

Chapter 3

Current Transportation System Overview

This chapter includes an assessment of Kent County's existing transportation system, the baseline for identifying future transportation investment needs. Various elements of the County's transportation system are reviewed by mode. This chapter presents the changes that have occurred since the adoption of the previous Metropolitan Transportation Plan in 2009.

Elements of the system include roads, bridges, public transportation, bicycle and pedestrian facilities, railroads, aviation, and marine facilities. Where applicable, the Plan compares the County's transportation system with Delaware's overall system.

The Highway Performance Monitoring System (HPMS) is a national database that assists metropolitan planning organizations and other government agencies in assessing highway conditions, performance, air quality trends, and investments for the functional classification of roads. These standards help assess the conditions and needs of the county's highways.

In addition, this chapter provides an overview of the land use characteristics within Kent County.

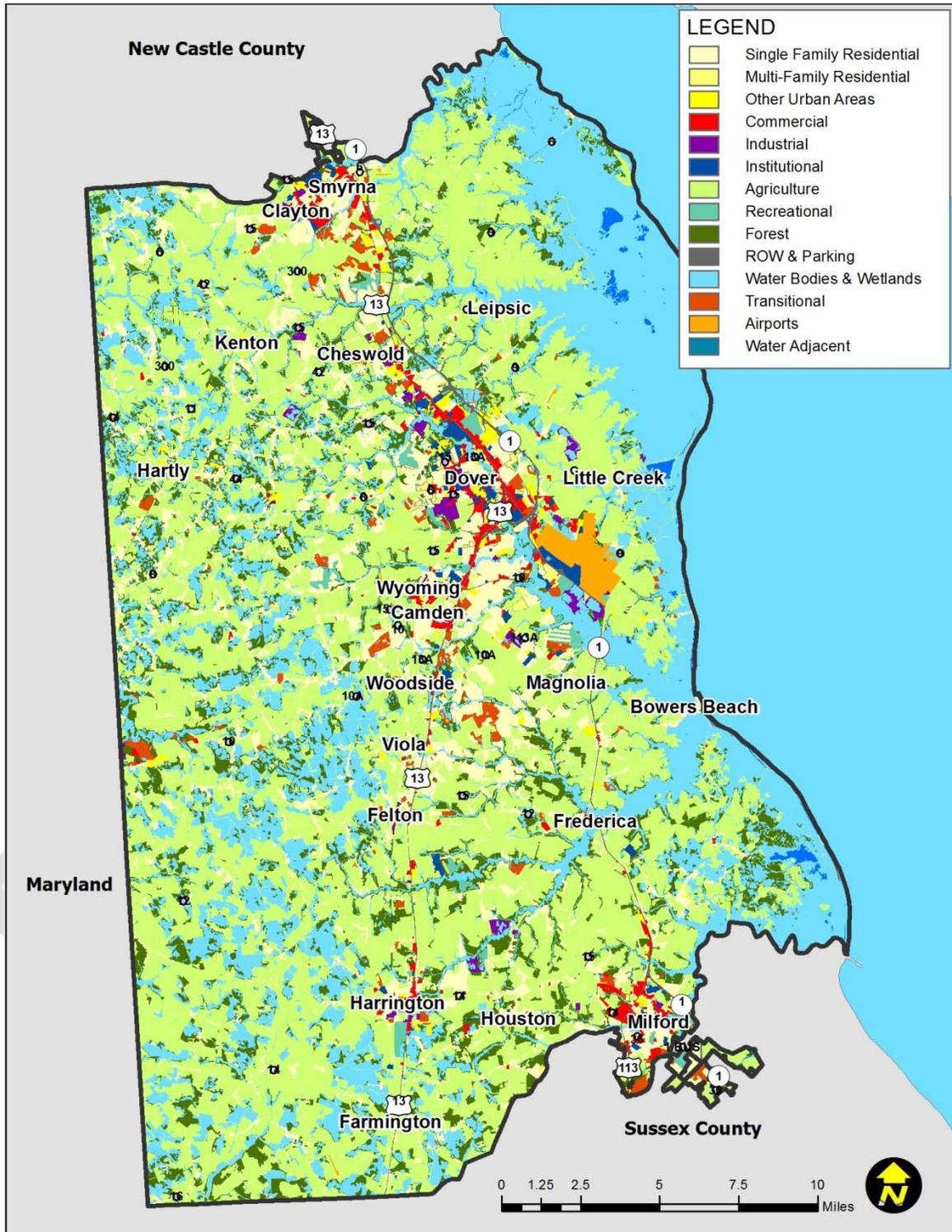
3.1 Existing Land Use

Existing land use data indicates that Kent County is comprised of predominantly agricultural and environmentally sensitive land, as seen in **Exhibit 3.1**. These two categories occupy 79 percent of the county's land use. Single-family residential use also composes a relatively significant amount of acreage in Kent County. **Exhibit 3.2** shows where the different types of land use reside in the County. As shown, commercial and mixed land uses are concentrated in municipalities and along major highways such as U.S. 13 and U.S. 113.

Exhibit 3.1: Existing Land Use

Land Use	Acres	Percent of Total
Agriculture	203,045	40.0%
Wetlands and Waterbodies	196,369	38.7%
Single-Family Residential	42,915	8.5%
Forest/Wooded	38,388	7.6%
Commercial	4,989	1.0%
Transitional	4,039	0.8%
Other Urban	3,644	0.7%
Streets/Right-of-Way	3,459	0.7%
Government/Institutional	2,315	0.5%
Airports	2,174	0.4%
Public Open Space	2,091	0.4%
Industrial	1,804	0.4%
Adjacent to Water	1,455	0.3%
Multi-family Residential	1,096	0.2%
Common Parking	13	0.01%
Total	507,798	100.0%

Exhibit 3.2: Kent County Existing Land Use (2011)



Source: Delaware Office of State Planning

3.2 Current Land Use Situation

Kent County's growth slowed compared to the rate of development recorded in the *2009 Regional Transportation Plan* and the *Kent County Comprehensive Plan*. As of September 2012, the County has approved 2,980 residential permits since 2007. The nationwide downturn in the real estate market significantly slowed development in the County and cut the number of development requests. Between 2008 to the present, the City of Dover has approved 94 residential permits and 15 commercial permits within City limits. During the same time period, the Town of Smyrna, one of the most rapidly-growing areas of the state, recorded 610 residential lots and 7 new commercial lots. Kent County subdivision locations are shown in **Exhibit 3.3**.

Growth in Kent County has outpaced infrastructure investment from all sources, however. Many of the local roads within growth areas are not currently improved to their functional classification standard. Before additional development is approved, the County, in conjunction with DelDOT and the MPO, should develop a plan for upgrading roads to their identified functional classification.

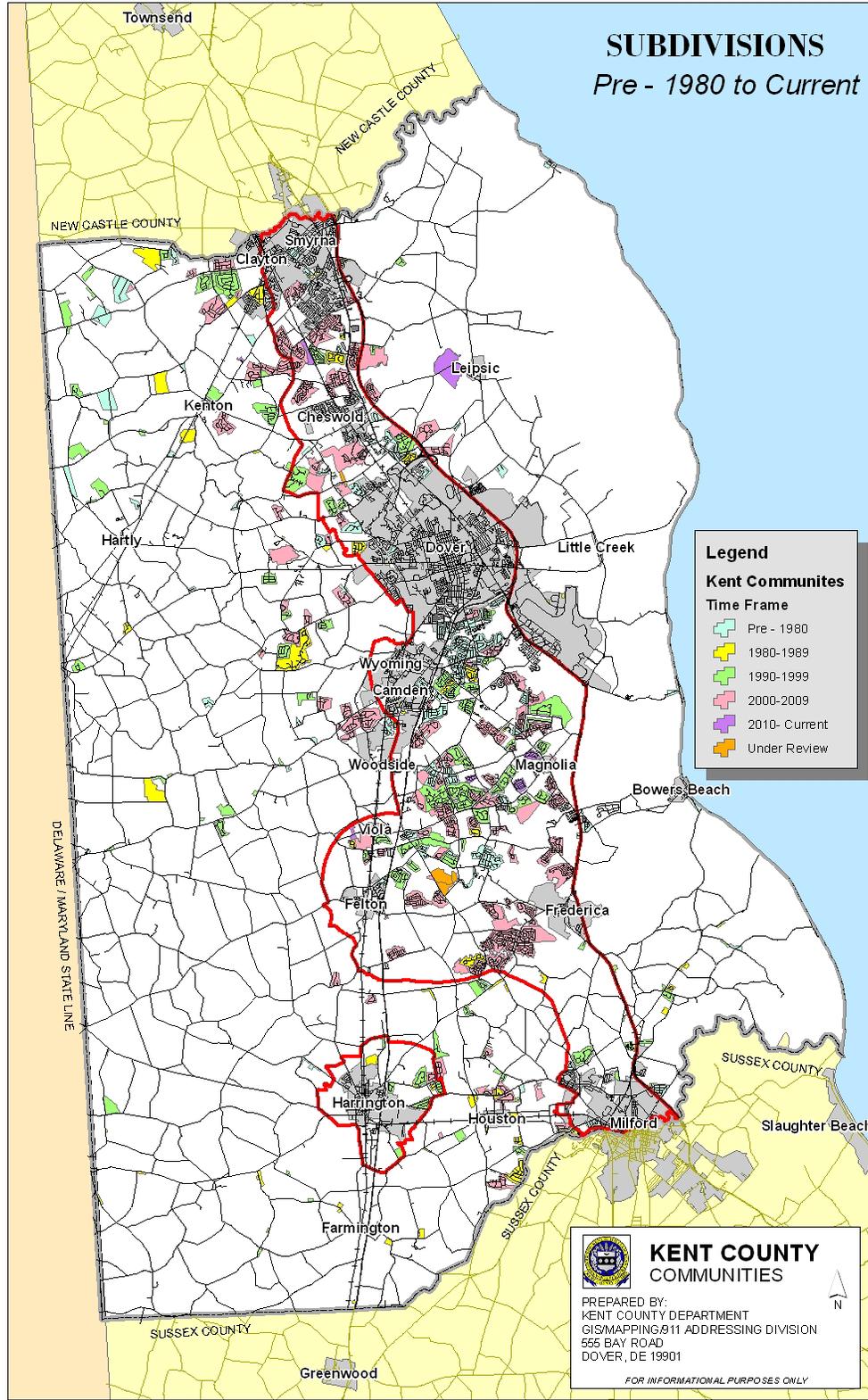
The Kent County Comprehensive Plan has put an emphasis on providing adequate infrastructure as well as a variety of nonresidential services, both public and private, for existing, planned, and anticipated residential development within growth areas. The County placed an emphasis on further refining the County's growth boundaries to serve two primary purposes: (1) efficiently directing public investments in infrastructure of all types, and (2) protecting the County's agricultural industry and natural resources from encroaching development.

