructure would need to be provided, and dependency on the auto would be maintained.

- The LRT has the greatest potential to generate economic development within the established communities through which the rail line will traverse.

- The LRT has the greatest potential to link established residential communities (containing low-income and minority sectors of population) and employment centers in the study area, with strategically located stations (within short pedestrian or bicycle trips) serving as centers of community activity.

- Location of the LRT within an underutilized existing transportation right-of-way minimizes the need for additional property acquisition, displacements, loss of tax ratables and loss of jobs.

- The at-grade LRT configuration and its simply designed stations and appurtenances blend best with the aesthetics and physical scale of its immediate surroundings.

A summary of the evaluations of each alternative according to the list of criteria is given in Table 6-2 below.

Table 6-2 – Summary and Evaluation of Alternatives by Evaluation Criteria

Alternative	Daily Ridership	New Transit Trips	Change in Daily Transit Passenger Miles	Potential for Intra-New Jersey Trips	Population within 1/2 and 1/4 mile of Proposed Stations	Employment Centers within 1/2 and 1/4 miles of Proposed Stations	Change in Daily Auto VMT	Physical Scale Consistent with Surroundings	Extent of Proposed Project within Existing Rights-of-way	Impacts to Natural Resources	Impacts to Social Resources	Consistency with State and Local Planned Growth Iniatives	Extent of Public and Agency Support	Economic Development Potential	Capital Cost	Operations and Maintenance Costs	Capital Cost per New Rider	Capital Cost per Route Mile
Alt 1	23,800	7,000	107,100	one-seat ride to Philadelphia, oriented towards longer trips	less population and zero-car households near stations	low number of job opportunities near stations	-98,700	Large-scale, within highway medians and other road rights-of-way	Moderate property impacts to road right-of-way	Some environ-mental impacts	Some environ-mental impacts	Located in less developed highway areas	Some public support	Would require new community infrastructure to spur growth in less developed areas	$2.4 B	$38.6 M	$342,857	$ 128.3 M
Rating	●	○	○	○	○	○	○	◒	◒	◒	◒	○	○	○	○	○	○	◒
Alt 2	23,000	8,100	122,600	one-seat ride to Philadelphia, oriented towards longer trips	less population and zero-car households near stations	low number of job opportunities near stations	-134,400	Large-scale, within highway medians and other road rights-of-way	Moderate property impacts to road right-of-way	Some environ-mental impacts	Some environ-mental impacts	Located in less developed highway areas	Some public support	Would require new community infrastructure to spur growth in less developed areas	$2.1 B	$35.7 M	$259,259	$ 123.5 M
Rating	◒	○	◒	○	○	○	◒	◒	◒	◒	◒	○	○	○	○	○	○	◒
Alt 2A	22,700	7,700	128,900	one-seat ride to Philadelphia, oriented towards longer trips	less population and zero-car households near stations	low number of job opportunities near stations	-125,400	Large-scale, within highway medians and other road rights-of-way	Moderate property impacts to road right-of-way	Some environ-mental impacts	Some environ-mental impacts	Located in less developed highway areas	Some public support	Would require new community infrastructure to spur growth in less developed areas	$2.5 B	$37.0M	$324,675	$ 144.5 M
Rating	◒	○	◒	○	○	○	◒	◒	◒	◒	◒	○	○	○	○	○	○	○
Alt 3	23,700	10,200	144,600	one-seat ride to Philadelphia, oriented towards longer trips	moderate population and zero-car households near stations	moderate number of job opportunities near stations	-153,300	Large-scale, within rail right-of-way in developed communities	Major property impacts to rail right-of-way due to large scale of alignment and stations	Some environ-mental impacts	Some impacts, especially noise	Located in dense, developed communities; endorsed by NJ Dept of Smart Growth	High level of public support; endorsed by state agencies	Generate economic growth in developed communities	$3.0 B	$38.3 M	$294,118	$ 175.4 M
Rating	●	●	●	◒	◒	◒	●	○	○	◒	○	●	●	●	○	○	○	○
Alt 4	18,600	10,900	109,700	greatest number of new stations, oriented towards trips within NJ	more population and zero-car households near stations	high number of job opportunities near stations	-111,400	Small-scale within rail right-of-way in developed communities	Minimal property impacts to rail right-of-way due to small scale of alignment and stations	Some environ-mental impacts	Some impacts, especially noise	Located in dense, developed communities; endorsed by NJ Dept of Smart Growth	High level of public support; endorsed by state agencies	Generate economic growth in developed communities	$1.3 B	$28.8 M	$119,266	$ 74.7 M
Rating	○	●	○	●	●	●	◒	●	●	◒	○	●	●	●	●	●	●	●

Legend	High ●	Medium ◒	Low ○

7 NEXT PROJECT DEVELOPMENT PHASES

The Southern New Jersey Transit Expansion Alternatives Analysis has inventoried and interpreted existing and future conditions, identified study area transportation needs, and developed and evaluated alternatives to address those needs, leading to selection of Alternative 4, Diesel Light Rail Transit from Camden to Glassboro, as the Recommended Alternative.

