



GLOUCESTER COUNTY

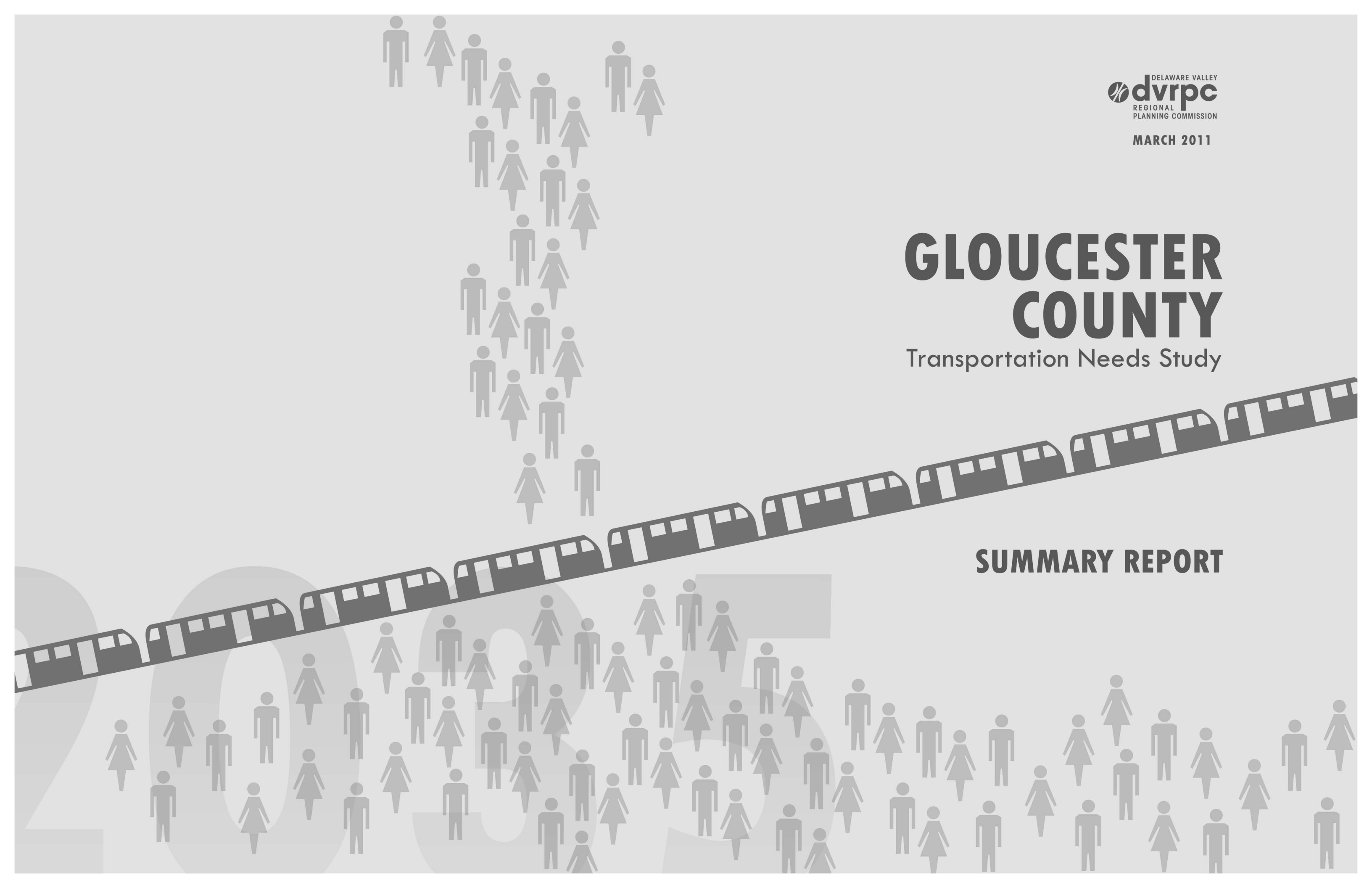
Transportation Needs Study

SUMMARY REPORT

GLOUCESTER COUNTY

Transportation Needs Study

SUMMARY REPORT



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



The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware

Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments.

This project was financed through planning grants from federal and state departments of transportation and contributions from Gloucester County. The authors, however, are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

DVRPC fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations in all programs and activities. DVRPC's website (www.dvrpc.org) may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. For more information, please call (215) 238-2871.

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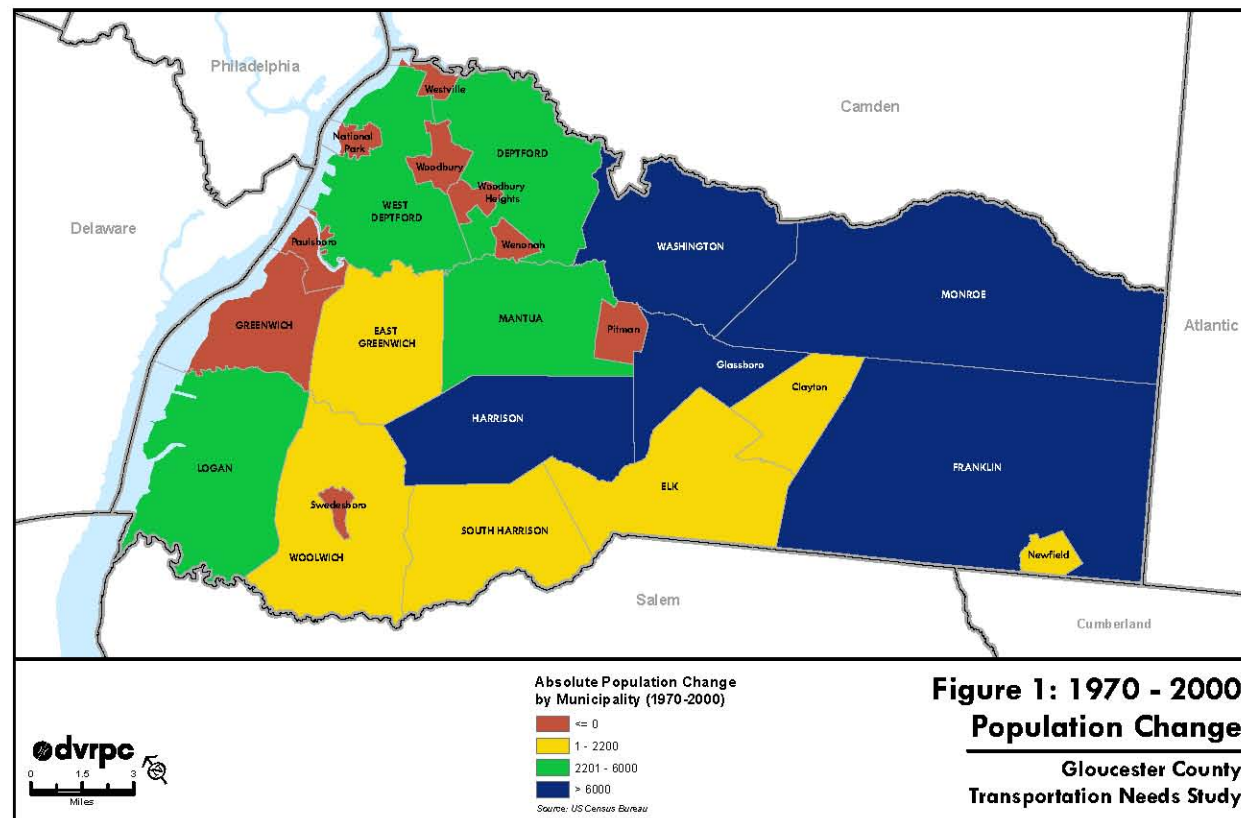
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Executive Summary

The *Gloucester County Transportation Needs Study* was prepared for the Gloucester County Planning Division (GCPD) by transportation planning staff of the Delaware Valley Regional Planning Commission (DVRPC). The project was undertaken to develop a long-range multi-modal / Smart Growth vision and supply decision making information to initiate and manage change as part of an update of the County Master Plan.



Between 1970 and 2000, population increases took place in less developed parts of the County while decreases were experienced in the older / more mature municipalities.

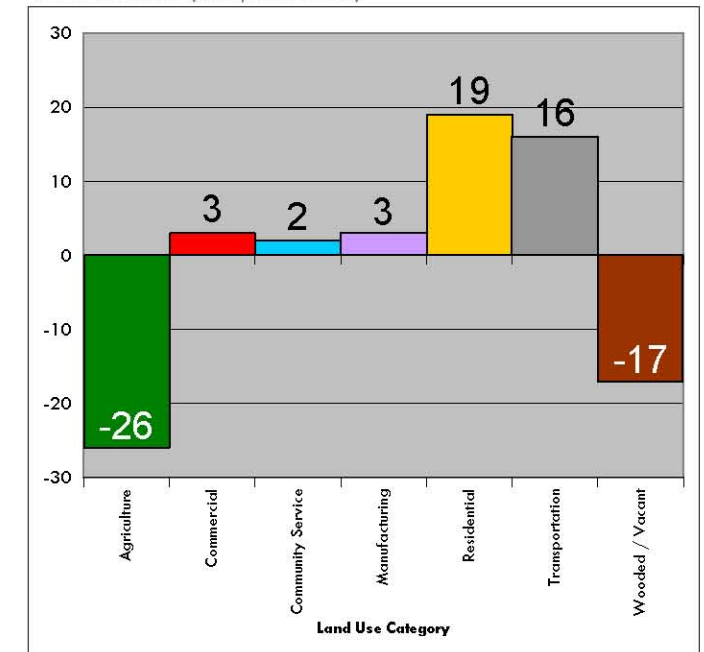
Gloucester County has an attractive environment with varied landscapes and an abundance of “developable” land. The County enjoys close proximity to Camden and Philadelphia to the north; Atlantic City to the east; and Wilmington to the west. Because of these and other conditions, the three decades spanning 1970 to 2000 witnessed considerable population and employment growth in the County. Washington and Monroe Townships—straddling the North-South Freeway (NJ 42) / Atlantic City Expressway—were the receivers of more than half of the County’s new residents between 1970 and 2000 (see **Figure 1**).

The growth came at the expense of land devoted to agricultural use and vacant or wooded tracts (see **Figure 2**).

The County has been proactive in the face of the change. Since 1989, they have been partnering successfully with the state and their municipalities in land acquisition programs to preserve farmlands and maintain farming as a way of life, and expand recreational facilities.

Still, strong growth in residents and jobs are forecasted, and indications are that Gloucester County will be the Philadelphia region’s fastest growing county by 2035. Trends indicate the growth will occur in the southern parts of the county resulting in a further loss of green space and sprawling land development patterns. Woolwich Township, in western Gloucester County, will be the fastest growing municipality in the DVRPC region. Growth is also forecasted in neighboring Atlantic, Camden, Cumberland and Salem counties. The increased and dispersed trip making to follow, will compound the county’s ability to manage the change on its own.

Figure 2: Gloucester County Land Use Change from 1970 to 2000 (in square miles)



Agricultural and wooded tracts have supplied the land for growth. Transportation change reflects areas devoted to circulation roads and parking lots supporting non-residential developments, subdivision streets, and major public works projects like the Commodore Barry Bridge which opened in 1974, and NJ 55 which opened to Gloucester County traffic in 1989.
 Source: DVRPC, 2010

Executive Summary

Project Background

Two major public transportation investments and a major planned community land development project offer opportunity to center growth, and manage travel. The County is interested in expanding the opportunities that Smart Growth principles—coordinated transportation, and community and land use planning—have to moderate travel, manage investments, and conserve natural and other resources for future generations. To that end, this project was undertaken to serve as input to the transportation element of the County’s Master Plan update.

Several limited-access freeways serve the county, though all are aligned north-south. These freeways serve to connect county residents to the region’s core in Philadelphia and Camden, as well as shore points to the east and south. In general, the densest portions of the county are in close vicinity to the freeways. New growth will add to the congestion experienced on the highways, and is tending to occur at greater distances from the freeways which compound the need to assess the system of county routes.

The primary east-west highway is US 322, largely a two-lane arterial highway. Historically, US 322 has faced challenges: serving regular residents and seasonal seashore travel. Construction of the Commodore Barry Bridge spurred residential and commercial development as a consequence of improved accessibility to South Jersey. Later, in 1991, the completion of the Blue Route (I-476) with I-95, in Pennsylvania—with the Barry Bridge and US 322 serving as the conduit—supersized mobility between the Poconos and the South Jersey Shore. Attempts to find alternative separate alignments to accommodate that travel, via an expressway through Gloucester County, have not been successful. Opportunities for an expressway become fewer as new development comes on-line, and improvement efforts necessarily become more localized and disjointed.

A mega-multi-use, new town development has been approved through a transfer-of-development rights plan straddling US 322 through Woolwich Township. A comprehensive set of highway improvements will be constructed by the developer to offset the local impacts of the multi-use land development project. The County has also taken initiative by taking ownership of US 322 through Harrison Township (now officially Gloucester County Route 536), and is constructing two highway widening projects to eliminate recurring traffic congestion locations through the Mullica Hill and in the Richwood sections of the Township. Conversely, NJDOT which continues to own and maintain the remainder of US 322’s alignment through the County has taken steps to manage traffic movement by installing a roundabout and constructing pedestrian safety elements along the stretch of US 322 traversing the Rowan University

campus in Glassboro. Both improvement strategies are correct for their environments, but demonstrate a pending need for understanding the effects and developing a unified vision for the corridor’s long-term transportation needs.

To their credit, both the County and NJDOT are taking steps in these directions. The County asked DVRPC to perform this study with a special emphasis included for the US 322 Corridor. NJDOT is also conducting the *Route 322 Concept Development Study and Implementation Plan* between the Commodore Barry Bridge and the NJ 55 Interchange.

To understand and comprehensively address the continued effects of long-term growth and travel throughout the county, staff members from the Gloucester County Planning Division (GCPD) and Delaware Valley Regional Planning Commission partnered in conducting the *Gloucester County Transportation Needs Study* to systematically determine traffic safety and multi-modal mobility needs and implementation responsibilities for the Year 2035.

Recommendations were developed through a multi-tiered and collaborative work program, including:

- ◆ Traffic mobility and safety planning along the high growth US 322 Corridor, from the Commodore Barry Bridge to the Black Horse Pike (NJ 42)—with special attention on seven activity centers / focus areas
- ◆ Intermodal planning in a corridor surrounding the proposed Glassboro-Camden Line (GCL)—a proposed expansion of passenger rail operations between the Rand Transportation Center in Camden and Glassboro, including: estimating station activity, and assessing multi-modal connectivity, station access and land use opportunities at the 11 stations proposed in the County
- ◆ Identifying transportation and land use opportunities associated with premium Bus Rapid Transit (BRT) services proposed by NJ Transit to operate in the Atlantic City / NJ 42 and NJ 55 corridors
- ◆ County-wide public transportation / congestion management planning—drawing from available sources of data, studies, ongoing plans and programs, and the findings of the corridor and facility studies
- ◆ Policy changes to formalize practices and standards that promote non-motorized travel and address the efficiency of the county-wide transportation network—as part of the county’s codes regulating land development and roadway standards—were recognized for their universal benefit and also recommended.

Throughout, Smart Growth principles that link transportation and community and land use planning were employed in defining the vision and recommendations.

Executive Summary

Study Development

The project was developed through a series of working meetings with the County representatives to discuss the study progress and steer the study's future course. Technical memoranda were prepared for each meeting to summarize interim findings and guide decision making:

- ◆ **Technical Memorandum #1** – Background and Existing Conditions (September 2009)
- ◆ **Technical Memorandum #2** – Year 2035 Plan Scenario Travel Modeling and PATCO Expansion Corridor and Station Area Planning (November 2009)
- ◆ **Technical Memorandum #3** – US 322 Corridor and Growth Areas- Year 2035 Plan Plus Scenario Travel Modeling and PATCO Expansion Corridor – Station Area and Land Use Planning (February 2010)
- ◆ **Technical Memorandum #4** – Assessment of Transit Investment Vision for Southern New Jersey Component 2: Bus Rapid Transit (February 2010)
- ◆ **Technical Memorandum #5** – Transit Planning Components (April 2010)
- ◆ **Technical Memorandum #6** – Project Update (May 2010)

Report Summary

This report reconstitutes the information contained in the technical memoranda with the decisions and directions recorded at the meetings. An overview of the remaining content follows.

- ◆ **Chapter 2 – Regional Setting:** Presents an overview of Gloucester County in a regional context including highways, transit and demographics
- ◆ **Chapter 3 – Existing County-Wide Conditions:** Provides a county-specific assessment of demographics, land use, highways, transit, trails, and ongoing improvements
- ◆ **Chapter 4 – Growth and Development:** Describes future year population and employment estimates, the expected distribution of the growth, and settings and strategies for centering the growth as a basis for smart transportation investment
- ◆ **Chapter 5 – Future Transportation Conditions:** Details the undertakings and findings of the US 322 Corridor traffic study, intermodal and conceptual planning in the GCL and BRT Corridors, and county-wide public transportation and congestion management planning
- ◆ **Chapter 6 – Recommendations and Conclusion:** Presents the program of Smart Growth and smart transportation policies, strategies and projects determined to promote a sustainable long-term future for Gloucester County.

Regional Setting

The county is situated in southern New Jersey, generally south and east of the cities of Camden and Philadelphia (Figure 3). Some natural features help define the county's boundaries, including the Delaware River on the north, Big Timber Creek on the east, and Oldmans Creek along the western boundary with Salem County.

Accessibility to interstate and interregional highways include I-295, the New Jersey Turnpike, US 130, NJ 45, NJ 47, NJ 55 and NJ 42 / the Atlantic City Expressway for north-south mobility; and US 322 and US 40 for east-west mobility.

Figure 3: Regional Setting

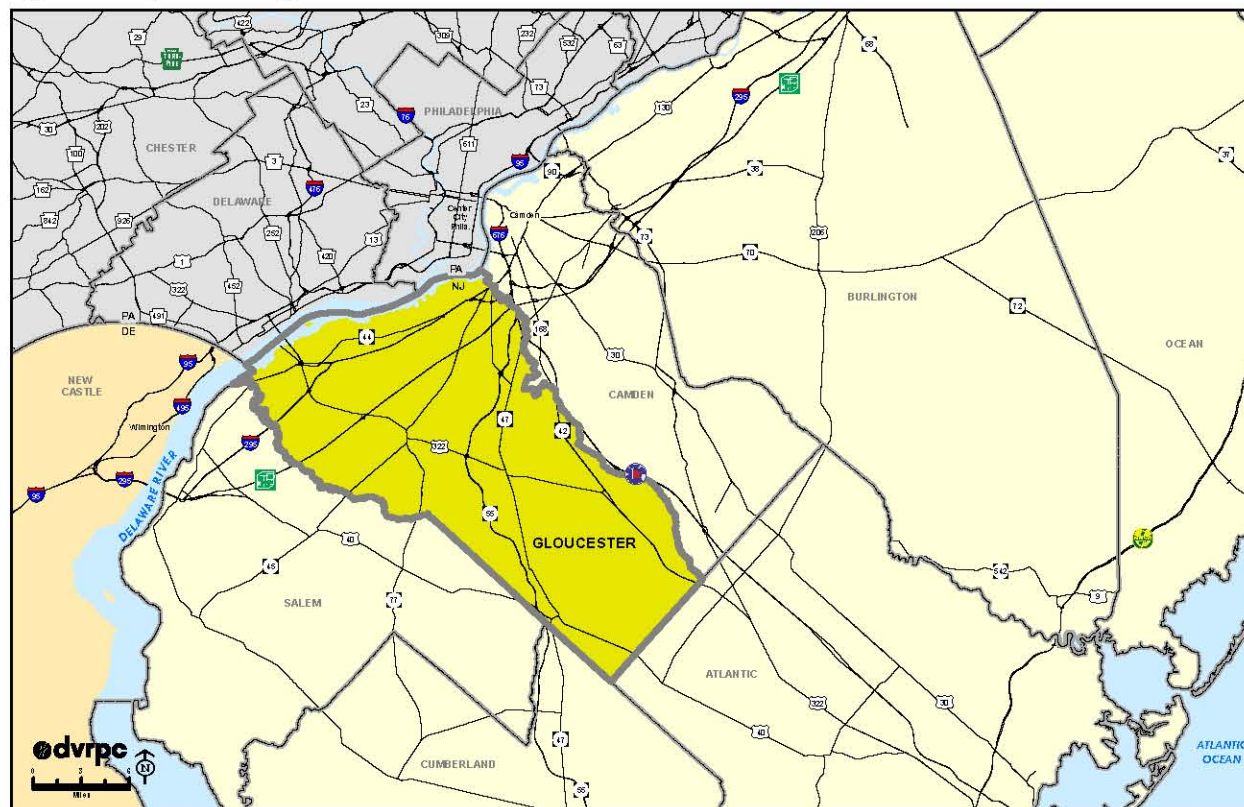


Table 1: Surrounding County Population and Employment: 2005 Estimates and 2035 Forecasts

County	Population		Change	
	2005	2035	Absolute	%
Gloucester	274,231	369,374	95,143	34.7%
Atlantic	271,015	357,570	86,555	31.9%
Camden	515,027	524,684	9,657	1.9%
Cumberland	153,252	176,060	22,808	14.9%
Salem	66,346	72,710	6,364	9.6%

County	Employment		Change	
	2005*	2035	Absolute	%
Gloucester	108,229	145,895	37,666	34.8%
Atlantic	155,530	204,913	49,383	31.8%
Camden	222,721	226,682	3,961	1.8%
Cumberland	64,070	71,053	6,983	10.9%
Salem	21,010	25,987	4,977	23.7%

*Atlantic, Cumberland, and Salem Counties - employment estimate year is 2007.

DVRPC, 2007 & SJTPO, 2008
DVRPC, 2010

There are no passenger rail services directly servicing the county, however interregional and interstate rail services are available nearby in Camden County, including NJ Transit's Atlantic City Rail Line and its River Line, and PATCO's Lindenwold High Speed Line. Access to Amtrak's national passenger rail network is available at 30th Street Station in Philadelphia. The County is anticipating passenger rail service via an extension of light rail service from the Rand Transportation Center, in the City of Camden, to Glassboro along existing Conrail track. Eleven of the Glassboro-Camden Line's 15 stations are proposed within Gloucester County.

Strong growth in population and employment is forecasted for Gloucester County and its New Jersey neighbors (see Table 1). Nearly a quarter-million additional people will call this five-county area home by 2035, and an additional 100,000 jobs will be created in the same area. The growth will have a profound impact on the County's landscape and infrastructure, unless managed with Smart Growth planning practices.

Existing County-Wide Conditions

The year 2005 was chosen to define “current conditions” for this study. Characteristics of the populations residing and working in the county, the county’s land use, and the nature of its transportation system were collected and recorded from a variety of sources spanning a decade, and analyzed to establish the study baseline. Data sets included: the 2000 decennial Census; Year 2005 municipal socio-economic data sets, readily available and in use as part of DVRPC’s Year 2035 long-range planning activities; transportation facility and traffic count data spanned 2005 to 2009 which were drawn from in-house and NJ state data banks; and 2005 aerial photography performed by DVRPC.

Demographics

The County is comprised of 24 municipalities, occupying 337 square miles of area. In 2005, Washington Township was estimated to have the highest population levels in the County, with Monroe and Deptford townships in a remote second tier. West Deptford Township and the Borough of Glassboro occupied a third tier. Employment opportunities were most numerous in Deptford and Washington Townships. The 2005 demographic estimates for all Gloucester County municipalities are shown on **Table 2**.

Table 2: Municipal Demographics: 2005 Estimates

Municipality	Area (mi. ²)	Population	Employment
Clayton Borough	7.45	7,275	2,023
Deptford Township	17.57	29,456	13,968
East Greenwich Township	14.89	6,206	1,612
Elk Township	19.73	3,755	725
Franklin Township	56.36	16,498	3,349
Glassboro Borough	9.34	19,103	8,667
Greenwich Township	11.96	4,932	3,486
Harrison Township	19.07	11,291	2,744
Logan Township	26.78	6,146	6,409
Mantua Township	15.99	15,029	7,228
Monroe Township	46.84	31,158	8,128
National Park Borough	1.52	3,192	358
Newfield Borough	1.68	1,645	782
Paulsboro Borough	2.49	6,037	2,515
Pitman Borough	2.27	9,162	3,148
South Harrison Township	15.62	2,859	426
Swedesboro Borough	0.76	2,030	2,462
Washington Township	21.55	50,198	12,861
Wenonah Borough	0.99	2,310	731
West Deptford Township	18.02	20,709	9,858
Westville Borough	1.12	4,423	2,635
Woodbury City	2.10	10,334	10,815
Woodbury Heights Borough	1.25	2,993	1,615
Woolwich Township	21.42	7,490	1,684
Gloucester County Total	336.59	274,231	108,229

DVRPC, 2010

Existing County-Wide Conditions

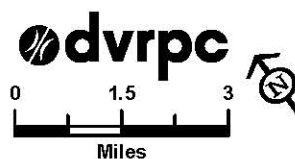
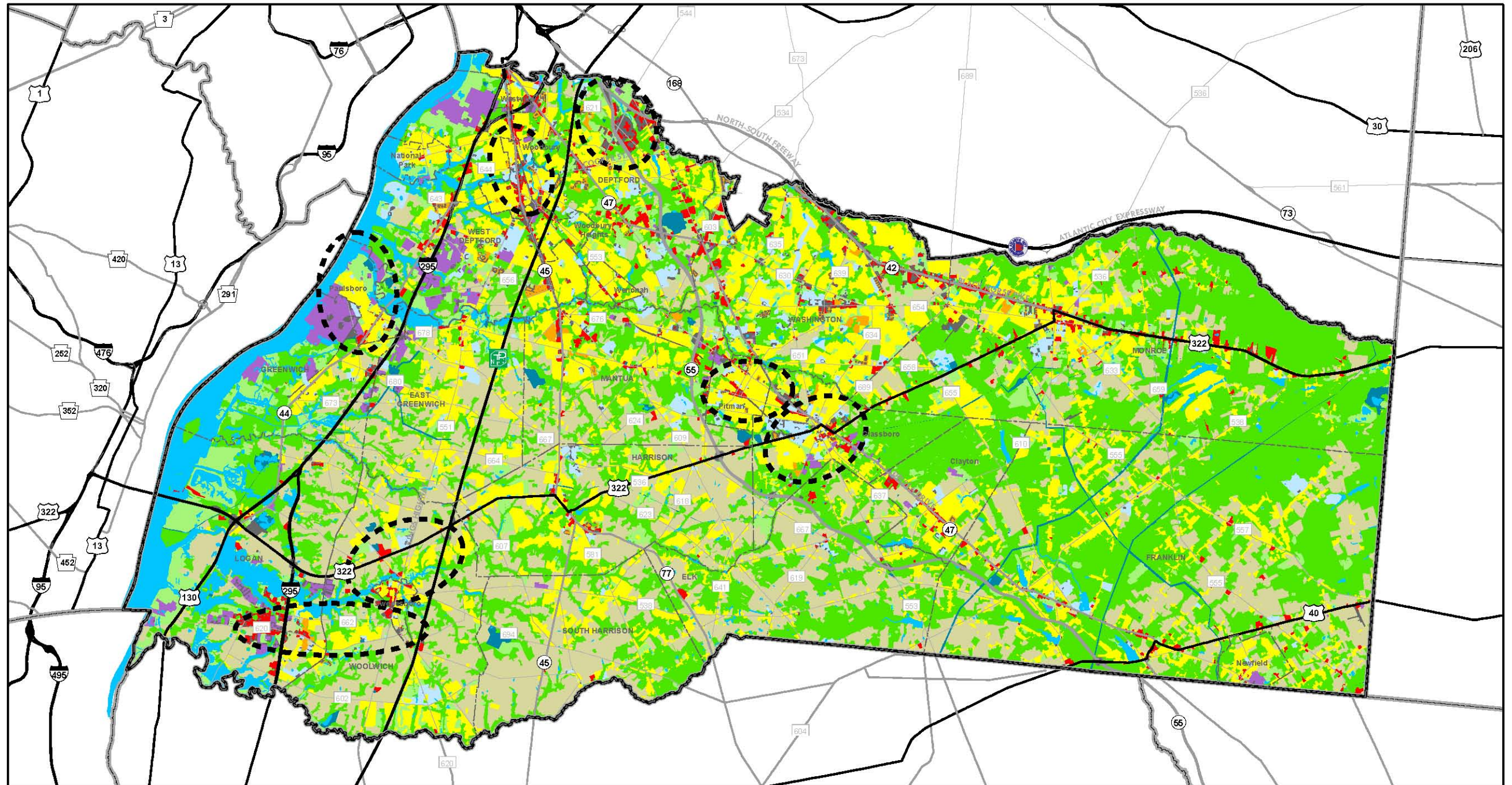
Land Use

Establishing a relationship between land use and transportation conditions is central to master planning and practicing the principles of Smart Growth. The use of the land—where people live, work and play—and its intensity is responsible for trip generation and its magnitude. The aerial spread of the uses and the transportation facilities connecting or serving the uses is responsible for how trips may be accomplished (e.g., by walking, bicycling, driving a car or taking a bus). Temporal demands, or direct costs, placed on individual transportation facilities may influence the mode or route selected.

Land use coverage across the planning area in 2005 was very diverse. Still, some observations of land use patterns may be discerned (**Figure 4**). In the north, mature and densely developed communities are typical. Manufacturing and industrial uses are concentrated there, and along the Delaware River waterfront. Mature suburban residential settings predominate across the central part of the county; and wooded, agricultural and variably developed and aged residential use typifies the southern part of the county. Commercial activities line the highways. The denser urban areas are more transit supportive, while the suburban settings are most effectively served by the automobile.

Important development nodes include Woodbury, the County seat, the Pureland Industrial Complex (in Logan Township), Rowan University (in the Borough of Glassboro) and the Deptford Mall (in Deptford Township). These nodes contain significant employment generators and shopping attractions, and form the basis of four of seven regional land use centers in the county. Land use centers provide a framework for focusing growth and managing travel. By mixing and varying complementary land use in close proximity, trip making can be reduced and more effectively served by existing facilities and/or by adding more transportation options. They are targets for Smart Growth planning and investment.

Existing County-Wide Conditions



- Land Use Centers**
- Deptford
 - Glassboro
 - Paulsboro
 - Pitman
 - Swedesboro
 - Woodbury
 - Woolwich

- Land Use (2005)**
- | | | |
|--------------------|---------------------------|--------|
| Agriculture | Military; Mining; Utility | Vacant |
| Commercial | Housing: Detached | Water |
| Community Services | Housing: Attached | Wooded |
| Manufacturing | Transportation/Parking | |

Figure 4: Land Use

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Existing County-Wide Conditions

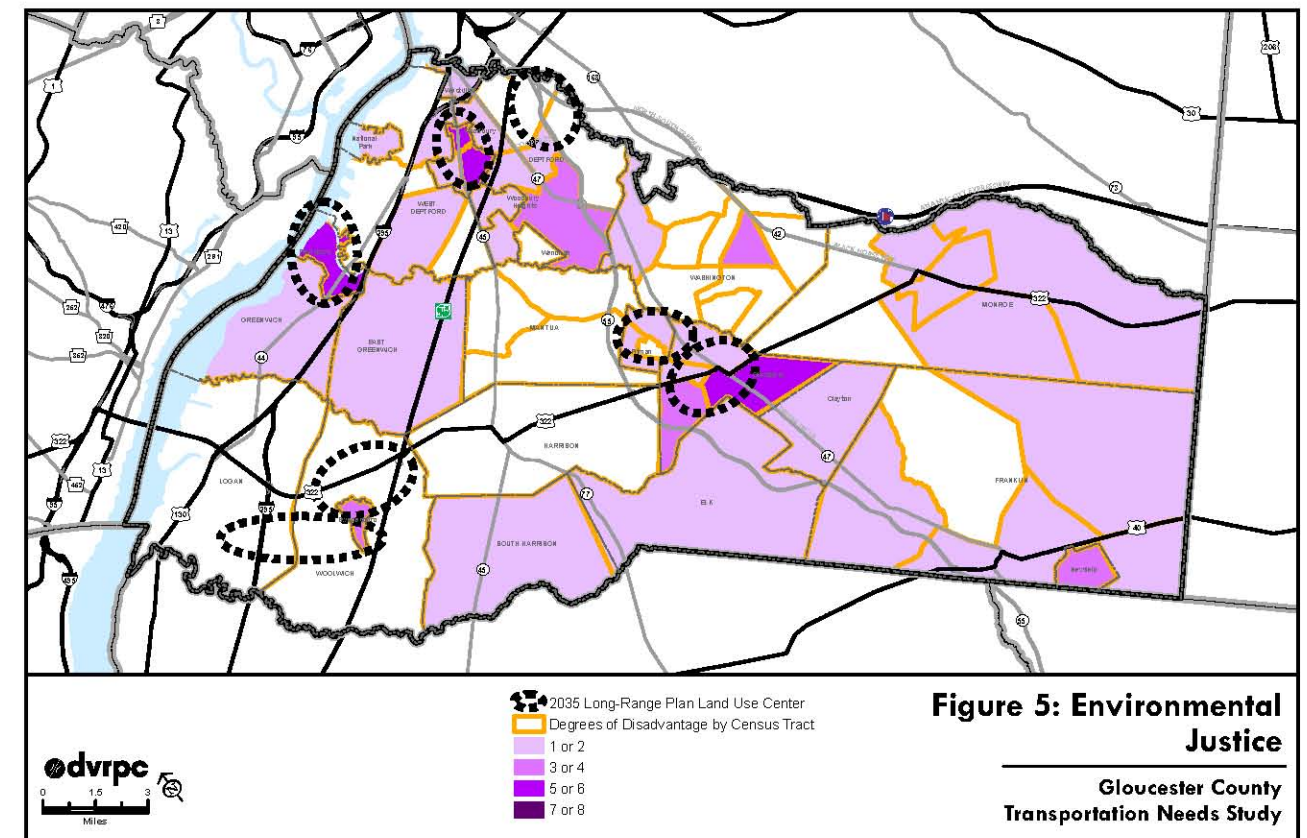
Human and Natural Environments

Planning and engineering for public works projects financed by the federal government are subject to defined goals and regulations to inventory, determine and mitigate negative effects upon resident populations and resources. As construction projects are developed, the information contained in this section may be helpful in identifying the interagency partnerships needed to develop an effective project; refining project scope; engaging residents' help in identifying avoidance steps; and/or preparing for the eventuality of compliance with the requirements of federal mandates (including: Title VI of the Civil Rights Act of 1964 and the 1994 President's Executive Order on Environmental Justice, #12898; and the National Environmental Policy Act of 1969 as amended).