Individual plans and ordinances control the current land use in municipal jurisdictions in Kent County. Dover has had new growth pressures and development conditions since the 1990s and the MPO and DelDOT have worked with the City to identify transportation improvements needed to accommodate these new developments. The Route 8 Concept Plan and Operations Study identified potential development and redevelopment plans along this corridor. This area is within the Corridor Overlay Zone described in the City of Dover's Zoning Ordinance. The Camden Comprehensive Plan identified areas of potential development expansion to the south of Camden along U.S. 13A and Route 10. Camden's close proximity to Dover makes it likely that development will occur between the town and city. The land use along U.S. 13 will continue to experience pressure for commercial development. The Town of Smyrna has also recently experienced significant growth, particularly along its southern end near Brenford Road.

The DelDOT Corridor Capacity Preservation Program is designed to maintain the regional importance and preserve the capacity and function of existing participating routes. The program is designed to maintain an existing road's ability to handle traffic efficiently and safely. Currently Route 1, U.S. 13, and U.S. 113 in Milford are routes within the MPO area that are included in the program. The goals of the program are accomplished through preventing additional new entrances and driveways, minimizing the need for traffic signals, and providing for local service roads. The program relies on the purchase or dedication of access rights, purchase of development rights, fee simple acquisitions, and roadway improvements such as grade-separated intersections as implementation methods.

The Kent County Comprehensive Plan introduces the concept of Transportation Improvement Districts (TIDs, further discussed in Chapter 5 as a means of encouraging growth in specific areas where comprehensive, multimodal transportation system improvements may be developed as part of a master land use and transportation planning effort.

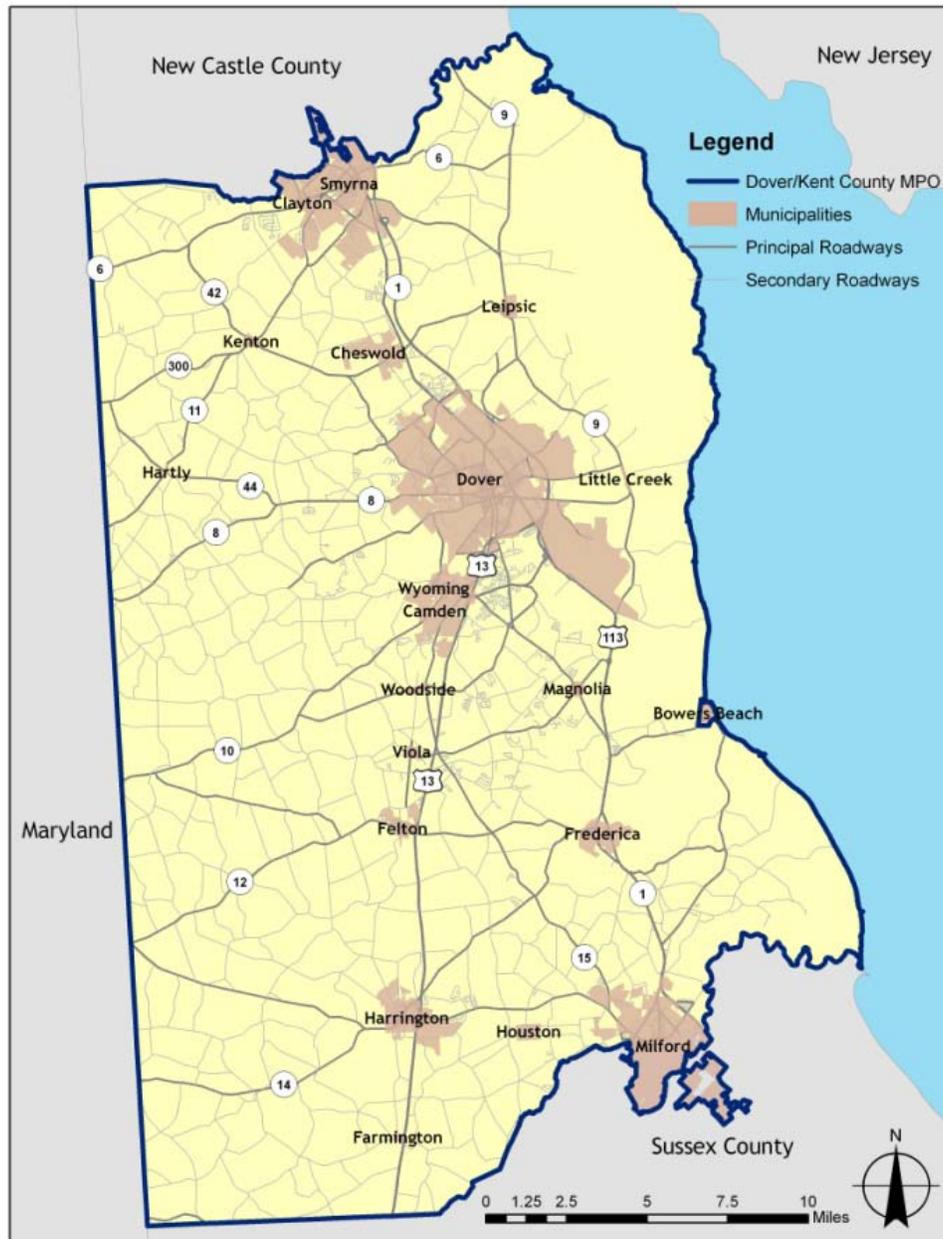
Exhibit 3.3: Kent County Subdivision Locations



3.3 Roads and Bridges

There are 12 State designated routes in Kent County. They are Del. 1, 6, 8, 9, 10, 11, 12, 14, 15, 42, 44, and 300. U.S. Routes 13 and 113 (also called Bay Road) additionally run through central Delaware. These routes connect municipalities in Kent County, and provide access to New Castle and Sussex counties, as well as to the state of Maryland, as seen in **Exhibit 3.4**.

Exhibit 3.4: Kent County Roadways



Source: DelDOT Planning

According to DelDOT reports, Kent County accounts for about 24 percent of the total route miles¹ in the state. New Castle and Sussex counties comprise the balance of the state, as seen in **Exhibit 3.5**. In 2011, Kent County had 1,526 route miles and 3,214 lane miles² of roadway, as seen in **Exhibit 3.6**. This is an increase from the 1,459 route miles and 3,074 lane miles the county had in 2006.

Exhibit 3.5: Roadway Route Miles and Density by County (2011)

	Route Miles	Area (Sq. Miles)	Roadway Density
New Castle County	2,480	426.29	5.82
Kent County	1,526	586.18	2.60
Sussex County	2,352	936.08	2.46
State of Delaware	6,358	1,948.54	3.26

¹ Length of roadway, regardless of the direction or number of lanes

² Length of roadway, where every lane counts separately in mileage calculation

Exhibit 3.6: Kent County Roadway Mileage by Functional Classification (2011)

Functional Classification	Route Miles	Percent of Total	Lane Miles	Percent of Total
Freeway and Expressway	20	1.3%	85	2.6%
Other Principal Arterials	37	2.4%	149	4.6%
Minor Arterials	116	7.6%	289	9.0%
Collectors	269	17.6%	538	16.7%
Local	1,084	71.0%	2,153	67.0%
Total	1,526	100%	3,214	100%

3.4 Functional Classification

Functional classification is a system of categorizing roadways based on their character and purpose; their function. Functional classification determines the design standards for a roadway, and provides a means of identifying where roadways need improvement to meet design standards.

The Delaware Department of Transportation (DelDOT) updated the county's functional classification system, which the Federal Highway Administration (FHWA) approved in December 2005. Classifications include Interstate, freeways and expressways, other principal arterials, minor arterials, major and minor collectors, and local routes. Except for Interstate highways, Kent County's roadways include all classifications.

The descriptions of functional classifications are as follows:

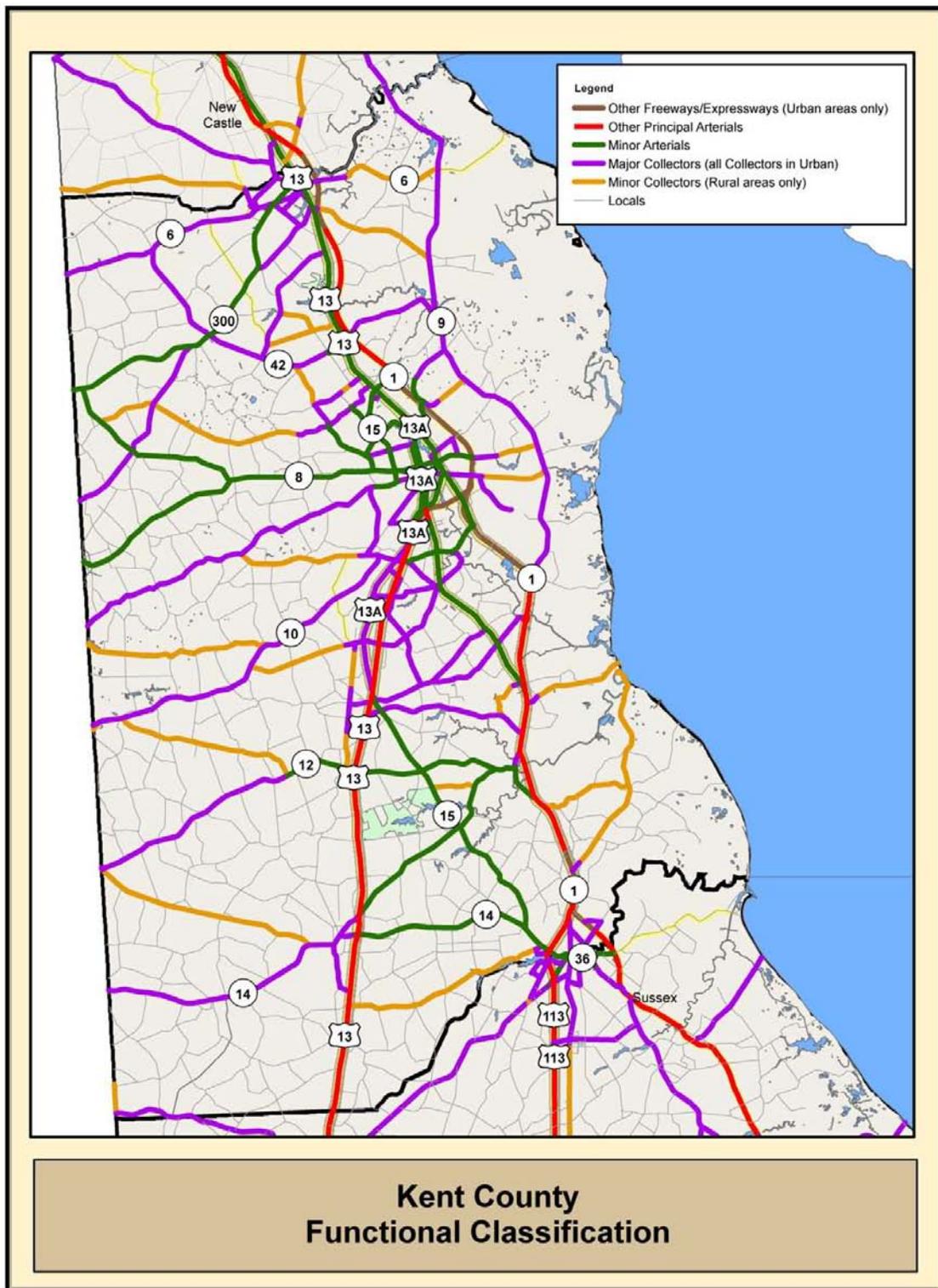
- **Interstate** – Interstate routes are part of the National System of Interstate and Defense Highways. These are high-speed, primary travel routes connecting metropolitan areas, cities, and industrial centers. Interstate routes do not directly provide access to adjacent land, interconnecting instead primarily with other higher classifications of routes. As stated, Kent County has no Interstate highways.
- **Other Freeways and Expressways** – Routes designated as other freeways and expressways are only present within urbanized areas. These roads are high-speed, primary travel routes that serve metropolitan cities and industrial areas. Freeways and expressways interconnect primarily with other higher classifications of routes, such as Interstates. Freeways and expressways in Kent County include Route 1 in the urbanized areas, and make up 1.3 percent of the county's roads.
- **Other Principal Arterials** – Principal arterial routes serve major centers of activity and urban areas. They are the highest traffic volume corridors with long trip lengths, and are links between the higher and lower classifications. Principal arterials generally allow access to adjacent properties, possibly with regulated access. Kent County has approximately 37 route miles of principal arterials, representing 2.4 percent of the county's roads.
- **Minor Arterials** – Minor arterials are routes that interconnect principal arterials and provide access to smaller developed areas linking cities and towns. Minor arterials in Kent County include Del. 8, Del. 15, Del. 14, Del. 10A, portions of U.S. 13 and U.S. 13A, Del. 44, and Del. 300. These routes comprise 7.6 percent of roadways in Kent County.
- **Collectors** – Collector routes are divided into major and minor routes. Major collectors are present in urbanized areas, while minor collectors are only present in rural areas. Collector routes provide land access and collect traffic from lower classification roadways, channeling them to the higher classification roadways. These routes comprise the majority of State Routes in the county, making up 17.6 percent of the county's roadways.
- **Local** – Local routes provide direct access to land and links to the higher classification routes. Local routes have the lowest volumes of traffic and short trip lengths. These routes consist of all roads not designated at higher classifications. Kent County had 1,084 miles of local roads in 2011. The majority of roads, 71 percent of those in the county, are classified as local. **Exhibit 3.7** illustrates route miles and annual vehicle miles traveled (VMT), by functional class in Kent County as of 2011. The amount of freeways and expressways and minor arterials increased between 2006 and 2011 while the other categories showed decreases. **Exhibit 3.8** displays the Functional Classification map for Kent County.