7.1 Immediate Next Steps

The following next steps would need to be undertaken to advance this alternative through the overall project development and approval/implementation process.

7.1.1 Draft Environmental Impact Statement

This inventory, assessment and documentation phase would address the Recommended Alternative, the No Build Alternative, and possibly a Transportation System Management Alternative (other lower-cost transportation improvements that can be implemented in a relatively short timeframe) if that alternative would likely respond to and remedy some of the study area needs. The Draft EIS would be prepared in accordance with National Environmental Policy Act (NEPA) guidelines, as adapted by the Federal Transit Administration, in order to potentially pursue federal funding. Environmental resource areas to be addressed in the Draft EIS on a construction and long-term basis and considering mitigation, as needed, would include: land use; socioeconomics; environmental justice; visual and aesthetic conditions; air quality; noise and vibration; ecology; water resources; parklands and open space; soils and geology; contaminated materials; safety and security; energy; utilities; archaeological resources; and historic resources. Any indirect project effects and cumulative effects of the project and any other on-going or proposed transportation projects in the study area to the above resource areas would also be documented. The document would be prepared in an open environment of public outreach and agency coordination, with its contents presented at one or more Public Hearings.

7.1.2 Final Environmental Impact Statement

This document would respond to any comments on the Draft EIS or any minor changes to the Recommended Alternative that would have taken place after the Draft EIS was issued. Refinement of the Recommended Alternative and any additional analyses related to that refinement would be included in the Final EIS. The goal of the Final EIS is to provide sufficient support to obtain jurisdictional agencies' approval to enable preliminary and final engineering design to take place.

7.1.3 Preliminary Engineering

Preliminary Engineering refines the concepts of the Recommended Alternative documented in the Draft and Final EIS. It advances the Recommended Alternative to a 30% design level, and includes full plan and profile development, right-of-way requirements, updated capital and operating costs and ridership estimates, and identification of revenue sources.

7.1.4 Final Design

Engineering that advances the Recommended Alternative to the 90-100% design level, and includes final development of a plan and profile, updated capital and operating costs and ridership estimates, and identification of committed revenue sources.

7.1.5 Construction

The physical implementation of the Recommended Alternative would include acquisition of right-of-way, installation of required infrastructure and systems, manufacture and delivery of rolling stock, start-up and testing.

7.2 Southern New Jersey Transit Vision

DRPA is advancing the Recommended Alternative (Alternative 4) described in this AA, along with two other independent projects involving bus rapid transit and commuter rail improvements, to improve transit options available for Southern New Jersey residents and work force. This "transit vision" was announced in late May 2009, and was discussed with the AA Technical Advisory Committee meeting and with the general public and stakeholders at the four AA open houses in June 2009. This three-project initiative has been endorsed by the State of New Jersey, the NJ Department of Transportation, NJ TRANSIT and the NJ Office of Smart Growth, as an effective means of:

- providing accessibility choices other than the automobile
- addressing peak period congestion found on most study area highways
- encouraging planned controlled growth around proposed transit stations, rather than the prevailing suburban sprawl associated with auto dependence and highway commutation

In view of these important endorsements, the State of New Jersey has committed $500 million to the Transit Vision.

7.2.1 Bus Rapid Transit along Routes 42 and 55 to Camden/Philadelphia

Express Bus-type service would be operated along this corridor, utilizing the Atlantic City Expressway, Routes 42, 55, I-76 and I-676, with dedicated lanes and park-and-ride lots developed for service from Southern New Jersey to the Walter Rand Transportation Center in Camden and to Downtown Philadelphia. Dedicated bus lanes during peak periods would be located on the shoulder or in the median separated from other traffic. An Alternatives Analysis addressing the Route 42 and 55 corridor will be undertaken to develop an optimum alternative and a service plan for high-quality transit service that would reduce congestion within this heavily traveled highway corridor. The Alternatives Analysis would follow FTA guidelines, since this project has the potential to qualify for Federal funds within the New/Small Starts program.

7.2.2 Atlantic City Rail Line Improvement Study

This proposed project will include infrastructure and operational improvements and modifications to the NJ TRANSIT Atlantic City Rail Line that would: 1. increase the rail line's utility as a vital transportation link connecting Southern New Jersey communities with Atlantic

City and Philadelphia; and 2. increase the importance and reach of the Atlantic City Airport. Components of a study of these proposed improvements would include:

- Evaluation of short-term improvements, such as new stations – including a Woodcrest Intermodal Station for auto access from Route I-295 and transfers from PATCO. Conceptual designs of the needed improvements will be produced, as well as estimates of ridership and cost to support implementation.
- Development of a Long-Range "Vision" for the Atlantic City Line, which would include evaluation of a range of alternatives with the goal of improving service frequency, speed, connectivity, and operating efficiency. Potential alternatives would include:
    - Enhanced Commuter Rail service with track expansion and improved connectivity to PATCO and the NJ TRANSIT River LINE
    - Extension of the PATCO Speedline along the Atlantic City Line