Disadvantaged Resident Populations (Environmental Justice)

Federal law states that no person or group shall be excluded from participation in, or denied the benefits of any program or activity utilizing federal funds. DVRPC's environmental justice (EJ) methodology quantifies levels of disadvantage within the nine-county region as a means of identifying population groups that may not be able to fairly participate / advocate their interests as improvement projects are planned and developed for implementation.

Eight categories of potential disadvantaged groups are identified in Title VI, including female head of household with child, non-Hispanic minority, Hispanic, carless households, impoverished, elderly 75 years of age and older, physically disabled, and limited English proficiency. Each category is analyzed for the total concentration in the region, generating a baseline. Census tracts containing concentrations higher than the baseline are considered disadvantaged, and those containing five or more degrees of disadvantage are regionally significant in terms of environmental justice sensitivity. Enhanced public outreach efforts will be required in these locations. **Figure 5** shows the concentrations of disadvantaged populations in Gloucester County.



Existing County-Wide Conditions

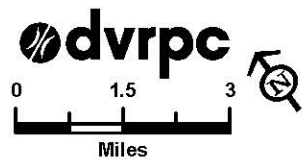
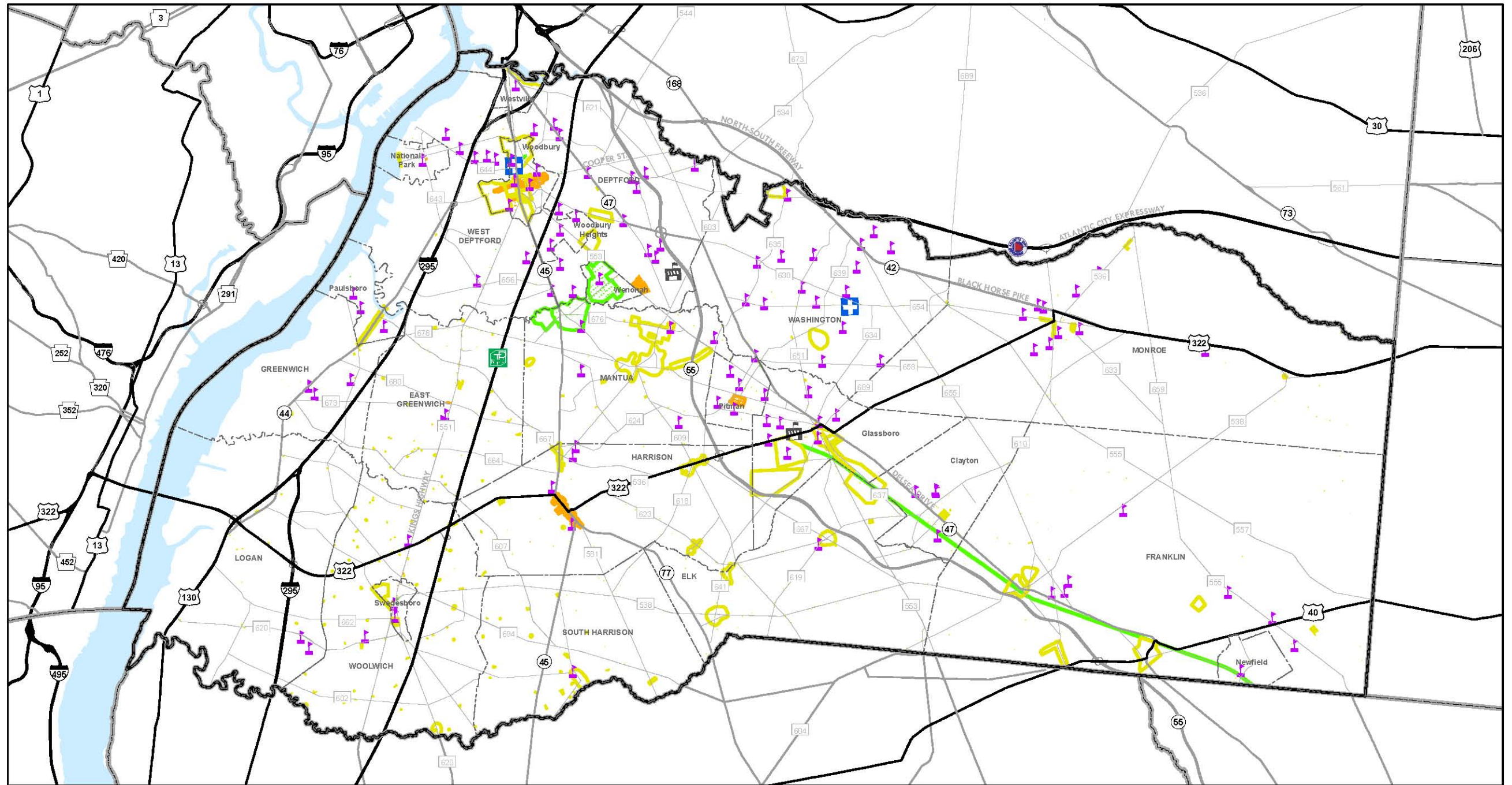
Cultural and Natural Environments

Natural and cultural resources sustain environmental functions, provide recreational opportunities, and enhance the quality-of-life of county residents. These features also come with their constituencies and guardians.

Cultural landmarks and historic resources in the county are varied and abundant (**Figure 6**). Local preservation codes may limit the scale and/or influence the appearance of physical changes proposed in these areas, and any effects will be subject to review and clearance spanning from local interest groups and up to the New Jersey Historic Preservation Office.

Natural features include floodplains, wetlands and protected lands (**Figure 7**). Impacts to these as a consequence of physical changes will require proper mitigation emanating from review and approvals by the New Jersey Department of Environmental Protection, the US Army Corps of Engineers, and potentially the municipality for water and wetlands, along with state, county, and municipal owners for public lands.

Existing County-Wide Conditions

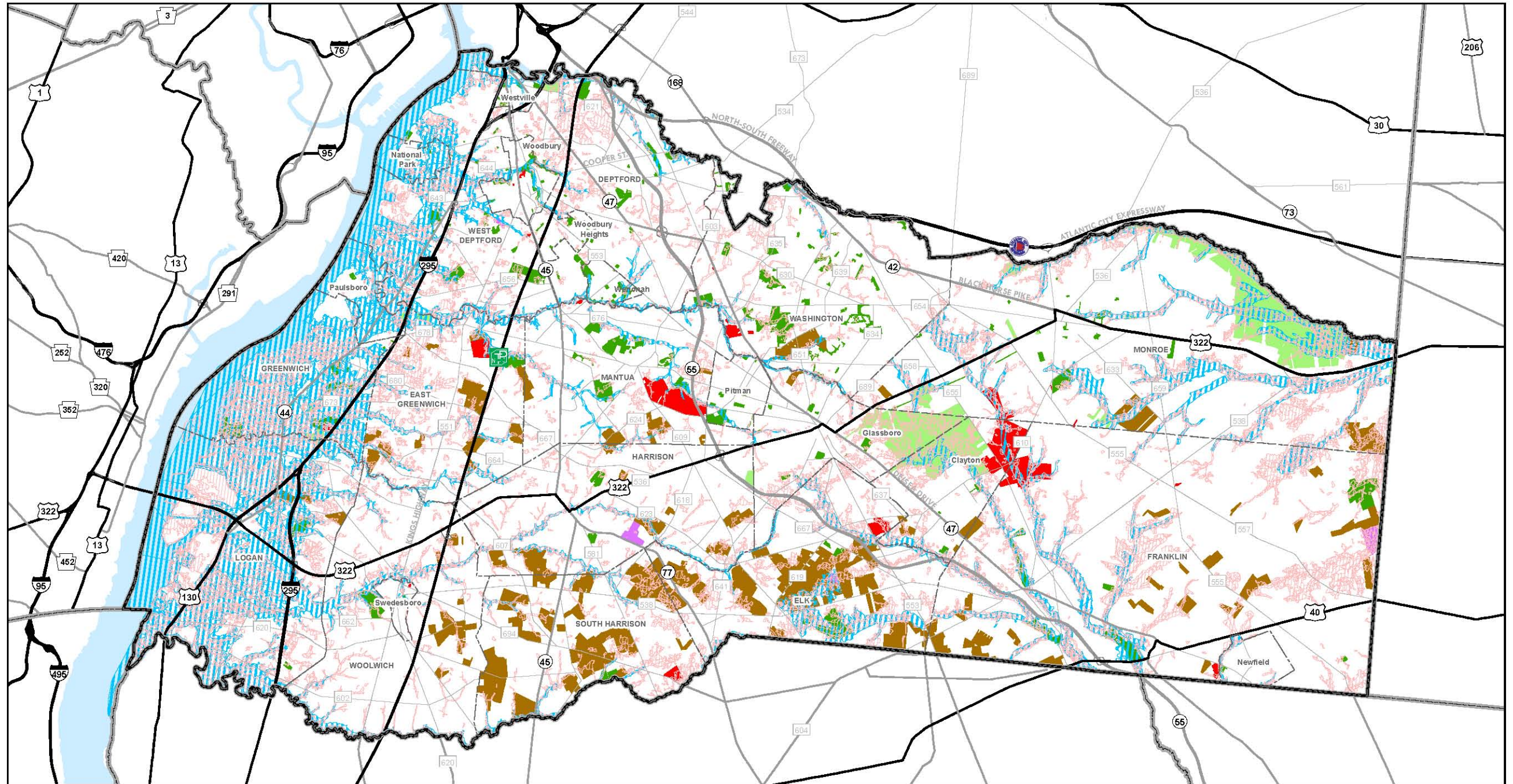


- | Historic Landmark* | | Cultural Features** | |
|--------------------|---------------------|---------------------|---------|
| Eligible Area | Eligible Location | School | College |
| Identified Area | Identified Location | Major Hospital | |
| Listed Area | Location | | |
- *Source: NJHPO
 **Source: NJDOE/ NJDHSS

Figure 6: Cultural Features and Historic Resources

**Gloucester County
 Transportation Needs Study**

Existing County-Wide Conditions



Protected Lands

- County
- Municipal
- Non-Profit
- Preserved Farmland
- State

Hydrography*

- Flood Plains
- Wetlands

*Source: Floodplain, FEMA; Wetlands, US Fish & Wildlife Service

Figure 7: Natural Features

**Gloucester County
Transportation Needs Study**

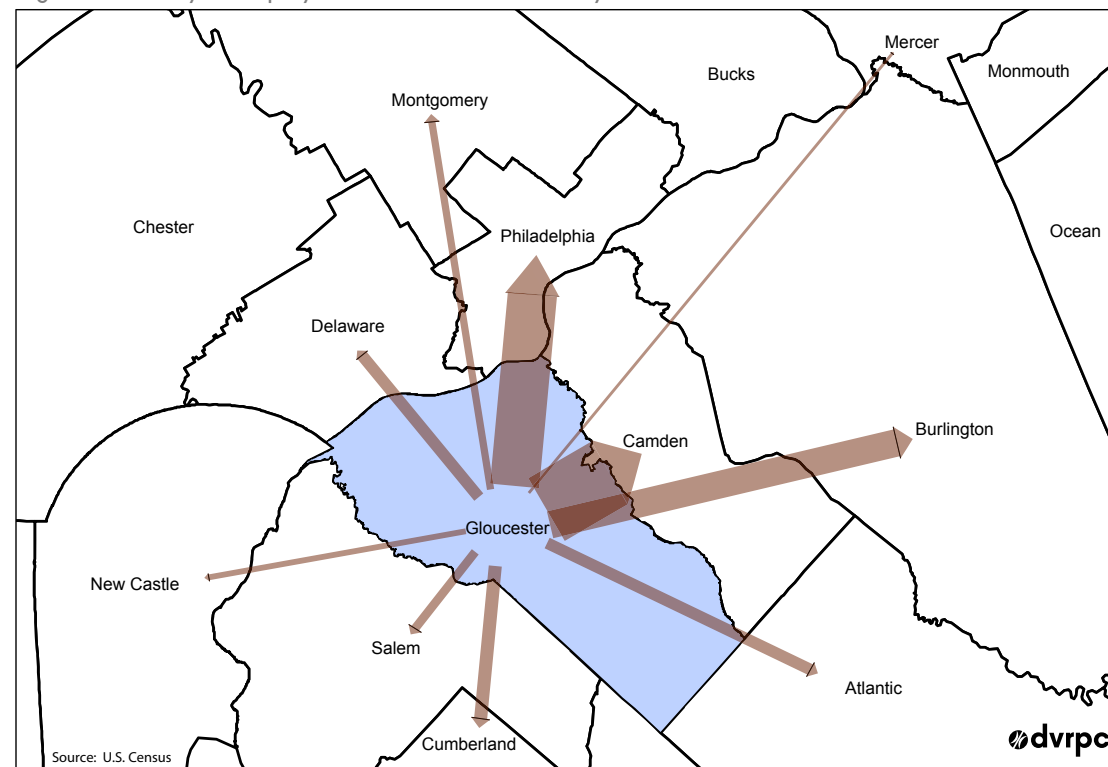
Existing County-Wide Conditions

Transportation Systems

Highways, bus routes, multi-use trails and an airport are currently available to serve Gloucester County’s travel needs. The reasons and directions of travel vary widely, but invariably two purposes stand out—the daily journey-to-work and the seasonal trip to the seashore. The information and recommendations contained in this work addresses the movement of people and goods during an average weekday.

Overall, Gloucester County is a net exporter of labor. According to the 2000 Census, 37 percent of its resident workers worked in other counties—largely commuting northward to Camden County and the City of Philadelphia. See **Figure 8** for the relative outflows of labor.

Figure 8: County of Employment for Gloucester County Residents



The north-south travel corridors are served by multi-lane arterials and freeways. Most NJ Transit bus routes, and two passenger rail routes, located in Camden County, are also aligned to the pattern. Overall, just 2.6 percent of the county’s employed residents commuted to work via public transportation.

Just one continuous east-west principal arterial highway traverses the county—US 322. With the general exception of interchange areas, US 322 provides just one through-travel lane in each direction between US 130, near the Commodore Barry Bridge, and the Black Horse Pike, in Williamstown. Once joined with the Black Horse Pike, a minimum of four through-travel lanes (two each direction) are supplied to the shore. Two cross-county bus routes serve the mature northern portions of the county.

County Route 538 is classified as an arterial in the County’s functional classification system and largely parallels US 322 to the south. It runs between Swedesboro Borough and the Black Horse Pike in Monroe Township.

Highways

The interconnected highway network serving Gloucester County is owned and operated by state, authority, county and municipal jurisdictions. Highway functional classification is a term that implies the hierarchy and interconnectivity of a highway network. Typically, freeways, expressways and arterial highways provide for through-travel and mobility over long distances. Local travel, comprised of shorter trips and local destinations / land access, is served by collector roads and local streets. More often than not, trips include both local and longer distance elements, and hence the importance of interconnectivity and continuity of the system to support all highway trips.

Federal-Aid Highway Network

The system of highways most important to national, state-wide and regional interests are included in the federal aid highway system (**Figure 9**). They provide mobility for long distance highway travel. These routes are also relied upon to serve / promote commerce, growth and the nation’s competitiveness, and may be designated National Highway System (NHS) routes by the US Congress. They may also be important for safety and security as Coastal Evacuation Routes per the New Jersey Office of Emergency Management. Ownership and maintenance responsibilities for these highways belong to the New Jersey Department of Transportation, toll authorities (the New

Existing County-Wide Conditions

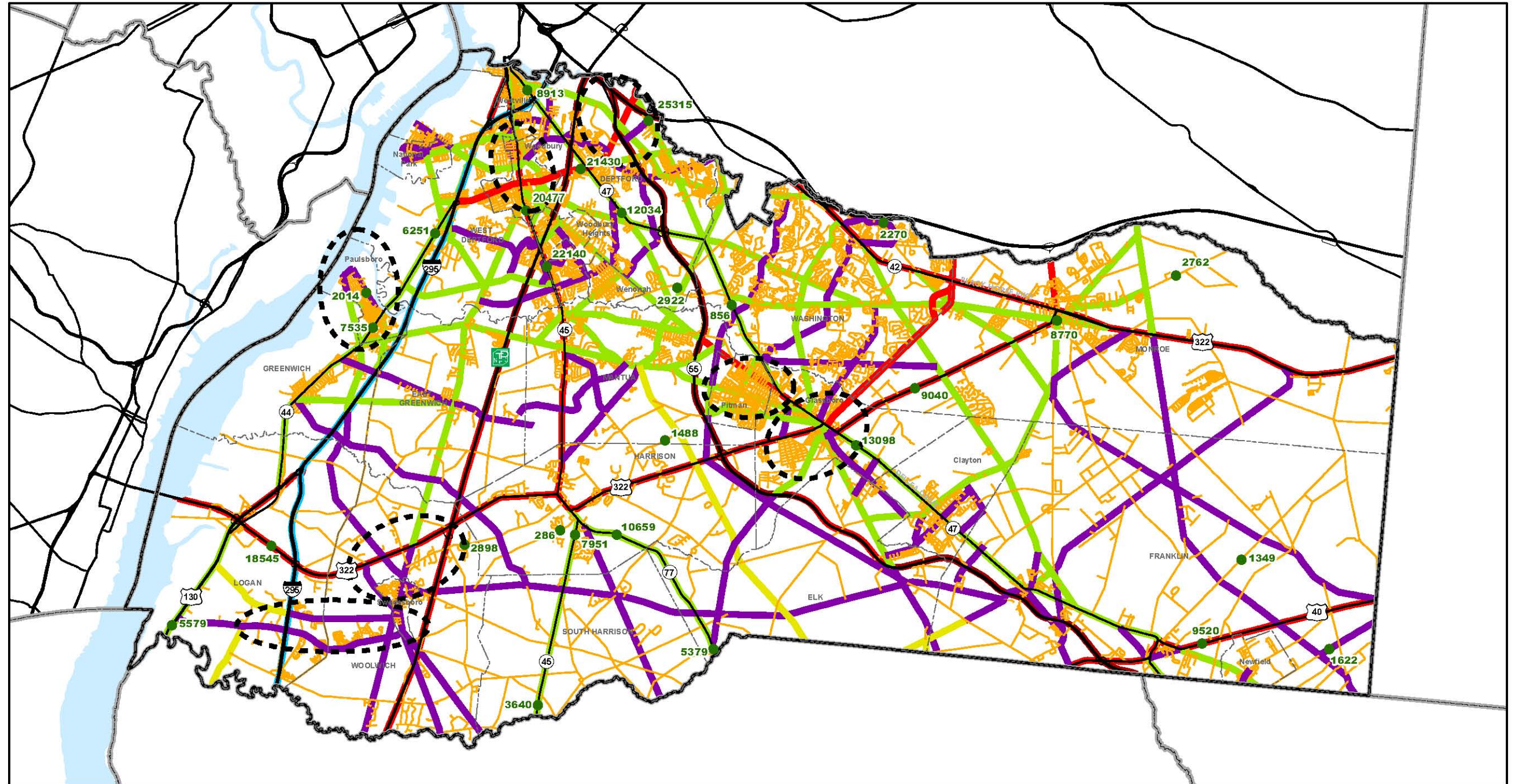
Jersey Turnpike Authority, the South Jersey Transportation Authority), and the County. Inclusion in the federal aid highway system also affords opportunities for funding assistance for planning and implementing improvements.

County Highway Network

The County maintains a large system of highways, and from its perspective designates its own hierarchical classification system (**Figure 10**). The County's functional classification system identifies arterial, collector, and local facilities. County Routes are also designated as 500, 600, or 700 series, and though there is not a strict correlation between the numerical series and functional class, 500 series highways are the most important for continuous travel. Most 500 and 600 series roadways are also part of the federal-aid system.

Recently, the County took ownership of US 322 in Harrison Township, now co-designated as US 322/CR 536 so they could undertake two major improvements: the Mullica Hill Bypass and the Richwood Area widening improvement. The County is open to other opportunities. As growth and development continue and municipal roads mature in significance, the County is looking for roads that might be better suited in the county route system.

Existing County-Wide Conditions



2035 Long-Range Plan Land Use Center

Functional Classification*

- █ Interstate Highway
- █ Other Freeway or Expressway
- █ Principal Arterial Highway
- █ Minor Arterial
- █ Major Collector
- █ Minor Collector
- █ Local Road
- Recent AADT(2005-2010)

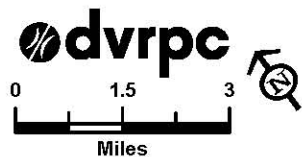
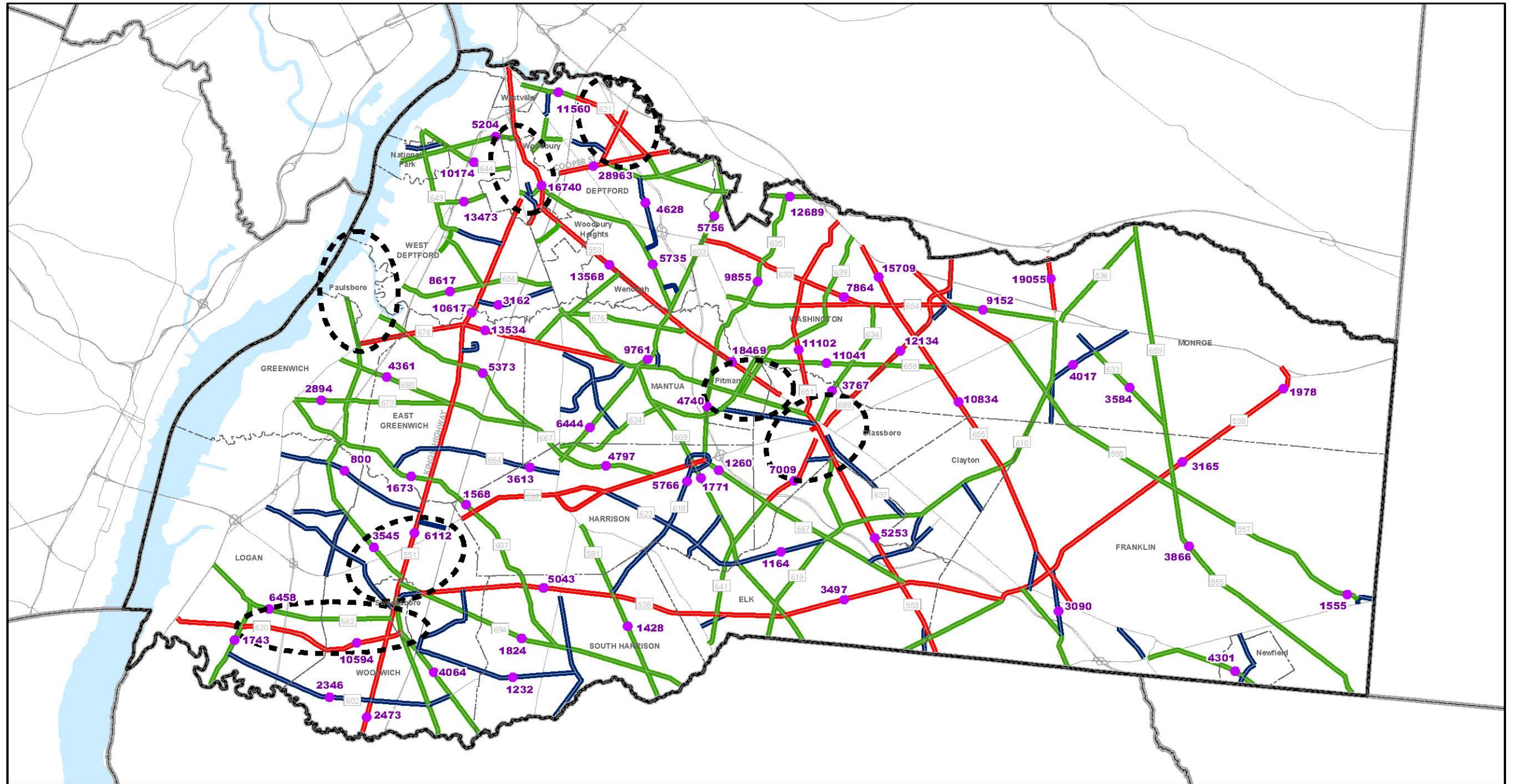
*Source: NJDOT



Figure 9: Federal Aid Highway Functional Classification System

**Gloucester County
Transportation Needs Study**

Existing County-Wide Conditions



- 2035 Long-Range Plan Land Use Center
- County Route Functional Classification**
- Arterial
- Collector
- Local
- Recent AADT(2005-2010)

Figure 10: Gloucester County Highway Functional Classification System

Gloucester County
Transportation Needs Study

Existing County-Wide Conditions

Public Transportation

Thirteen NJ Transit bus routes serve the county. Eleven NJ Transit bus routes operate within Gloucester County. Two additional routes, 316 and 551 serve the Avandale Park-n-Ride in Camden County and are convenient to portions of Gloucester County. The routes serve regional land use centers and areas where disadvantaged populations reside. **Table 3** and **Figure 11** summarize the public transportation services benefiting Gloucester County residents.

Eleven of the county's bus routes are north-south routes operating to/from Camden and/or Philadelphia; two are cross-county routes operating in the northern portion of the County (i.e., routes 455 and 463). Though not located within the county there are two passenger rail services, with regional draw, on the northern fringe of the county (PATCO's Lindenwold High Speed Line, and NJ Transit's Atlantic City Rail Line); and the NJ Transit River LINE light rail operates between the Rand Transportation Center in Camden and Trenton. All existing rail services operate on north-south alignments

NJ Transit Bus Route 410, operating between Bridgeton and Philadelphia, serves the only officially designated park-and-ride lot in the county. The lot is located on the southwest corner of the NJ 45 / CR 667 intersection just north of Mullica Hill. It has 26 parking spaces and is owned by NJDOT. Spot checks of parking demand at the lot conducted during the project indicated very low utilization, but walk-up activity is generated by surrounding apartments and houses.

Special needs shuttles, operated by agencies and municipalities, serve client groups throughout the County.

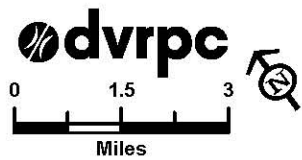
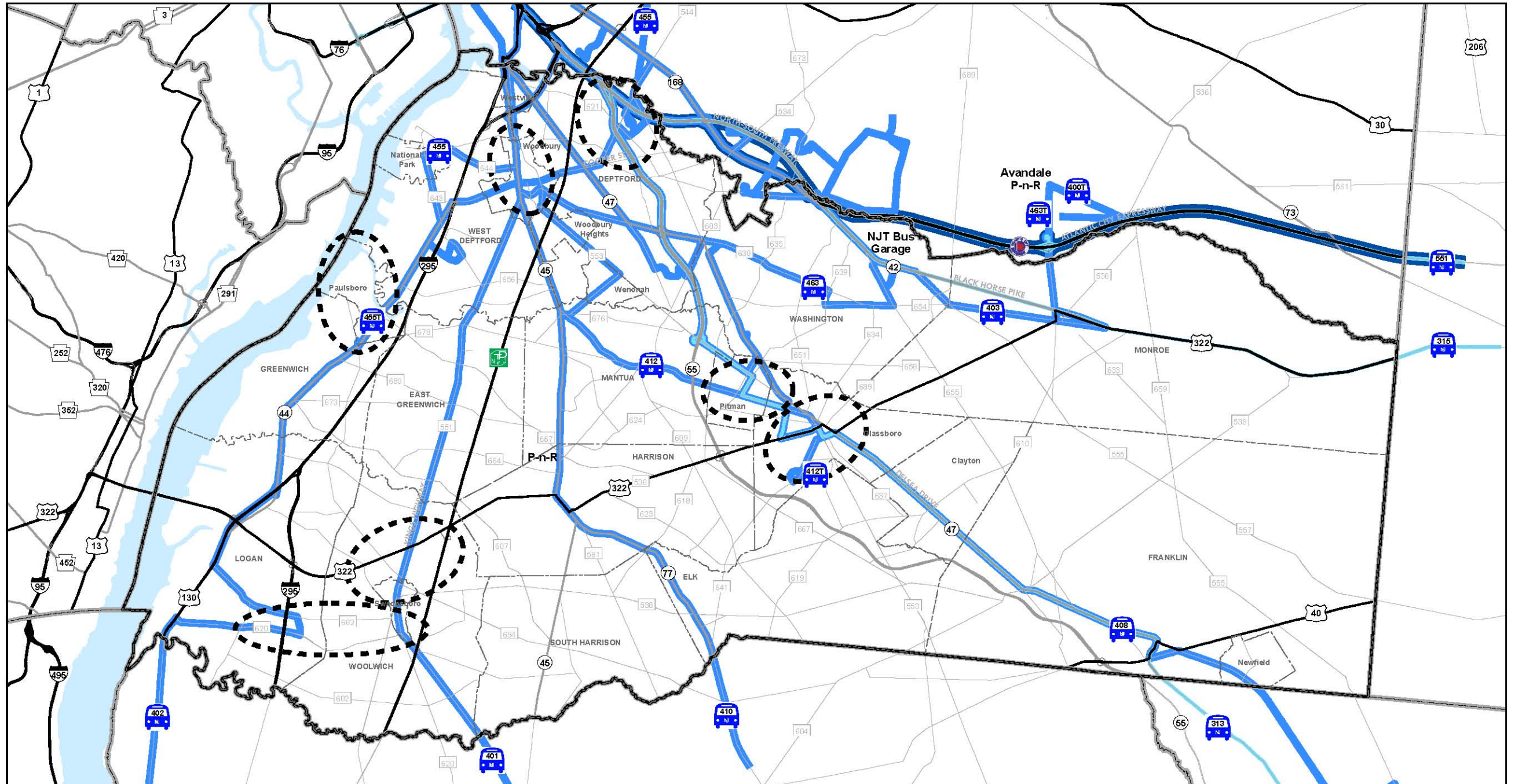
Table 3: Current Public Transportation Services (2009)

New Jersey Transit Bus Service (service operating in Gloucester County)						
Route	Average Weekday Ridership	Frequency	Service	Terminus	Terminus	Notes
313	230	4x eastbound, 3x, westbound	7 days	Philadelphia	Cape May	Not convenient for work commute
315	132	2x eastbound, 3x westbound	7 days	Philadelphia	Cape May	Not convenient for work commute
316	-	8x roundtrip	7 days	Philadelphia	Cape May	Seasonal, AC Expressway only
400	5,188	20 min. to 1 hour	7 days	Philadelphia	Sicklerville	Black Horse Pike, convenient for work commute
401	676	30 min. to 2 hour	7 days	Philadelphia	Salem	Kings Highway, convenient for work commute
402	612	30 min. to 1 hour, peak only	7 days	Philadelphia	Pennsville	US 130, NJ 44, convenient for work commute
403	2,869	20 min. to 1 hour	7 days	Camden	Turnersville	Black Horse Pike, convenient for work commute
408	1,361	30 min. to 2 hour	7 days	Philadelphia	Millville	NJ 47, NJ 55, convenient for work commute
410	1,060	30 min. to 1 hour	7 days	Philadelphia	Bridgeton	NJ 77, NJ 45, convenient for work commute
412	1,209	30 min. to 1 hour	6 days	Philadelphia	Sewell	CR 553(A), convenient for work commute
455	763	1 hour	7 days	Cherry Hill	Paulsboro	North corner of the county only
463	345	1 hour	5 days	Woodbury	Avondale P-n-R	For x-fer to express bus routes
551	2,169	30 min. to 1 hour	7 days	Philadelphia	Atlantic City	ACE only, convenient for work commute

Rail Service (operating in the vicinity of Gloucester County)						
Route	-	Frequency	Service	Terminus	Terminus	Notes
RiverLINE	-	15 min. to 30 min.	7 days	Camden	Trenton	\$1.35 flat fare
Atlantic City Line	-	40 min. to 1:30 hours	7 days	Philadelphia	Atlantic City	1 hour weekend frequency
PATCO HSL	-	4 min. to 40 min.	7 days	Philadelphia	Lindenwold	Several large park-n-ride stations

NJ Transit, 2009 and 2010
DVRPC, 2010

Existing County-Wide Conditions







-  2035 Long Range Plan Land Use Center
- NJ Bus Routes**
-  300 Series Line
-  400 Series Line
-  551

Figure 11: Current Public Transportation System

**Gloucester County
Transportation Needs Study**

Existing County-Wide Conditions

Multi-Use Trails and Bikeways

Multi-use trails and bikeways provide alternate facilities for non-motorized travel for both transportation and recreational functions (**Figure 13**). The longest individual trail extends between Glassboro and Williamstown, generally shadowing US 322. The rest of the system is fragmented and disjointed, and there is only a single on-road bikeway (CR 655). An opportunity to extend the Glassboro-Williamstown trail south from Glassboro to Bridgeton currently exists and planning efforts are underway.

A more extensive system has been developed in concept. DVRPC has developed a generalized system of interconnected multi-use trails to serve the long-range future of the region. In 2006, the Cross County Connection Transportation Management Association developed a set of recommended on-street bikeways with local municipalities to primarily serve a commuting function. Both state and county highways are included. DVRPC's Long-Range Plan and DVRPC's Congestion Management Process (CMP) advocate the completion of both networks.