Exhibit 3.7: Roadway Functional Classification by Route Miles and Vehicle Miles Traveled (VMT)

Functional Classification	Route Miles			VMT (millions)	
	2006	2011	% of Total (2011)	2011	% of Total
Freeway & Expressway	17	20	1.3%	614	14.0%
Other Principal Arterials	43	37	2.4%	1186	27.0%
Minor Arterials	106	116	7.6%	1306	29.7%
Collectors	275	269	17.6%	703	16.0%
Local	1,018	1084	71.0%	582	13.2%
Total	1,459	1,526	100%	4,391	100%

Source : DelDOT and U.S. Census Bureau

Exhibit 3.8: Functional Classification Map



Source: DelDOT

3.5 Daily Traffic Volumes (AADT)

Annual average daily traffic (AADT) on roadway segments is another indicator of traffic conditions. This indicator reflects the operations and performance of specific roadways. DelDOT has a system of permanent automatic traffic counters at locations throughout the state and publishes an annual report of the AADT's on all state roadway segments. Listed below in **Exhibit 3.9** is a sample of some of the permanent counter data throughout Kent County, for 2006 and 2011.

Exhibit 3.9: Permanent Traffic Counter Data

COUNTER	ROAD	LOCATION	AREA	2006	2011
8036	U.S. 13	Smyrna Rest Area	Smyrna	21,147	22,291
8040	U.S. 13	Dover Downs	Dover	56,662	50,027
8060	U.S. 13	Court Street	Dover	24,945	24,899
8041	Road 88 (Leipsic Road)	Northeast of Dover	Dover	1,600	1,542
8042	Route 15 (Wyoming Mill Road)	Southwest of Dover	Wyoming	7,677	7,952
8043	Route 8	West of Dover limits	Dover	11,697	11,105
8044	Road 12 (Smyrna Leipsic Road)	North of Leipsic	Leipsic	777	821
8045	Route 9	North of Leipsic	Leipsic	566	641
8050	Route 10	West of DAFB	Camden	19,560	17,236
8051	Route 1	Dover Toll Plaza	Dover	35,594	34,743*
8091	Route 1	North of Frederica	Frederica	39,643	38,968*
8061	U.S. 113	Court Street	Dover	22,751	22,458
8062	U.S. 113	Milford Bypass	Milford	20,831	20,184*

**2009 Data*

Source: DelDOT Traffic Summary

3.7 Customer Satisfaction Survey/Public Opinion

DelDOT routinely conducts a Customer Satisfaction Survey of the traveling public, including businesses that ship and receive goods, to determine how well the Department is meeting transportation needs. The survey considers all modes that move people and goods. These survey results are used to better understand what features of the transportation system are most important to system users. In addition to trends and analysis, the survey helps to identify the needs of system users. This section reviews the satisfaction of Kent County residents and their opinions as compared to the rest of the state.

Customer Satisfaction Surveys were first conducted in 1997 and are repeated regularly to obtain trend data. The survey data are used as inputs into the Department's progress monitoring program. In 2009, the latest available, four different user groups were surveyed as part of this study. These user groups represent some of the different customer segments served by the Department. The first and largest survey, known as the General Transportation User Survey, was a random statewide telephone survey of 1,216 Delaware residents age 16 years and older. This survey was conducted in each of the previous survey years.

All respondents were asked to rate Delaware's transportation system as a whole, and the 2009 results indicate that 85 percent of Kent County respondents think that the transportation system as a whole is meeting their needs "very well" or "somewhat well." This is higher than the 2006 survey results, which indicated that 81 percent of Kent County respondents feel the transportation system is meeting their needs "very well" or "somewhat well". **Exhibit 3.10** shows the data by county of residence.

**Exhibit 3.10: Satisfaction Level by Transportation Type (2009) –
General Transportation User Survey**

	New Castle		Kent		Sussex	
	Very or Somewhat Well	Not Too or Not at All	Very or Somewhat Well	Not Too or Not at All	Very or Somewhat Well	Not Too or Not at All
Roadways	91%	9%	91%	10%	94%	6%
Transit	77%	18%	73%	20%	100%	0%
Bicycle	88%	13%	73%	17%	47%	54%
Pedestrian	71%	29%	69%	32%	60%	40%
Overall	83%	16%	85%	16%	79%	21%

Source: DeIDOT Customer Satisfaction Survey

Mode Choice

The University of Delaware completes an annual analysis of transportation mode choice, based on public survey results. The results for Kent County are shown in **Exhibit 3-11** below, based on 2010 data.

Exhibit 3-11: Transportation Mode Choice

Mode	All Trips (2010)	Work Trips (2010)
Drove Alone	90%	97%
Passenger	7%	2%
Bus	2%	1%
Walked/Biked/Other	1%	0%

3.8 Surface Type and Lane Width

Surface type and lane width are two important physical characteristics of roadways. Kent County's roadways have several different types of surfaces, ranging from unpaved to Portland cement concrete pavement. Pavement design is typically a function of volume, truck percentage, and life cycle costs. The majority of the county's arterial and major collector roads have concrete pavement or a combination of concrete pavement with a hot-mix overlay. The majority of minor collector roads, local roads, and suburban development streets have a flexible hot-mix or surface treatment.

Design, speed, traffic type (particularly when trucks are present), the environment or context of the road's location, and available sight distances help determine travel lane widths. **Exhibit 3.12** presents a representative sample of lane width by functional classification for 2012. Road width has less impact on safety in general when traffic is slower. The faster traffic moves, however, the greater the impact on safety. Wider lanes give motorists more recovery room if they lose control of their vehicles at higher speeds. Wider lanes also can entice motorists to drive faster than they would on narrower roads.

Lane width can correspond with safe interaction among motor vehicles, pedestrians and bicyclists. Wider lanes provide more space and reduce the level of friction that passing bicyclists create. A wider lane increases the amount of time needed for a pedestrian to cross a road.

In summary, when designing and building roads, it is vital to strike a balance with lane widths to keep roads safe for everyone. Lanes should allow motorists room for traffic flow and control recovery, yet keep speeds low enough for safety while accommodating bicyclists and pedestrians. In road design, the formula for building pedestrian crossings is four feet per second. Wider intersections, however, should have refuges at the center for pedestrians and bicyclists to safely stop.

Exhibit 3.12: Kent County Lane Width by Functional Classification (2012)

Functional Class	Percent of Lane Miles					
	< 9' Wide	9' Wide	10' Wide	11' Wide	12' Wide	> 12' Wide
Interstate/Freeway	0	0	0	0	39	61
Other Principal Arterials	0	0	0	0	38	62
Minor Arterials	0	0	13	7	61	17
Major Collectors	0	3	26	47	12	14
Minor Collectors	0	13	36	49	0	2
Local	3	19	43	15	4	16
Subdivision	2	1	10	61	6	20

Source: DelDOT

3.9 Pavement Conditions

DelDOT's Pavement Management Section collects data on the condition of state and federally funded highways to establish rehabilitation priorities. Priorities are based on overall pavement condition, road functional class, annual average daily traffic, coordination with other construction projects, and the presence of schools, hospitals, transit routes, and other crucial public services.

DelDOT uses industry-wide measures and rating techniques to monitor the physical condition of its roads. The two key attributes of roadway conditions are rideability and surface distress. Rideability relates to comfort or smoothness felt while riding on a road. Surface distress relates to visible problems, such as cracks and potholes.

Overall Pavement Condition (OPC) is DelDOT's key indicator of rideability and surface distress. OPC is based on 25 percent rideability and 75 percent surface distress. **Exhibit 3.13** shows thresholds DelDOT uses to determine road conditions. Good roads have an OPC rating of 60 or greater. Poor roads have an OPC rating of 50 or less. Furthermore, the state uses special "trigger values" when a segment of road requires special attention. Local roads

have a trigger value of 50. Expressways have a higher OPC trigger value of 70. **Exhibit 3.14** demonstrates this in more detail.