Airports

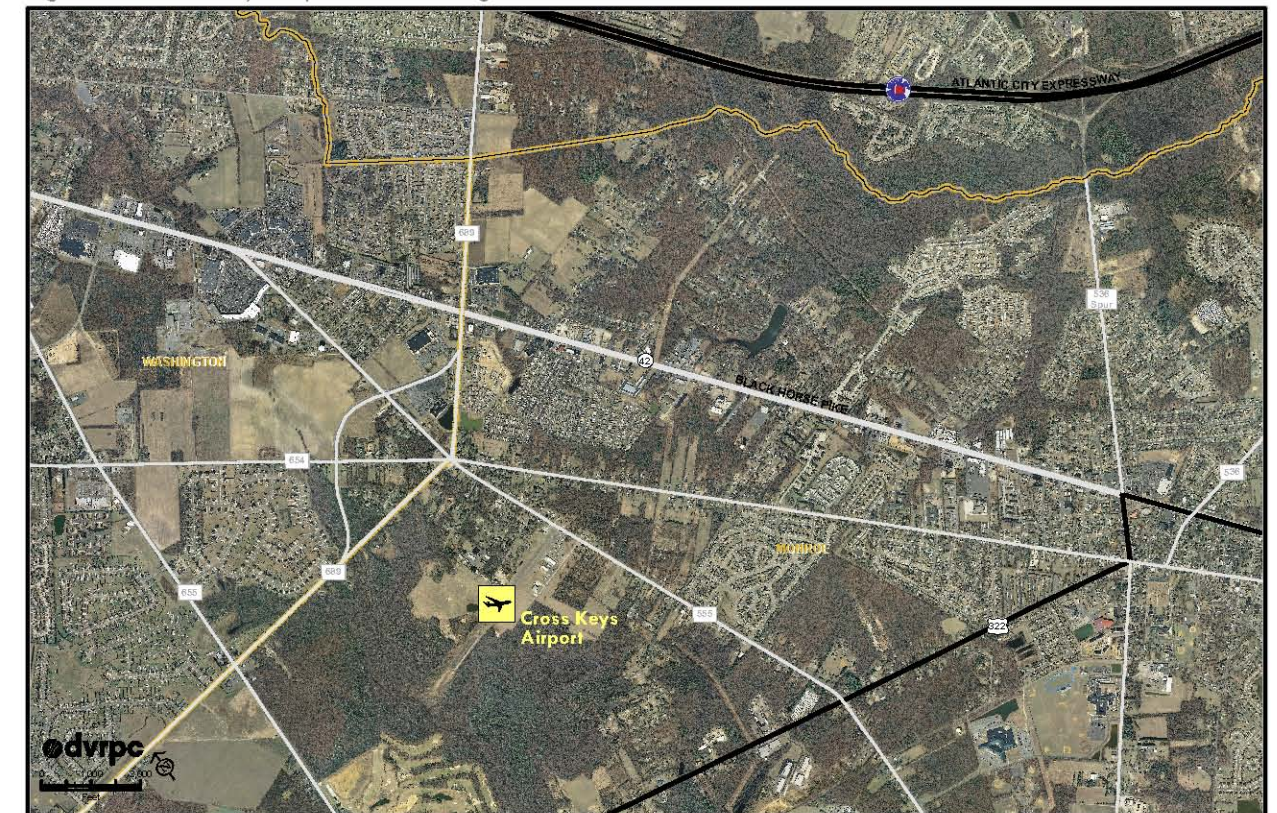
The Cross Keys Airport in Monroe Township is the county's only public-use airport, with 55 aircraft generating 25,600 annual aircraft operations (takeoffs and landings) as surveyed by the DVRPC Aircraft Operations Counting Program in 2008. See **Figure 12** for the airport's local setting.

The facility is commercially successful and strategically important because of its proximity to Philadelphia International Airport (PHL). Cross Keys is designated as a Priority General Airport in the 2006 NJ State Airport System Plan, and DVRPC's Regional Airport System Plan (RASP) recommends official reliever status for the airport. Functioning as a reliever, Cross Keys Airport would serve as an alternate for operations and storage of small general aviation aircraft, and reduce congestion at PHL. Official reliever status can also provide the potential for federal financial assistance.

Neither the owner of the airport nor the Federal Aviation Administration has agreed to officially seek or designate Cross Keys as a reliever facility. In addition, steps are underway to prepare a Master Plan for the facility with an aim of improving efficiency, safety and storage—and with that increased activity at the airport. Funding for implementation may provide the impetus for seeking the reliever designation.

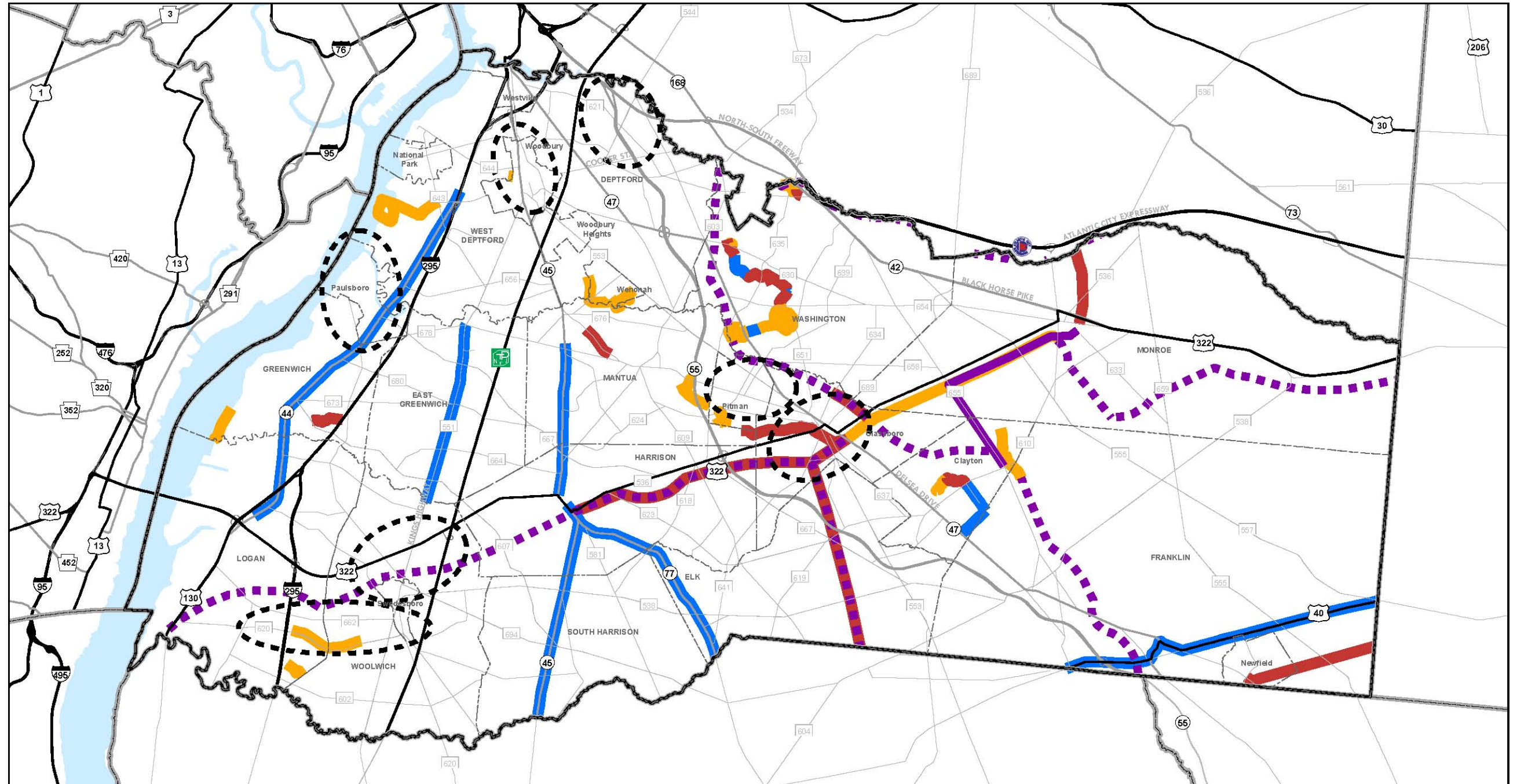
As it stands and appears for the near-future, the facility is an important asset to the state, region, and county. On a longer-term basis, the airport holds promise for further development as a public-use facility for corporate flights and supplier of new private sector jobs.

Figure 12: Cross Keys Airport Local Setting



The Cross Keys Airport is conveniently located in eastern Gloucester County with easy access to the Atlantic City Expressway, NJ 42, and US 322.

Existing County-Wide Conditions



2035 Long-Range Plan Land Use Center

Multi-Use Trail & Bikeway Network

Existing

- Cross County Connection*
- Connections 2035

Proposed Off-Road

- Cross County Connection*
- Connections 2035

Proposed On-Road

- Cross County Connection*

*Source: Cross County Connection TMA, 2009

Figure 13: Multi-Use Trails and Bikeways

**Gloucester County
Transportation Needs Study**

Existing County-Wide Conditions

Assessment of Existing Transportation Conditions

A current, but generalized status report on the adequacy of the transportation infrastructure to serve Gloucester County safely and efficiently was drawn from DVRPC's 2009 Congestion Management Process (CMP). The CMP is a systematic approach for managing congestion and enhancing the mobility of people and goods. It advances the goals of the region's Long-Range Plan by assuring that modal balance is considered and provided when planning and implementing transportation improvement projects. The CMP is also a consideration in selecting projects to include for funding in the Transportation Improvement Program (TIP). Consistency with the CMP is a requirement for projects to be eligible for federal transportation funds in air quality non-attainment areas.

The CMP identifies congested corridors and multi-modal strategies to eliminate or reduce congestion. Where additional single-occupancy vehicle (SOV) capacity is appropriate, the CMP includes potential supplemental strategies to reduce travel demand, improve operations, and return the most long-term value from the investment. Where ideas for projects are developing that are not consistent with the strategies listed in the CMP, the CMP procedures detail how to advance project development, which includes careful consideration of long-term land-use implications, with their resulting demand for transportation investment.

Existing and emerging transportation corridors are formulated based on eight criteria that follow from the goals of the DVRPC Long-Range Plan in the categories of roads, transit, safety and reliability, and land use. **Figure 14** illustrates the CMP corridor analytic framework in the Gloucester County area, and the methodology's summarized criteria for the regional highways forming the spine of the corridors. Links shown in red define the county's worst performers—all are aligned north-south. In general, the CMP content finds:

- ◆ N-S corridors (#2 – I-295, NJ Turnpike; #3 – NJ 42 & AC Expressway; #6 – US 130; #11 – NJ 41, NJ 47 and NJ 55; #12 – NJ 45) – These corridors show high concentrations of CMP criteria. Primary (Very Appropriate) strategies include: ITS, incident management, transit route and service extensions, Transit First strategies (e.g., transit signal priority along arterial highways, etc.), traffic engineering (e.g. center turn lanes), and land use strategies (e.g. transit-oriented development).
- ◆ US 322 (#7) – Shows medium concentrations of CMP criteria, with multiple criteria concentrated in Mullica Hill, Richwood, Glassboro and at the junction of the Black Horse Pike (NJ 42). Primary (Very Appropriate) strategies include: ITS (e.g. closed loop computerized traffic signals), traffic engineering (e.g. channelization), park-and-ride lots, and land use strategies (e.g., roadway connectivity, transit-oriented development).

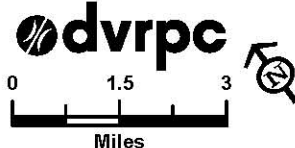
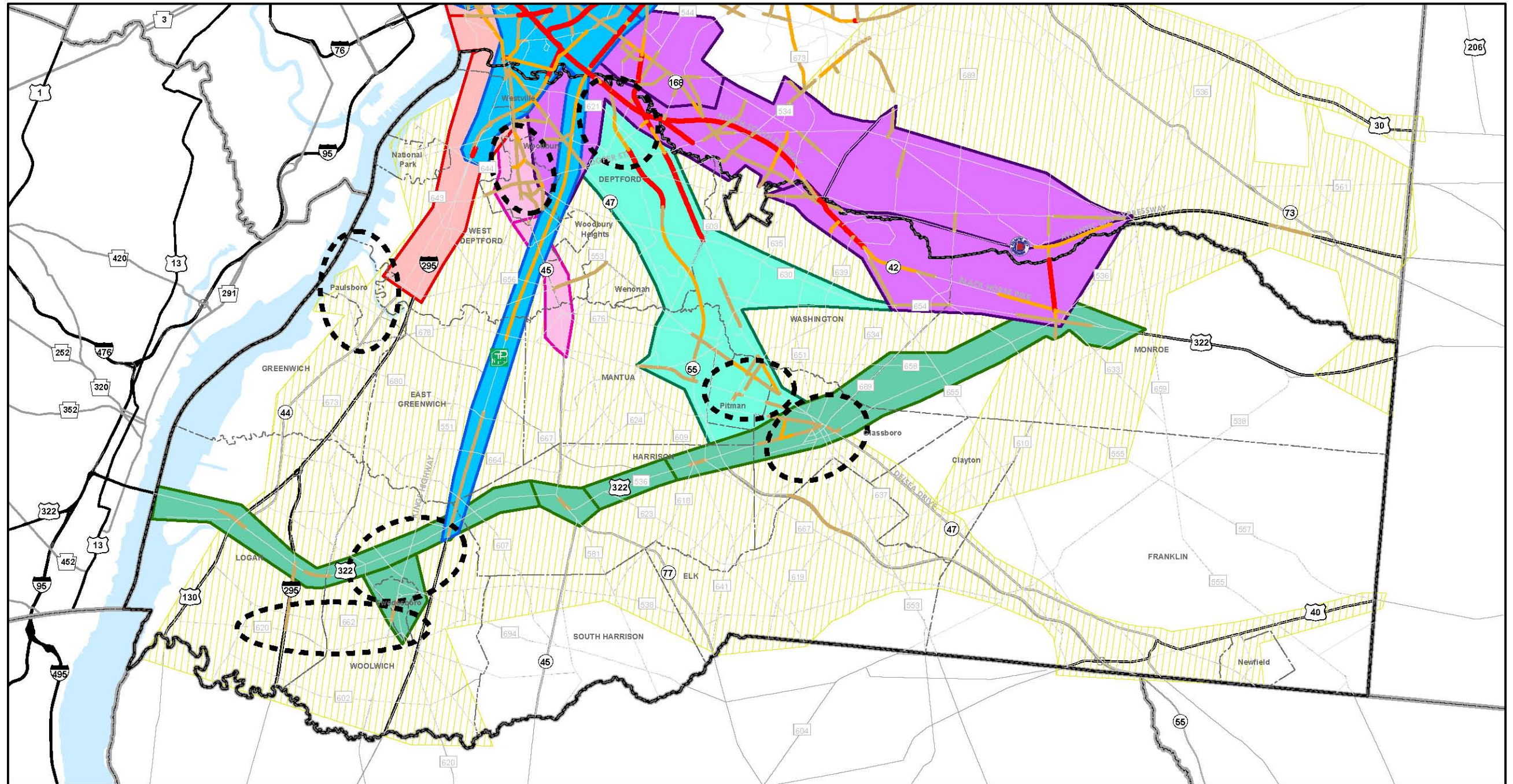
Detailed evaluations addressing multi-modal conditions in corridor #7, and proposed transit investments to aid conditions in corridors #3, 7, 11, and 12 are presented in **Chapters 5**. Recommendations are cited in **Chapter 6**.

The Process findings also indicate that the vast majority of the remainder of the County is at risk and concern for emerging congestion.

- ◆ Area-wide congestion – Appropriate strategies to combat area-wide problems include instituting highway access management practices, revising existing land use and transportation regulations, and practicing growth management and Smart Growth initiatives.

Policy actions are identified to better manage the county-wide trend. Recommended strategies are discussed in **Chapter 6**.

Existing County-Wide Conditions



- | | |
|-----------------------------|--------------------------------------|
| NJ Corridors | 2035 Long-Range Plan Land Use Center |
| 2 – I-295, NJ Turnpike (S) | Sum of Criteria |
| 3 – AC Expressway/NJ 42 | 0 - 3 |
| 6 – US 130 | 3 - 4 |
| 7 – US 322, Cross Keys Area | 4 - 5 |
| 11 – NJ 41, NJ 47, NJ 55 | 5 - 8 |
| 12 – NJ 45 | |
| Emerging Corridors | |

Figure 14: 2008 Congestion Management Process Corridors

Gloucester County Transportation Needs Study

Existing County-Wide Conditions

Traffic Safety

DVRPC staff conducted a county-wide traffic safety analysis to determine high-crash corridors. NJDOT's Plan4Safety program was employed to assess the county and non-county highway networks to identify five-mile long corridors with a minimum of 50 crashes over a three-year period (2006–2008). **Figure 15** shows crash corridors exceeding the planning threshold along the county roadway network and **Figure 16** shows the assessments performed for state and toll roads.

With the exception of CR 654 in Washington Township, the highest rated crash corridors are typically state-owned highways. Of those identified, some corridors have already had improvements completed, or are planned to.

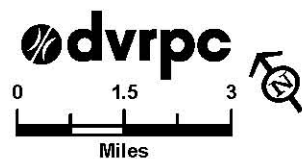
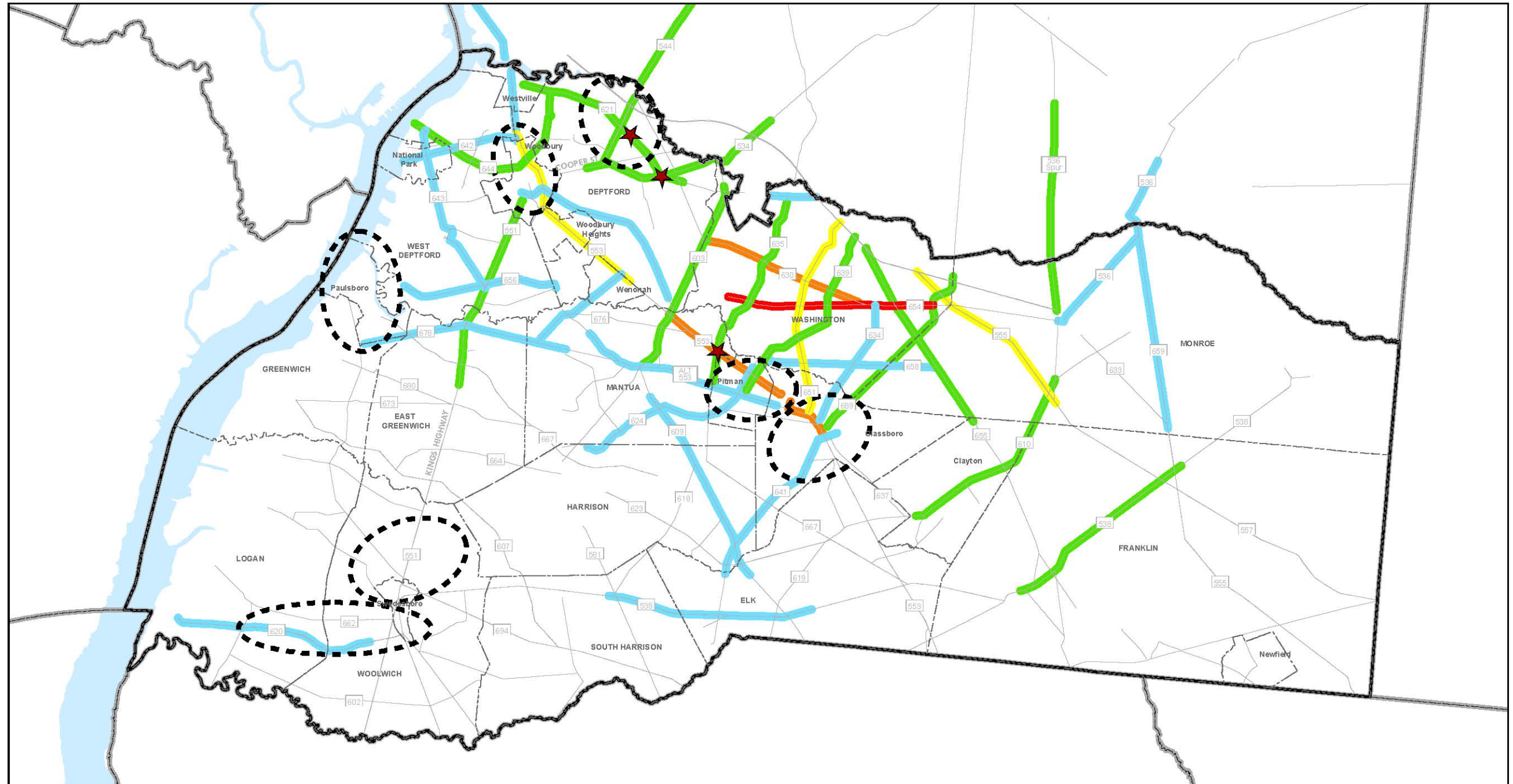
- ◆ Mullica Hill Road, US 322/CR 536, in Richwood and US 322, in Glassboro, recently completed Richwood Area improvements, and pedestrian improvements and roundabout construction / Rowan Boulevard improvements through the Rowan University campus in Glassboro.
- ◆ NJ 47, Delsea Drive in Glassboro, improvements recently completed include turning lanes and signal improvements.
- ◆ CR 654, Hurffville-Cross Keys Road between Green Tree Road (CR 651) and Chapel Height Road (CR 639) in Washington Township, travel and turning lanes and signalization improvements have been added.
- ◆ CR 553, Woodbury-Glassboro Road in Pitman and Mantua, has improvements planned for the Lambs Road and Tylers Mill Road intersections.
- ◆ CR 630, Egg Harbor Road in Washington Township, improvement planned, including the addition of turning lanes.

Regional and State crash location priority lists were also reviewed for prior assessments / improvements.

- ◆ No state-to-state highway intersections in the county are among the state's top 200 locations (2003 – 2005).
- ◆ Three intersections in Gloucester County are on the state-wide priority crash list of county-to-county roadway intersections (2003 – 2005): CR 553/CR 635, in Pitman and Mantua; CR 534/CR 621, in Deptford; CR 621/Deptford Center Road, in Deptford.

- ◆ DVRPC roadway safety audit priority lists for intersections (2002 – 2004), and 5-mile long roadway segments (2004 – 2006). In the latter list, crash rates for CR 654, in Washington Township, and CR 620, in Woolwich, equaled or exceeded the functional class average (by 2 to 3 times).

Existing County-Wide Conditions



- 2035 Long-Range Plan Land Use Center
- High Priority Intersection along County Routes*
- * Source NJ DOT statewide priority crash list (2003-2005)

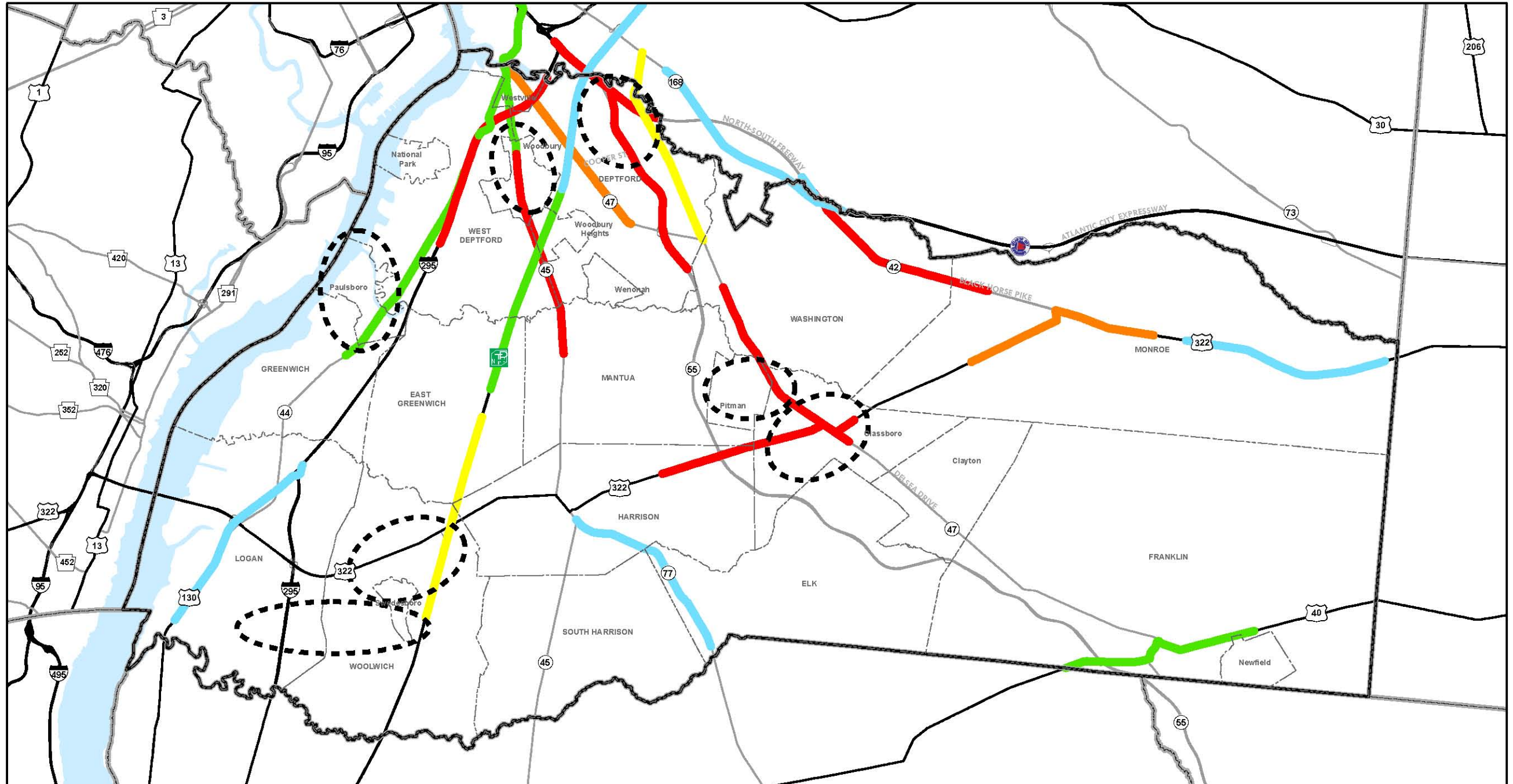
- 5-Mile Crash Clusters (2006–2008)****
(50 Crashes Minimum)
- 50 – 100
 - 101 – 200
 - 201 – 300
 - 301 – 400
 - 400 +

**Source: Plan 4 Safety, 2010

Figure 15: Traffic Safety along County Highways

**Gloucester County
Transportation Needs Study**

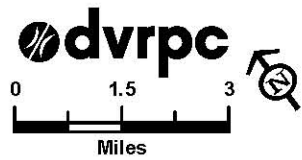
Existing County-Wide Conditions



 2035 Long-Range Plan Land Use Center
5-Mile Crash Clusters (2006–2008)*
 (50 Crashes Minimum)
 Light Blue: 50 – 100 Orange: 301 – 400
 Green: 101 – 200 Red: 400 +
 Yellow: 201 – 300
 *Source: Plan 4 Safety, 2010

Figure 16: Traffic Safety along State and Authority Highways

**Gloucester County
Transportation Needs Study**



Existing County-Wide Conditions

Public Transportation Service

Existing bus routes serving the county were evaluated employing DVRPC's Transit Score methodology. Transit Scores are formulated with consideration of a geographic area's population, housing, auto-ownership, and employment density characteristics; and are useful for judging appropriate geography, modes and levels of transit service for investment decisions.

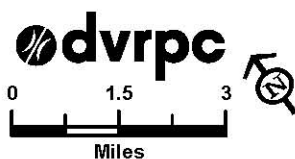
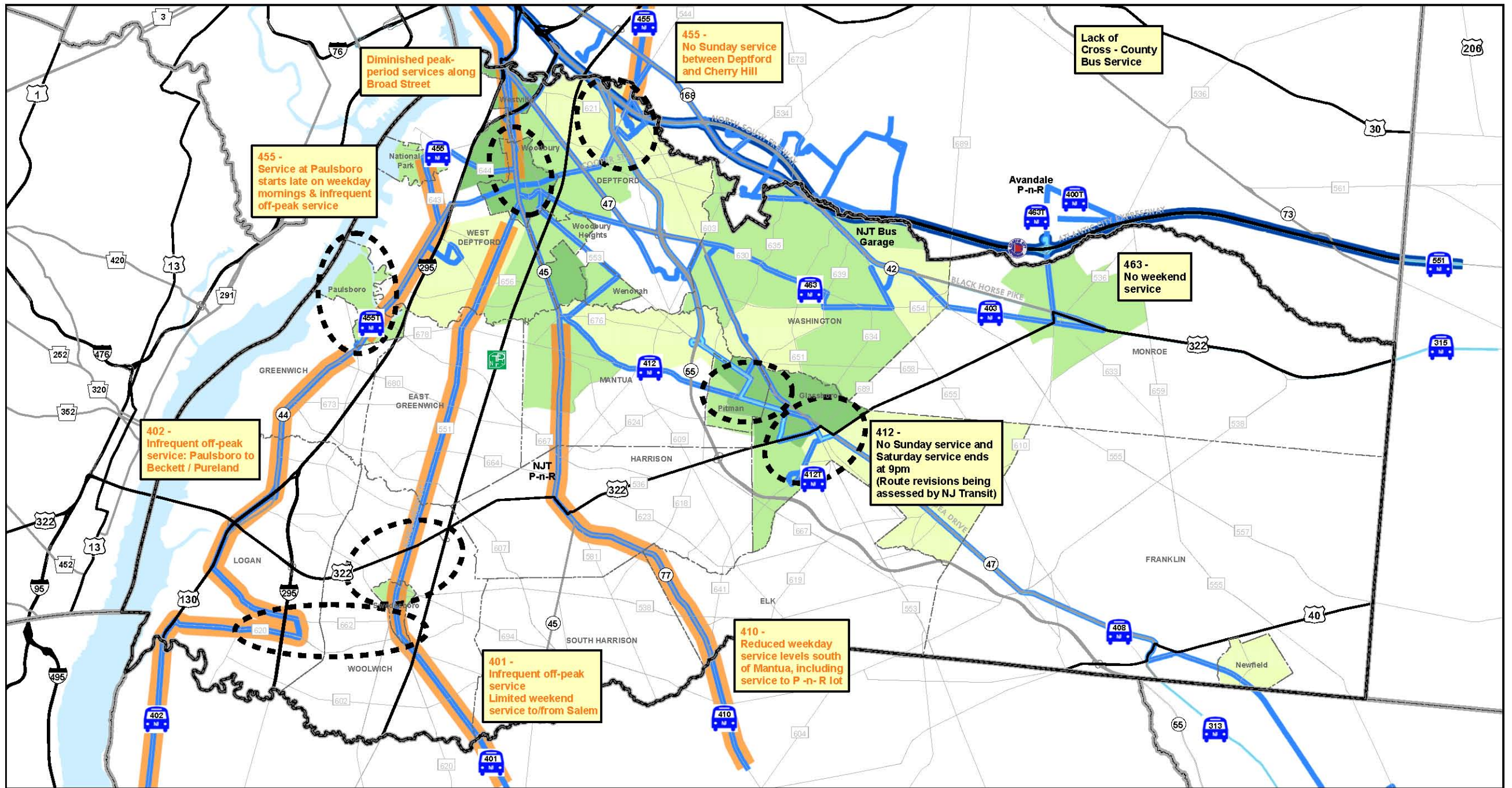
Figure 17 shows the existing bus routes in relationship to the Transit Score methodology, assuming forecasted 2005 demographic conditions. For the most part bus routes are provided in areas that are supportive of some level of transit service (i.e., in the northern parts of the county), in areas containing disadvantaged population groupings, and in all land use centers.

Facets of the scheduled service could be improved. In summary, the service deficiencies include:

- ◆ Routes 401 and 402 – infrequent off-peak service along a majority of the routes
- ◆ Routes 410 and 455 – infrequent peak, and off-peak service along “outer” extents of the routes
- ◆ Route 455 – no Sunday service to Cherry Hill
- ◆ Routes 402, 408, 410, and 412 – diminishing peak period service north of Woodbury, as predominant direction buses depart Broad Street in express to/from Philadelphia
- ◆ Routes 412 and 463 – lack seven day a week service
- ◆ Lack of east-west (cross-county) service in the southern part of the county

At the present time, Route 412 is undergoing route reevaluation by NJ Transit. Four realignments are being considered in Mantua Township. All alternates would more directly serve the locations of proposed GCL stations than the route's current alignment.

Existing County-Wide Conditions



2035 Long-Range Plan Land Use Center

2005 Transit Score

Low (< 0.60)	Med.-High (2.51 - 7.50)
Marginal (0.61 - 1.0)	High (> 7.50)
Medium (1.01 - 2.50)	

NJ Bus Routes

	300series Line
	400series Line
	551

Figure 17: Assessment of Current Public Transportation System

Gloucester County
Transportation Needs Study

Existing County-Wide Conditions

Current Transportation Improvement Program

There are a series of recently completed, advancing and planned transportation improvement projects in, and in the vicinity of Gloucester County (**Figure 18**). Sponsors include NJDOT, NJ Transit, Gloucester County and the region's transportation authorities.

Transportation Authority Projects

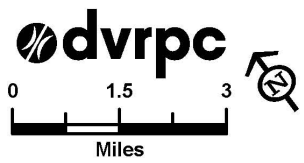
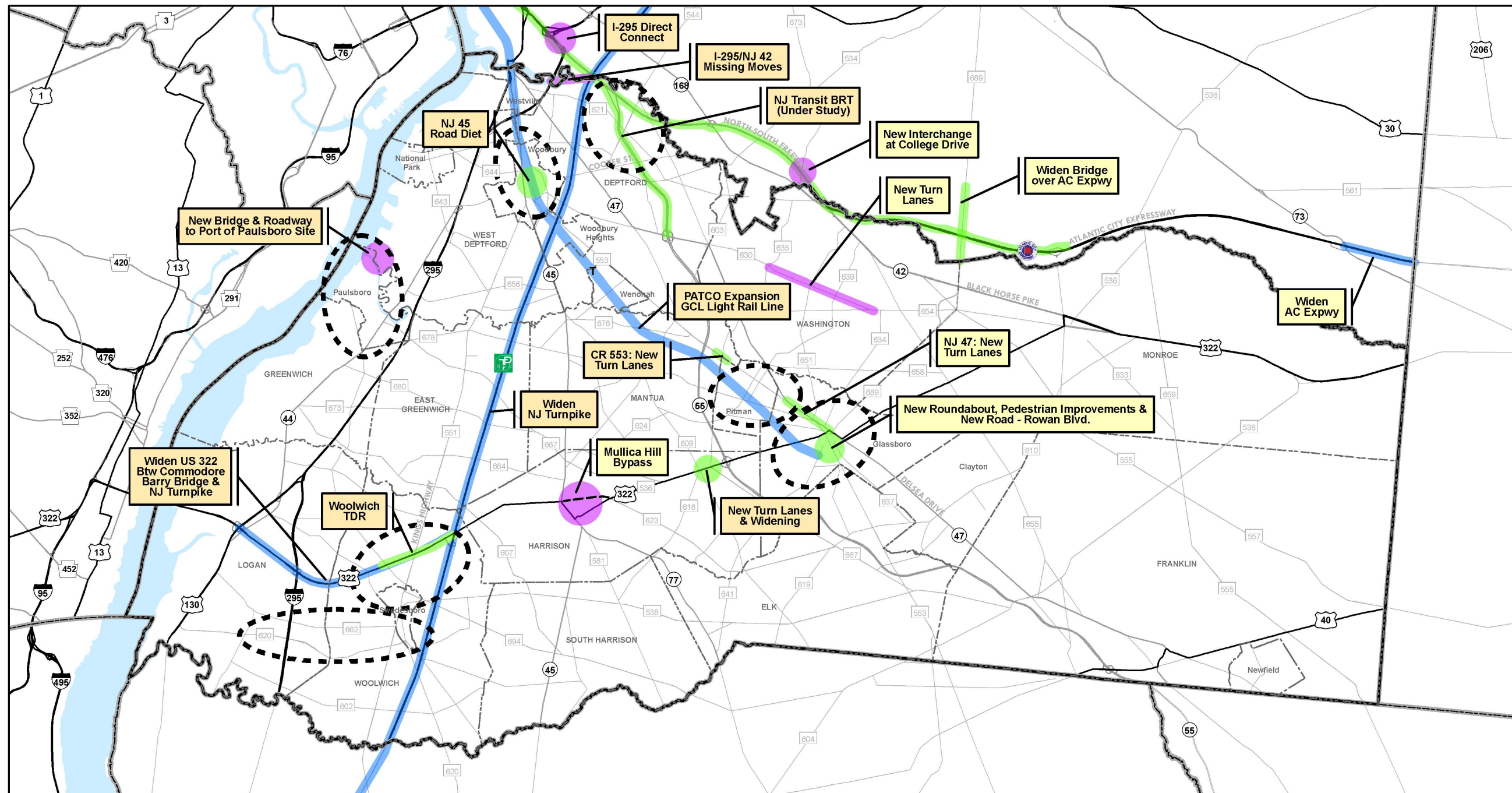
Two major public transportation planning projects were identified in the *Transit Investment Vision for Southern New Jersey* prepared in 2009 by the Delaware River Port Authority (DRPA) / Port Authority Transit Corporation (PATCO), and both are advancing.

- ◆ Glassboro-Camden Line (GCL) – a proposed expansion of passenger rail service that would operate diesel light rail vehicles along an 18-mile long alignment between the Walter Rand Transportation Center in Camden and Glassboro. Much of the proposed alignment utilizes existing Conrail right-of-way and tracks. The service would be similar to NJ Transit's River Line. The GCL is proposed to have 15 stations, including 11 stations in Gloucester County. An alternatives analysis conducted by DRPA / PATCO determined the preferred alignment and mode for further development. Funding and sponsorship for conducting an Environmental Impact Statement (EIS) for the transit extension are currently being determined. Earlier timelines for the project's continued development indicated that environmental clearance and design would take four years, followed by a two year construction effort.
- ◆ Bus Rapid Transit (BRT) – a proposal for premium express / limited-stop bus service between the NJ 47/NJ 55 interchange and Camden/Philadelphia, and the Avandale Park-n-Ride lot (CR 536 Spur/Atlantic City Expressway Interchange) and Camden/Philadelphia. NJ Transit has taken the lead on this project. A two year alternatives analysis study is currently underway with an expected completion by the end of 2011.

Both projects will have consequences on the County's long-term future, and were studied in greater detail as part of this study at the request of the County. Details are provided in **Chapter 5**.

Two major highway projects are planned by the New Jersey Turnpike Authority, and the South Jersey Transportation Authority, including the widening of the NJ Turnpike, through the entirety of Gloucester County, and adding an eastbound lane to the Atlantic City Expressway between NJ 73 and the Garden State Parkway.

Existing County-Wide Conditions



2035 Long-Range Plan Land Use Center

Current Project

Planned Project

Source:
 - Connections 2035, DVRPC 2009
 - TIP/ for NJ 2010 - 2013
 - GC P/W CIP 2008 - 2010

Long-Range Plan (LRP)

Transportation Improvement Program*(TIP)

Other (County, Municipalities)

*The DVRPC Board unanimously adopted the FY2010 TIP for New Jersey on July 23, 2009

Figure 18: Current and Planned Improvements

**Gloucester County
 Transportation Needs Study**

Existing County-Wide Conditions

County and NJDOT Projects

The County recently completed its widening and intersection improvements to US 322 / CR 536 through the Richwood area of Harrison Township, and continues to advance the construction of the Mullica Hill Bypass, a new two-lane roadway on a separate alignment. Both projects address longstanding bottlenecks along US 322 / CR 536.

NJDOT completed construction of a roundabout and pedestrian safety improvements along US 322 through the Rowan University campus consequent with the University's construction of Rowan Boulevard.

Gloucester County and NJDOT will partner in funding the Paulsboro Marine Terminal Access Road and Bridge project (see **Figure 19**). The project will provide a bridge over the Mantua Creek and a two-lane roadway for a more direct and less intrusive connection between the industrial redevelopment site and I-295 at the Mantua Grove Road (CR 656) interchange. Project completion is slated for late 2012.

Figure 19: Paulsboro Marine Terminal Access Road and Bridge Project



The Paulsboro bridge project will allow for efficient connections between the Port of Paulsboro and I-295.

Existing County-Wide Conditions

Conclusion: Analysis of Existing Conditions

Observations reached in assessing the current transportation situation include:

- ◆ All limited-access freeways and most arterial highways serve north-south travel. These are the most heavily traveled and congested routes in the planning area.
- ◆ Just one major east-west arterial highway traverses the county. US 322 traverses largely undeveloped lands in the southern part of the county. Trends suggest that these are the areas that will be most prone for development, and where population and employment will increase the most.
- ◆ Existing NJ Transit bus route service is concentrated in the developed areas of the county. Routes are predominantly oriented to north-south travel along major arterial highways, and serve regional land use centers and areas with disadvantaged populations.
- ◆ A very small proportion of county residents use public transit for work commuting. Frequency and span of service, and days of operation are not uniform for the bus routes.
- ◆ There is no cross-county bus service in the southern, growing portions of the county.
- ◆ Though there are numerous multi-use trails in Gloucester County, the system of trails is disjointed and uncoordinated.
- ◆ The County has been very successful at directing transportation investments to improve the most deficient facilities.
- ◆ Two proposed mass transportation projects within the county (the GCL, and BRT) will greatly improve services. The projects offer potential for altering commuting patterns and integrating modes and services; and invite opportunity for supportive development and redevelopment.
- ◆ Regional and County planning and improvement programs are in place that address the county's main travel corridors.
- ◆ Forecasted growth foreshadows sprawling land development patterns, dispersed trip making and significant increases in travel activity and congestion throughout the county.

Master planning was performed to sustainably accommodate future conditions throughout the county, and is addressed in the following chapters.

Growth and Development

Future development trends and growth in the county were drawn from an examination of DVRPC's long-range forecasts of population and employment. **Table 4** indicates the levels of residents and jobs in the county's municipalities in 2005 and 2035. In the horizon year, the forecasts indicate that an additional 95,000 residents and 38,000 jobs can be expected throughout the county. Washington, Monroe, Deptford, and West Deptford Townships and the Borough of Glassboro will continue to grow and will continue to contain the highest levels of population and employment.

The older and more densely developed portions of the county are forecasted to grow the least, indicating sprawl will persist. The largest absolute gains in residents (about 15,100 people) are forecasted for Woolwich Township.

Figures 20 and 21 reinforce that the locations of the strongest growth will continue in the least developed areas of the County—along the US 322 corridor.

Smart Growth principles and planning practices offer a means to direct and manage the change.

Table 4: Municipal Demographics: 2005 Estimates and 2035 Forecasts

Municipality	Area (mi. ²)	Population			Employment		
		2005	2035	% Change	2005	2035	% Change
Clayton Borough	7.45	7,275	10,353	42%	2,023	2,885	43%
Deptford Township	17.57	29,456	34,996	19%	13,968	16,321	17%
East Greenwich Township	14.89	6,206	8,561	38%	1,612	2,177	35%
Elk Township	19.73	3,755	7,259	93%	725	1,604	121%
Franklin Township	56.36	16,498	22,668	37%	3,349	4,380	31%
Glassboro Borough	9.34	19,103	25,983	36%	8,667	9,926	15%
Greenwich Township	11.96	4,932	5,295	7%	3,486	3,899	12%
Harrison Township	19.07	11,291	20,433	81%	2,744	5,532	102%
Logan Township	26.78	6,146	7,440	21%	6,409	10,540	64%
Mantua Township	15.99	15,029	22,806	52%	7,228	11,683	62%
Monroe Township	46.84	31,158	46,709	50%	8,128	10,993	35%
National Park Borough	1.52	3,192	3,428	7%	358	397	11%
Newfield Borough	1.68	1,645	1,761	7%	782	836	7%
Paulsboro Borough	2.49	6,037	6,219	3%	2,515	2,878	14%
Pitman Borough	2.27	9,162	10,075	10%	3,148	3,252	3%
South Harrison Township	15.62	2,859	4,432	55%	426	849	99%
Swedesboro Borough	0.76	2,030	2,402	18%	2,462	2,797	14%
Washington Township	21.55	50,198	57,695	15%	12,861	19,372	51%
Wenonah Borough	0.99	2,310	2,639	14%	731	910	24%
West Deptford Township	18.02	20,709	26,956	30%	9,858	13,715	39%
Westville Borough	1.12	4,423	4,997	13%	2,635	2,748	4%
Woodbury City	2.10	10,334	10,488	1%	10,815	11,526	7%
Woodbury Heights Borough	1.25	2,993	3,160	6%	1,615	1,823	13%
Woolwich Township	21.42	7,490	22,619	202%	1,684	4,852	188%
Gloucester County Total	336.77	274,231	369,374	35%	108,229	145,895	35%

DVRPC, 2010

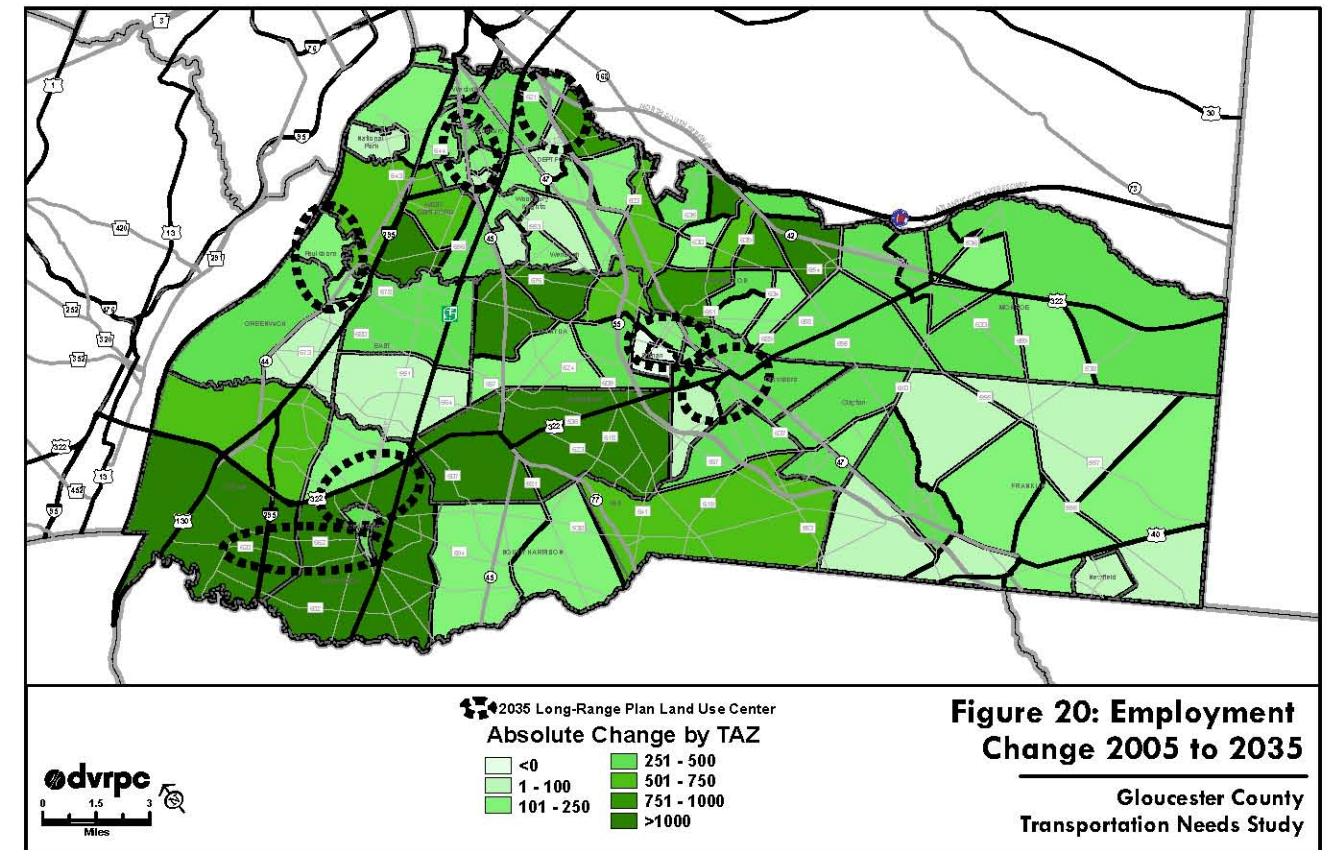


Figure 20: Employment Change 2005 to 2035

Gloucester County Transportation Needs Study

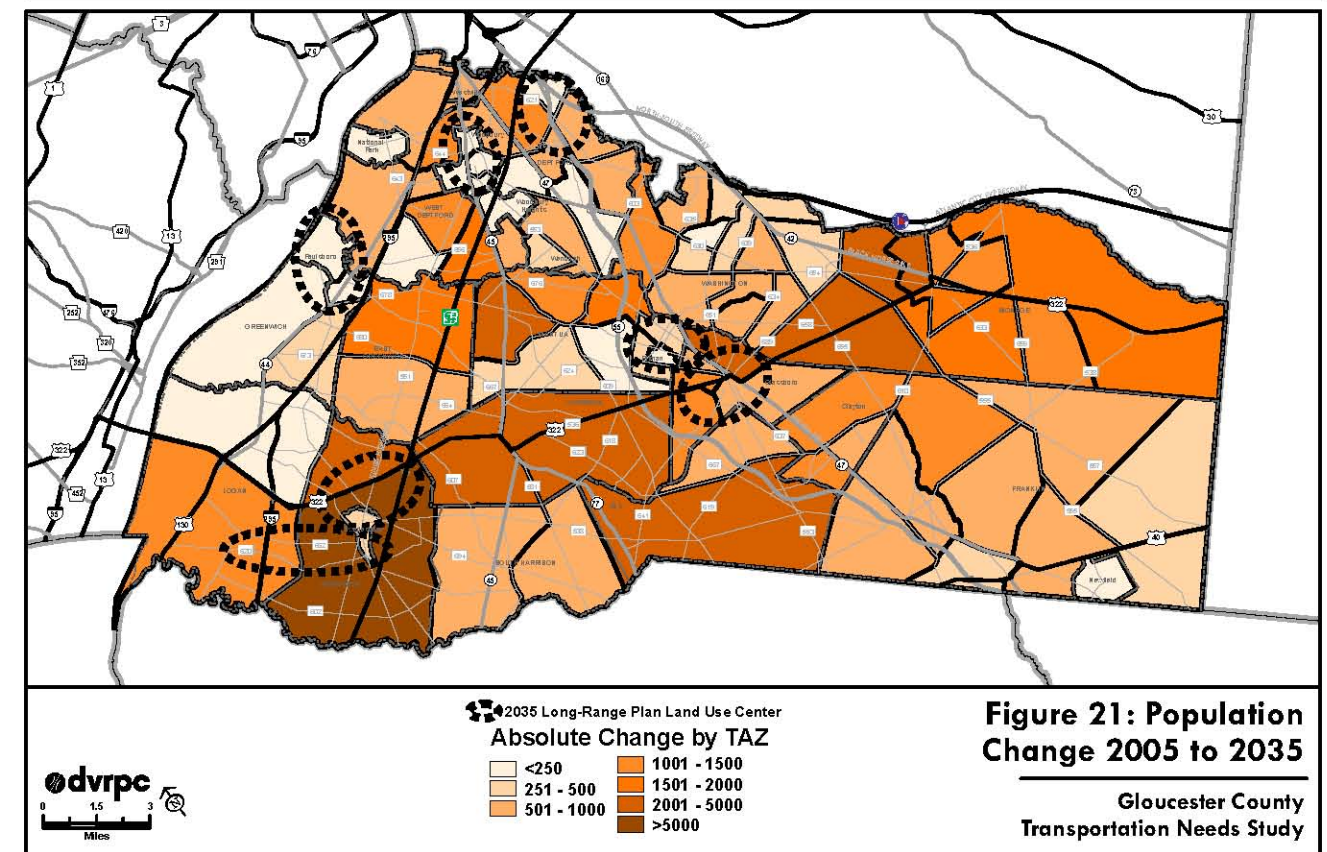


Figure 21: Population Change 2005 to 2035

Gloucester County Transportation Needs Study

Growth and Development

Land Use Centers

Smart Growth links land use, community and transportation planning, decisions and investments to foster community-building, contain sprawl and conserve resources. New growth is encouraged to take place in compact, mixed-use centers, which desirably are already supported with infrastructure. In settings where jobs and residents are located in close proximity, vehicular travel can be eliminated or reduced, and more effectively served by more transportation options than just the private automobile.

Land use centers supply the focal points for regional Smart Growth planning practice. Strategies differ by the nature of the development present and the goal to be achieved and usually require small area master plans and revisions to municipal comprehensive plans and ordinances to realize them. For all, transferring development rights from lands targeted for preservation to the center is a means to channel future growth, and multi-municipal planning agreements may be required.

Areas for consideration include:

- ◆ Older downtowns: Reinvest in and revitalize older downtowns – these compact areas already demonstrate the land use characteristics and transportation benefits of Smart Growth—build upon them
- ◆ Large single-use centers: Vary and intensify land use, including residential, within commercial centers at interchanges, and large free-standing shopping centers to supply complementary live-work-play land use arrangements, internalize trip making and support transit service
- ◆ Transit stations (Transit-oriented development): Add land activities within 1/4-mile of existing, proposed and potential stations to promote a pedestrian environment, and support transit service and two-way ridership
- ◆ New towns: Establish high density, mixed-use new towns that mimic older traditional communities on large, undeveloped tracts

DVRPC’s regional plan for a sustainable future, *Connections*, identifies seven land use centers in the County:

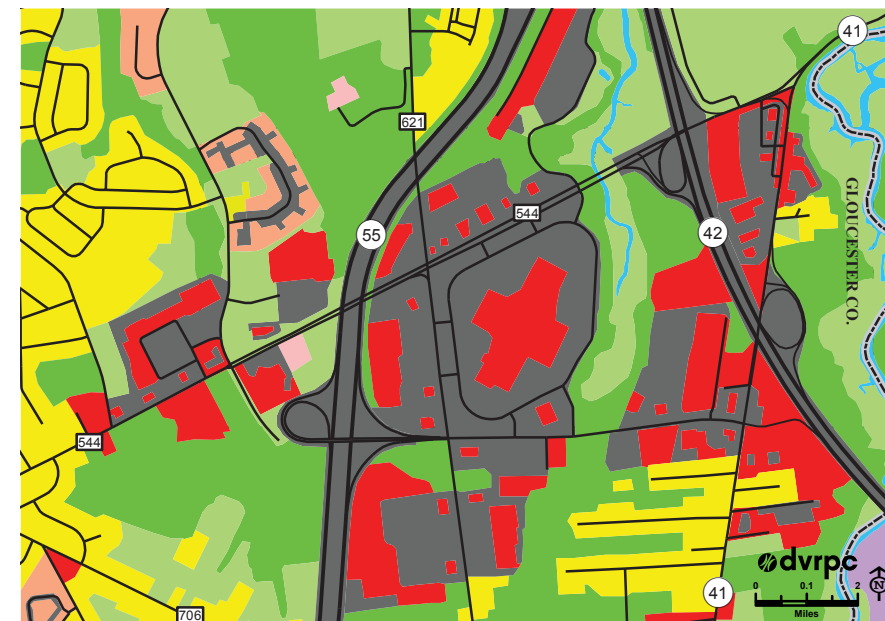
“Suburban Center”– Deptford. A retail hub with 2.6 million square feet of gross leasable area occupies 329 acres within the area formed by the interchanges of NJ 55, NJ 42, NJ 41 CR 544, and Deptford Center Road. The Deptford Mall and seven other large single-use centers, supported by more than 8,000 parking stalls, are located here (see **Figure 22**). Two NJ Transit bus routes serve the center.

“Town Centers”– Glassboro, Paulsboro, Pitman, Swedesboro, and Woodbury. These are traditional downtowns with residential neighborhoods in close proximity that supply a mix of retail and service functions in a walkable setting. Each is served by at least one scheduled NJ Transit bus route.

Glassboro is the location of Rowan University. Swedesboro contains Beckett, a planned residential community, and the Pureland Industrial Park on either sides of the I-295 / CR 620 (Center Square Road) interchange. Woodbury is the seat of government for Gloucester County.

As a consequence of its riverfront location, Paulsboro is also a **“County Industrial Center.”** Valero Refinery’s gasoline and petroleum refining operations are located there, and it is also proposed location for the future Paulsboro Marine Terminal (occupying the former BP facility). The new 175 acre port facility will accommodate mixed general cargo specializing in break-bulk commodities. Supportive transportation investments for the site have been committed, including a new roadway / bridge connection between the site and I-295. These landside access improvements will serve the port and maintain the quality of life in the Borough’s residential neighborhoods.

Figure 22: Deptford Center Land Use



The commercial (red) and transportation / parking (gray) land uses define Deptford Center as a large single-use “Suburban Center.”

Growth and Development

“Planned Town Center”– Woolwich. A new mixed-use community is being developed through the provisions of Woolwich Township’s Transfer of Development Rights (TDR) plan. The planned town center will simultaneously remove development pressure from productive farmlands and open spaces in the remainder of the township, concentrate necessary infrastructure investment and support the municipal tax base.

The development receiving zone is spread over two parcels totaling 868 acres—straddling US 322 from approximately Oak Grove Road (CR 671) on the west, through the New Jersey Turnpike interchange to the boundary with Harrison Township on the east. The ultimate project may include 3.6 million square feet of commercial space and a mix of housing types totaling 3,700 dwelling units (only 230 units are proposed as single-family homes), community and recreational spaces. The parcel west of the Turnpike, the Auburn Road Receiving Zone, will be predominantly residential (500 dwelling units). The US 322 Corridor Receiving Zone will be the “new town” component and will contain the rest, and the vast majority, of the proposed development’s activity.

The planned center will offer interconnected circulation roadways, integrated with existing streets, functionally designed to accommodate all modes (pedestrians through transit buses)—reducing the need to drive alone in private automobiles. Improvements to adjacent roadways, including configuring US 322 as a boulevard, have been defined in the plan to offset impacts of the land development project. At present, the NJ Transit 401 Bus operating north-south between Salem, Camden and Philadelphia along Kings Highway (CR 551) serves the central portion of the site.



DVRPC, 2010

Future Transportation Conditions

Examinations of future conditions were developed incrementally and collaboratively with GCPD staff. The work assignments addressed:

- ◆ The US 322 Corridor – traffic safety, travel forecasting and mobility
- ◆ The proposed Glassboro-Camden passenger rail line – intermodal and land use planning
- ◆ The proposed BRT service along the North-South Freeway (NJ 42), and the Atlantic City Expressway / and NJ 55 – general service planning information
- ◆ County-wide public transportation planning – service and intermodal planning.

The investigations and findings of the geographical / facility studies gradually overlapped, became complementary, and ultimately were merged into a comprehensive program of recommended improvement projects, strategies, etc., to serve the entire county.

US 322 Corridor Traffic Study

US 322 is the principal east-west arterial highway spanning Gloucester County, and represents a general boundary between the mature northern and growing southern parts of the county. Recent traffic counts indicate daily traffic volumes of approximately 18,500 vehicles near the Commodore Barry Bridge and 8,800 vehicles near its intersection with the Black Horse Pike. Typically, the highway provides two travel lanes, though in the vicinity of the interchanges with US 130, I-295, the NJ Turnpike, and NJ 55, US 322 has a four-lane cross-section. The ongoing construction of the Mullica Hill Bypass will result with four travel lanes traversing Mullica Hill split into two, two-lane facilities.

Traffic safety analyses and travel demand forecasting / traffic mobility studies were conducted for seven critical growth and mobility areas (focus areas) within the corridor and for the corridor as a whole. The focus areas, defined by GCPD staff, are locally important within the southern, growing part of the county, and in large part correspond with the Long-Range Plan's land use centers. Ultimately, five of the seven focus areas are situated along US 322 – thereby defining the study corridor.

The seven focus areas are:

- ◆ Beckett/Pureland – Logan and Woolwich Townships
- ◆ Woolwich – Woolwich Township
- ◆ Mullica Hill – Harrison Township
- ◆ Richwood – Harrison Township
- ◆ Pitman and Glassboro – the namesake boroughs
- ◆ Hurffville/Fries Mill – Washington Township
- ◆ CR 555 / US 322 – Monroe Township

The municipalities comprising the corridor account for 44 percent of the county's land area, 43 percent of its jobs, and 50 percent of its population. By the year 2035, the corridor municipalities are forecasted to grow between seven and eleven percent more than the county average.

Traffic Safety

NJDOT's online crash records database – Plan4Safety – (2005–2007) was queried for crash clusters having 15 or more total reportable accidents occurring within 0.10 mile segments along US 322, and the state and county roadways within the focus areas. Severity trends and collision patterns were recorded and are mapped on **Figure 23**.

US 322 – There are four isolated cluster locations outside the focus areas: CR 607 (unsignalized intersection, 21 crashes – predominately angle, improvements planned), CR 655 (unsignalized intersection, 33 crashes – predominately rear-end), and at the east end of the corridor between CR 610 (signalized, 23 crashes – predominately rear-end) and NJ 42 (signalized, 27 crashes – predominately angle)

Future Transportation Conditions

Focus Areas:

- ◆ Beckett/Pureland – 40 crashes at 2 signalized intersections (Heron and Beckett) along Center Square Road, CR 620, on either side of the I-295 interchange – predominately rear-end
- ◆ Woolwich – no crashes (threshold not met)
- ◆ Mullica Hill – 190 crashes along US 322 predominantly – predominately rear-end (improvements under construction)
- ◆ Richwood – 119 crashes – primarily along US 322 and predominately rear-end (improvements completed)
- ◆ Pitman/Glassboro – approximately 400 crashes along US 322 and NJ 47 – predominantly rear-end (improvements completed)
- ◆ Hurffville/Fries Mill – 227 crashes along CR 654, Hurffville-Cross Keys Road – predominately rear-end (improvements completed by the County in 2008)
- ◆ CR 555/US 322 – 45 crashes at the signalized intersection – predominately right-angle

The vast majority of crashes are rear-end crashes occurring along the arteries traversing four focus areas (Mullica Hill, Richwood, Pitman/Glassboro, and Hurffville/Fries Mill). Traffic volume – through and turning; roadway environment – driveway frequency and definition, presence of turn lanes; and signal timing – clearance, turn phases, progression—all may be contributing factors. As such, more detailed evaluations are recommended for follow-up.

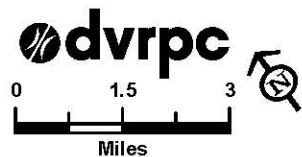
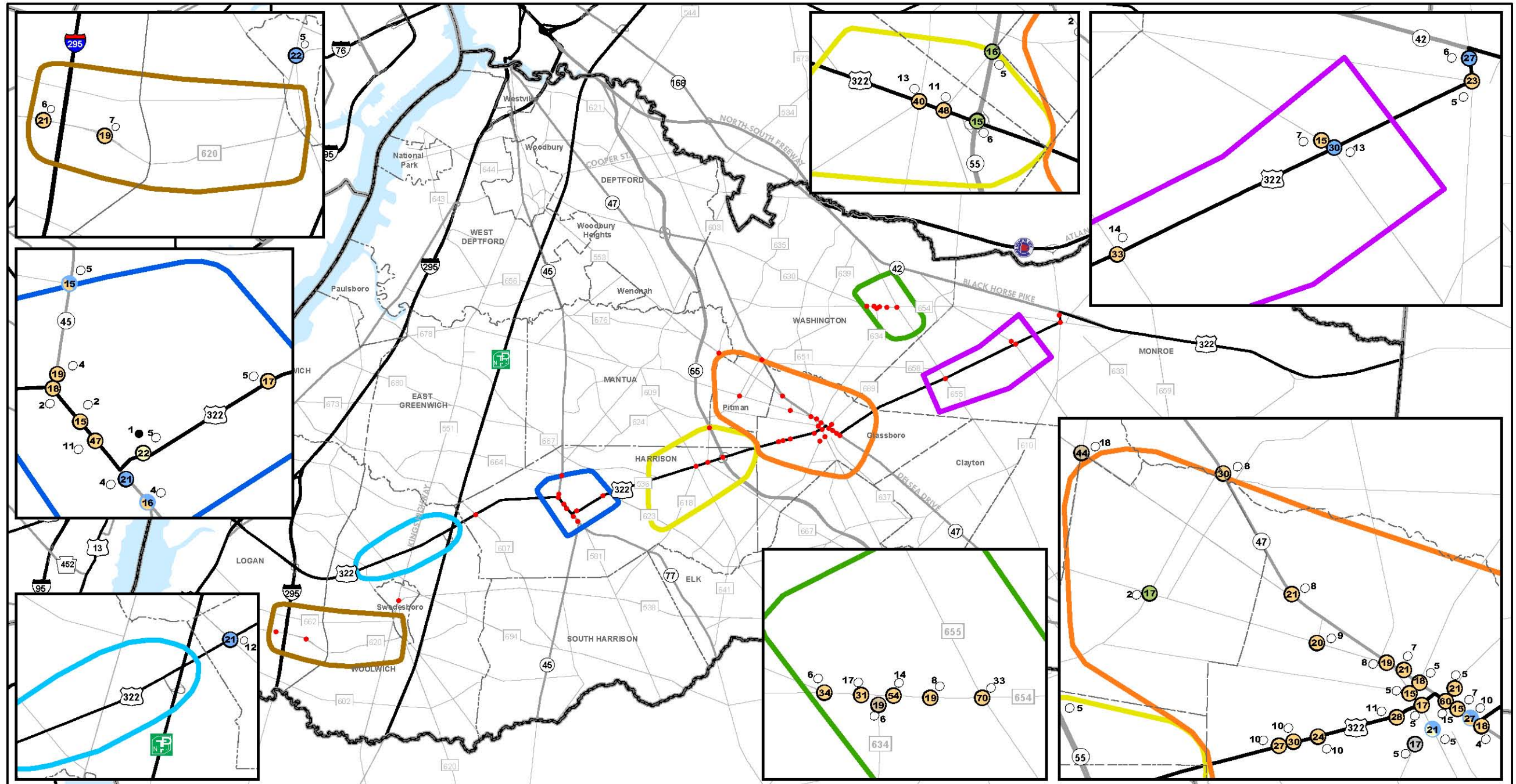
Many of the identified high crash locations have had improvements recently completed, or have improvements planned, including;

- ◆ Mullica Hill Bypass in construction
- ◆ Richwood Area improvements constructed
- ◆ Improvements to US 322 and NJ 47 in Glassboro constructed
- ◆ Planned improvements along CR 553 north of Pitman
- ◆ Improvements in the Hurffville/Fries Mill focus area along CR 654 constructed

- ◆ Planned improvements in the Hurffville/Fries Mill focus area CR 630

These planned or constructed improvement locations address a significant proportion of the high crash locations identified in this analysis. Outstanding locations are recommended for remediation with operational improvements or through independent action.