Exhibit 3.13: Pavement Conditions Thresholds

Good	OPC > 60
Fair	OPC > 50 and OPC ≤ 60
Poor	OPC ≤ 50

Source: DelDOT

Exhibit 3.14: Pavement Conditions Trigger Values

Freeways and Expressways	70
Arterials and Collectors	60
Local Roads	50

Source: DelDOT

Exhibit 3.15: Pavement Conditions in Kent County, 2010

Functional Class	Total Lane Miles	Good		Fair		Poor		Meets Trigger Value	
		Lane Miles	%	Lane Miles	%	Lane Miles	%	Lane Miles	%
Freeway/ Expressway	45.73	43.64	99.8%	0.05	0.1%	0.04	0.1%	5.39	12.3
Major Arterial	83.09	42.29	50.9%	21.96	26.4%	11.84	14.2%	31.81	38.3
Minor Arterial	124.14	103.52	78.3%	25.9	19.6%	2.75	2.1%	28.65	21.7
Collector	271.19	209.03	77.1%	47.73	17.6%	14.43	5.3%	62.16	22.9
Local	647.24	525.54	81.2%	105.46	16.3%	16.24	2.5%	16.24	2.5
Suburban	165.56	141.12	85.2%	14.38	8.7%	10.06	6.1%	NA	NA
Total	1,342.98	1,065.14	80.1%	215.48	16.2%	55.36	3.6%	144.25	12.3

Source: DelDOT

3.10 Bridges and Bridge Conditions

In 2012, Kent County had 361 bridges, an eight-percent increase since 2007 when the County had 334 bridges. Of the 361 bridges, 193 are 20 feet or longer, and are included on the National Bridge Inventory. Ten bridges are considered eligible for inclusion on the National Register of Historic Places.

3.11 Structural Deficiency and Functionality

In 2012, DelDOT identified 33 Kent County bridges as structurally deficient. A structurally deficient structure does not necessarily require an immediate repair action or a road closing. However, structurally deficient bridges require an increased inspection frequency, and the bridge would be planned for rehabilitation or replacement, depending on the deficiency rating. A functionally obsolete bridge refers to deck geometry, load carrying capacity, clearance, or roadway approach alignment that no longer meets current design criteria.

Exhibit 3.16 shows bridge conditions in Kent County from 2007 to 2012. The number of structurally deficient bridges continues to increase as the rehabilitation of structurally deficient bridges has reduced the number of functionally obsolete bridges in that time period. The number of functionally obsolete bridges has remained approximately four percent. Compared to the state overall, Kent County has a higher percentage of structurally

deficient bridges, yet the state has nearly three times the percentage of functionally obsolete bridges, as seen in **Exhibit 3.17**.

Exhibit 3.16: Kent County Bridge Inventory (2007-2012)

Year	2007	2012
Total Bridges	334	361
Structurally Deficient	8	33
<i>% of Total</i>	2.4%	9.1%
Functionally Obsolete	15	15
<i>% of Total</i>	4.5%	4.2%

Source: DelDOT

Exhibit 3.17: Delaware Bridge Inventory (2007-2012)

Year	2007	2012
Total Bridges	1,464	1,604
Structurally Deficient	36	99
<i>% of Total</i>	2.5%	6.2%
Functionally Obsolete	171	172
<i>% of Total</i>	11.7%	10.7%

Source: DelDOT

3.12 Evacuation Routes

Kent County is vulnerable to a number of hazards including floods, hurricanes, hazardous materials incidents, terrorism, and nuclear facility incidents.

The Delaware State Transportation Management Teams (TMTs), in coordination with the Department of Homeland Security, work together to make joint decisions on how an incident or event that impacts the transportation system will be handled. TMTs were introduced in Delaware's Integrated Transportation Management Strategic Plan in December 1997. TMTs bring together personnel and resources from police, fire, rescue, emergency management, transportation, communications, environmental protection, public works, and other agencies to improve safety and reduce delays during incidents, events, and emergencies that impact Delaware's transportation system. There are six TMTs in Delaware, with one located in Kent County.

The All Hazards Evacuation Annex of the Transportation Incident and Event Management Plan for Kent County (April 2007) provides specific county-related details to accompany the Delaware Transportation Incident and Event Management Plan, prepared in August 2004. This Annex primarily focuses on managing the transportation system during large planned or unplanned incidents or events that might affect the health and safety of people who live or

work in Kent County. The Kent County Evacuation Region Overall Map (November 2006) is included in the Annex Plan and is available on the DelDOT website. The map shows primary and secondary evacuation routes in addition to local evacuation routes.

Primary evacuation routes include Del. 1, and U.S. 13 and U.S. 113 for north/south movement as well as Woodland Beach Road, Port Mahon Road, Pickering Beach Road, Kitts Hummock Road, Bowers Beach Road, Milford Neck Road, Thompsonville Road, and Big Stone Beach Road from Bay side. These routes are limited and unlimited access highways, and local roads with numerous entrances and exits. A network of secondary evacuation routes direct local residents to the primary evacuation routes, and can be utilized to reroute traffic during an evacuation in the event that the primary evacuation routes become impassible (see **Exhibit 3.18**). Delaware Routes 8, 9, 12, 14, 15 and 300 are secondary evacuation routes. Local evacuation routes are any other routes in the County that feed into primary or secondary routes.

3.13 Operations

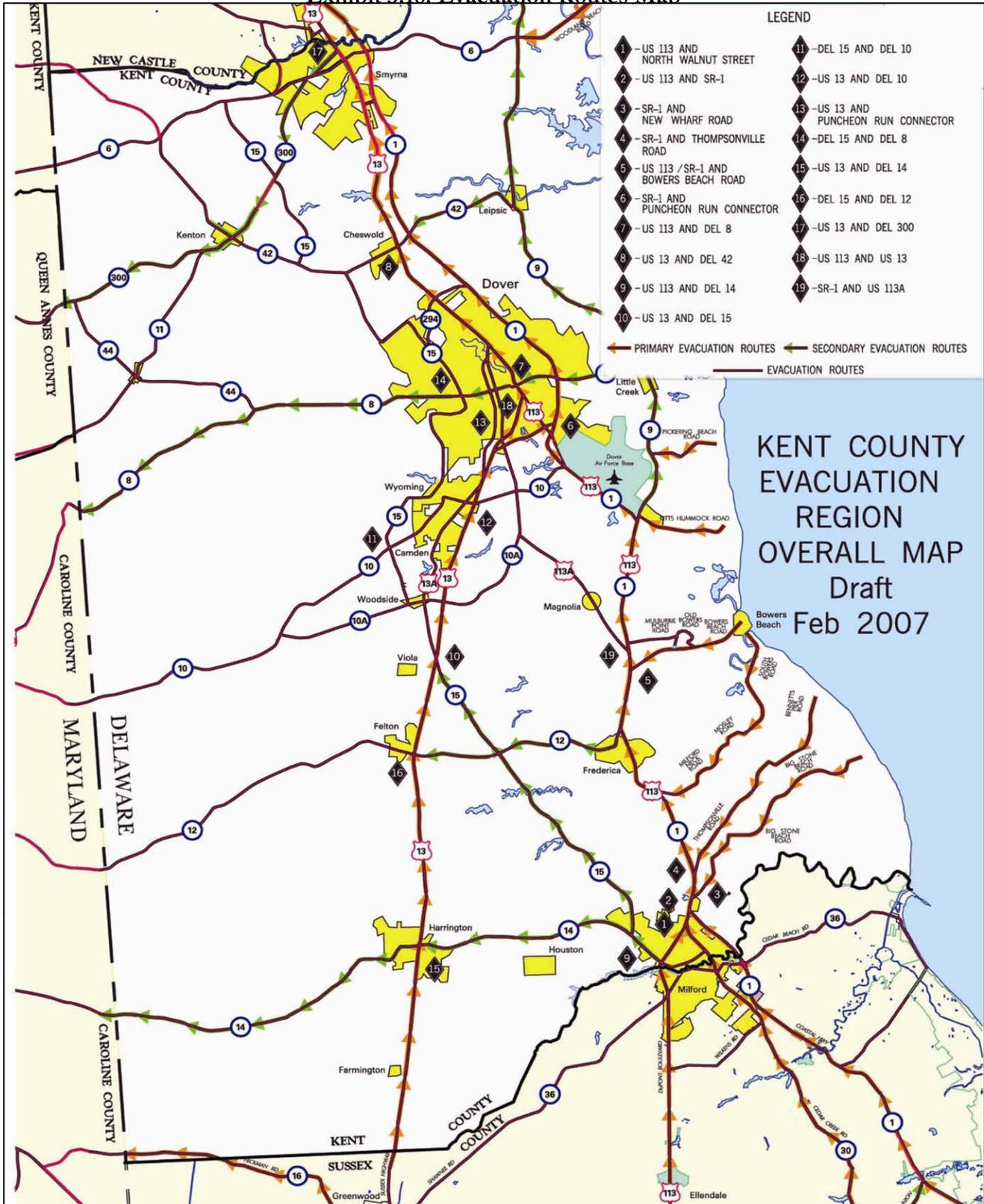
DelDOT's Division of Transportation Solutions (Traffic Section) manages most traffic control design and operation issues. This division is responsible for traffic-related analysis and design, including sign installation and maintenance and pavement markings.

Kent County has several major corridors with coordinated signal systems that are operated from DelDOT's Transportation Management Center in Smyrna. These corridors include:

- U.S. 13 (through Smyrna)
- U.S. 13 (Camden to north Dover)
- U.S. 113 (Route 36 to north Milford)
- Route 8 (west Dover)
- Route 10 (U.S. 13 to Dover Air Force Base)

In addition, all traffic signals in Kent County are equipped with a preemptive system to allow paramedics, ambulance and fire trucks to trigger a green light at intersections so they can decrease their response time to emergencies.

Exhibit 3.18: Evacuation Routes Map



Source: DelDOT

3.14 Safety

An indicator of roadway safety is the number and type of motor vehicle crashes. In 2011, there were 20,872 vehicle crashes in Delaware. In that year, Kent County accounted for 3,036 of these accidents, 14.5 percent of the state total, which was the lowest of Delaware's three counties. Between 2007 and 2011, there was a decrease in the rate of vehicle crashes per million VMT in the county, as seen in **Exhibit 3.19**. In 2011, 17 fatal crashes occurred in Kent County. The number of crashes decreased and the crash rate fluctuated, but decreased overall, between 2007 and 2011.

Exhibit 3.19: Kent County Motor Vehicle Crashes by Injury Severity (2007-2011)

Year	2007	2009	2011
VMT (per million VMT)	1,700	1,633	1,612
Total Crashes	3,371	3,275	3,036
Rate (per million VMT)	1.98	2.01	1.88
Injury Crashes	888	852	916
Rate (per million VMT)	0.52	0.52	0.57
Fatal Crashes	19	17	17
Rate (per million VMT)	0.011	0.010	0.010

Sources: Delaware Department of Transportation/Delaware State Police

Persons involved in fatalities are also an important indicator of safety. **Exhibit 3.20** provides details on the percentage of fatalities by person involved, for both Kent County and statewide.