Future Transportation Conditions



○ Focus Area
19 Total # of Crashes (3yrs:2005-2007)

● Injury(Crashes)
● Fatality(Crashes)

Predominant Crash Type

● Fixed Object
● Left Turn/U-Turn
● Rear End
● Right Angle
● Side Swipe
● Struck Parked Object

Source: PLAN4SAFETY,2009

Figure 23: US 322 Corridor Study Traffic Safety

Gloucester County Transportation Needs Study

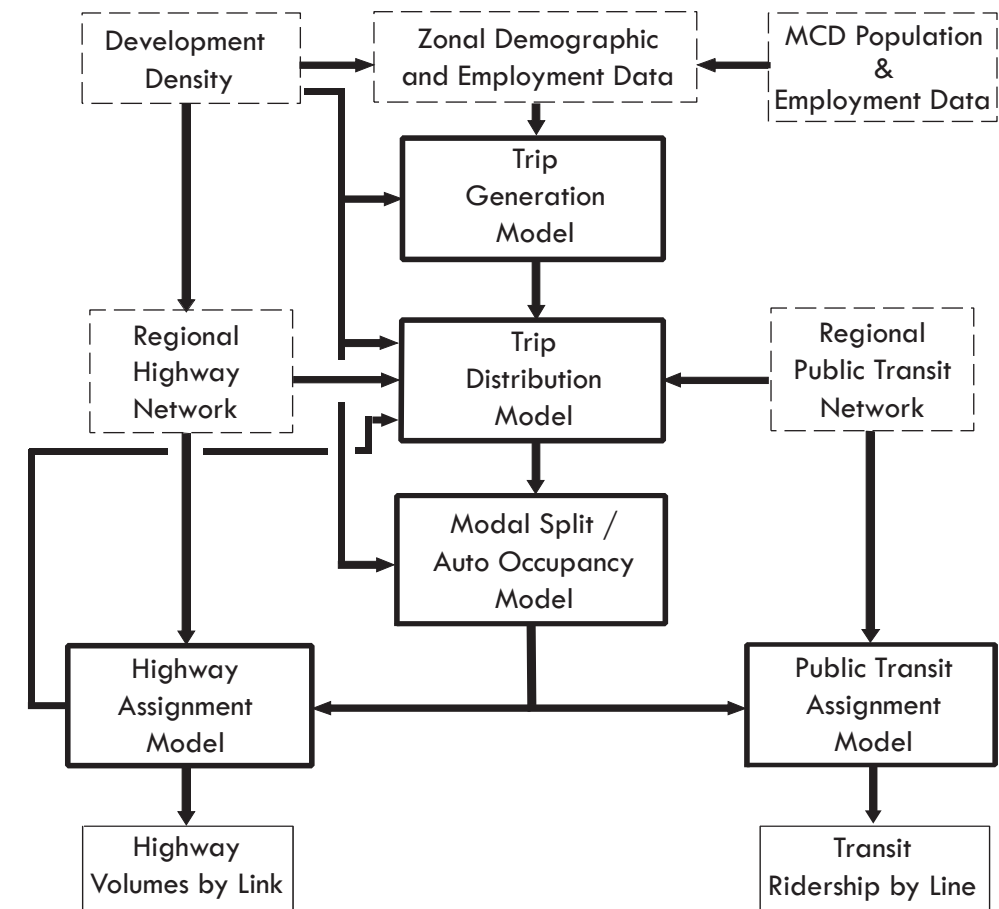
Future Transportation Conditions

Travel Demand Modeling

DVRPC maintains a computer-based highway and public transportation travel simulation model that replicates highways (not local roads) and public transit services throughout the region. It can be used to understand or estimate travel behavior and/or travel data for differing transportation networks, demographic conditions and time periods. In turn, the model can be used to locate problem areas, identify future trends and travel conditions, and consider alternative improvement strategies to address existing and emerging problems.

For the GCTNS, the regional model was employed to determine and assess traffic mobility conditions in the corridor's focus areas and along US 322. Multiple simulations were conducted and analyzed. Just two are reported in depth: the 2005 Base Year Scenario – to establish baseline conditions in the corridor and the focus areas, and the 2035 Plan Scenario – developed through iteration, to show expected conditions and changes, and determine improvement recommendations. See **Figure 24** for a schematic portrayal of the four-step focused travel simulation process.

Figure 24: DVRPC Regional Travel Simulation Process



Future Transportation Conditions

2005 Base Year Model Preparation

Traffic forecasting required a focused network for the US 322 study corridor. By “focusing” DVRPC’s regional travel forecasting model, enhancements are accomplished within a detailed study area while a regional level of detail is maintained elsewhere. Focusing supplies a finer analytical grain in the detailed study area’s transportation analysis zone (TAZ) structure and a denser highway network to support it, and yields greater accuracy in the highway assignment in the focused study area.

The focused simulation for the Gloucester County Transportation Needs Study’s evaluation of the US 322 Corridor required / resulted with:

- ◆ Adding the complete network of Gloucester County routes to the regional model, and performing integrity checks / updates of the modeled highway network so that the 2005 highway geometry was accurately reflected in the simulation.
- ◆ Updating the transit network to coincide with the 2005 route and operating configurations of NJ Transit’s services in the study area.
- ◆ Splitting 16 TAZs into 39 throughout the study corridor, redistributing each original zone’s 2005 demographic inputs (population and employment) to “fit” the new smaller zone structure, and where necessary adding appropriate highway links to serve the new zones.

Following preparation, the model was run. Traffic assignments were compared with actual ground counts (2005 – 2009) for reasonableness and accuracy. Where necessary, adjustments to the modeled network were performed and the model re-run to calibrate the detailed study area highway network (i.e., in the focus areas and along US 322) to a “current” average daily condition in 2005.

2005 Base Year Performance Statistics

Performance data is important for describing current traffic operating conditions and for measuring / evaluating change to year 2035. Measurement and assessments were performed along locally accessible highways (i.e., collector, minor and major arterial highways, not limited-access expressways or freeways) in the modeled network. Average daily traffic volumes are provided for general information. Combined peak period (7-9 AM and 3-6 PM)

performance statistics are supplied to describe traffic operations, and identify problematic locations and possible solutions to satisfy the busiest travel hours.

Average daily traffic volumes and peak period volume-to-capacity (V/C)¹ ratios along study area highway links are illustrated in **Figure 25**. **Table A-1** in the Appendix also contains a tabulated summary of the AADTs. Aggregated area-wide peak period performance statistics (vehicle miles of travel, vehicle hours of travel, average speeds, and volume-to-capacity ratios) for the focus areas are summarized in **Table 5**.² (**Table A-2** in the Appendix supplies more details on the modeled networks within each focus area.)

Table 5: Base Year Modeled Network Peak Period Performance Measures

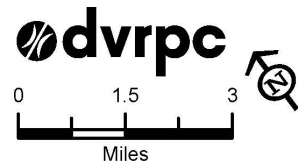
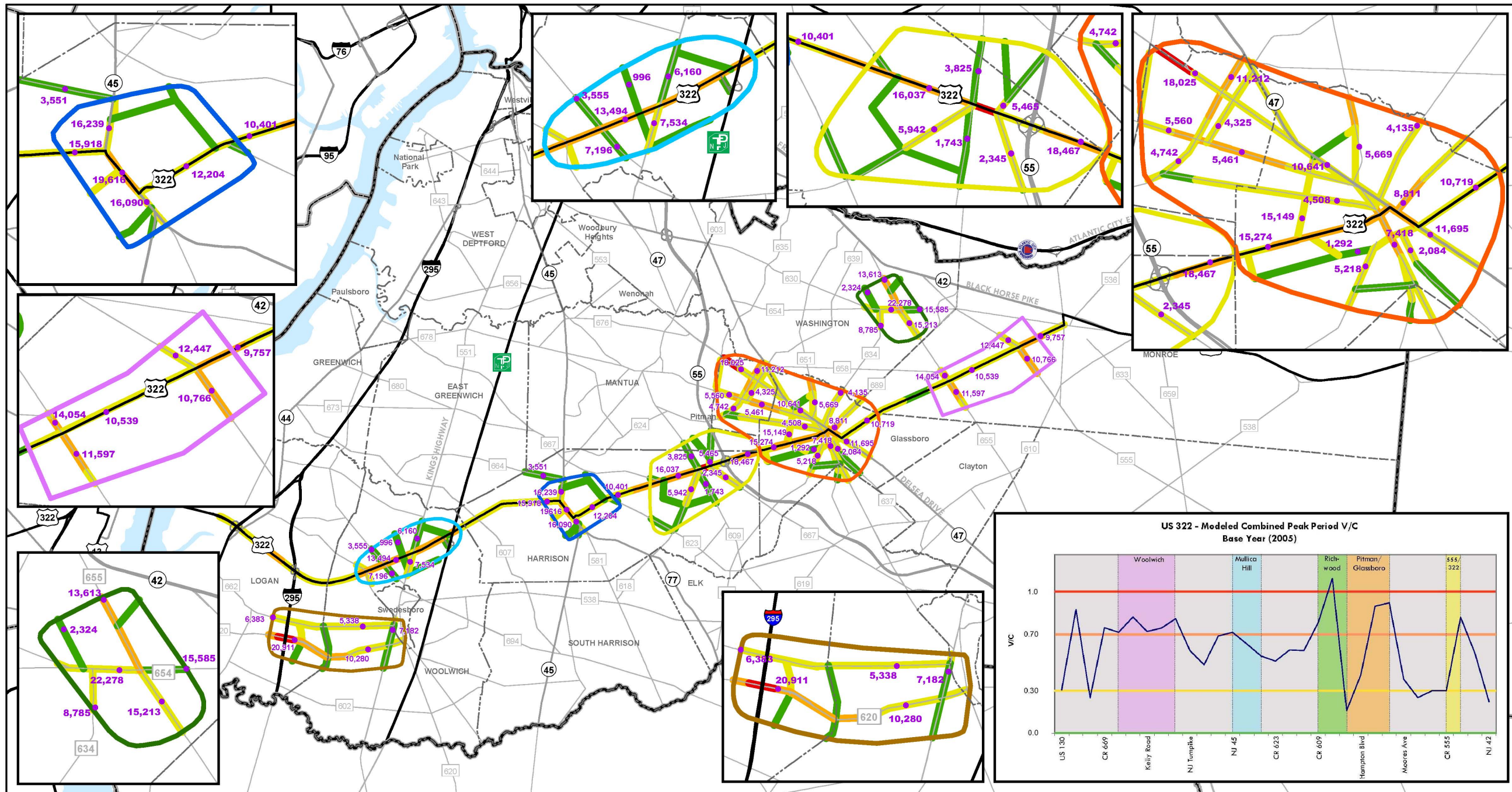
Peak Period Traffic Performance: 2005 Base Year Scenario				
Focus Area	VMT	VHT	Avg. Speed (m/h)	V/C Ratio
Beckett / Pureland	29,391	2,359	12.5	0.54
Woolwich	27,985	1,773	15.8	0.43
Mullica Hill	30,237	1,612	18.8	0.51
Richwood	29,552	1,664	17.8	0.31
Pitman / Glassboro	82,812	5,937	13.9	0.49
Hurffville / Fries Mill	19,158	1,110	17.3	0.36
555 / 322	24,512	1,370	16.2	0.47

DVRPC, 2010

¹Volume-to-capacity ratios are indicators of traffic operating conditions between free flowing conditions (≤ 0.30), and forced or breakdown flow (>1.00).

²Peak period performance statistics were obtained / aggregated by manipulating outputs of the 2005 Base Year modeled highway network using geographic information systems (GIS) software.

Future Transportation Conditions



● Current ADTs (2005-2009)*
 *Also Shown on Table A-1 in Appendix 1

Combined Peak Period V/C (2005)

Green	<0.3	Orange	0.7 - 1
Yellow	0.3 - 0.7	Red	>1

Figure 25: US 322 Corridor Study Base Year Conditions (2005)

Gloucester County Transportation Needs Study

Future Transportation Conditions

The analysis of modeled 2005 peak traffic performance data indicates that:

- ◆ US 322/CR 536 between CR 609 and CR 667 in the Richwood focus area operates above capacity (note: capacity improvements in this area have recently been constructed).
- ◆ CR 620 in the Beckett/Pureland focus area generally operates above capacity in the vicinity of the I-295 Interchange where traffic flow in the interchange area is constrained by a bottleneck.
- ◆ The shared alignments of US 322 and NJ 45 through Mullica Hill, and US 322 and NJ 47 through Glassboro operate with congestion.
- ◆ Much of US 322 west of Richwood experiences congestion in the peak hours.
- ◆ Area-wide congestion is highest in the Beckett/Pureland focus area ($V/C = 0.54$)
- ◆ Vehicle miles of travel (VMT) is greatest in the Pitman/Glassboro focus area, but the area also has a robust transportation network to absorb the volume and moderate congestion ($V/C = 0.49$).

2035 Land Use and Demographics

DVRPC's official 2035 municipal population and employment forecasts were used in the focused model to reflect the planning horizon's growth and development. An approximate gain of 57,000 people and 21,000 jobs are forecasted in the study corridor's municipalities. The largest gains will occur in Monroe Township and Woolwich Township. As in the base year, special effort was devoted to redistributing the municipal demographic forecasts to "fit" the study's focused TAZ / transportation network structure.

2035 Futures Testing / Modeled Improvements

Future year travel testing was performed iteratively and sequentially to determine a set of transportation improvements that would allow for predictable levels of service ($V/C \leq 1.00$) during the peak period on all local-access highway facilities in the focus areas, and along US 322.

Two sets of transportation improvements were added into the current year model to determine the mobility recommendations that adhered to the desires of the County and the congestion management practices of DVRPC.

- ◆ 2035 No-Build projects – All projects constructed since 2005 and planned / programmed for construction by 2035. The source for this group was the region's Transportation Improvement Program for New Jersey, the region's Long-Range Plan, and projects that the County has a high degree of confidence of being built or are advancing through its Public Works Capital Improvements Program and the Woolwich TDR capital program. Outside of the county, major pipelined projects were included in the 2035 model structure, erring on the side of caution as to which projects may effect circulation within Gloucester County (see **Figure 18**).
- ◆ 2035 Plan Recommendations – A derived additional set of transportation improvements needed to reach the stated goal that included:
 - ◆ improvements at the CR 620 / I-295 interchange to mitigate the bottleneck on CR 620 – deliverable through capital programming
 - ◆ uniform application of land use and traffic management strategies that will improve the performance and extend the serviceability of arterial and major collector roadways (such as highway access management practices) – deliverable through policies / revisions to the County's codes

I-295 / CR 620 interchange: An improvement concept was prepared for the interchange that would mitigate current and future year congestion caused by the bottleneck condition of the CR 620 bridge over I-295 (**Figure 26**). The improvement includes a new wider CR 620 bridge crossing I-295, a wider I-295 southbound exit ramp, and traffic signal updates. A similar project, the widening of the bridge carrying Camden County Route 689, Berlin-Cross Keys Road, over the Atlantic City Expressway was recently completed at a cost of \$5.5 million.

Policy related improvements: These include a variety of actions (detailed in **Chapter 6**) and would be instituted through changes to land development review and approval regulations, standards, and practices. These have benefit throughout the County not just within the US 322 Corridor.

Future Transportation Conditions

2035 Plan Scenario Performance Statistics

Average daily traffic volumes and peak period volume-to-capacity (V/C) ratios along study area highway links are summarized in **Table 6** and illustrated on **Figure 27**. **Table A-1** in the Appendix also contains a tabulated summary of the AADTs, and **Table A-2** in the Appendix supplies more details on the modeled networks within each focus area.

Conclusions: US 322 Corridor Traffic Study

Forecasted growth and traffic volume is accommodated by planned, programmed, and recommended physical improvements and recommended policy actions. In the peak periods, there are no facilities within the focus areas or along US 322 proper that operate above capacity during the 2035 peak analysis period.

Identified traffic safety problems can be addressed consequent with the identified physical improvements. Those left unaddressed include:

- ◆ US 322 at CR 655, Monroe Township (555 / 322 focus area)
- ◆ US 322 at the CR 610 intersection and at the NJ 42 intersection, Monroe Township
- ◆ The intersection of US 322 / CR 536 and CR 607, Harrison Township

Table 6: Plan Scenario Modeled Network Peak Period Performance Measures

Peak Period Traffic Performance: 2035 Plan Scenario				
Focus Area	VMT	VHT	Avg. Speed (m/h)	V/C Ratio
Beckett / Pureland	34,297	2,822	12.2	0.61
Woolwich	50,083	3,665	13.7	0.45
Mullica Hill	36,284	2,348	15.5	0.62
Richwood	41,599	2,342	17.8	0.44
Pitman / Glassboro	102,547	7,805	13.1	0.61
Hurffville / Fries Mill	24,713	1,518	16.3	0.46
555 / 322	30,534	2,008	15.2	0.58

DVRPC, 2010

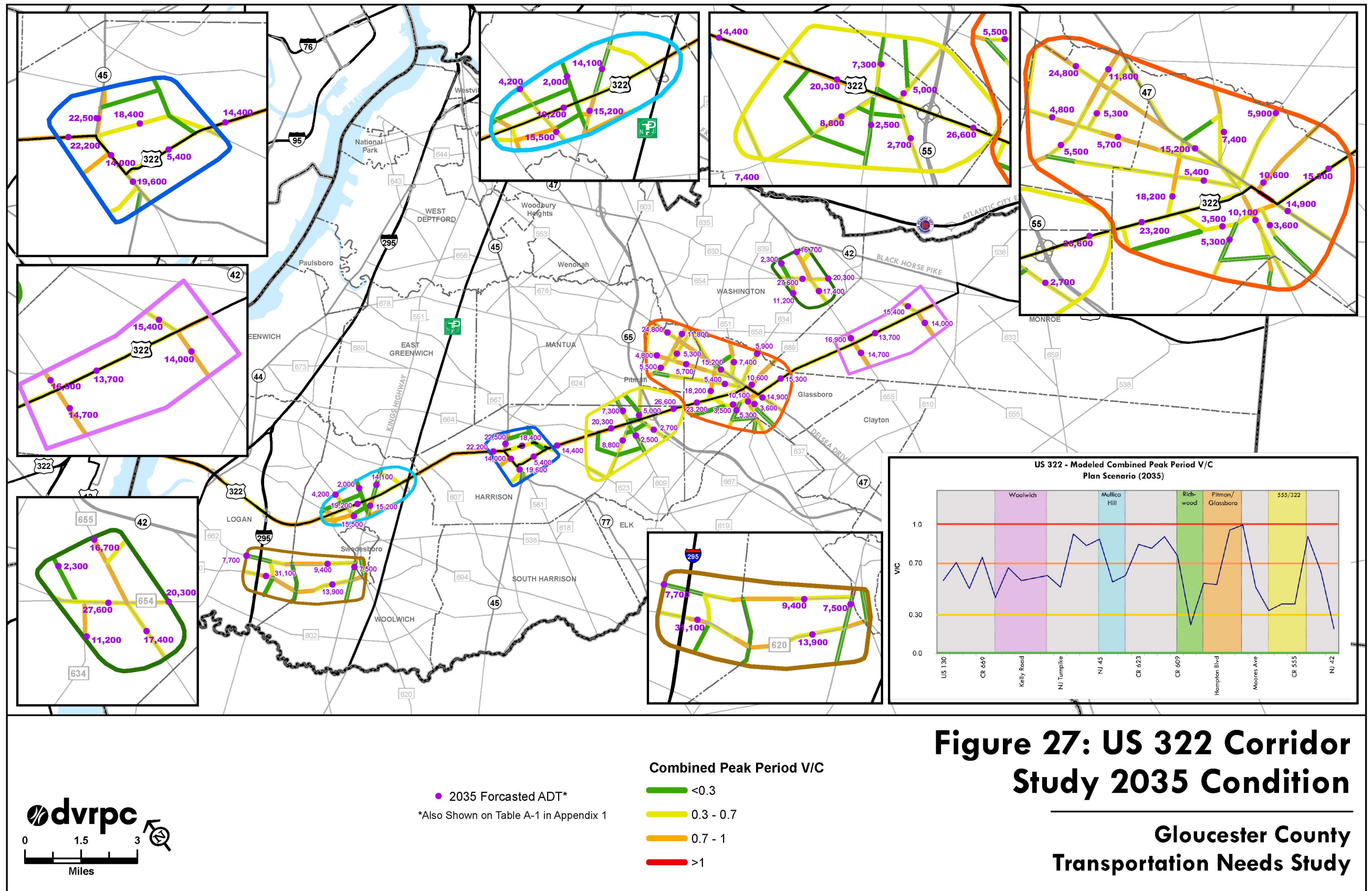
Future Transportation Conditions



Figure 22: I-295 / CR 620 Interchange Improvement Concept

**Gloucester County
Transportation Needs Study**

Future Transportation Conditions



Future Transportation Conditions

Longer Term Considerations for US 322: The Glassboro Bypass

The results of the US 322 Corridor traffic forecasting and mobility work indicates that further widening of US 322 beyond imminent, planned and programmed improvements (**Figure 18**) will introduce additional volume across the corridor. Particularly sensitive to further traffic growth is the US 322/NJ 47 overlap in Glassboro. Any additional volume in this segment will result in over-capacity and undesirable traffic operating conditions before the 2035 planning horizon is reached. To address this observation, the County requested DVRPC staff prepare preliminary investigations into the potential utility of a US 322 Glassboro Bypass / traffic relief route.

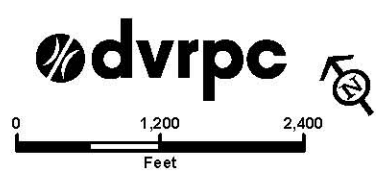
A conceptual alignment was identified (**Figure 28**), and cursory modeling performed to determine the utility and possible consequences of the route. The illustration reflects a low order design with at-grade intersections in context with its surroundings, but also shows a conflict with protected lands which would require mitigation efforts.

A selected-link analysis performed with the 2035 Plan model indicated a rough estimate of 6,500 daily vehicles might be taken from US 322 as a consequence of the relief route. However, traffic will redistribute and balance between all the highways in the corridor to the degree that there will not be a straight reduction of that volume from US 322, and there will probably be more than 6,500 vehicles using the Bypass, depending upon its design.

To be more attractive than US 322's path, the Bypass's longer distance will require more than a five mile-per-hour operating speed advantage. The higher type design elements that may accompany those requirements may include minimal use of traffic control devices, strict driveway control, longer turning radii, and grade separated intersections.

Twenty-five years is not an unrealistic time frame to fully develop and deliver the Bypass for when it will be needed. To that end, steps should be initiated as soon as practical to prepare a conceptual development and feasibility assessment that examines benefits, impact, costs, funding mechanisms, and municipal and public support for the concept shown in **Figure 28**, other alignments that may have been identified, and the no-build alternative.

Future Transportation Conditions



- 2035 Forecasted ADT
- ▬▬▬ Bypass Alignment (New Road)
- ▬▬▬ Bypass Alignment (Existing Road)
- Protected Open Space 2007
- Natural Heritage Site
- Historic Property
- Stream

Figure 28: Glassboro Bypass Conceptual Alignment

**Gloucester County
Transportation Needs Study**

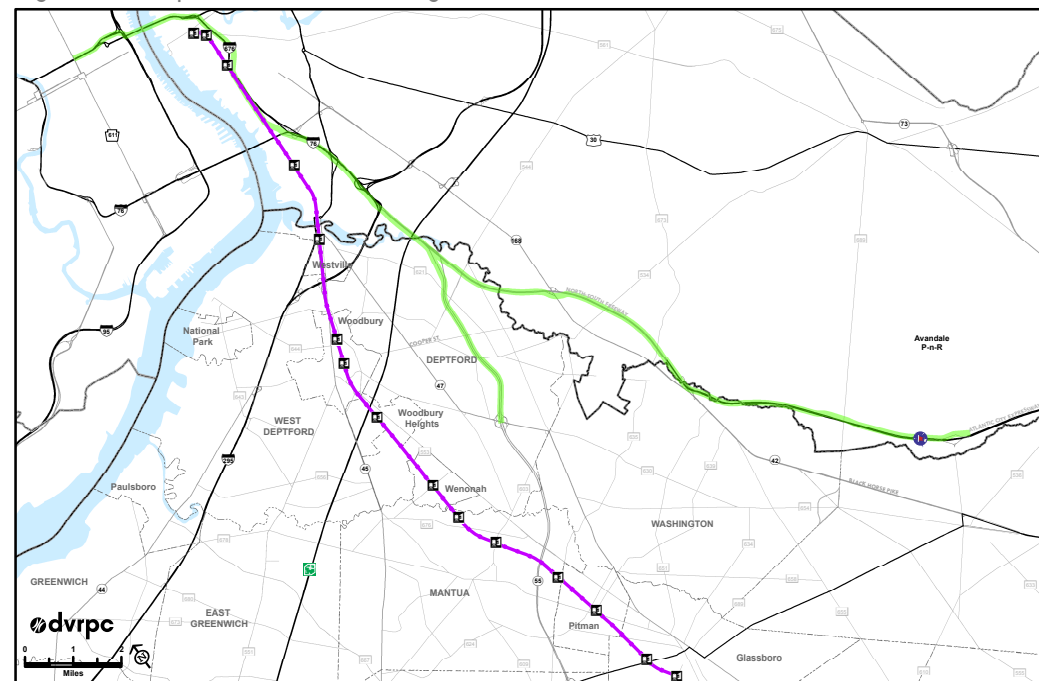
Future Transportation Conditions

Public Transportation Systems

Multiple and multi-faceted evaluations were undertaken to provide guidance for the County’s current planning activities and the long-range needs for public transportation services.

Work addressed two advancing public transit investments, and the county’s network of bus routes. The facility studies included detailed assessments for intermodal connectivity and land use in the vicinity of proposed stations. The county-wide study was more broadly directed at identifying improved service levels along existing bus routes and increasing the area of coverage within the county. The planning areas and improvement strategies associated with the facility studies gradually overlapped and were merged into the county-wide plan. As a result, the recommended travel and congestion management strategies / investments support the US 322 Corridor, and apply throughout the county.

Figure 29: Proposed GCL and BRT Alignments



The proposed bus rapid transit (green) and Glassboro-Camden Line (purple) will greatly enhance commuting options for Gloucester County residents.

PATCO Expansion (GCL)

In 2009 consultants for the DRPA and PATCO concluded an alternatives analysis for the South Jersey transit expansion project. The alternatives analysis identified the Locally Preferred Alternative (LPA) as a proposed rail service which would operate diesel light rail vehicles along an 18-mile long alignment between the Walter Rand Transportation Center in Camden, and Glassboro. Much of the proposed alignment utilizes existing Conrail right of way and tracks. The LPA, is being developed and marketed as the “Glassboro-Camden Line” (GCL), and the service will be similar to NJ Transit’s River Line. See **Figure 29** for the proposed alignment.

The GCL is expected to have 15 stations, including 11 stations in Gloucester County. The Gloucester County Stations include (north to south);

- ◆ Crown Point Road – Westville Borough
- ◆ Red Bank Avenue – Woodbury
- ◆ Cooper Street – Woodbury
- ◆ Woodbury Heights – Woodbury Heights Borough
- ◆ Wenonah – Wenonah Borough
- ◆ Mantua Boulevard – Mantua Township
- ◆ Sewell – Mantua Township
- ◆ Mantua/Pitman – Mantua Township
- ◆ Pitman – Pitman Borough
- ◆ Rowan University – Borough of Glassboro
- ◆ Glassboro – Borough of Glassboro

The proposed stations range from walk-on stations, located in central business districts with little or no parking (i.e., Pitman) to strictly park-n-ride stations in undeveloped areas (i.e., Mantua Boulevard). The introduction of this rail

Future Transportation Conditions

service in the county portends a large benefit for commuting, intermodal travel and land use. At last word the GCL service was planned to begin in 2016, although the ongoing development of the project's environmental impact statement has since been interrupted for a new sponsor. These conditions may alter the deliverability of GCL light rail service to the county.

Bus Rapid Transit (BRT)

The alternatives analysis that resulted in the LPA for the GCL diesel light rail line also produced *Transit Investment Vision for Southern New Jersey*. Included in the *Vision*, beyond the light rail service, were improvements to the existing NJ Transit Atlantic City Rail Line, and a proposal for BRT Service between the NJ 47/NJ 55 interchange and Philadelphia, and between Avandale Park-n-Ride (CR 536 Spur/Atlantic City Expressway interchange) and Philadelphia. The proposed alignment is shown on **Figure 29**.

BRT can be a premium bus operation that incorporates many characteristics typical of rail service. More common characteristics include³;

- ◆ Dedicated (bus-only) running ways (preferably, physically separated from other traffic)
- ◆ Accessible, safe, secure, and attractive stations
- ◆ Easy-to-board, attractive and environmentally friendly vehicles
- ◆ Efficient (i.e., off-board) fare collection
- ◆ Intelligent Transportation Systems (ITS) applications to provide real-time passenger information, signal priority, and service command/control
- ◆ Frequent, all-day service
- ◆ Distinctive system identity

Generally, the more characteristics incorporated, the better the service.

³ Transit Cooperative Research Project, Report #118, Transportation Research Board

The South Jersey BRT project, currently in the alternatives analysis stage, will have approximately seven stations in New Jersey, including two in Gloucester County – Deptford Center Road and NJ 47/Delsea Drive. The alignment that travels along NJ 42 and the Atlantic City Expressway may have several stations that are convenient for Gloucester County residents. Coupled with the GCL project, the two projects will provide enhanced transit service to the most densely developed portions of Gloucester County, serve as opportunities to center, mix and intensify development, and combat congestion throughout several of the region's most congested travel corridors.

The alternatives analysis being conducted for NJ Transit is expected to be completed by the end of 2011. Gloucester County is represented on the alternatives analysis technical advisory committee.

Glassboro-Camden Line Corridor Intermodal Planning

Work in the GCL corridor centered on providing a mutually beneficial relationship between the proposed stations, surrounding transportation facilities and services, and the host communities. This involved studying potential traffic problems, finding means and opportunities to connect bus routes, bicyclists and pedestrians to stations, identifying needed station amenities, and analyzing the land use and transit-oriented development potential of each station location in Gloucester County.

The work completed for the Needs Study is preliminary in nature. It is meant to serve as a first assessment, and a planning guide for what might be expected in the future. The ultimate builder/operator of the rail service will conduct extensive planning and engineering studies for the station areas as part of environmental study and design steps needed for funding and land development approvals.

Vehicular and Non-vehicular Access to the GCL Stations

A high level assessment of the accessibility of the 11 proposed stations was prepared as a guide for future decision making for site development, and ingress, egress, and circulation as the GCL project advances. General station locations were obtained from *Southern New Jersey to Philadelphia Mass Transit Expansion Alternatives Analysis Study – Final Station Location Summary* (DRPA, July 2008). To facilitate the review for the Gloucester County Transportation

Future Transportation Conditions

Needs Study, DVRPC staff prepared estimates of station patronage and vehicular activity, and made assumptions for the boundaries of the station property and the access scheme for its parking facility.

Adjacent highways from which primary station access is to be taken were assumed. Highway functional classification categories for those highways were noted. County road classifications were obtained from Gloucester County's Official Map; the others from the Federal Highway Administration's functional classification system of federal aid highways (maintained by DVRPC). Ambient conditions were inventoried from DVRPC's GIS information library, including 2005 aerial photography, human and natural features, locations of traffic congestion documented in DVRPC's Congestion Management Process, and NJ Transit bus routes operating in the vicinity. Transit-oriented development (TOD) opportunity surrounding the proposed stations was also included. The assessment of these items helps establish the suitability of, concerns about, and promise for the site as a transit station.

Access conditions were assessed for a horizon year of 2035 assuming the GCL light rail service is operational, station "type" definitions per PATCO, and in-house trip generation estimates for the stations.

The evaluation of future station area conditions were conducted with 2005 aerial photography and traffic count data (current traffic counts expanded to Year 2035 plus estimated station traffic assignments). Sidewalks and crosswalks were judged relative to the presence of existing sidewalk, continuity and connectivity into adjacent neighborhoods or developments. Standard volume warrants for traffic signals and auxiliary turning lanes were consulted and applied against 2035 traffic estimates as the basis for identifying traffic engineering improvements on the accessing roadways. (Note: state, county and municipal roadway design standards should also be consulted as part of station site design and engineering.) Connections with local streets and/or an adjacent property's access design, circulation network and parking layout were considered and identified as opportunities for managing traffic and integrating the uses. Finally, trailblazing signage and proposals for re-directing bus route service were indicated to interconnect transportation systems.

Future year station access assessments are summarized on **Table 7**. Noteworthy are: the construction of missing ramps between I-295 and NJ 42 that portends a significant benefit for regional congestion and station access surrounding the proposed Cooper Street Station; the realignment of five NJ Transit bus routes to serve the Cooper Street Station in support of establishing a potential transit hub in the heart of Woodbury (discussed in more detail later in this section); and three station connection opportunities posed by a realignment of Bus Route 412, currently being evaluated by NJ transit. Traffic traveling between I-295 northbound and NJ 42 southbound, and the opposite utilize Cooper Street through Woodbury as one option to make the connection. The construction of highway ramps to satisfy the connection will reduce traffic volumes on Cooper Street in the proposed station area.

- ◆ On-site considerations for all proposed stations should account for:
 - ◆ Kiss-n-Ride loops
 - ◆ Short-term parking
 - ◆ Layover / storage space for intersecting bus routes and para-transit vehicles
 - ◆ Bike racks
 - ◆ Shelters at intersecting bus stops
 - ◆ Sidewalks (presence and continuity) along site frontages, and to/from/at nearby bus stops

Future Transportation Conditions

Table 7: Glassboro-Camden Line Station Area and Access Assessment – 2035 Summary

Station (Type)*	Access Point	Functional Class	Sidewalks	Crosswalks	Bicycle Facilities	Traffic Signal	Turn Lane**		CMP and Related Congestion Management Strategies	Trailblazing	Bus Connection	
							Left	Right			Nearby	Direct
Glassboro (Terminal)	Ellis St (CR 641)	Arterial	from station to Higgins Dr		connect to proposed multi-use trail via Ellis St and Sewell St				pedestrian access via an extension of Georgetown Rd and/or Franklin Rd	NJ 55	Routes 313, 408	Route 412
	Girard Rd	Local		on University Ave at Girard Rd and Whitney Ave								
Rowan University (Walk-up)	Mullica Hill Rd (US 322)	Principal Arterial	via a proposed pathway on south side of US 322 by University	at Mullica Hill Rd and station's entrance	US 322 shoulder width favorable to connect to university				multiple access routes will minimize station's traffic impact on any one facility		Route 408	Routes 313, 412
	Bowe Blvd	Local		at US 322 and Bowe Blvd at station's entrance								
Pitman (Walk-up)	Pitman Ave (CR 639)	Collector		at Pitman Ave crossing to the north side of the street	Share the Road signs							Routes 313, 408, 412
	Broadway (CR 553 Alt)	Collector		crossing Broadway at Ballard Ave and Jersey Ave	Share the Road signs							
Mantua / Pitman (Park-n-Ride)	Lambs Rd (CR 635)	Collector				warranted		westbound	County project on Woodbury Glassboro Rd (CR 553) will alleviate traffic congestion		Routes 313, 408	Route 412***
Sewell (Park-n-Ride)	Center St (CR 603)	Collector	opportunities on East and West Atlantic	crossing Center St at East and West Atlantic Aves		warranted		eastbound				Route 412***
Mantua Boulevard (Park-n-Ride)	Mantua Blvd (CR 676)	Collector				warranted		southbound	opportunity to share driveways with existing businesses to provide multiple vehicular access, pedestrian access via Cape May Ave			Route 412***
Wenonah (Walk-up)	Mantua Ave (CR 632)	Collector		crossing Mantua Ave at East Ave and West Aves	opportunity for bike lanes on Mantua Ave							Route 412
Woodbury Heights (Park-n-Ride)	Elm Ave (CR 652)	Collector						westbound	opportunity to provide additional vehicular access via Lake Ave		Route 412	
Cooper Street (Park-n-Ride)	Cooper St (CR 706)	Arterial		crossing Railroad and Green Aves to serve neighborhoods, crossing Cooper St at Railroad and Green Aves		warranted		westbound	multiple access routes will minimize station's traffic impact on any one facility, Direct Connect project will reduce traffic volumes on Cooper St			Routes 401, 402, 410, 412, 455, 463
Red Bank Avenue (Park-n-Ride)	Red Bank Ave (CR 644)	Collector		crossing Red Bank Ave at Green St and Washington Ave	Share the Road signs	warranted		westbound eastbound	opportunities for shared access/parking with CVS to minimize station's traffic impact on Red Bank Ave		Routes 401, 402, 410, 412, 455, 463	
Crown Point Road (Park-n-Ride)	Gateway Blvd (NJ 45)	Principal Arterial	on the east side of Rt 45	at NJ 45 and Olive St intersection		warranted		southbound northbound	pedestrian access via an extension of Duncan Ave	I-295 NB	Routes 401, 402, 408, 410, 412	Routes 401, 402****

*Preliminarily defined by PATCO (as of this date)

**See also state, county, and municipal highway design standards

***Realignment study by NJ Transit may deliver these new interconnections

****Route 401 and 402 express trips operate along Gateway Boulevard

Future Transportation Conditions

GCL / BRT Intermodal Planning

The introduction of light rail and/or premium bus services into the county will have an impact on the existing bus routes. Services duplicated by the new operations may be discontinued or reconfigured, and routes operating in the proximity of the stations may need to be realigned and/or have schedule adjustments to better complement the service. As the GCL and BRT become operational, in-depth system-wide analysis by NJ Transit will be warranted to determine the exact changes required to best integrate the various modes and services.

Following are several improvements and observations for preliminary consideration. They are also shown on **Figure 30**.

- ◆ Woodbury and Pitman were awarded Transportation and Community Development Initiative (TCDI) planning grants in 2010. The resulting studies will provide plans for improving the pedestrian experience in the towns, thereby enhancing bus service.
- ◆ Deptford Center (Deptford Township), as a regional land use center should be targeted for master planning and zoning changes to allow for mixed-use, and particularly residential development in the commercial area. Mixed-land use arrangements will promote two-way commuting patterns which are more supportive to current bus operations and potential BRT service. Future redevelopment should also be complemented with park-n-ride facilities, and a center-circulating shuttle bus service. Current and future bus, BRT, and shuttle services and a park-n-ride facility can be coordinated as a Deptford Center bus hub.
- ◆ Live pull ins/outs for Routes 410 and 412 will provide new coverage, and additional cross-county service, including service to several potential GCL stations on a modest budget. Route 410 would operate live between the Washington Township NJ Transit bus garage and Mullica Hill, and Route 412 would operate live between the garage and Glassboro.
- ◆ Route 412 is undergoing a realignment evaluation by NJ Transit. Possible new alignments will improve connectivity to more proposed GCL stations (including the Mantua/Pitman, Sewell and/or Mantua Boulevard stations). The service will require longer operating days with more frequent service to complement an operating light rail line.
- ◆ A Woodbury transit hub should be considered for the potential GCL Cooper Street station. This concept is further discussed in the next section of this chapter.
- ◆ Potential Crown Point Road, Red Bank Avenue and Cooper Street stations should provide space for bus storage/layover for long-term feeder needs/operations.
- ◆ Potential GCL station hosting municipalities should consider and make provisions for transit oriented development opportunities in the station areas. This topic is addressed in greater detail later in this chapter.
- ◆ The GCL service will enhance peak period headways along the Broad Street corridor, north of Woodbury.

Future Transportation Conditions

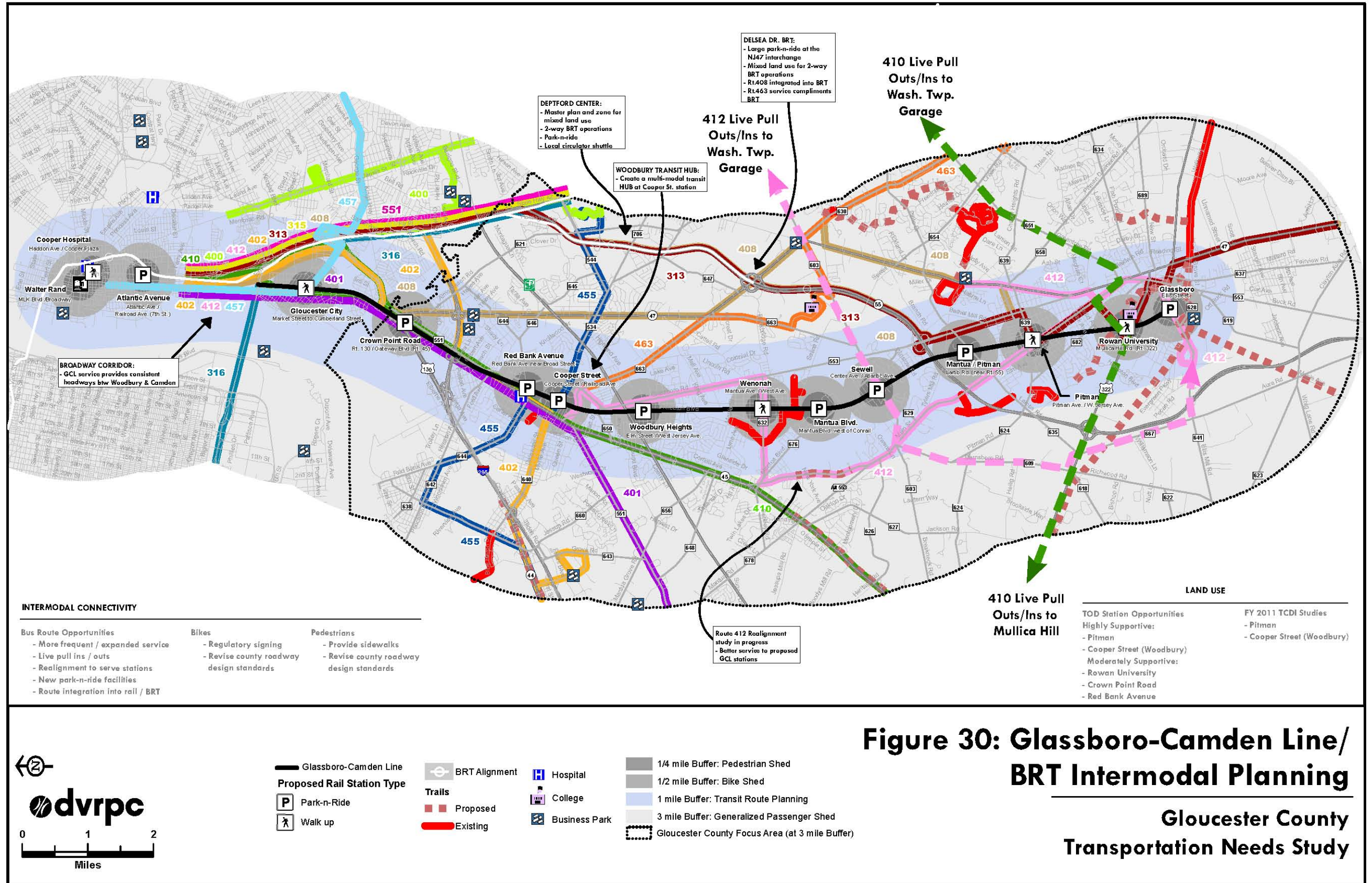


Figure 30: Glassboro-Camden Line/ BRT Intermodal Planning

Gloucester County Transportation Needs Study

Future Transportation Conditions

Woodbury Transit Hub

The project team undertook a preliminary feasibility study for a bus hub and transfer facility surrounding the GCL's Cooper Street Station in Woodbury to support future dialogue, continued planning, final station location decision making by county and municipal officials, and the ultimate developer of the rail line. The work addressed both land use and station access planning; and suggested that both challenges and opportunities exist with a "downtown" location.

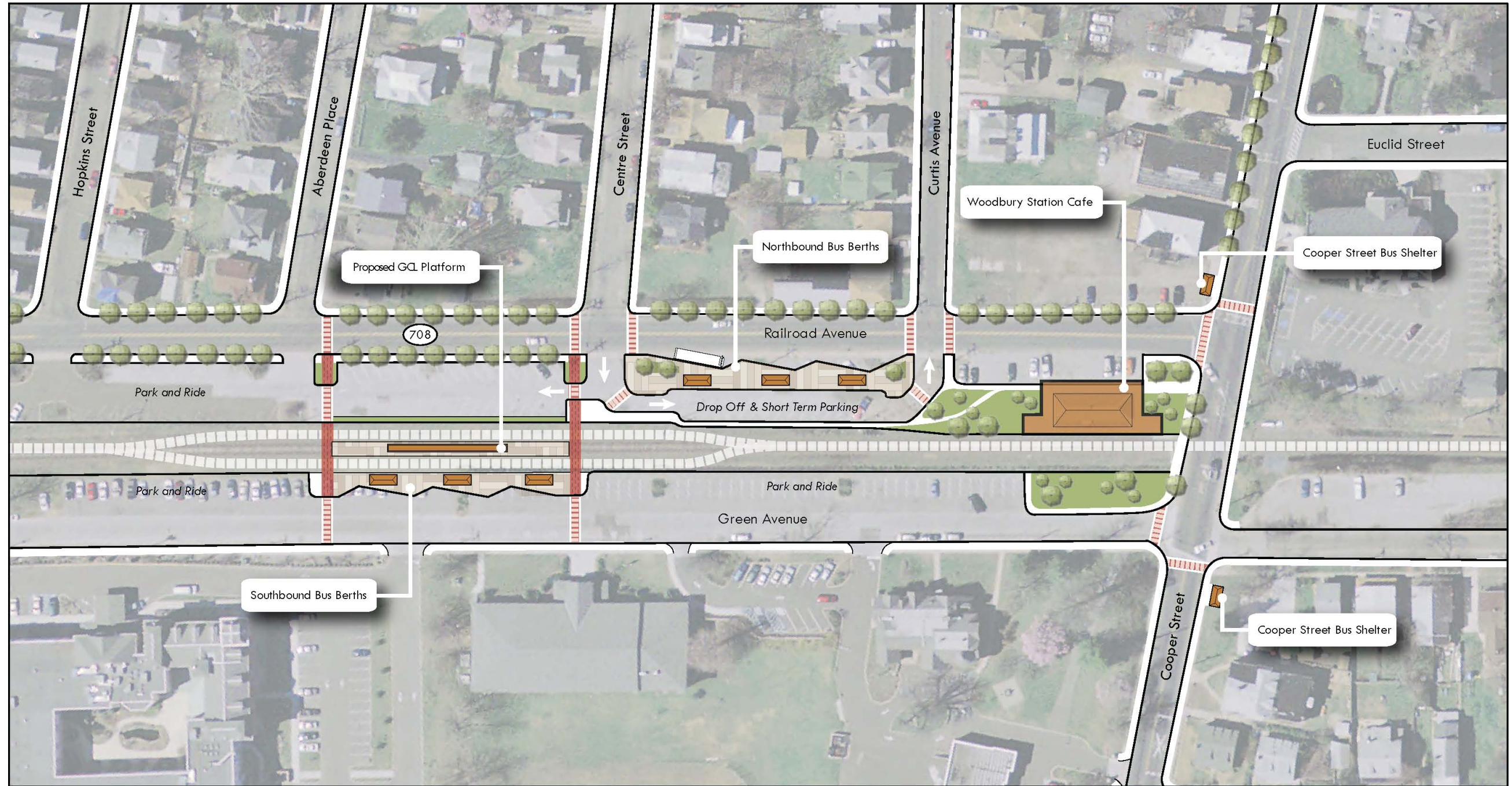
- ◆ **Neighborhood Context:** The Woodbury Station and possible transit hub is situated south of Cooper Street, along a stretch of rail centered between Railroad Avenue (CR 708), on the west, and Green Avenue, on the east. Located a short distance from Broad Street (NJ 45), the linear site sits between an established single-family neighborhood (to the west) and religious buildings and a senior housing complex (to the east). The site includes approximately 288 surface parking spaces arranged in a series of linear parking areas on each side of the tracks.
- ◆ **Site Advantages:** A potential transit hub at this location is advantageous to Woodbury and the future transit operator for several reasons:
 - ◆ Adjacency to proposed GCL Line station would facilitate safe and efficient transfer between bus and the proposed passenger rail service.
 - ◆ Six NJ Transit bus lines currently travel through the Cooper Street station area; three directly past the station and three along Broad Street. Consolidating existing stops and providing a fixed location for transfers will promote ridership and help create a transit identity. The transit hub may expect to accommodate approximately 12 buses total per hour during peak travel times. (Current schedules indicate a peak vehicle arrival / queuing condition of four northbound buses and eight southbound buses in the PM peak hour at the station.)
 - ◆ Proximity to the downtown would reinforce Broad Street as Woodbury's principal commercial street and potentially serve as the catalyst for transit-oriented development.
- ◆ **Site Constraints:** The narrow nature of the site presents challenges for a potential transit hub:
 - ◆ Bisected in two by the railroad tracks, the site effectively operates as two separate narrow pieces. West of the tracks, along Railroad Avenue, the parking lot measures approximately 60 feet while the parking area to the east of the tracks measures approximately 32 feet with no buffer between it and Green Avenue.

These widths will likely be narrowed with station development (e.g., to accommodate a platform and additional track). The narrower dimensions will make it unlikely that buses traveling in separate directions could stop or be stored in a single location on either side of the tracks.
 - ◆ Meeting parking demand near the transit hub may be a problem. Some of the existing parking spaces will be lost to the development of the rail station and potential bus facilities. Despite the uninterrupted block length with on-street parking (over 1,500 feet between Cooper Street and South Barber Avenue), the narrowness of the site may preclude construction of a parking structure on land contiguous with the railroad.
- ◆ **Preliminary Recommendations:** **Figure 31** displays a conceptual design for the Woodbury transit hub. The concept contains the following elements:
 - ◆ Split direction bus berths – Buses traveling north access the transit hub via Railroad Avenue (CR 708) before continuing north along Broad Street (NJ 45). Buses traveling south access the transit hub via Green Avenue before continuing to their southern destinations.
 - ◆ Saw tooth bus berth design – The saw tooth design offers the advantage of appearing more like a formal transit facility and discourages unauthorized parking.
 - ◆ Short term parking area – A short term parking area that functions as a pick-up and drop-off location for the transit hub combined with multiple bus berths on the Railroad Avenue side of the tracks to conserve space.
 - ◆ Pedestrian connections – Pedestrian connections facilitate safe and convenient transfers between buses and the GCL light rail line. Pedestrian walkways and rail crossings are consolidated to link bus waiting areas to the station platform. Sidewalks connect the transit hub to Cooper Street so that passengers can safely walk to the Broad Street commercial district.
 - ◆ Designated waiting areas – Separate protected waiting areas with seating are provided for each set of bus berths in addition to the train platform.

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- ◆ Park-n-ride spaces – Commuter spaces are designated south of the transit hub along the railroad tracks. Due to space limitations, parking configurations are arranged as they currently exist. To the west of the tracks, parking is organized as angled head-in spaces with one way (south) circulation along Railroad Avenue. To the east, 90 degree head-in parking remains, but a buffer is provided to separate the parking area from Green Avenue traffic flow.
- ◆ **Off-site Opportunities:** Supportive off-site elements / facilities were identified in the work which should be considered and integrated into a more complete evaluation of the Cooper Street Station location:
 - ◆ The existing parking garage at Broad and Cooper Streets – County-owned free parking
 - ◆ The property on the southwest corner of Railroad Avenue and Cooper Street – opportunity for additional parking garage proximate to the station
 - ◆ Converting Railroad and Green Avenues to a one-way couplet – narrower roadways to compensate for extra width needed with station development, safer pedestrian conditions surrounding station and bus stops; add grade crossing (with active protection devices) between Cooper and Barber to reduce circulation distances with one-way streets.
- ◆ **Additional Design Concerns:** The following considerations will be important in the design of any transit facility at this site:
 - ◆ Presence of sidewalks and curb ramps leading to trip generators and nearby pedestrian circulation system
 - ◆ Protected crossings at signalized or stop controlled intersections and crosswalks
 - ◆ Effect on adjacent property owners
 - ◆ Pedestrian activity through intersections
 - ◆ Open and visible spaces for personal security and passenger visibility
 - ◆ Street and station lighting
 - ◆ Adequate curb space for the number of buses expected to stop at any one time
 - ◆ Ease of buses re-entering traffic stream

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Potential Off-Site Considerations

- New at-grade railroad crossing between Cooper Street and East Barber Avenue to enhance accessibility
- Parking structure opportunity on the southwest corner of Railroad Avenue and Cooper Street
- Conversion of Railroad Avenue and Green Avenue to one-way couplet with narrowed cartways for traffic calming
- Traffic signal at the intersection of Railroad Avenue and Cooper Street
- Bus layover space(s) as part of potential southern division route realignment



Drawing not to scale

Figure 31: Woodbury Transit Hub Concept

Gloucester County Transportation Needs Study

Future Transportation Conditions

GCL Station Area Land Use Planning

DVRPC's mission includes promoting "Smart Growth" initiatives to effectively link transportation, land use planning, and decision making. As such, the study team conducted an assessment jointly considering transit oriented development (TOD) potential and "transit scores" in the areas surrounding the 11 proposed GCL stations.

- ◆ Physical Factors Affecting TOD Potential: TOD is an implementation strategy of Smart Growth, and is generally defined as the existence of and/or supplying moderate to high density, compact mixed-use development within an easy walk (1/4-mile or 5 minutes) of a transit station. The appropriateness of TOD within a particular station area depends on a variety of physical and situational characteristics. This analysis focused on evaluating the physical framework of each station area and did not consider the impact of situational characteristics, such as economic conditions and local sentiment, on the viability of TOD in a particular location. The factors considered in the qualitative analysis include:
 - ◆ Pedestrian environment
 - ◆ Mobility options
 - ◆ Mix of land uses
 - ◆ Range of housing options
 - ◆ Development opportunities
 - ◆ Recent development activity
 - ◆ Community character
- ◆ Quantitative Analysis: DVRPC's Transit Score methodology was used to supplement the TOD evaluations for the station area settings. In this case study transit scores for each station area were computed with 2000 US Census data, assuming a weighted average of the transit scores for each census tract contained within the 1/4-mile station study area. Final transit scores for each station were stratified into five categories. TOD is most appropriate for areas with scores falling into the top two categories.

Findings and Conclusions

In general, TOD potential along the GCL Corridor in Gloucester County was determined to be mixed. The analysis indicated that TOD will most likely succeed in places where population and jobs are already concentrated, and for stations situated in areas that are located next to or near existing centers of mixed-use activity. The TOD evaluation results indicated that the most supportive conditions were surrounding the proposed Cooper Street and Pitman stations.

- ◆ Station Areas highly supportive of TOD (2): Cooper Street, Pitman
- ◆ Station Areas moderately supportive of TOD (3): Red Bank Avenue, Crown Point Road, and Rowan University
- ◆ Station Areas not currently supportive of TOD (6): Woodbury Heights, Wenonah, Mantua Boulevard, Sewell, Mantua/Pitman, Glassboro

In isolation, the transit score analysis results also reinforced the Cooper Street and Pitman station locations, and indicated that the Crown Point Road, Red Bank Avenue and Rowan University station areas possess demographic characteristics supportive of TOD.

Transit-oriented development is a comprehensive development strategy that is ideal for several of the proposed station hosts in Gloucester County. All station areas, whether supportive of TOD or not, would benefit from transit-supporting land uses. These land uses include developments in close proximity to the proposed station that generate trips without the mixed use aspect of TOD, such as housing or office developments. Zoning regulations in TOD supportive settings should be amended if appropriate to support higher densities, and even taller buildings, with a mix of land use activities. Land use regulations for these areas should also require connectivity with the proposed station locations. This might include sidewalks, crosswalks, or multi-use trails.

DVRPC's Fiscal Year 2011 Work Program includes a planning study dedicated solely to studying transit oriented development at proposed PATCO Expansion stations Woodbury and Pitman. The forthcoming study will involve outreach activities and include greater detail than has been offered here.

Future Transportation Conditions

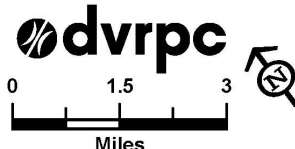
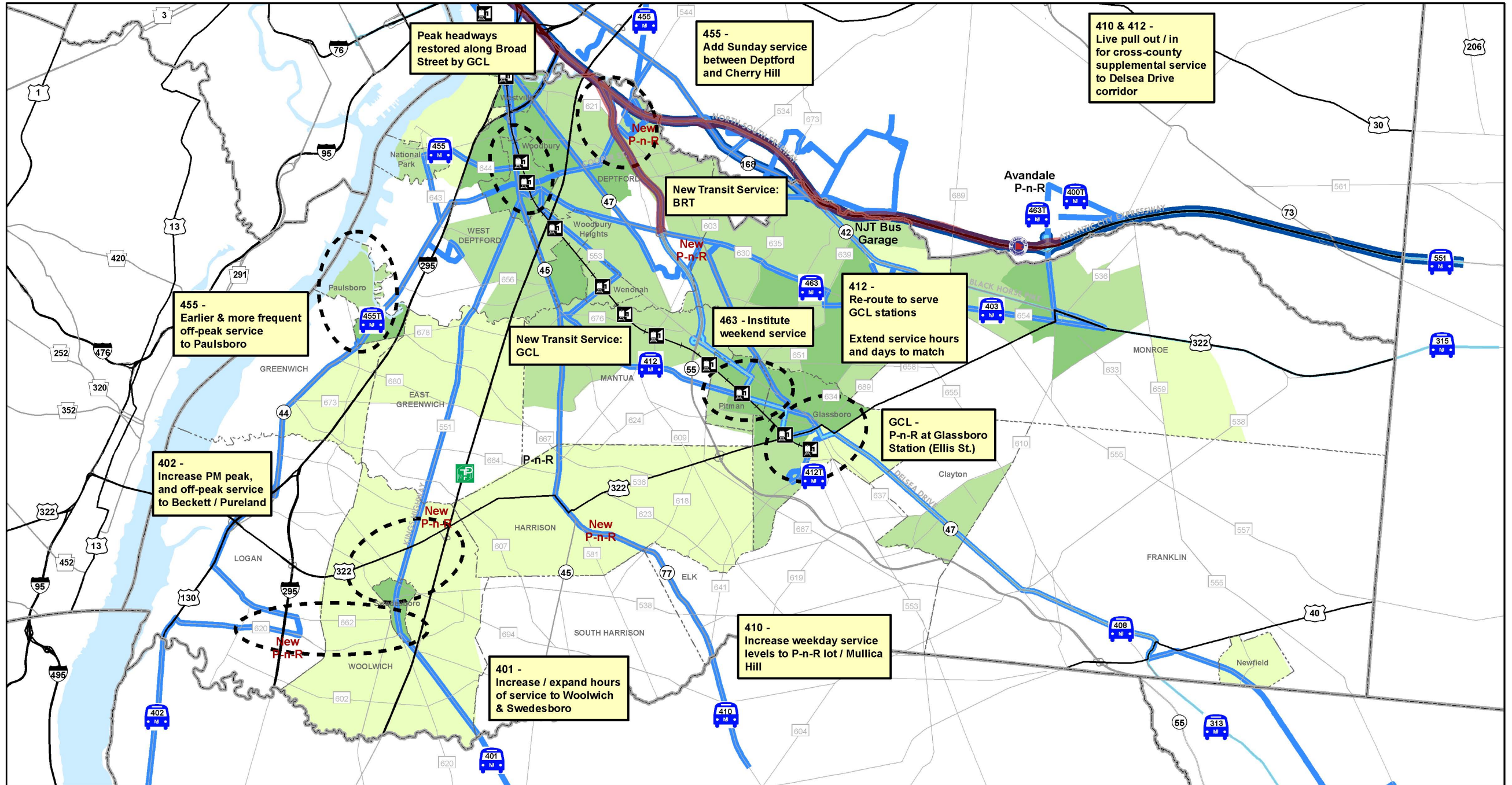
County-wide Transit Planning

Year 2035 Transit Scores were used to assess horizon year demographic conditions relative to the findings of the analyses of existing transit conditions. The findings of the GCL and BRT corridor studies, and the US 322 Corridor study were layered into the analysis to determine consistency between schemes and identify further opportunities as the basis for a county-wide transit plan. The key elements are illustrated on **Figure 32**, and included:

- ◆ A wider spread of transit supportive characteristics in the County's population and employment by the Year 2035
- ◆ Bus service improvements recommended to address existing deficiencies
- ◆ The GCL light rail line
- ◆ Bus Rapid Transit service – including master plans and rezoning to encourage varied and supportive land use in Deptford Center and at the BRT terminus at the NJ 55 / Delsea Drive (NJ47) Interchange
- ◆ Five new park-n-ride lots – three in the US 322 corridor and two associated with BRT service
- ◆ A new circulator bus route serving the new Woolwich Town Center development, Swedesboro, and Pureland and Commodore industrial parks
- ◆ Live pull out/ins for two existing NJ Transit bus routes (410 and 412) to provide new cross-county service between the NJ Transit bus garage in Washington Township and the beginning of the route alignments

The county-wide transit vision includes steps that the County and municipalities should consider as a complement to upfront planning for the GCL and BRT to optimize existing resources and manage growth and investment for the long-term.

Future Transportation Conditions



- 2035 Long-Range Plan Land Use Center
- BRT Alignment
- NJ Bus Routes**
- 300 Series Line
- 400 Series Line
- 551
- DVRPC 2035 Transit Score Trend Scenario**
- Low (< 0.6)
- Marginal (0.60–1.0)
- Medium (1.01–2.50)
- Med.-High (2.51–7.50)
- High (> 7.5)

Figure 32: Transit Route Planning
Gloucester County Transportation Needs Study

Future Transportation Conditions

The Gloucester County Transportation Needs Study examined existing and forecasted multi-modal conditions in a variety of land use and transportation settings. From that work, recommendations for a county-wide improvement program were developed. During the work it also became clear that a set of policy actions, if institutionalized into practice, could contribute to sustainably accommodating future growth more uniformly and universally throughout the county.

Policy Recommendations

Many of the principles inherent in the study’s specific recommendations are attainable on an ongoing basis through adoption of new policies and revisions to codes regulating the County’s land development review practices / requirements and roadway design standards. These actions will extend the serviceability of the existing transportation network and expand multi-modal mobility, within and beyond the 2035 planning horizon.

Land Use Centers

The emphasis on land use centers as focal points for future growth and investments is central to containing sprawl and managing travel in the county. Appropriate strategies add complementary mixed-land uses at higher densities to strengthen work, living, and shopping opportunities in close proximities. In turn, trip making is contained, reduced and/or more effectively managed with more transportation options. **Table 8** highlights typical land use center characteristics.

Strategic locations for coordinated land use planning and transportation investments include older downtowns, large single-use centers, and areas surrounding existing / proposed transit stations. Inter-jurisdictional partnerships are necessary to fully realize the Smart Growth benefits because land use decisions are based in the municipality, while the county, state and federal governments are responsible for transportation investments. Master planning, zoning changes, and multi-municipal and intergovernmental coordination and financial assistance are necessary components to effect the changes.

Table 8: DVRPC 2035 Land Use Centers

Gloucester County Land Use Centers	Type	Characteristics
Deptford	Suburban Center	<ul style="list-style-type: none"> → Significant regionwide → Perceived as a single place → More jobs than residents → Defined primarily by a concentration and variety of commercial, professional, and light industrial uses → Suburban in character → Less dense than town centers → Lack the integrated mix of uses found in town centers → Generally auto dependent rather than transit oriented or pedestrian scale
Glassboro Paulsboro Pitman Swedesboro Woodbury	Town Center	<ul style="list-style-type: none"> → Has a mixture of high-density residential and commercial land use, defined as a minimum density of six people and three employees per developed acre → Has an integrated mix of land uses → Has a unique history, character, and sense of place → Are of relatively higher density than their surrounding land uses → Has a distinct downtown/main street area surrounded by relatively dense residential development → Is pedestrian friendly and often transit oriented → Is surrounded by suburban land uses
Woolwich	Planned Town Center	<ul style="list-style-type: none"> → Has planned town-center-type development on greenfields in growing suburbs or rural areas or through redevelopment on greyfields and/or brownfields in existing developed communities → Plans call for a village-type development, incorporating mixed, integrated land uses, relatively high densities, pedestrian connections, and a distinct downtown or main street

DVRPC, 2010

Traffic Safety

Traffic safety conditions, discussed earlier, identified five-mile high-crash corridors in the county. Several of the identified corridors have since undergone improvements or have improvements planned. The other corridors may benefit from additional analyses. DVRPC has a traffic safety team that monitors highway safety and conducts Road Safety Audits on high-crash corridors throughout the region. The team works closely with local stakeholders to identify the root causes of poor traffic safety and to find relevant mitigation strategies. The county is encouraged to take full advantage of these services to stay current with safety conditions along the highway network. The corridors identified in the earlier sections that have not been improved, or do not have improvements planned should be

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considered for updated crash data evaluations for possible Road Safety Audits and improvement. Three years of post-improvement crash data should be examined to determine the success of mitigation where physical / operational changes have been implemented.

Congestion Management

Traffic congestion is present in major travel corridors and is shown to be spreading throughout the county. The independent detailed evaluation of traffic safety and mobility conditions in the US 322 Corridor indicated a strong correlation with the findings and strategies recommended in DVRPC's Congestion Management Process (CMP). As such, it is concluded that the regional CMP supplies a valuable process and ongoing methodology for combating congestion on a county-wide perspective.

Congestion management applies combinations of multimodal strategies to enhance the mobility of people and goods in congested areas without first adding capacity. The initial goals of CMP are to slow the growth of demand on the transportation network and extend its useful life. Funding for major transportation improvement projects is in scarce supply which makes cost effective congestion management strategies all the more important. If the federal government is financing a capacity-adding project, the project sponsor must also demonstrate and commit to a range of supplemental congestion management strategies as near-term offsets, to receive the most long-term value from the investment. An overview of several congestion management strategies suitable within Gloucester County follows.

Access Management

Access management is a means of preserving mobility on highways through the systematic control of the placement and design of driveways and intersections. Access management works by removing turbulences from the road, thereby creating a more predictable and efficient driving environment which also improves safety. Common access management methods include auxiliary turning lanes and shared driveways. The methods seek to create minimal interruption to through traffic. Not all roads are equal, and not all need to facilitate mobility and/or through travel. Therefore the methods and criteria of access management need to be tailored to each functional classification or road.

In New Jersey, the Department of Transportation is the primary source for access management. NJDOT currently manages access on state-maintained roads under the State Highway Access Management Code (Title 16, Chapter 47, Subchapters 1 – 8). However, NJDOT is not concerned with county and locally-owned roads. New Jersey law allows counties and municipalities to adopt codes for managing jurisdictional roads so long as it meets the standards of the state code. Currently no counties or municipalities in New Jersey have access management codes. Mercer County is in the process of adopting a code which identifies 'desired typical sections' by functional class. Depending on the outcome of Mercer County's adoption process, and any subsequent legal challenges, Gloucester County should work to adopt similar access management standards applicable to its County Route network.

Revise County Road Cross-Section Design Standards

It is equally important to consider and accommodate bicycles and pedestrians when recognizing transportation as an integrated system. A bicycle that is on the road or a pedestrian on a sidewalk may replace a car on a road or parked in a parking lot. Walking and biking are performed for utilitarian purposes, amplifying their accommodation as a congestion management measure.

Gloucester County currently does not have any roads designated as bicycle routes. Also, the County does not require the construction of sidewalks along the roadway system. However, Share the Road signs and bike lanes were recently installed along Fries Mill Road (CR 655). Including bicycling and pedestrian provisions in the design standards for county routes can extend non-motorized mobility and intermodal connectivity throughout the county.