**Exhibit 3.20: Percent of Total Fatalities by Person Involved (2011)
Driver or Passenger of a Motor Vehicle in Transport, Pedestrian or Bicyclist**

	Driver or Passenger of a Motor Vehicle In Transport	Motorcyclists	Pedestrian	Bicyclists
Kent County	58.9%	17.6%	23.5%	0.0%
Statewide	64.1%	17.5%	18.4%	0.0%

Source: DelDOT/Delaware State Police Annual Traffic Statistical Report

In 1998, the American Association of State Highway and Transportation Officials (AASHTO) noticed that efforts to reduce fatalities were stalling, and initiated the Strategic Highway Safety Plan (SHSP). AASHTO encouraged

various state agencies in the nation involved in highway safety to coordinate and develop innovative strategies to reduce fatalities on America's highways.

In September 2006, Delaware released its own SHSP. In 2010, Delaware rewrote this document, called the "Delaware Strategic Highway Safety Plan: Toward Zero Deaths." The SHSP's mission to eliminate fatalities on Delaware's roads involves a multi-agency approach that utilizes education, enforcement, engineering and emergency services strategies. The Highway Safety Plan mentions a goal to cut Delaware's road fatality rate to 1.0 per 100 million vehicle miles traveled by the year 2016. In Kent County, achieving that goal would cut the number of traffic fatalities in half.

The 2010 SHSP for Delaware identifies seven primary emphasis areas and four secondary emphasis areas as follows:

- Primary Emphasis Area #1: Reducing the Frequency and Severity of Roadway Departure Crashes
- Primary Emphasis Area #2: Curbing Aggressive Driving
- Primary Emphasis Area #3: Increasing Seatbelt Usage
- Primary Emphasis Area #4: Reducing Impaired Driving
- Primary Emphasis Area #5: Improving the Design and Operation of Highway Intersections
- Primary Emphasis Area #6: Making Walking and Street Crossing Safer
- Primary Emphasis Area #7: Improving Motorcycle Safety and Increasing Motorcycle Awareness

- Secondary Emphasis Area #1: Sustaining Proficiency in Older Drivers
- Secondary Emphasis Area #2: Making Heavy Vehicle Travel Safer
- Secondary Emphasis Area #3: Designing Safer Work Zones
- Secondary Emphasis Area #4: Improving Traffic Records

The Hazard Elimination Program (HEP) aims to reduce crashes by improving road design. Each year, DelDOT identifies sites in the Dover/Kent MPO region that meet the HEP criteria for inclusion in the program. The sites are reviewed to determine the principal type of crashes, their conditions, and severity. From this information, DelDOT assesses whether the location could be made safer through a focus on low-cost, high-benefit improvements such as roadway pavement marking or signing, or if a more detailed engineering study is needed. DelDOT evaluates all locations identified in the HEP under these criteria.

Between 2006 and 2011, the HEP identified sites in the MPO region. **Exhibit 3.21** shows the number of HEP sites added per year. Of the total sites in the County, eight are located on U.S. 13, three are located on Route 1, and one is located on U.S. 113.

Exhibit 3.21: Number of HEP Sites by Year (2006-2011)

Year	# of HEP Sites
2006	6
2007	7
2008	8
2009	9
2010	4
2011	4

Source: DelDOT

As the region continues to develop in an auto-dependent pattern and VMT subsequently increases, the number of crashes may also increase. DelDOT maintains a crash database to analyze the high-crash locations and identify the possible need for roadway improvements. Continued similar site-specific analysis and remedy will be necessary as increasing travel demand creates growing congestion conditions, which contribute to driver failure and increased crashes.

3.15 Public Transportation

Public transportation includes a broad range of services in Kent County, including local fixed route transit, intercounty commuter transit, paratransit, and subsidized taxi. Public transit service is provided in Kent County by Delaware Transit Corporation (DTC), operating as DART First State. The success of public transportation is dependent upon adequate density to support it and must be considered with future development patterns.

Approximately 46,000 residents in Kent County are within one-quarter mile of transit services, the typical distance considered reasonable for someone to access fixed-route services. **Exhibit 3.22** highlights these areas within one-quarter mile of transit.

3.15A DART First State South District

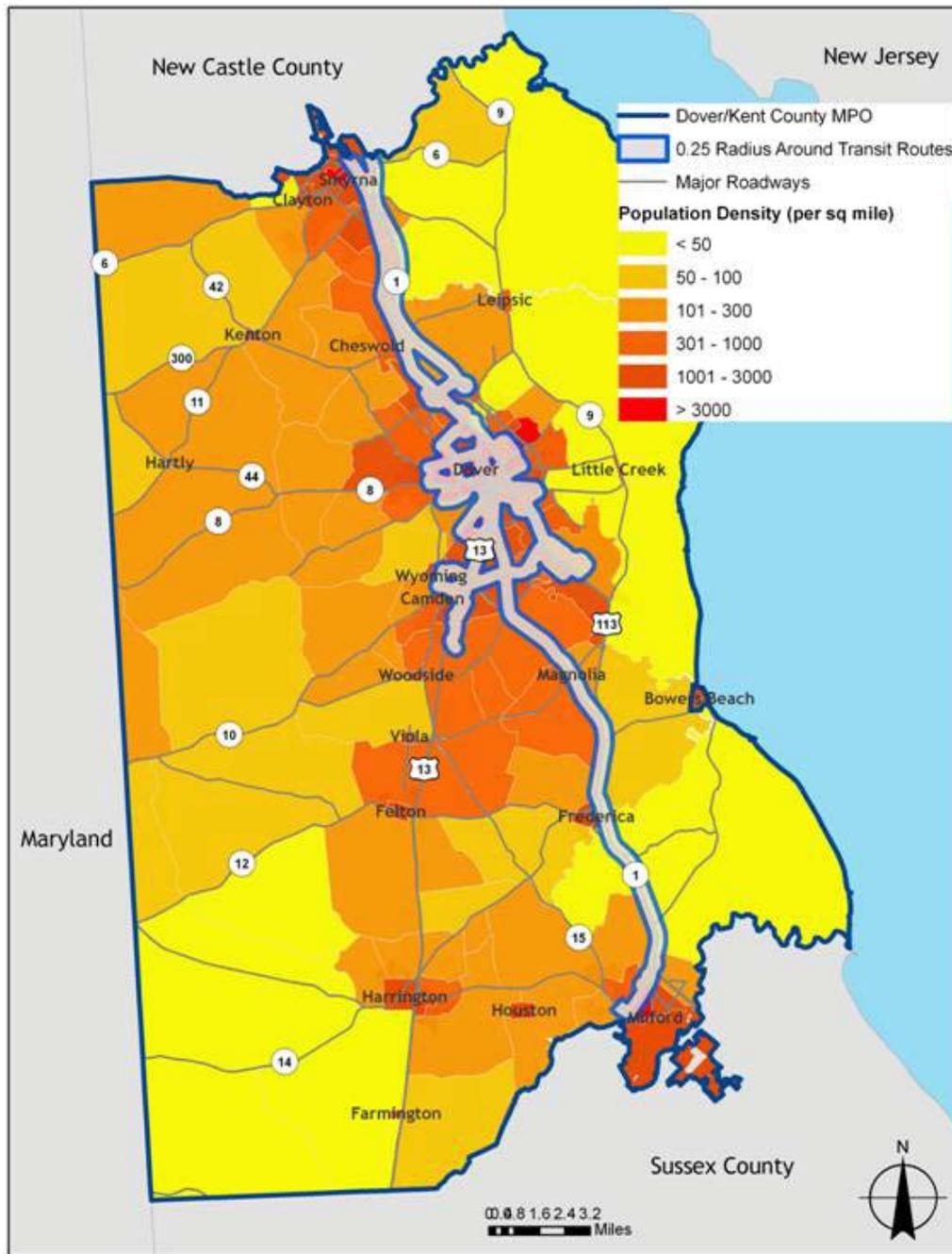
DART First State's South District provides service in Kent County focused around a radial/loop pattern from the Water Street Transfer Center in downtown Dover. The system provides basic mobility for city residents to access medical services, employment, recreation, social services and institutions of higher learning. Some of the major generators are Kent General Hospital, Dover Mall, Delaware State University, Dover Downs, the state capital,

Dover Air Force Base, Dover's downtown area and WalMart. DART service provides enough spatial coverage to bring almost all parts of the city within walking distance of a transit stop.

Thirteen fixed routes serve the Dover area, operating between 6:00 a.m. and 6:00 p.m. on weekdays and five fixed routes on Saturday operating from 9:00 a.m. to 6:00 p.m. In addition, an extended local service, Route 120, operating between 5:00 a.m. and 7:00 p.m. on weekdays between Dover and Smyrna began in December of 2009 to offset overcrowding on the Intercounty Route 301. The Dover routes meet the Intercounty Route 301 service that operates between Dover and Wilmington, and the Route 303 Intercity service that operates between Dover and Georgetown via Milford. The former Harrington/Dover Shuttle which connects with bus Route 104 at the Camden Wal-Mart was so successful it is now one of DART's regular fixed routes, Route 117. With the exception of the Route 117 and Route 120, all of the Dover-area bus routes operate on the hour or half hour in a timed-transfer system, pulsing from the Water Street Transfer Center.

Transit service in Kent County ceases after 6:00 p.m. due to a smaller population and less demand. However, the growing demand to provide access to employment beyond 6:00 p.m. prompted DTC to launch GoLink Night Service in 2003. It is a way to more effectively utilize the county-wide paratransit bus equipment which was already operating until 9:00 p.m. GoLink Night Service operates between 6:00 p.m. and 9:00 p.m. using existing Paratransit trips, by advanced reservations between fixed route bus stops. Like the day services passengers are picked up and dropped off at fixed route bus stops. The only difference is the advanced reservation.

Exhibit 3.22: Areas Within One Quarter Mile Existing Transit Service



Source: Delaware Transit Corporation

GoLink Flex Service is also provided within the Dover area, where customers within an established flex zone can catch a paratransit bus from a flex stop to the closest fixed route bus stop. Customers using this service make an advanced reservation. This service provides more accessible service to communities and customers who do not have direct access to fixed-route service. Flex service essentially expands transit service into low-density areas, using existing resources. In (FY) 2011 there were 1,329 total passenger trips, 61 GoLink Flex service trips and 1,268 GoLink Night Service trips.

A fleet of 18 medium-sized fixed route buses are housed and maintained at the DelDOT complex in Dover. In 2011, this transit fleet logged 715,451 vehicle miles and 47,604 vehicle hours representing an increase of 52 percent from 2006 in miles and 33 percent in hours. **Exhibit 3.23** provides operating statistics for DART First State South Fixed Route Transit in Kent County. Ridership increased from 364,781 passenger trips in 2006 to 622,694 passenger trips in 2011, approximately 71 percent. Primary trip destinations continue to include school, work, medical services, and shopping, with the most utilized bus stops located at attractors such as Dover Downs, shopping centers, and social service agencies.