Gloucester County currently has cross-section standards for the county road system. A unique standard applies to each functional classification. Total right-of-way widths are:

- ◆ Arterials – 88 feet
- ◆ Collectors – 76 feet
- ◆ Locals – 64 feet

All travel lanes, regardless of functional classification are 12 feet. As the standards are currently written, five-lane arterials and four-lane collectors have four-foot shoulders. All other standards dictate a 10-foot shoulder. In the two circumstances where shoulders are four feet, a design standard change to narrow the inside travel lane to 11 feet

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should be considered. This will allow for five foot shoulder which the American Association of State Highway and Transportation Officials (AASHTO) consider to be the desirable minimum width for comfortable bike riding. Five feet is also the minimum width for a bicycle lane where on street parking is present. Where there is no on street parking, a bike-lane should be a minimum of four feet. Preferred bicycle routes—including those comprising / adjoining the Cross County TMA's on-street network—should have bicycle lanes installed and other roads suitable for bicycles should be signed as bike routes.

The overall right-of-way dimension also includes a 10 foot wide utility strip. Devotion of five feet for sidewalks should be considered to promote pedestrian travel in the vicinity of transit stations as they are developed, and ultimately throughout the County, as County Routes are improved or added to the network.

Many roads pre-date the existing standards. The next section covers those instances where adequate right-of-way width prevents minimum shoulder width.

Bicycle Mobility – Share the Road

The 2009 version of the FHWA's *Manual on Uniform Traffic Control Devices* contains a sign that would be useful for designating bike routes in the county. The sign states that bicycles "May Use Full Lane." Though it may not be appropriate to sign two-lane portions of US 322 with this sign, many four-lane arterials and two-lane collector and local roads would be appropriate. The goal is simply to promote bicycling while informing motorists that the roads are shared. This sign is applicable to locations where adequate shoulders and bike lanes are not present, and can be used in complement / extension to the network developed by the Cross County Connection TMA in the near term, and eventually throughout the county.



MUTCD, 2009

Grid Building

Roadway networks configured as grids enable a more efficient distribution of traffic and increase pedestrian and bicycle mobility. A grid provides several paths to connect two points. Most urban places are configured as grids –

notably Woodbury and Pitman in Gloucester County. Typical subdivisions in suburban locations are composed of one or two accesses from an arterial highway, winding internal streets, and cul-de-sacs for property access. Often, purposeful walking is precluded by circuitous internal roadways.

Municipalities have the means to regulate the extent that a grid is built in new developments. There are several variants of 'connectivity indices' available to measure connectivity. Most involve dividing the number of streets by the number of intersections, or a similar calculation. By requiring a minimum connectivity index score, the municipality can limit the number of cul-de-sacs and promote a grid system. Where a cul-de-sac is required due to physical constraints, a pedestrian / bike path can be required to provide connectivity. Connecting with the circulation networks of adjoining developments should also be explored as a means of extending the street grid.

Park-n-Ride Lots

Park-n-ride lots are an effective means of reducing single-occupancy vehicle travel and promoting transit and carpooling. There is currently a single official park-n-ride lot in the county. It is located at the intersection of NJ 45 and CR 667, north of Mullica Hill, in Harrison Township. NJ Transit bus route 410 serves the location and 26 vehicle parking spaces are available. There are no additional amenities, such as bus stop shelters. A second 'unofficial' park-n-ride is located along US 322 at the NJ Turnpike Interchange in Harrison Township. This unimproved lot could potentially serve upwards of 30 vehicles. Plans exist to create an official park-n-ride lot near the NJ Turnpike Interchange during interchange reconstruction efforts which are expected to begin in late 2011.

A method of incrementally increasing the number of park-n-ride lots in the county involves tying new lots to major transportation investments. By using this approach an investment such as the Mullica Hill Bypass is recognized as a way to reduce current congestion, and a park-n-ride lot in the vicinity is a means to manage travel demand into the future. A park-n-ride lot located along NJ 77 south of US 322/CR 536 could serve as an intercept lot and potentially reduce the number of vehicles traveling through Mullica Hill. Similarly new park-n-ride lots are recommended to support the future widening of the NJ Turnpike and/or configuring US 322 as a boulevard in Woolwich Township, and the improvements identified at the CR 620 and I-295 Interchange.

Park-n-ride lots do not need to be new facilities. Many establishments such as churches, theaters, restaurants, and others have excess and unused parking capacity that can be shared with weekday commuters. Ideally, the new lots

Future Transportation Conditions

would be transit accessible but this is not a necessity. Cross County Connection TMA provides carpool match services for Gloucester County residents.

Complete Streets

Complete streets policies change the way that planning and engineering of highway facilities is performed, and seeks to enable all modes to benefit from a transportation facility's improvement. Many of the congestion management strategies fall under the umbrella of complete streets. Examples of accommodations include:

- ◆ Sidewalks
- ◆ Bike lanes
- ◆ Shoulders
- ◆ On-street parking
- ◆ Traffic calming measures
- ◆ Transit accessibility measures

Essentially, complete streets match an area's context (or environment) to the facilities provided. A fundamental shift in planning and engineering is required. Complete streets elements are disqualified during the planning and engineering process rather than qualified.

NJDOT recently updated Policy Number 703 reflecting the adoption of the principles of complete streets. Going forward, NJDOT will incorporate complete streets elements in the construction of new roads, as well as on existing roads during reconstruction efforts. The county should consider adopting a similar policy to advance Smart Growth and improve multi-modal transportation in its travel corridors.

Transit

This section is applicable to portions of the county served by transit that may not be supported by the outcomes of the Transit Score methodology. The need to connect people with employment opportunities is as important a concern as the fare box recovery ratio of the service. Major generators, i.e. Pureland and the Commodore industrial parks should benefit by increased transit service.

On a county-wide basis, several improvements can be implemented to better integrate transit service and foster riders, and help to manage travel and rein in congestion.

- ◆ **Park-n-Ride Lots** – park-n-ride lots are an effective means of congestion management. They are also useful to support transit service where land development patterns are rural and suburban. The lack of density causes many transit trips to begin or end with a journey by personal vehicle.
- ◆ **Bus Stop Shelters** – bus stop shelters protect waiting passengers from the elements, allow for the dissemination of transit information, and give a sense of permanence to the service. Shelters may often be installed free of charge by advertising companies. In New Jersey a multi-level approval process is needed before a shelter can be installed. Participants include, NJDOT, the hosting municipality, and NJ Transit. To improve the approval process the county may consider identifying a liaison that assists with the approval process. The county should also consider identifying ideal locations and creating a priority action list.
- ◆ **Transit Supportive Land Uses** – the sprawling nature of development in much of the county does not support transit services. The County and municipalities may assist in supporting transit by offering development bonuses for those that develop in land use centers, in compact mixed-use arrangements, and along existing transit lines.

The Gloucester County Planning Division currently makes significant effort to promote transit in the county. They produce guides and maps, and keep NJ Transit schedules stocked at numerous locations throughout the county. These are worthwhile efforts and should be continued.

Future Transportation Conditions

Intelligent Transportation Systems (ITS)

Fully 60 percent of non-recurring congestion is attributable to traffic incidents and interruptions through construction zones. Increased highway capacity should not be provided to mitigate these random occurrences. Instead, Intelligent Transportation Systems (ITS) and technologies can be effective tools in long term congestion management and emergency preparedness planning. Examples of ITS deployments include closed-circuit TV camera coverage, variable message signs, vehicle detection systems, and others.

Currently there is limited ITS deployment in Gloucester County.

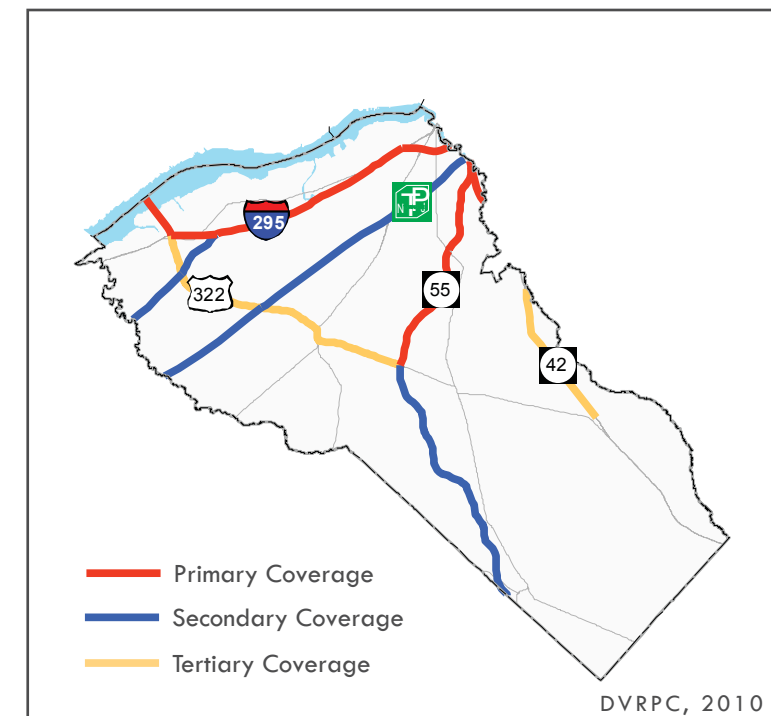
- ◆ I-295, the NJ Turnpike, and the Commodore Barry Bridge have varying levels of closed-circuit TV camera coverage;
- ◆ I-295, NJ 55, and the NJ Turnpike have variable message signs; and
- ◆ I-295 and the NJ Turnpike have travel time detectors.

DVRPC's Long-Range Plan includes a regional ITS Infrastructure Vision. The Vision identifies levels of coverage appropriate for individual facilities to the year 2035. The ITS Vision for Gloucester County incorporates I-295, NJ 55, the New Jersey Turnpike, US 322 / CR 536 and the Black Horse Pike NJ 42.

There are three basic levels of ITS coverage.

- ◆ **Primary** coverage includes full closed-circuit TV camera coverage, variable message signs, incident detection, and travel time detectors.
- ◆ **Secondary** coverage includes limited closed-circuit TV camera coverage (full coverage if on an arterial), variable message signs, travel time detectors, and coordinated traffic signals.
- ◆ **Tertiary** coverage includes closed-circuit TV camera coverage at major intersections, variable message signs at major intersections, travel time detectors, coordinated traffic signals.
- ◆ Other operations strategies are applicable to various highways, including emergency service patrols, incident management task forces, and integrated corridor management.

Figure 33: 2035 ITS Infrastructure Vision



Recommendations and Conclusion

A County-wide improvement program was prepared to provide a strategic and integrated vision. The program takes advantage of existing assets, infrastructure, and available resources, and addresses forecasted growth to achieve long-term sustainability. To do this most effectively both land use and transportation opportunities have been integrated.

The plan encourages growth in compact, mixed-use centers that link residences and jobs in close proximity, and identifies more transportation options to serve them. As a consequence, trip making characteristics can be altered / moderated, and transportation investments managed more effectively.

Recommended Improvement Program

The recommended improvement program is contained in **Tables 9a** through **9e**. It assesses priority and deliverability of the recommendations, defines key next steps for developing the recommendations, and identifies the likely partnerships that will be necessary to fully implement the plan.

Land Use (Figure 34a)

Future growth is recommended to be added in regional and local land use centers, and in the vicinity of major public transportation stops. Transportation recommendations are integrated to these same locations. More local land use centers can and should be identified in developed areas, along arterial highways, and along existing transit routes.

Congestion Management Process (Figure 34b)

Regional planning constructs have been developed through DVRPC's CMP to address the most congested travel corridors in the county, and support connections with federal planning and improvement funding requirements. Appropriate strategies to manage travel and congestion without first adding capacity are identified through the process. Some improvement projects addressing the congested corridors are pipelined, but not yet constructed. Strategies addressing congestion in the US 322 Corridor and emerging throughout the County have been developed

into policy actions and candidate projects that are consistent with the region's CMP and may be advanced for programming.

Traffic Mobility and Safety (Figure 34c)

Traffic improvements are identified for implementation according to regional land use centers / local focus areas.

Public Transportation and Congestion Management (Figure 34d)

New facilities, improved services and integrated operations by higher occupancy vehicles are identified to support land use centers, supply travel options to major employment sites and emerging congested areas, and as supplemental investments for major capital investments that primarily benefit the private auto.

Multi-Use Trails, Pedestrian and Bikeways (Figure 34e)

Policy and program recommendations to advance and promote non-motorized travel throughout the County are included.

Recommendations and Conclusion

Table 9a: Land Use Recommendations

	Strategy / Recommendation	Degree of Current Need	Implementation Time Frame	Next Steps / Notes	Planning / Implementation Partners
Older Downtowns: Central Business Districts in Glassboro, Paulsboro, Pitman, Swedesboro, Woodbury	Concentrate growth and add new mixes to vary and intensify development. Provide more transportation options / services. Priority locations for community revitalization and transportation investment funding and programs	High	Near-term	Master planning. Amend zoning and land development ordinances	Region, County, Municipalities, Economic Development groups, State agencies, Property owners, Investors
Areas Surrounding Transit Stations (TOD): <u>GCL Stations - High Priority</u> Within approximately 1/4 mile of Cooper Street Station in Woodbury; and Pitman Station <u>GCL Stations - Moderate Potential</u> Within approximately 1/4 mile of Crown Point Road Station in Westville Borough; Red Bank Avenue Station in Woodbury; and Rowan University Station in Glassboro <u>BRT Park-n-Ride lots</u> NJ 55 / NJ 47 Interchange	Concentrate growth and add new mixes to vary and intensify development. Provide more transportation options / services. Priority locations for community revitalization and transportation investment funding and programs	High	Near-term	Transit / Community Development Initiative. Amend zoning and land development ordinances	Municipalities, Gloucester County, NJ Transit, region
		Moderate	Mid-term	Master planning. Amend zoning and land development ordinances	Municipalities, Gloucester County, NJ Transit, region
		High	Long-term	Master planning. Amend zoning and land development ordinances	Municipalities, Gloucester County, NJ Transit, NJDOT, region
Large Single-Use Centers Deptford Center (Retail area surrounding the interchanges of NJ 55, NJ 42, NJ 41, CR 534 and Deptford Center Road, in Deptford Township) Pureland (Industrial park at I-295 and CR 620 Interchange, in Logan Township) Commodore Industrial Park (US 322 at I-295 Interchange, in Logan Township)	Concentrate growth and add new mixes to vary and intensify development. Provide more transportation options / services. Priority locations for community revitalization and transportation investment funding and programs	High	Long-term	Master planning. Amend zoning and land development ordinances	Municipality, Gloucester County, NJ Transit, NJDOT, region
		High	Long-term	Master planning. Amend zoning and land development ordinances	Municipality, Gloucester County, NJ Transit, NJDOT, region
		High	Long-term	Master planning. Amend zoning and land development ordinances	Municipality, Gloucester County, NJ Transit, NJDOT, region
New Towns Woolwich Town Center (Woolwich Township) Richwood Town Center (Harrison Township)	Concentrate growth and add new mixes to vary and intensify development. Provide more transportation options / services. Priority locations for community revitalization and transportation investment funding and programs	High	Mid- to Long-term	Develop and implement recommendations of the TDR Master plan	Municipality, Gloucester County, NJ Transit, NJDOT, region
		Moderate	Mid- to Long-term	Master planning. Amend zoning and land development ordinances for TDR	Municipality, Gloucester County, NJ Transit, NJDOT

Recommendations and Conclusion



Concentrate growth and add new mixes to vary and intensify development

- Older Downtowns
- Transit-Oriented Development near Stations
- Large Single-use Centers
- New Towns

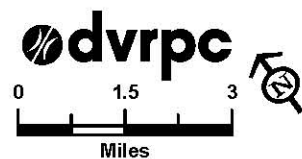
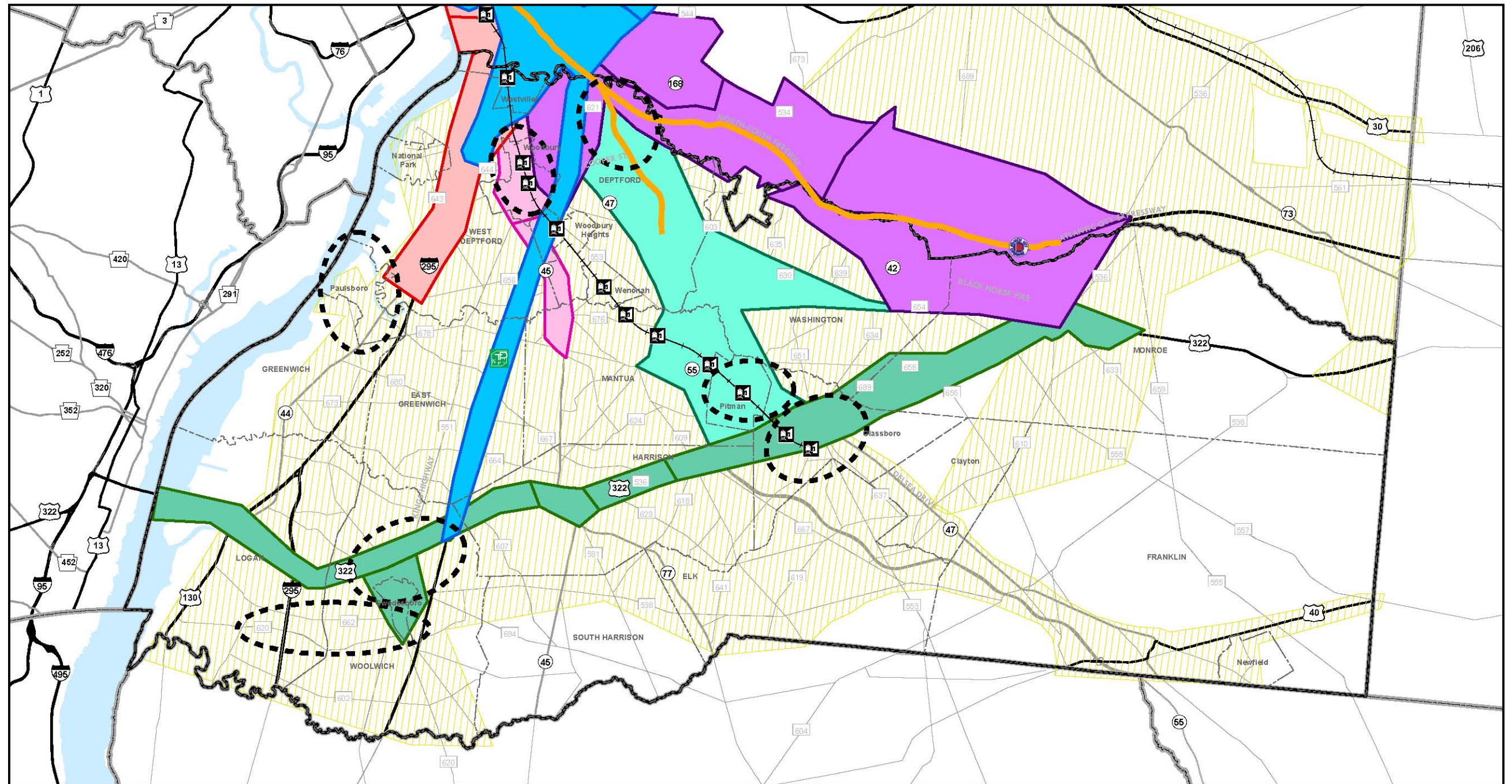
Figure 34a: Land Use Recommendations

Gloucester County Transportation Needs Study

Recommendations and Conclusion

Table 9b: Congestion Management Process Recommendations

	Strategy / Recommendation	Degree of Current Need	Implementation Time Frame	Next Steps / Notes	Planning / Implementation Partners
Congested N-S Corridors: I-295; US 130; NJ 41, NJ 47 & NJ 55; and NJ 45 Corridors	Construct and operate GCL; ITS, Incident management, transit route and service extensions; Transit First strategies; Traffic engineering improvements	High	On-going	Participate in GCL's EIS. Prepare detailed facility / corridor studies and improvement plans as necessary. Advocate for implementation in regional planning forums / programs.	Gloucester County, Municipalities, NJDOT, NJ Transit, TMA, region
NJ 42 & Atlantic City Expressway Corridors	Operate BRT; ITS, Incident management, transit route and service extensions; Transit First strategies; Traffic engineering improvements	High	On-going	Participate in BRT Alternatives Analysis. Prepare detailed facility / corridor studies and improvement plans as necessary. Advocate for implementation in regional planning forums / programs.	Gloucester County, Municipalities, NJDOT, NJ Transit, TMA, region
Congested E-W Corridors: US 322 / CR 536 Corridor	Traffic signal coordination, Traffic engineering improvements, Park-n-ride lots, Local transit services	Moderate to High	On-going	Implement US 322 / CR 536 Corridor Plan per Gloucester County Needs Study, and Route 322 Concept Development Study and Implementation Plan	Gloucester County, Municipalities, NJDOT, NJ Transit, TMA, region
Emerging Corridors: County Route System (County-wide)	Promote interconnected roadways in adjacent developments. Develop highway access management criteria and ordinance for County Route system. Incorporate Complete Streets / multi-modal considerations in transportation planning / improvement project development. Provide bicycling facilities and sidewalk provisions with construction / reconstruction projects.	High	Near-term	Amend County ordinances regulating land use development requirements, and County Route design standards.	Gloucester County, Municipalities, NJDOT, NJ Transit, TMA, region



- NJ Corridors**
- 2 -- I-295, NJ Turnpike (S)
 - 3 -- AC Expressway/NJ 42
 - 6 -- US 130
 - 7 -- US 322, Cross Keys Area
 - 11 -- NJ 41, NJ 47, NJ 55
 - 12 -- NJ 45
 - Emerging Corridors

- 2035 Long-Range Plan Land Use Center
- BRT Alignment

Recommended Strategies
 Integrate Development Roadway Networks and Manage Driveway/Access Highway, Accommodate Multi-Modal Use of Highways by Design

Figure 34b: Congestion Management Process Recommendations

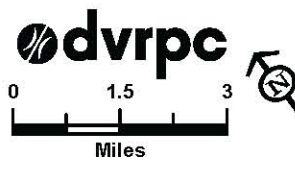
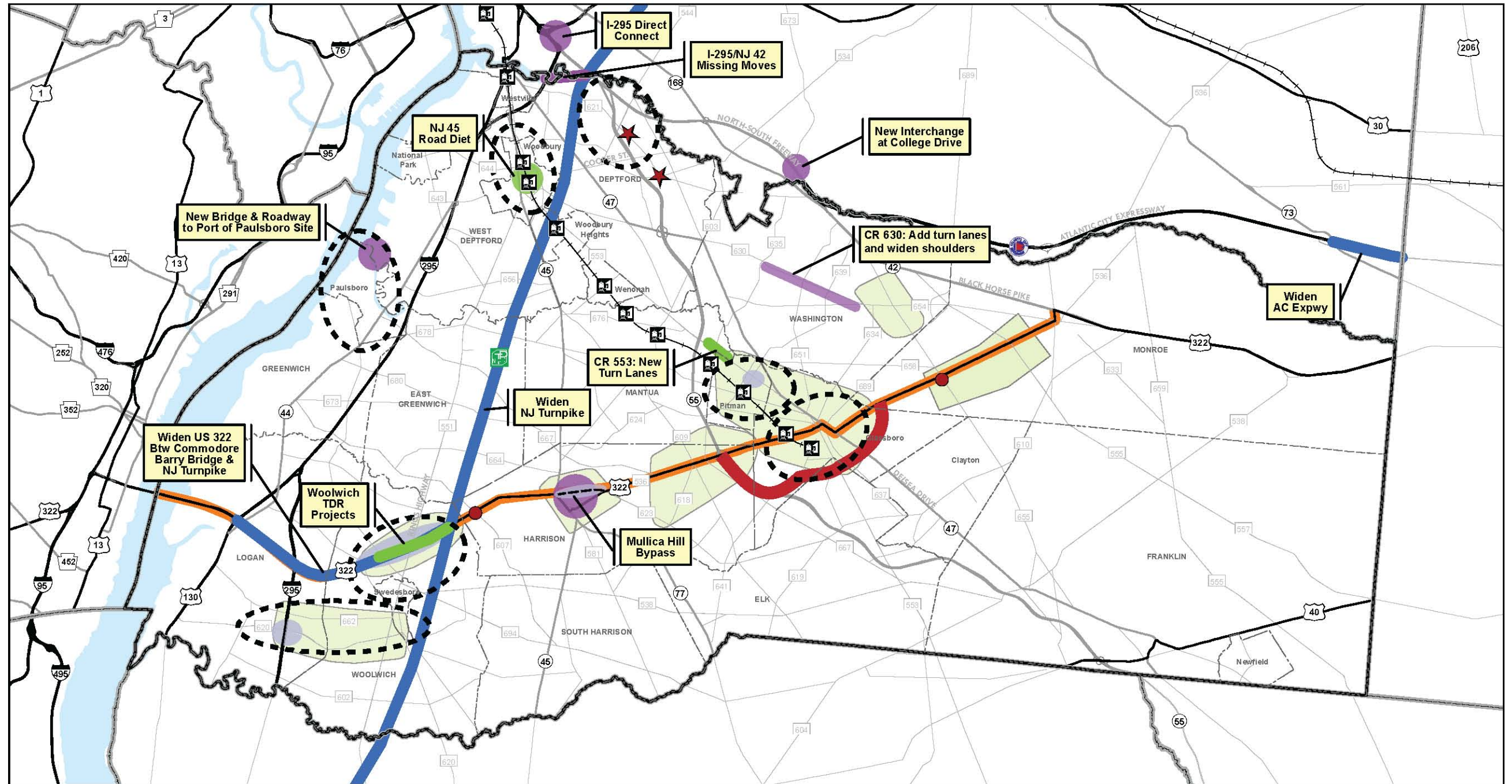
**Gloucester County
 Transportation Needs Study**

Recommendations and Conclusion

Table 9c: Traffic Mobility and Safety Recommendations

	Strategy / Recommendation	Degree of Current Need	Implementation Time Frame	Funding	Next Steps / Notes	Planning / Implementation Partners
Traffic Mobility:						
<u>County-wide (and immediate vicinity)</u>						
I-295 and NJ 42	Add Missing Movements to Interchange at I-295 / NJ 42	High	Long-term	TIP #355A/Design begins FY 2011	Complete design. Advocate for construction funds	NJDOT, Gloucester and Camden counties, NJ Transit, TMA, region
I-295, I-76, and NJ 42	Direct Connection of I-295 Through Interchange at I-76 / NJ 42	High	Long-term	TIP #355/Design began FY 2010	Complete design, Advocate for construction funding	NJDOT, Gloucester and Camden counties, NJ Transit, TMA, region
Atlantic City Expressway	Widen eastbound to three lanes from NJ 73 to Garden State Parkway	High	Near-term	DVRPC Long Range Plan #103, externally funded/Project under construction	Complete construction	South Jersey Transportation Authority
<u>Paulsboro</u>						
Paulsboro Bridge	Construct a new bridge to connect to the Paulsboro BP site on CR 656 (Mantua Grove Road)	Moderate to High	Near-term	Construction estimate \$23.0 million, funding from NJDOT and Gloucester Co	Construction scheduled: late 2010 through 2012	Gloucester County, NJDOT, Municipalities, Industrial Development and Port Agencies, TMA, region
<u>Woodbury</u>						
NJ 45 (Broad Street)	Road Diet / Complete Street, Carpenter Street to Red Bank Avenue - reduce travel lanes from 4 to 3, add bike and parking lanes	High	Near-term	100% NJDOT	Advocate for design and construction	NJDOT, NJ Transit, Gloucester County, Municipality, TMA
<u>Beckett / Pureland</u>						
I-295 & CR 620 (Center Square Road) Interchange	Widen Bridge over I-295 from 2 to 5 lanes, and I-295 SB off-ramp from 1 to 3 lanes. Address traffic safety at adjacent intersections. (See Figure 22)	High	Long-term	Potential TIP funded	Master planning / Conceptual Development and Feasibility Assessment	NJDOT, NJ Transit, Gloucester County, Municipality, region
<u>Woolwich</u>						
US 322	Widen from from 2 to 4 lanes between US 130 and CR 671	Moderate	Mid- to Long-term	Externally funded, scheduled 2016-2035 (DVRPC Long Range Plan #79)	Conceptual Development and Feasibility Assessment	NJ Turnpike Authority, NJDOT, Municipality, Gloucester County, region
	Reconfigure US 322 as a boulevard - "Complete Street" - median, access management, service / frontage roads, sidewalks between CR 671 and NJ Turnpike	Moderate	Mid- to Long-term	Woolwich Township TDR program, DVRPC Long Range Plan #79	Developer implement TDR improvements	NJDOT, Municipality, Property owner, Gloucester County, TMA, region
New Jersey Turnpike	Widen from Exit 4 to Delaware Memorial Bridge	Low	Long-term	Externally funded/scheduled 2026-2035 (DVRPC Long Range Plan #70)	Conceptual Development and Feasibility Assessment	NJ Turnpike Authority, NJDOT, Municipality, Gloucester County,
	Realign Pancoast Road to intersect US 322 at the Turnpike Interchange, install traffic signal.	Moderate	Mid- to Long-term	Woolwich Township TDR Program	Developer implement TDR improvements	NJDOT, Municipality, Property owner / Developer, Gloucester County, TMA, region
CR 551 (Kings Highway)	Widen from 2 to 4 lanes between US 322 and township line, add turning lanes south of US 322	Moderate	Mid- to Long-term	US 322 and NJ 551 Intersection improvements, NJDOT Route 322 Concept Development Study: Design - \$0.8mill, Right-of-Way - \$0.2 mill, Constr - \$4.8 mill; NJ 551 widening: Woolwich Township TDR Program	Advocate for implementation partnership - NJDOT completion of design and ROW acquisition; Developer implement intersection and TDR improvements	NJDOT, Municipality, Property owner / Developer, Gloucester County, TMA, region
Woolwich Ring Roads	Construct new ring roads north and south of US 322	Moderate	Mid- to Long-term	Woolwich Township TDR Program	Developer implement TDR improvements	NJDOT, Municipality, Property owner / Developer, Gloucester County, TMA
<u>Mullica Hill</u>						
US 322 - Mullica Hill Bypass	New 2-lane roadway between US 322 / NJ 45 and US 322 / CR 623	Moderate to High	Near-term (Under Construction)	TIP #07369: State and County	Under Construction	NJDOT, Municipality, Property owner, Gloucester County, TMA, region
<u>Richwood</u>						
Richwood Ring Roads	New connector roads between CR 609 and CR 635 north of US 322 / CR 536, and between CR 609 and CR 667 south of US 322 / CR 536	Low	Long-term	Planned community's roadways	Developer implement improvements	NJDOT, Municipality, Property owner / Developer, Gloucester County, TMA
<u>Pitman / Glassboro</u>						
CR 553 (Woodbury Avenue) between NJ 47 and NJ 55	Add left-turning lanes at intersections with Tylers Mill Road and CR 635 (Lams Road)	High	Near- to Mid-term	100% County	Complete design and construct	Gloucester County, Municipality
US 322 / Glassboro Bypass	Bypass / traffic relief route around Glassboro for post 2035 implementation. (See Figure 22)	Moderate to High	Long-term	Potential TIP funded	Conceptual Development and Feasibility Assessment	Gloucester County, NJDOT, Municipalities, Property owners and stakeholders, NJ Transit, TMA, region
<u>Hurffville / Fries Mill</u>						
CR 630 (Egg Harbor Road)	Add turning lanes and widen shoulders between CR 635 & CR 654	Moderate to High	Near- to Mid-term	TIP #D0503 for Right-of-Way acquisition	Advocate for construction funds	Gloucester County, Municipality, TMA
Traffic Safety:						
<u>555 / 322</u>						
US 322 and CR 655 intersection, Monroe Township	Traffic safety, driveway access management, and complete streets improvements	Moderate	Mid-term	Potential Local Aid: County / Federal	Conduct road safety audit	NJDOT, Gloucester County, Municipality, Property owners, NJ Transit, TMA
<u>Woolwich</u>						
US 322 / CR 536 and CR 607 intersection, Harrison Township	Traffic safety improvements	Moderate	Mid-term	Potential Local Aid: County / Federal	Traffic engineering / safety evaluation	Gloucester County, NJDOT, Municipality
<u>Deptford Center</u>						
CR 534 and CR 621 Intersection, Deptford Township	Traffic safety improvements	Moderate	Mid-term	Potential Local Aid: County / Federal	Traffic engineering / safety evaluation	Gloucester County, NJDOT, Municipality
CR 621 and Deptford Center Road intersection, Deptford Township	Traffic safety improvements	Moderate	Mid-term	Potential Local Aid: County / Federal	Traffic engineering / safety evaluation	Gloucester County, Municipality, NJDOT

Recommendations and Conclusion



★ High Priority Crash Locations*
 ● Identified Traffic Safety Location
*Source: NJDOT Statewide Priority crash list (2003-2005)

US 322 Study Corridor
 GCTNS Focus Area
 Highway Improvement Area
 Glassboro Bypass Conceptual Alignment

Improvement Projects
 Long-Range Plan (LRP)
 Transportation Improvement Program** (TIP)
 Other (County, Municipalities)
 2035 Long-Range Plan Land Use Center
 Improvement Project
**The DVRPC Board unanimously adopted the FY2010 TIP for New Jersey on July 23, 2009
Source:
 - Connections 2035, DVRPC 2009
 - TIP/ or NJ 2010 - 2013
 - GC PW CIP 2008 - 2010

Figure 34c: Recommended Traffic Mobility and Safety Improvements

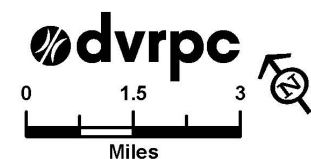
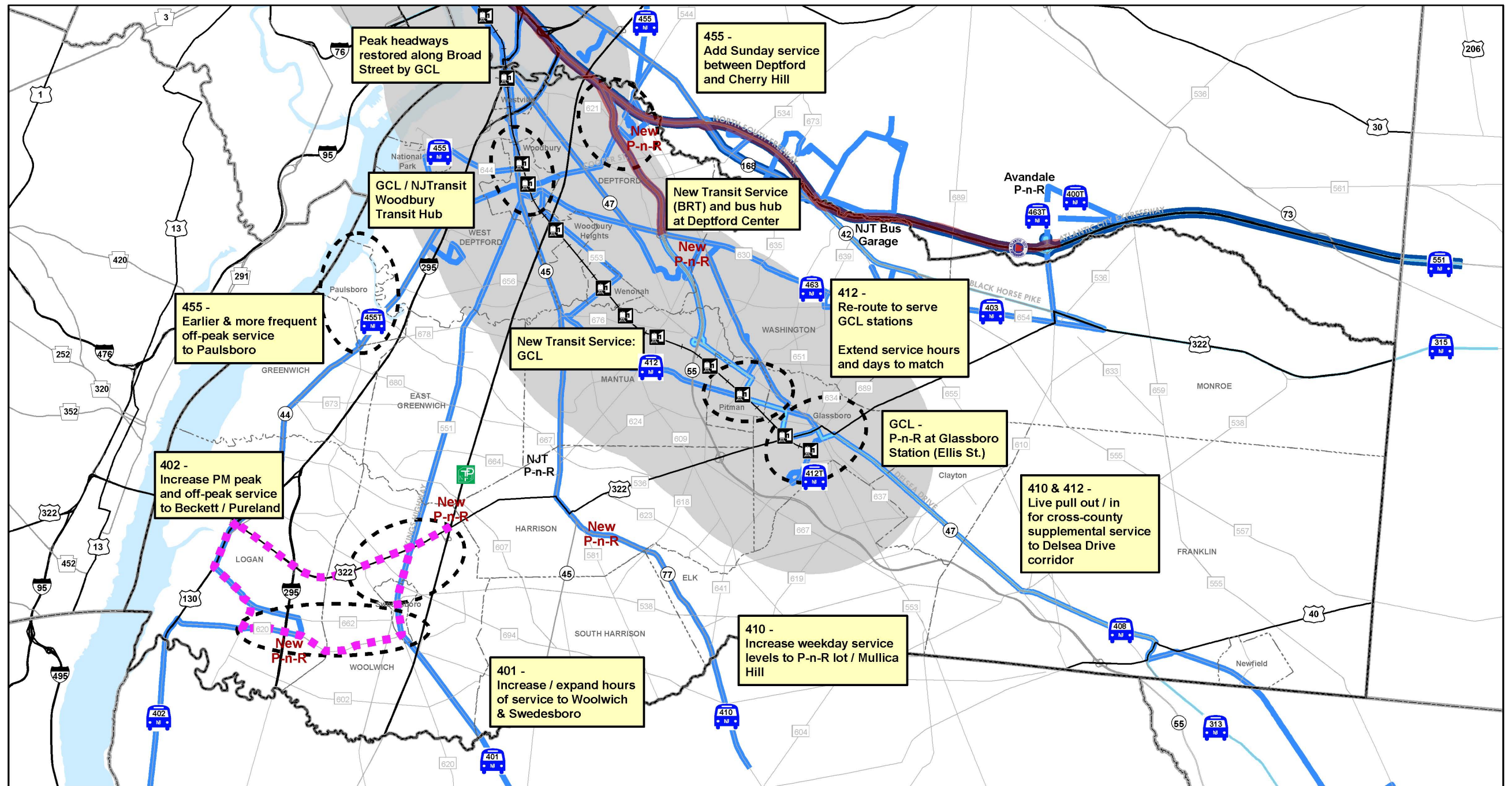
**Gloucester County
 Transportation Needs Study**

Recommendations and Conclusion

Table 9d: Public Transportation and Congestion Management Recommendations

	Strategy / Recommendation	Degree of Current Need	Implementation Time Frame	Next Steps / Notes	Planning / Implementation Partners
Schedule Enhancements: Existing NJ Transit Bus Routes:					
401	Increase / expand hours of service south of Woodbury to Woolwich and Swedesboro	High	Near-term	Promotes access to jobs	NJ Transit, Counties, TMA
402	Increase midday and PM peak service between Pureland and Woodbury	High	Near-term	Promotes access to jobs	NJ Transit, Counties, TMA
410	Increase weekday service levels to existing NJ 45 park-n-ride lot north of Mullica Hill	High	Near-term	Petition NJ Transit to review	NJ Transit, Counties, TMA
	Increase weekday service levels to proposed NJ 77 park-n-ride lot south of Mullica Hill	Low to Moderate	Mid- to Long-term	Implement with new park-n-ride lot south of Mullica Hill	NJ Transit, NJDOT, Counties, TMA
455	Provide earlier and more frequent weekday service between Woodbury and Paulsboro	High	Mid-term	Implement with the Port of Paulsboro development	NJ Transit, NJDOT, Counties, TMA
	Provide Sunday service between Deptford and Cherry Hill Mall.	High	Near-term	Petition NJ Transit to review	NJ Transit, Counties, TMA
463	Provide weekend service	Low	Mid-term	Implement with GCL	NJ Transit, Counties, TMA
Service Extensions: Existing NJ Transit Bus Routes:					
410	Provide live cross-county service on pull-outs / pull-ins between Washington Township Garage and Mullica Hill	Moderate	Mid- to Long-term	Implement with new park-n-ride lot south of Mullica Hill	NJ Transit, Gloucester County, TMA
412	Provide live cross-county service on pull-outs / pull-ins between Washington Township Garage and Glassboro	High	Near-term	Petition NJ Transit to review	NJ Transit, Gloucester County, TMA
Route Revisions: Existing NJ Transit Bus Routes:					
412	Realign route in the vicinity of proposed GCL stations	High	Near-term	Presently under review by NJ Transit	NJ Transit, Gloucester County
	Extend service hours to match GCL service	Low	Mid-term	Implement with GCL	NJ Transit, Gloucester County, TMA
NJ Transit's Southern Division	System-wide route evaluation	Low	Mid- to Long-term	Implement with the GCL and BRT investments	NJ Transit, Counties, TMA
New Bus Routes:					
BRT service in the NJ 42 / AC Expressway & NJ 55 Corridor	Operate premium / limited-stop bus service along freeways into Camden and Philadelphia (2 stops in Gloucester County)	High	Mid- to Long-term	Complete Alternatives Analysis	NJ Transit, Counties, Municipalities, TMA, region
Woolwich, Swedesboro, Beckett / Pureland, Commodore Industrial Park Circulator Loop	Operate circulator bus route that connects towns / uses, park-n-ride lots and NJ Transit bus routes	Moderate	Mid- to Long-term	Implement with Woolwich Town Center	NJ Transit, Counties, Municipalities, TMA
New Passenger Rail Service:					
GCL light rail line	Operate light rail passenger service between Glassboro and Camden	High	Mid-term	Complete EIS	NJ Transit, County, Municipalities, TMA, region
Intermodal Facilities:					
Woodbury (Cooper Street) Transit Hub	Construct Woodbury Transportation Center / GCL Station, realign bus routes	High	Near- to Mid-term	Complete Transit / Community Development Initiative	NJ Transit, County, Municipalities, TMA, region
Deptford Center Bus Hub	Construct Transportation Center and parking garage, realign bus routes, operate circulator route	High	Long-term	Master planning. Amend zoning and land development ordinances. Complete BRT Alternatives Analysis	NJ Transit, NJDOT, County, Municipalities, TMA, region
Park-n-Ride Facilities:					
I-295 / CR 620 Interchange park-n-ride	Construct park-n-ride lot with interchange reconstruction	High	Long-term	Master Planning; Conceptual Development and Feasibility Assessment	NJ Transit, NJDOT, Gloucester County, Local Business Groups, Municipality, TMA
US 322 / NJ Turnpike Interchange park-n-ride	Construct park-n-ride lot with Woolwich TDR / 322 improvements	High	Mid-term	Implement with Woolwich Town Center	NJ Transit, NJDOT, NJ Turnpike Commission, Gloucester County, Municipality, Developer and TMA
NJ 77 park-n-ride	Construct park-n-ride lot	Moderate	Mid- to Long-term	Incorporate into evaluation of Bus Route 410 extension	NJ Transit, NJDOT, County, Municipality, TMA
NJ 55 / NJ 47 Interchange park-n-ride	Construct park-n-ride lot with BRT service	High	Mid- to Long-term	Complete BRT Alternatives Analysis	NJ Transit, NJDOT, County, Municipality, TMA

Recommendations and Conclusion



- 2035 Longe-Range Plan Land Use Center
- BRT Alignment
- Woolwich / Logan Loop Route (Conceptual)
- 3 mile Buffer
- NJ Bus Routes 300series Line
- NJ Bus Routes 400series Line
- NJ Bus Routes 551

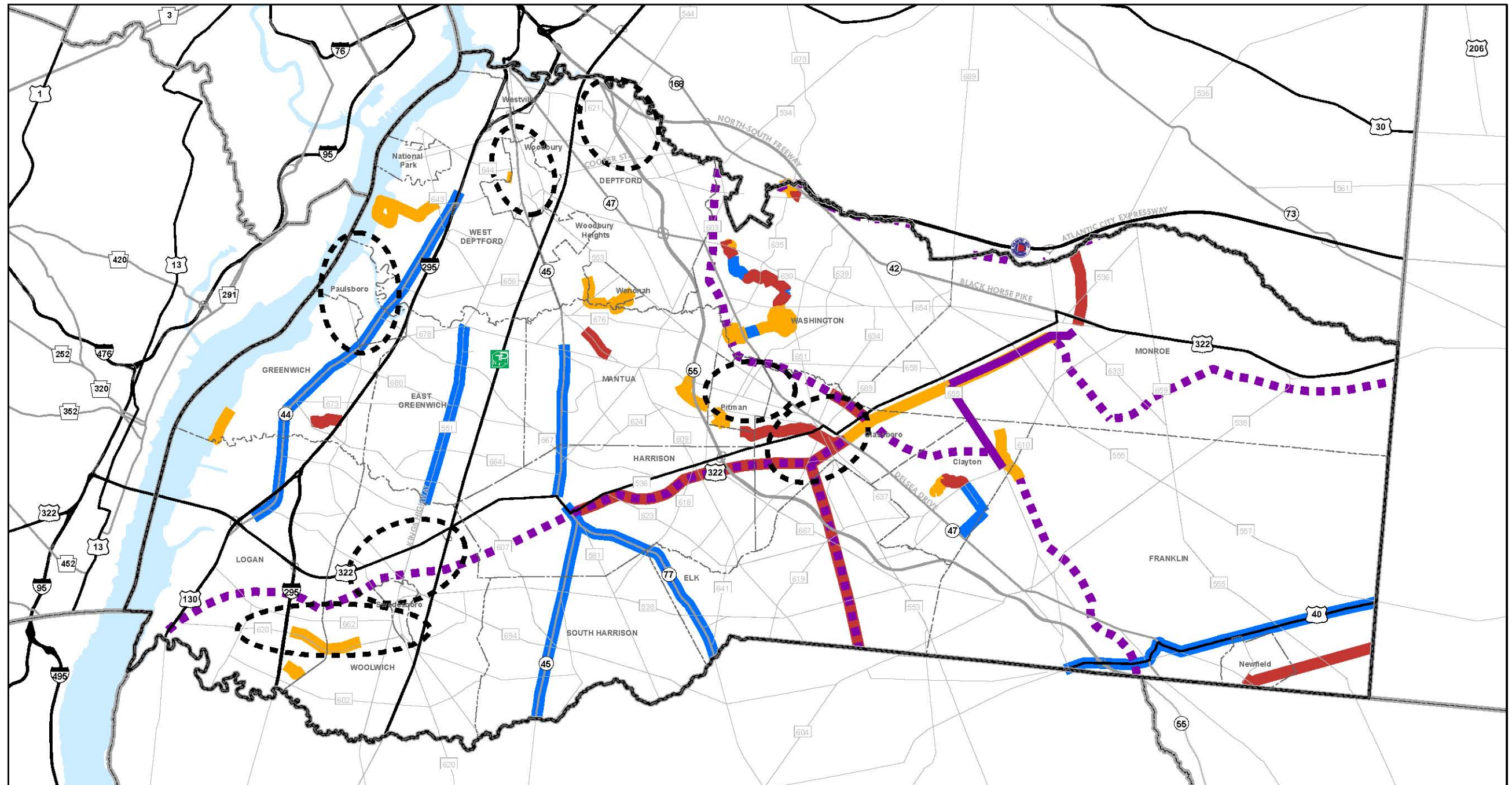
Figure 34d: Recommended Transit Improvements and Congestion Management Strategies
Gloucester County Transportation Needs Study

Recommendations and Conclusion

Table 9e: Multi-Use Trails, Pedestrian and Bikeway Recommendations

	Strategy / Recommendation	Degree of Current Need	Implementation Time Frame	Next Steps / Notes	Planning / Implementation Partners
Revise County Route design standards to include bicycling facilities and sidewalks	Revise County Route design standards to include bicycling facilities and sidewalks; Implement with new or reconstruction	High	Near-term	Revise ordinances and design standards	Gloucester County, Municipalities, Property owners
Complete regional / County-wide vision of multi-use trails and TMA bikeways network	Plan and Construct trails	High	Long-term	Participate in regional planning forums. Prepare County recreation and open space plan. Prepare official maps	County, State agencies, Municipalities, TMA
Develop municipal trail networks, connect with regional network	Plan and Construct trails	High	Long-term	Prepare recreation and open space plans. Prepare official maps	Municipalities, County, State agencies, TMA

Recommendations and Conclusion



dvrcpc

0 1.5 3 Miles

 2035 Long-Range Plan Land Use Center
Multi-Use Trail & Bikeway Network
Existing
 Cross County Connection*
 Connections 2035
Proposed Off-Road
 Cross County Connection*
 Connections 2035
Proposed On-Road
 Cross County Connection*

*Source: Cross County Connection TMA, 2009

Figure 34e: Multi-Use Trails, Pedestrian and Bikeways

**Gloucester County
Transportation Needs Study**

Recommendations and Conclusion

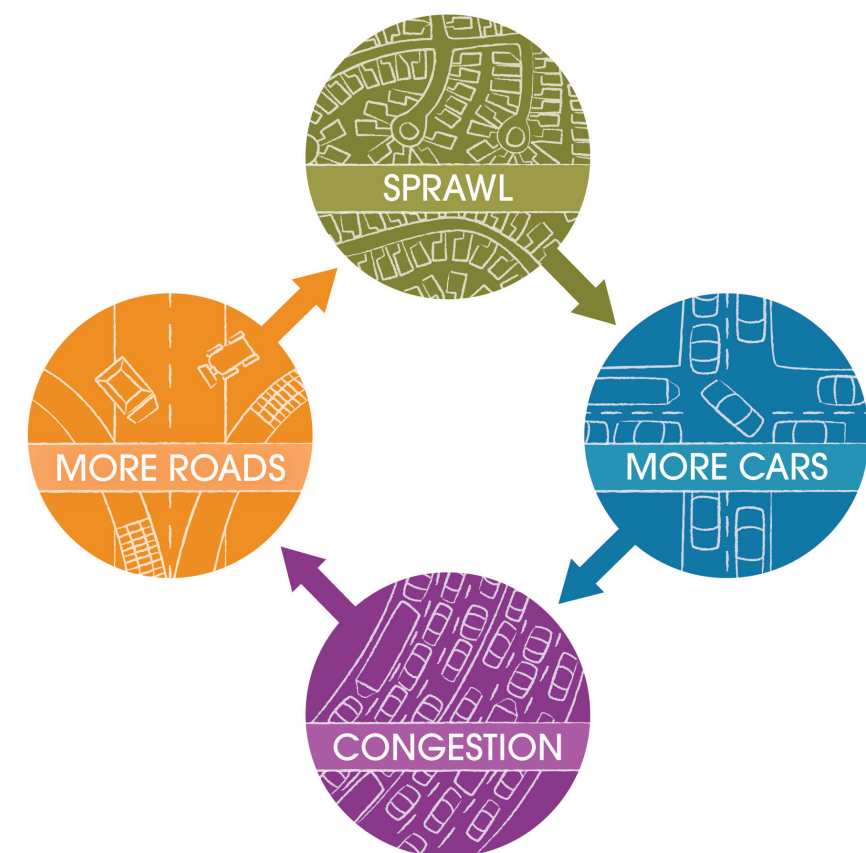
Conclusion

The County has been very successful in improving its transportation facilities. Numerous projects are planned / programmed in the County to address the future. According to the analyses performed herein, each of the planned projects are valuable for accommodating future Year 2035 travel demands along the most deficient facilities. Beyond the currently planned projects, this study identified the need for two additional physical improvements, and a program of policy actions / institutional changes directed toward planning practices and county roadway standards.

Just two physical improvements were identified through the GCTNS technical work: at the CR 620 and the I-295 Interchange, which is currently deficient; and along US 322 / NJ 47 through Glassboro, which will reach capacity by the planning horizon, and is suggested for relief via a bypass route for the longer-term future (i.e., beyond 2035).

A program of institutional improvements offers a wider net for directing growth, managing travel, extending serviceability, and combating congestion along the county's extensive network of county routes where sprawl, dispersed trip making, and congestion will emerge. Gloucester County has the ability to better manage conditions and promote multi-modal, bike and pedestrian mobility throughout the county by changing some of its policies and practices surrounding land development regulations, and county roadway design standards. These include promoting varied development and growth in targeted centers, and investing in infrastructure to support that growth; instituting access management requirements for the County Route system; and revising design standards and right-of-way requirements to include all motorized and non-motorized modes of travel.

The continued support of County officials is necessary to ensure that the currently planned projects are realized, and that the recommended projects and programs are pursued. The County has authority over the practices and requirements governing its highways, but inter-jurisdictional and municipal partnerships will be required to fully implement the plan because major transportation investment decisions also typically involve state and federal agencies, and land use decisions are usually based in the municipality.



The GCTNS' Smart Growth recommendations will manage the cycle of sprawl.

DVRPC, 2010

Expanded Travel Demand Modeling Data



Expanded Travel Demand Modeling Data

Table A-1: Current and 2035 Plan Traffic Volumes

Designation	Name	Limits	Traffic Volumes		
			Current	2035 Plan	% Change
Beckett / Pureland Focus Area					
CR 662	High Hill Road	I-295 overpass and Pedricktown Center Square Road	6,383	7,700	21%
CR 620	Center Square Road	Beckett Road and I-295	20,911	31,100	49%
CR 662	High Hill Road	Township Line Road and Auburn Road	5,338	9,400	76%
CR 620	Center Square Road	Auburn Road and Township Line Road	10,280	13,900	35%
CR 551	Auburn Road	Center Square Road and High Hill Road	7,182	7,500	4%
Woolwich Focus Area					
CR 653	Paulsboro-Swedesboro Road	Kings Highway and Swedesboro Road	7,196	15,500	115%
CR 551	Kings Highway	Kelly Road and Swedesboro Road	7,534	15,200	102%
CR 551	Kings Highway	Swedesboro Road and Pancoast Road	6,160	14,100	129%
CR 653	Swedesboro Road	Gilchris Drive and Belfiore Drive	3,555	4,200	18%
local	Garmin Road	US 322 and Hendricks Court	996	2,000	101%
US 322	Swedesboro Bridgeport Road	Paulsboro Road and Kelley Road	13,494	19,200	42%
Mullica Hill Focus Area					
CR 664	Wolfert Station Road	NJ 45 and Barney Hawkins Road	3,551	1,500	-58%
NJ 45	North Main Street	US 322 and Wolfert Station Road	16,239	22,500	39%
US 322/NJ 45	South Main Street	NJ 45 and Arbor Street	19,616	14,000	-29%
NJ 45	Main Street	High Street and US 322	16,090	19,600	22%
NJ 77	Bridgeton Pike	Richwood Road and Commissioners Road	10,907	13,600	25%
CR 623	Clems Run	US 322 and Harrisonville Road	1,420	4,700	231%
US 322	Swedesboro Road	Cider Press Drive and 45	15,918	22,200	39%
local	Woodland Avenue	Hoeshoe Lane and Orchard Drive	2,238	6,200	177%
local	High Street	Washington Ave and Banff Drive	2,310	3,600	56%
NJ 45	Woodstown Road	Woodchuck Drive and Spicer Street	7,856	15,100	92%
US 322	Mullica Hill Bypass	New two-lane bypass	N/A	18,400	N/A
US 322	Mullica Hill Road	NJ 45 and Clems Run Road	12,204	5,400	-56%
US 322	Mullica Hill Road	Clems Run and Sherwin Road	10,401	14,400	38%
Richwood Focus Area					
CR 623	Clems Run	US 322 and Harrisonville Road	1,420	4,700	231%
CR 618	Harrisonville Road	Bridgeton Pike and Clems Run	5,774	7,400	28%
US 322	Mullica Hill Road	Cedar Road and Harrisonville Road	16,037	20,300	27%
CR 618	Harrisonville Road	Bishop Road and US 322	5,942	8,800	48%
CR 609	Elmer Barnsboro Road	Bishop Road and US 322	1,743	2,500	43%
CR 635	Lambs Road	322 and Mantua Township Line	5,465	5,000	-9%
CR 667	Aura Road	Williamson Lane and US 322	2,345	2,700	15%
US 322	Mullica Hill Road	NJ 55 and Hampton Boulevard	18,467	26,600	44%
CR 609	Barnsboro Road	US 322 and Heilig Road	3,825	7,300	91%
local	Heilig Road	Brookside Way and Barnsboro Road (CR 609)	1,478	3,200	117%
Pitman / Glassboro Focus Area					
CR 624	West Holly Avenue	Cedar Avenue and Alt Broadway	4,742	5,500	16%
Alt 553	Alt Broadway	Holly Avenue and Lambs Road	5,560	4,800	-14%
CR 553	North Woodbury Avenue	East Holly Avenue and Lambs Road	18,025	24,800	38%
CR 639	Pitman Avenue	Summit Avenue and Mount Vernon Avenue	4,325	5,300	23%
Alt 658	Alt South Broadway	Adams Avenue and Wildwood Avenue	5,461	5,700	4%
CR 624	East Holly Avenue	Woodbury Road and NJ 47	11,212	11,800	5%
local	Joseph L. Bowe Boulevard	US 322 and Carpenter Street	15,149	18,200	20%
NJ 47	Delsea Drive	Shopping Center Driveway and Will Dalton Drive	10,641	15,200	43%
CR 682	Carpenter Street	Main Street and Bowe Boulevard	4,508	5,400	20%
CR 553	Main Street	Union Street and High Street	7,418	10,100	36%
CR 689	East New Street	Delsea Drive and Alfred Avenue	8,811	10,600	20%
CR 634	Fishpond Road	Delsea Drive and Pitman Downer Road	4,135	5,900	43%
US 322	High Street	Borough Commons Parkway and Monroe Township Line	10,719	15,300	43%
US 322	Mullica Hill Road	Hampton Boulevard and Lehigh Road North	15,274	23,200	52%
local	Oakwood Avenue	Laurel Street and Holly Street	1,292	3,500	171%
CR 641	Ellis Street	Owen Avenue and Laurel Street	5,218	5,300	2%
CR 637	Academy Street South	Grove Street and High Street	2,084	3,600	73%
NJ 47	Delsea Drive	High Street and Grove Street	11,695	14,900	27%
CR 651	Greentree Road	NJ 47 and William Dalton Drive	5,669	7,400	31%
Hurffville / Fries Mill Focus Area					
CR 630	Egg Harbor Road	Hurffville Cross Keys Road and Ganttown Road	7,751	10,600	37%
CR 634	Fishpond Road	Pitman Downer Road and Hurffville Cross Keys Road	8,785	11,200	27%
CR 655	Fries Mill Road	Hurffville Cross Keys Road and Black Horse Pike	15,213	17,400	14%
CR 654	Hurffville Cross Keys Road	Fries Mill Road and Fishpond Road	22,278	27,600	24%
CR 655	Fries Mill Road	Cross Keys Glassboro Road and Hurffville Cross Keys Road	13,613	16,700	23%
CR 654	Hurffville Cross Keys Road	Cross Keys Bypass and Fries Mill Road	15,585	20,300	30%
local	Bells Lake Road	Birch Grove Lane and Scarlet Oak Road	2,324	2,300	-1%
555 / 322 Focus Area					
US 322	Williamstown Road	Fries Mill Road and New Street	10,539	13,700	30%
CR 555	Tuckahoe Road	Roun Avenue and Dahlia Avenue	12,447	15,400	24%
CR 555	Tuckahoe Road	Clayton Road and US 322	10,766	14,000	30%
CR 655	Fries Mill Road	Pitman-Downer Road and US 322	14,054	16,900	20%
CR 655	Fries Mill Road	Stanger Avenue and US 322	11,597	14,700	27%
US 322	Williamstown Road	Jobs Lane and Eldridge Avenue	9,757	12,000	23%

Expanded Travel Demand Modeling Data

Table A-2: Modeled Peak Period Performance Measures

Focus Area	Functional Classification	VMT			VHT			Avg. Speed (m/h)			V/C Ratio		
		2005	2035	% Change	2005	2035	% Change	2005	2035	% Change	2005	2035	% Change
Beckett / Pureland	Arterial	18,556	20,866	12.4%	1,647	1,819	10.4%	11.3	11.5	1.8%	0.66	0.71	7.6%
	Collector	9,435	12,004	27.2%	621	909	46.4%	15.2	13.2	-13.1%	0.42	0.52	23.8%
	Local	1,400	1,426	1.9%	91	95	4.4%	15.4	15.0	-2.4%	0.18	0.20	11.1%
	Total	29,391	34,297	16.7%	2,359	2,822	19.6%	12.5	12.2	-2.5%	0.54	0.61	13.0%
Woolwich	Arterial	21,468	36,891	71.8%	1,332	2,269	70.4%	16.1	16.3	0.9%	0.47	0.43	-8.5%
	Collector	2,054	3,990	94.3%	137	283	105.9%	14.9	14.1	-5.7%	0.26	0.49	88.5%
	Local	4,464	8,202	83.7%	304	1,113	266.6%	14.7	7.4	-49.9%	0.29	0.59	103.4%
	Total	27,985	50,083	79.0%	1,773	3,665	106.7%	15.8	13.7	-13.4%	0.43	0.45	4.7%
Mullica Hill	Arterial	26,962	29,010	7.6%	1,398	1,715	22.6%	19.3	16.9	-12.3%	0.57	0.68	19.3%
	Collector							N/A					
	Local	3,276	7,274	122.1%	214	633	196.4%	15.3	11.5	-25.1%	0.18	0.35	94.4%
	Total	30,237	36,284	20.0%	1,612	2,348	45.7%	18.8	15.5	-17.6%	0.51	0.62	21.6%
Richwood	Arterial	22,540	29,025	28.8%	1,188	1,493	25.7%	19.0	19.4	2.5%	0.41	0.48	17.1%
	Collector	3,397	4,872	43.4%	241	316	31.1%	14.1	15.4	9.4%	0.17	0.32	88.2%
	Local	3,615	7,702	113.1%	235	533	126.8%	15.4	14.5	-6.1%	0.18	0.44	144.4%
	Total	29,552	41,599	40.8%	1,664	2,342	40.7%	17.8	17.8	0.0%	0.31	0.44	41.9%
Pitman / Glassboro	Arterial	51,135	64,559	26.3%	3,449	4,624	34.1%	14.8	14.0	-5.8%	0.50	0.62	24.0%
	Collector	21,618	25,170	16.4%	1,646	2,006	21.9%	13.1	12.5	-4.5%	0.57	0.65	14.0%
	Local	10,059	12,818	27.4%	842	1,175	39.5%	11.9	10.9	-8.7%	0.39	0.50	28.2%
	Total	82,812	102,547	23.8%	5,937	7,805	31.5%	13.9	13.1	-5.8%	0.49	0.61	24.5%
Hurffville / Fries Mill	Arterial	16,287	20,323	24.8%	925	1,213	31.1%	17.6	16.8	-4.8%	0.36	0.45	25.0%
	Collector	1,902	2,845	49.6%	123	206	67.5%	15.5	13.8	-10.7%	0.47	0.71	51.1%
	Local	969	1,545	59.4%	62	100	61.3%	15.6	15.5	-1.1%	0.18	0.29	61.1%
	Total	19,158	24,713	29.0%	1,110	1,518	36.8%	17.3	16.3	-5.7%	0.36	0.46	27.8%
555 / 322	Arterial	18,175	22,531	24.0%	1,040	1,508	45.0%	17.5	14.9	-14.5%	0.45	0.56	24.4%
	Collector	6,337	8,002	26.3%	330	500	51.4%	19.2	16.0	-16.6%	0.52	0.67	28.8%
	Local							N/A					
	Total	24,512	30,534	24.6%	1,370	2,008	46.5%	16.2	15.2	-6.1%	0.47	0.58	23.4%

2010 US Census Results (vs. municipal demographic forecasts)



2010 US Census Results (vs. municipal demographic forecasts)

Growth and development trends and analytical conclusions were drawn in the Gloucester County Transportation Needs Study. The foundation for the observations and analyses lie in estimates of municipal population and employment levels for the years 2005 and 2035. The source for this data was socio-economic forecasts prepared by DVRPC that support its long-range land use and transportation planning functions for the region.

DVRPC prepares its municipal forecasts in five-year increments, however, in the conduct of the Transportation Needs Study just two years were benchmarked—2005, as the study’s baseline; and 2035, to coincide the study’s planning horizon with that region’s long-range plan (CONNECTIONS, 2035).

Following completion of the technical work and the draft-final report, the US Census Bureau released its 2010 population figures. **Table B-1** is presented to compare the study’s population forecasts and more specifically the planning set’s interim year 2010 forecasts with the 2010 Census information.

The result indicates that the 2010 planning set are on target, and just a bit higher than the new Census figures. DVRPC’s 2010 population forecasts are on average one percent higher for the County overall, and for the municipalities comprising the US 322 Corridor.

In light of the new information, it is judged that the recommendations of the study remain adequate and valid. Ongoing monitoring of municipal level population and employment data, and traffic volumes, are necessary components for plan maintenance.

Table B-1: Municipal Demographics: 2005, 2010 and 2035 Study Forecasts vs. 2010 Census Data

Municipality	Population			US Census 2010	Change: Forecasted 2010 to Census 2010	
	GCTNS's Planning Set*				Abs	% Change
	2005	2010	2035			
Clayton Borough	7,275	7,865	10,353	8,179	314	4%
Deptford Township	29,456	30,519	34,996	30,561	42	0%
East Greenwich Township	6,206	6,658	8,561	9,555	2,897	44%
Elk Township	3,755	4,428	7,259	4,216	-212	-5%
Franklin Township	16,498	17,682	22,668	16,820	-862	-5%
Glassboro Borough	19,103	20,423	25,983	18,579	-1,844	-9%
Greenwich Township	4,932	5,002	5,295	4,899	-103	-2%
Harrison Township	11,291	13,045	20,433	12,417	-628	-5%
Logan Township	6,146	6,394	7,440	6,042	-352	-6%
Mantua Township	15,029	16,521	22,806	15,217	-1,304	-8%
Monroe Township	31,158	34,140	46,709	36,129	1,989	6%
National Park Borough	3,192	3,238	3,428	3,036	-202	-6%
Newfield Borough	1,645	1,667	1,761	1,553	-114	-7%
Paulsboro Borough	6,037	6,072	6,219	6,097	25	0%
Pitman Borough	9,162	9,337	10,075	9,011	-326	-3%
South Harrison Township	2,859	3,161	4,432	3,162	1	0%
Swedesboro Borough	2,030	2,101	2,402	2,584	483	23%
Washington Township	50,198	51,637	57,695	48,559	-3,078	-6%
Wenonah Borough	2,310	2,373	2,639	2,278	-95	-4%
West Deptford Township	20,709	21,908	26,956	21,677	-231	-1%
Westville Borough	4,423	4,533	4,997	4,288	-245	-5%
Woodbury City	10,334	10,364	10,488	10,174	-190	-2%
Woodbury Heights Borough	2,993	3,025	3,160	3,055	30	1%
Woolwich Township	7,490	10,393	22,619	10,200	-193	-2%
Gloucester County Total	274,231	292,486	369,374	288,288	-4,198	-1%

DVRPC, 2011

* Population forecasts for long-range planning from: CONNECTIONS 2035, The Long-Range Plan for the Greater Philadelphia Region (DVRPC, November 2009)

Study Participants



Study Participants

Table C-1: Study Participants

Gloucester County	
	Title
Mr. Rick Westergaard	Acting Planning Director
Mr. Charles Romick	Planning Director (Retired)
Ms. Jessica Lucas	County Planner
Ms. Therese Donlan	Principal Planner
Delaware Valley Regional Planning Commission	
	Role
Mr. Jerry Coyne	Project Manager
Mr. Michael Becker	Project Planner
Ms. Guinevere Pascal	Project Mapping and GIS
Mr. Keith Hartington	Project Planner
Mr. Andrew Svekla	Project Planner
Ms. Becky Maule	Graphic Artist

DVRPC, 2010

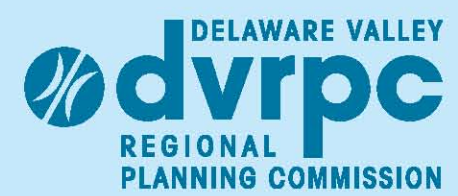
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Abstract: The Gloucester County Transportation Needs Study was a two-year, three-phase study undertaken by DVRPC to assist Gloucester County with the preparation of the transportation element of an updated County Master Plan. The study emphasized Smart Growth principles, multi-modal commuting, and the relationship between land use and transportation. A version of the DVRPC regional travel demand model was prepared for the study with focus on the high-growth portions of the county. The modeling aspect assisted in determining the transportation improvements needed to accommodate the expected demands of future growth. Additionally, DVRPC conducted a station-area analysis for rail stations to be served by the locally preferred alternative of the PATCO South Jersey expansion project, the Glassboro-Camden Line. The station-area analysis looked beyond the immediate stations and determined improvements that may be needed in the surrounding areas to connect people (vehicles, cyclists, pedestrians) with the stations.

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