Exhibit 3.23: Kent County Fixed-Route Operating Statistics (2006-2011)

Measure	2006	2007	2008	2009	2010	2011
Miles	471,537	462,295	461,124	482,816	612,811	715,451
Hours	35,924	35,725	35,558	37,585	42,518	47,604
Passenger trips	364,781	376,223	409,942	468,517	525,829	622,694
Trips/mile	0.77	0.81	0.89	0.97	0.86	0.87
Trips/hour	10.15	10.53	11.53	12.47	12.37	13.08

Source: Delaware Transit Corporation

DTC's Dover Transit Center facility opened in December 2009. The new hub has fifteen bus bays, approximately 90 parking spaces, passenger benches, trash receptacles and information kiosk. Future expansions for the transit facility include an indoor waiting room, ticket sales, real time passenger information, and other amenities. In addition to supporting DART's local, paratransit, intercounty and intercity services, the transit center will support privately-run intercity bus services. The site is adjacent to the Norfolk Southern railroad and has been identified as the future Dover Station for downstate commuter rail.

Moving forward, DTC is partnering with the Dover Kent Metropolitan Organization and Rideshare Delaware to conduct an interest survey with the major employers in Kent County, "What About DART?" The purpose of the survey is to learn if employees are familiar with or use DART's bus service or carpool. It will also take a look at how far and when employees travel to and from work. Lastly, we hope to obtain information from employees about what transit factors impact the decision to ride or not ride public transit. It is anticipated that a comprehensive review of this market will help formulate service change proposals that provides our customers with the most efficient service delivery options.

DTC continues to make progress toward making all bus stops compliant with Americans with Disabilities Act (ADA) regulations. Facilities are provided at stops generally based on ridership at that particular location. The

most heavily-used bus stops are afforded a bench and shelter or other protection from the elements. As more funding becomes available, provision for ADA accessibility and stop amenities will progress in priority order based on need and ridership levels.

The FY2013 Service Plan will continue to study Delaware's Interstate travel demand and the most efficient means for DTC to serve this growing market. The population growth in southern New Castle County, northern Kent County and Sussex County has contributed to the increase in demand for transit service between counties. DTC has a need to provide more service to this growing population segment, and to help alleviate roadway congestion on Route 1 and U.S. 13/896/301 corridors.

DTC proposes to continue monitoring the performance of the Route 301 Saturday service via December 2011 Service Change with two roundtrips and the reverse commuting nature of the New Castle to Kent County trips that are funded through the Jobs Access Reverse Commute grant.

Paratransit Services

The ADA of 1990 requires transit agencies to provide paratransit services for eligible riders within 3/4-mile of the alignment of fixed-route services. DART First State provides statewide door-to-door bus service for individuals who are unable to use fixed-route bus service due to age or disability.

Senior Citizens Affordable Taxi (SCAT)

The SCAT program provides a 50 percent discount on taxi fares for senior citizens, and persons with disabilities which prevent them from operating a motor vehicle. There are five privately-owned cab companies throughout the state that provide the taxi service, and are reimbursed by the state. In Kent County, City Cab of Dover and Watkins Cab of Milford provide these services.

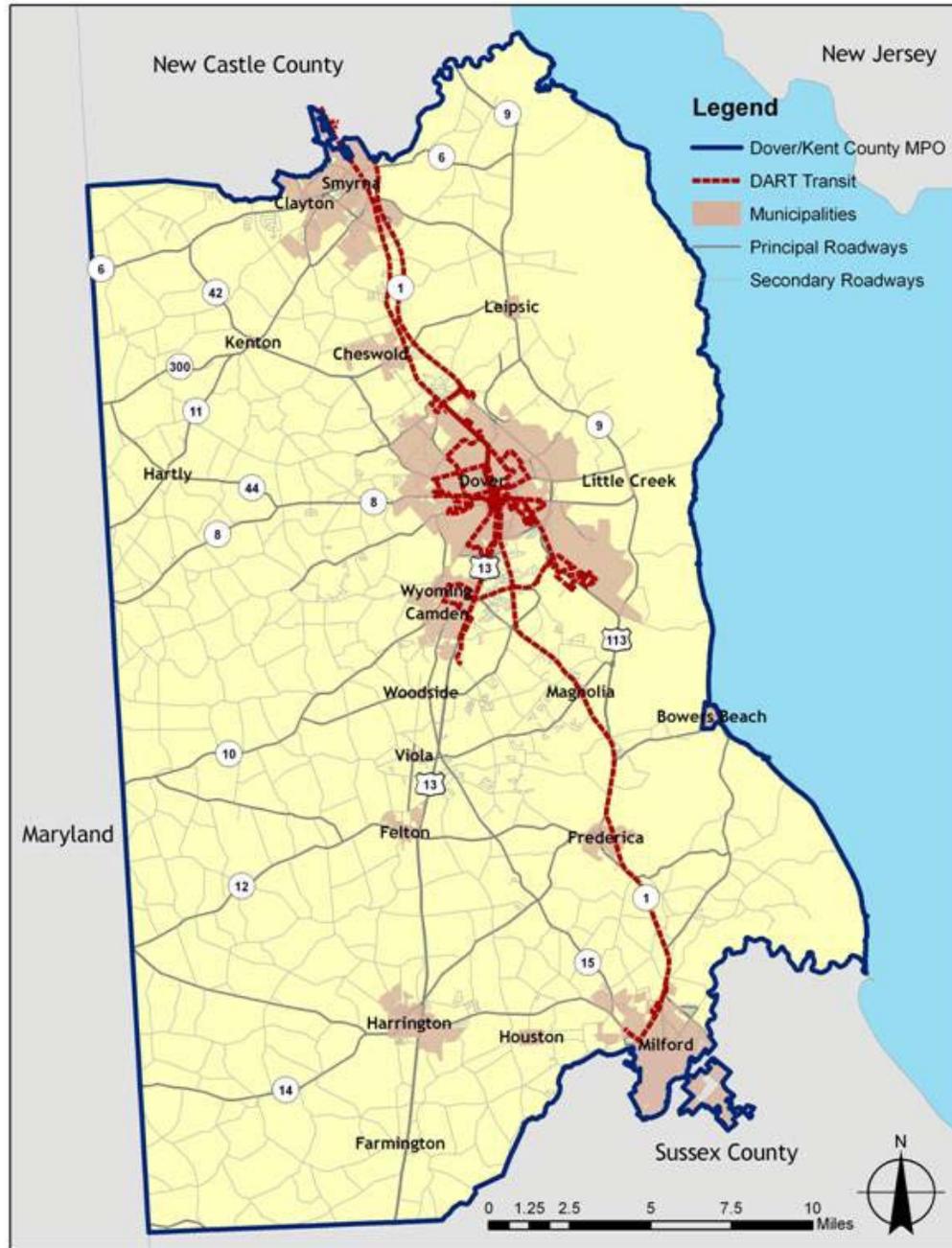
Federal Section 5310 Pledge Program

This Federal Transit Administration (FTA) program provides capital funding to private and public nonprofit agencies for the purchase of vehicles to provide transportation to the elderly and disabled. Funds are allotted to the state and Delaware Transit Corporation administers the program. The vehicles are used by non-profit organizations such as senior centers, community centers, churches, nursing homes, social service agencies and community-based organizations to provide transportation to their clients for shopping, medical appointments, and recreation. Volunteer drivers, as well as agency-paid drivers, help operate the service. In 2011, the FTA Section 5310 program provided 268,657 trips.

Kent-Sussex Agency Reimbursable Transportation Program

Through the Kent-Sussex Reimbursable Program, the state provides operating funds for elderly and disabled residents' transportation in Kent and Sussex counties. The local governments approve which agencies participate in the program along with determining funding for each agency. Transportation is provided by the participating agency and Delaware Transit Corporation administers the program.

Exhibit 3.24: DART First State Transit Routes



Source: Delaware Transit Corporation

Exhibit 3.25: DART's Dover Transit Routes



Source: Delaware Transit Corporation

Exhibit 3.26: Kent County Paratransit Operating Statistics (2007-2011)

Measure	2007		2009		2011	
	Kent	Statewide	Kent	Statewide	Kent	Statewide
Fleet	48	225	58	268	63	290
Miles (In Millions)	1.6	8.6	1.98	9.86	1.83	10.15
Hours	93,877	469,476	108,470	535,968	94,932	531,320
Passenger Trips	176,716	811,907	193,916	900,128	199,634	968,323
Trips/Mile	0.11	0.09	0.10	0.09	0.11	0.10
Trips/Hour	1.88	1.73	1.79	1.68	2.10	1.82

Source: Delaware Transit Corporation

Intercity and Intercounty Bus Service

The DART First State intercity and intercounty transit operation provides service with stops in Smyrna, Dover, Magnolia, Milford, and Georgetown. Kent County bus service includes connections with Intercounty Route 301 and Intercity Route 303. Route 301 operates between Dover and Wilmington. Route 303 operates between Dover and Georgetown.

Exhibit 3.27: Kent County Intercity Operating Statistics (2007-2011)

Measure	2007	2009	2011
Miles	206,768	207,582	236,266
Hours	7,923	7,954	8,710
Passenger Trips	27,848	38,064	59,994
Trips/Mile	0.13	0.18	0.25
Trips/Hour	3.51	4.79	6.89

Source: Delaware Transit Corporation

According to the *Kent County Coordinated Transit/Transportation Plan*, DTC operates a highly successful intercounty route from Wilmington to Dover via Route 1. The overall goal of the route is to reduce the one-way travel time to make it comparable to the single-occupant vehicle. Route 301 operates sixteen round trips, during weekdays between 4:38 a.m. and 8:45 p.m. In December 2011, a pilot service of two round trips was added on Saturdays.

DART Route 305, the Beach Connection, links New Castle and Kent counties with the Rehoboth park-and-ride and Resort Transit. Route 305 operates during the summer approximately from Memorial Day to Labor Day on weekends to mitigate traffic on DE1. On Friday there is one round trip leaving Wilmington at 6:48 pm, three round trips on Saturday from 8:30 am to 5:30 pm, and two round trips on Sunday at 8:15 am and 5:30 pm. The Friday evening trip returns from Rehoboth at 9:00 pm and the last trips returning from Rehoboth on Saturday and Sunday is at 8:00pm. Kent County residents can access the Route 305 at the Smyrna Rest Area and Scarborough Road Park and Ride.

Other Value-Added Services

As identified in *Transitioning to Transit, Delaware's Long-Range Transit Plan for the 21st Century: Long-Range Plan 2000-2025*, these additional services are provided by DTC:

- *Travel Training* – Teaches people how to use transit services.
- *Business Partners in Transit* – Educates employers about transit programs and tax credits.
- *Community Partners in Transit* – Works with education, community, and youth groups to encourage transit use and ride-matching service.
- *Mobility Brokerage* – Finds alternative transportation solutions when regular fixed-route services cannot meet customers' needs.
- *TransitChek* – Provides a commuter benefit that is tax free to employees and tax deductible to employers.
- *Job Works!* – Provides clients of job placement agencies with free bus transportation to job interviews.
- *Rideshare Delaware* – Provides a ride matching service for carpooling.

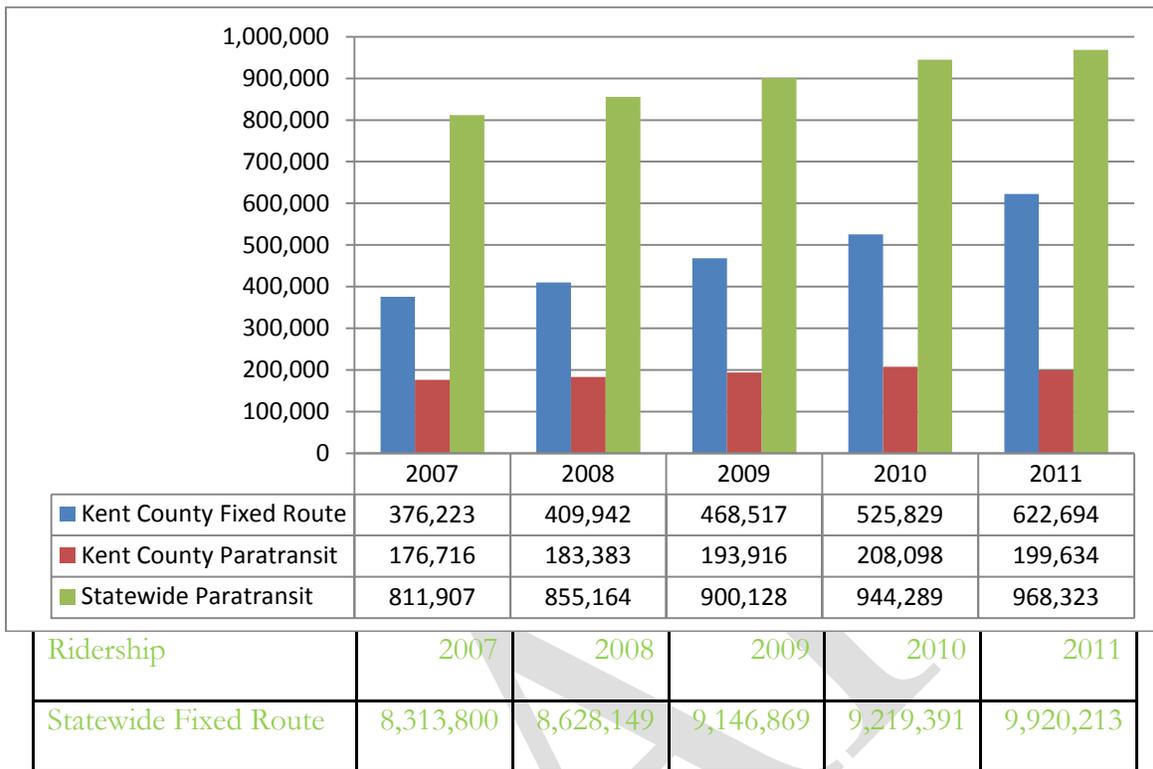
Public Transportation Ridership

Kent County has experienced an increase in its transit ridership in recent years. Fixed Route passenger trips have increased from 376,223 in 2006 to 622,694 trips in 2011, representing a 66 percent increase in ridership. At the same time, statewide paratransit ridership increased from 811,907 in 2007 to 968,323 riders in 2011, representing an increase of 19 percent. Kent County also experienced an increase in paratransit ridership. In 2007, there were 176,716 paratransit trips while that number grew to 199,634 in 2011, representing a 13 percent increase.

Ridesharing

Programs of DART First State include Park-and-Ride/Pool locations, carpooling and vanpooling, school pool, the Guaranteed Ride Home program and transit programs.

Exhibit 3.28: Kent County Paratransit and Fixed Route Ridership (2007-2011)



RideShare Delaware

Ridesharing refers to modes of travel that are alternatives to single-occupant vehicle travel, including carpooling, vanpooling, and taking the bus or train. In 2006, approximately 9.4 percent of Delaware commuters shared a ride to work. Each benefited by saving money in fuel and vehicle maintenance costs, and reducing air pollution and traffic congestion. This compares to the national average of 10 percent of commuters.

RideShare Delaware is dedicated to aiding commuters with finding and using alternative modes of transportation. RideShare is a free public service of DART First State. Funded with a combination of federal Congestion, Mitigation & Air Quality (CMAQ) and state dollars, the program’s goal is to reduce the number of single-occupant vehicles (SOVs) traveling on Delaware’s roadways, thus improving air quality in the First State. RideShare works in partnership with local and regional agencies toward meeting federal air quality standards.

RideShare offers free ridematching services for commuters working in the state and for parents of students in Delaware schools. It includes an emergency-ride-home benefit for registered commuters actively ridesharing to work, vanpool services, and transportation benefit assistance to employers as well as commuters that live or work in Delaware. A little more than 900 Kent County residents are involved in RideShare Delaware, about 16 percent of the total program participants statewide. This includes over 710 employees working at about 160 Kent County worksites. The state of Delaware is the largest employer offering ridesharing benefits in Kent County.

3.16 Bicycle and Pedestrian Facilities

Delaware law allows bicycling and pedestrian access on all roadways, except for limited access expressways (functional classifications of Interstate and Route 1 north of the toll plaza in Dover) or in exceptional circumstances where specifically prohibited. Some roadways have specific design components intended to provide for bicycle travel, such as bike lanes or wide shoulders, whereas on other roadways, bicyclists must ride in the travel lane. Similarly, sidewalks are common pedestrian facilities within urbanized areas, but less common in outlying rural areas. Pedestrians must walk on sidewalks, or if not available, facing traffic as far off to the side of the roadway as possible. Pedestrians also should cross roadways at designated crossings or intersections where provided. As stated in the City of Dover *Comprehensive Plan Update* (amended 2005), and reiterated in the 2008 *Kent County Comprehensive Plan*, bikeways and pedestrian ways along collector and arterial streets are fragmented. “Share the Road” signs have been posted recently to increase motorists’ awareness of the presence of bicyclists and pedestrians. As part of any new development or redevelopment applications, DelDOT typically requires bike lanes, sidewalks, and/or shared-use paths as part of site plan approval.

Overview of Types of Facilities

AASHTO has developed a classification system for bicycle facilities. This system designates four classes of bicycle facilities:

- Shared Roadways (no Bikeway Designation)
- Signed Shared Roadways
- Bike Lanes
- Shared Use Paths

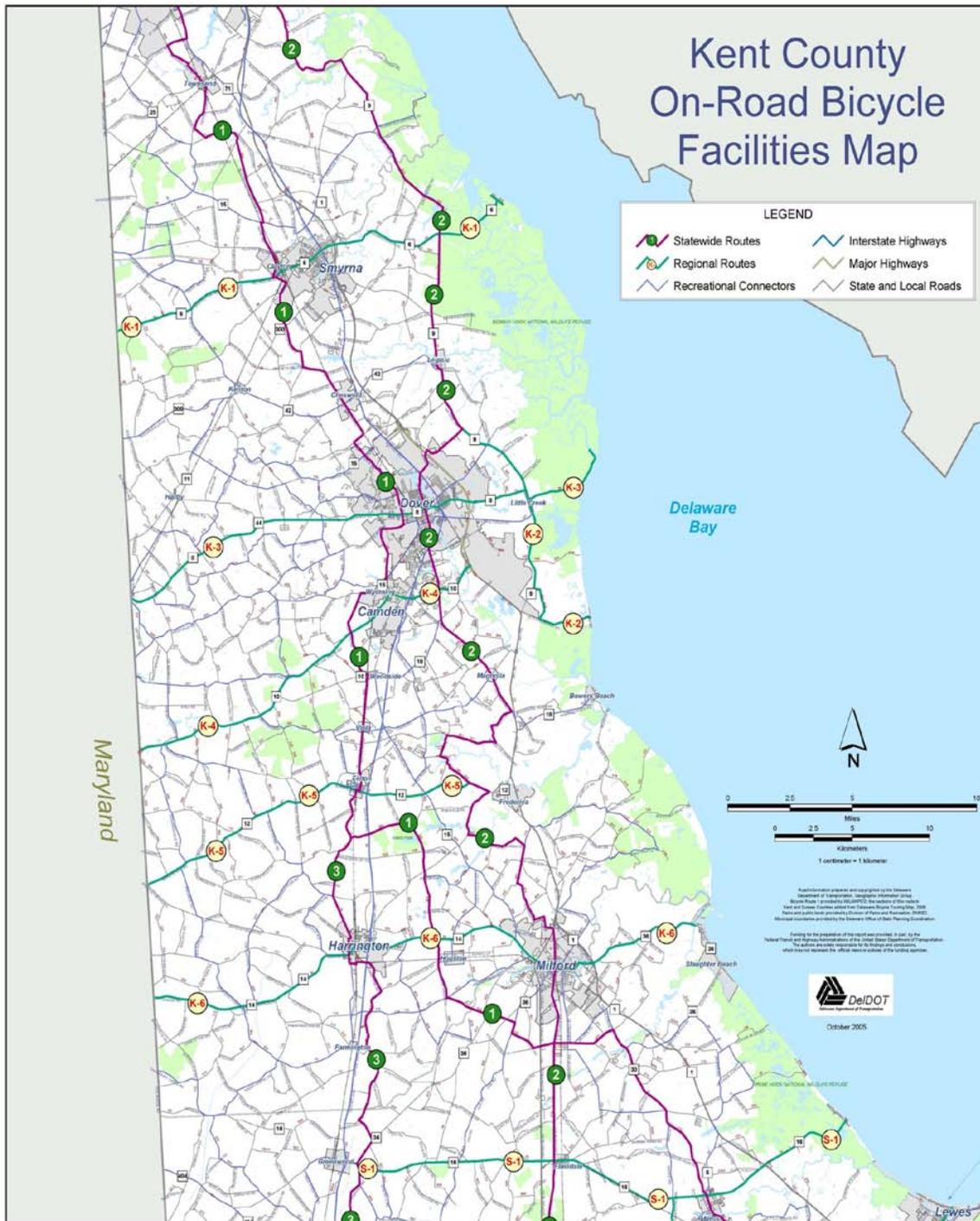
Shared Roadways refers to roadways that are not specifically designated as bicycle routes. Bicycle travel is legal and allowed on these roadways (except where specifically prohibited, such as on limited-access expressways as described above), but they lack signs, striping, or other designations that identify them for use by bicycles. Most roads in Kent County fall under the Shared Roadways category. Signed Shared Roadways have been specifically identified as preferred routes for bicyclists, with “Bike Route” signs. These roadways do not provide specific travel lanes for bicycles, but may include paved shoulders, wide curb lanes, or other features that make the route better-suited to bicycle travel. Bike Lanes are on-street travel lanes reserved for use exclusively by bicycles. They are designated by lane markings and signs, and are typically provided on corridors where higher levels of bicycle use are anticipated, and where separation of motorists and bicycles is beneficial. Shared Use Paths are off-street trails that serve both bicycles and pedestrians. These paths often serve both recreational and transportation purposes. Such paths are primarily provided in state and local parks in the County, but are also provided as part of new land developments. Sidewalks are generally intended for use by pedestrians only, though bicycles are also allowed to use sidewalks in most areas, provided that they travel at a safe (slow) rate of speed and grant right-of-way to pedestrians. Sidewalks are more commonly provided in towns and urbanized areas, and rarely along more rural roadways. Pedestrians may use roadway shoulders when sidewalks are not present.

Existing Bikeways

DelDOT has identified a number of statewide and regional bikeways in Kent County. The *Delaware Bicycle Facilities Master Plan* (2005) identified Statewide Bicycle Routes, Regional Bicycle Routes, and Recreational Connectors in Kent County. These bikeways (see **Exhibit 3.30**) are predominantly located on paved shoulder roadways, though many do not have “Bike Route” signs and therefore are not Signed Shared Roadways. Some of these corridors do have “Share the Road” signs intended to increase motorist awareness of bicyclists along the route. While there are

no major physical barriers to bicycling in Kent County, traffic conditions in heavily-traveled areas such as U.S. 13 and U.S. 113 may create local safety concerns to less experienced bicyclists.

Exhibit 3.30: Designated Statewide and Regional Bicycle Routes in Kent County



Source: DelDOT Planning

Existing Pedestrian Facilities

Sidewalks are the primary type of pedestrian facility in the region, although pedestrians may use bike paths, bike trails, greenways, and paved shoulders (walking facing traffic) when no sidewalk is present. According to 2012 data provided by DelDOT Planning, there are 464 miles of footpaths, sidewalks, and crosswalks in the MPO area.

Bicyclists are legally permitted on sidewalks unless specifically prohibited such as in certain downtowns or other locations where potential conflicts with pedestrians are high. However, sidewalks are not intended to accommodate most bicyclists, who can reach speeds of 15-20 miles per hour. Pedestrians travel at about three miles per hour. As previously stated, sidewalks are less common in outlying unincorporated areas. DelDOT maintains an inventory of roadways with sidewalks in municipalities and in suburban developments. Based on the latest information, Kent County accounts for about 10 percent of the statewide total for miles of roadways with sidewalks on both sides, and about 14 percent of the total for miles of roadways on one side only.

Bicycle and Pedestrian Planning

DelDOT is actively updating the state's long-range bicycle plan that will address the bicycle facilities at both the route and policy levels. The Pedestrian Action Plan and Bicycle Facilities Plan will guide efforts to improve bicycle and pedestrian opportunities in Delaware and its counties. In addition, most of the local governments in the County require new sidewalk and bicycle facilities for applicable development projects.

In September 2011, the MPO adopted its Regional Bicycle Plan for Kent County. The plan identified a variety of recommended on-road and off-road bicycle improvements throughout the County. Included in the Plan were 18 proposed on-road improvement locations, where specific recommendations such as shoulders, signing, striping, and paving modifications were identified. The Plan also identified seven new off-road trail connections throughout the County.

In October 2011, the First State Trails and Pathways Initiative was adopted by DelDOT and the Department of Natural Resources and Environmental Control. This initiative is a dedicated effort between a variety of agencies to promote non-motorized transportation throughout the State, to provide a world-class system of trails connecting towns, neighborhoods, parks, and natural areas, and to provide enhanced economic opportunities as they relate to bicycling, tourism, and recreation. DelDOT recently initiated final design for two trail projects that were initially identified in the Regional Bicycle Plan – the Capital City trail in downtown Dover and the Route 10 Bicycle/Pedestrian trail (from the Isaac Branch trail to the Gateway South shopping center).

DelDOT Pedestrian Action Plan

DelDOT developed its statewide pedestrian action plan in 2008. This plan will address and propose solutions to identified key issues in an effort to make walking a safe, convenient, efficient and comfortable means of transportation. As of the fall of 2012, DelDOT has conducted an assessment of the existing pedestrian network and has prepared a draft American with Disabilities Act (ADA) Implementation Plan. The draft report indicates the need for numerous pedestrian improvements in Kent County. The intent of the ADA Implementation Plan is to develop pedestrian improvements in accordance with Governor Markell's Executive Order 26, which notes that State investment should initially be concentrated in Level 1 areas, as identified by the *State Strategies for Policies and Spending*.

DeIDOT Bicycle Facilities Plan

The Delaware Bicycle Facility Master Plan (2005) was developed in order to define and implement a statewide system of designated, on-road bicycle routes. The Bicycle Facility Master Plan will be considered in conjunction with several other policies and programs including the DeIDOT Rails-to-Trails Program, and local and regional bicycle master plans.

The overall purpose of the plan is to recognize bicycling as an integral part of the transportation system and provide for suitable accommodations for bicycles on the statewide roadway network. Implementation of the plan will achieve the following goals:

- Integrate existing bicycle routes and trails to a larger, statewide bicycle network.
- Establish bicycle routes between municipalities, activity centers, and recreational areas throughout the state.
- Tie bicycles to other modes, creating availability for mode share and reducing the need for single-occupant vehicles, particularly for work trips.

In July 2011, DeIDOT published the updated Bicycle Map for Kent County. The Bicycle Map designates roads within the following categories for bicycle mobility:

- Statewide Bicycle Routes – North-south connections between New Castle, Kent, and Sussex Counties
- Regional Bicycle Routes – Higher traffic routes that provide direct connections between major municipalities and activity centers
- Connector Bicycle Routes – Routes that provide connections from local activity and recreational centers to the larger bicycle network

Exhibit 3-31 lists the following miles of each particular route within the MPO region.

Exhibit 3-31: Bicycle Route Designations

Bicycle Route Designation	Miles
Statewide	369
Regional	223
Connector	318

Source: DeIDOT Planning

Complete Streets

In January 2010, DeIDOT issued its Complete Streets Policy. Complete streets are designed and operated to enable safe and efficient access for all users, and allows all users to choose among different transportation modes (including non-motorized modes). DeIDOT, Kent County and Dover have adopted measures to improve bicycle and pedestrian facilities as a standard course of business. Most new roadway projects consider the need of, and include improvements for, multi-modal facilities. In addition, through the land development process, requirements have been requested of developers to include sidewalks and/or shared use paths in conjunction with their projects.

Also, various types of traffic calming devices may facilitate pedestrian travel by slowing motor vehicle travel, increasing visibility, and providing pedestrian crossing refuge islands. Several suburban developments in Kent County have utilized traffic calming features, including roundabouts and speed humps, on their streets. Downtown Dover uses sidewalk bulb-outs, textured pavements, on-street parking, and a traffic-diverter to calm traffic and create a more pedestrian-friendly environment. Roadway projects with planned bicycle facilities will be based on the new bicycle facility design guidelines established in both the Facility Plan and the Road Design Manual.

Bicycle and Pedestrian Safety

Bicyclists and pedestrians are at risk of injury from motor vehicles and other hazards along roadways and pathways. Over the past 15 years, generally more crashes have involved pedestrians than bicycles, as seen in **Exhibit 3.32**. Overall, pedestrian crashes have increased over the past decade, peaking in 2010. Bicycle crashes have remained generally consistent during the same time period. The number of bicycle crashes that occurred in 2011 represented the lowest number of crashes during the past decade.

In 2011, bicycle and pedestrian crashes accounted for 2.0 percent of all traffic crashes. Since 2000, bicycle and pedestrian crashes have made up between 1.5 and 2.2 percent of all traffic crashes in Kent County. It is important to note that impaired pedestrians were involved in 30 to 40 percent of these crashes.

Exhibit 3-32: Kent County Bicycle and Pedestrian Crash Data

Year	PEDESTRIAN CRASHES		BICYCLE CRASHES	
	Total	Fatal	Total	Fatal
2006	40	6	19	1
2007	29	4	16	0
2008	36	2	21	2
2009	29	2	18	2
2010	55	5	29	0
2011	51	4	11	0

Source: Delaware State Police Traffic Statistical Report

3.17 Goods Movement

The dominant means of goods movement in Kent County, as well as in Delaware overall, is by truck. Trucks move approximately 80 percent of manufactured goods to and from Delaware each year. The main commodities shipped from Kent County in 2010 were chemicals, minerals, food, lumber, and farming materials. Most of the commodity flows from Kent County are transported within the State of Delaware. As stated in the Dover/Kent County MPO Transportation Information Booklet, "...in 2007 Kent County imported 4,305,215 tons of consumer goods, raw materials, and other precious commodities, with a total of 223,302 trucks hauling these goods into the county." Kent County receives more than one-third of its goods from New Castle County, Pennsylvania, and New Jersey. Based on the latest DelDOT statistics, about one in 15 vehicles (6 percent) on Kent County roads carries freight. By comparison, in 2001, the same 6 percent of the total annual average daily traffic (AADT) was heavy trucks. In Kent County, U.S. 13, U.S. 113 and Route 1 are the primary truck routes. U.S. 13 is the principal freight transportation route for private and for-hire motor carriers in Delaware. In Dover, McKee-Saulsbury Road is a designated truck route to serve the industrial areas on the west side of the city. High truck traffic volumes have also been recorded on U.S. 13 through Farmington, Felton, Woodside, Camden, Cheswold, and Smyrna. The increase of truck traffic

and truck dependence has resulted in issues of road capacity and safety. The growing number of trucks and truck miles has led to accelerated damage of the highway system, decreasing air quality, more noise, and an overall negative impact on our resident's quality of life. In several areas throughout the state, shippers, carriers, and the community have made special efforts to direct trucks to designated routes.

3.18 Passenger and Freight Railroads

The state of Delaware has five freight railroads and 218 freight rail-miles. One railroad, the Class I, or national carrier, Norfolk Southern (NS), serves tracks in Kent County. Norfolk Southern runs north and south through Kent County from Clayton through Harrington. To the north, NS connects to the national railroad system via the Amtrak Northeast Corridor.

Several major commodities come into Delaware by rail, according to waybill samples provided by the railroads. These commodities are automobiles, coal, stone/aggregates, chemicals, and grain. Coal and grain are the two major commodities delivered to, or through, Kent County. Grain imports are necessary to support the massive poultry industry, which has outstripped the ability of the local growers to supply the entire amount. Coal is crucial for electric power production. Food products are another rail-imported commodity.

Rail freight represents an under-utilized resource in Delaware, with the volume of service consistently below the capacity of the rail lines and below the potential to warrant improvements in most locations. There are some important areas where chokepoints exist, and addressing these will increase velocity on the entire downstate network.

DelDOT continues to promote freight rail as an alternative to truck traffic on Delaware's highways. DelDOT works with freight railroad companies throughout the state to improve infrastructure and service, as well as address citizen concerns about safety, noise, traffic, and other rail-related issues. DelDOT has partnered with NS on major infrastructure projects, and continues to seek opportunities for public-private partnerships.

In September 2011, DelDOT prepared its *State Rail Plan*. As described in the *State Rail Plan*, the purpose of the Plan is to:

- Broaden the understanding of rail issues for all stakeholders
- Define the role of railroads in a multimodal environment
- Identify infrastructure and other improvements required to improve rail service
- Provide a framework to implement rail improvement initiatives
- Support DelDOT in obtaining federal funding

The document analyzes freight mobility, feasible passenger rail service, transportation efficiency, congestion mitigation, and livable communities throughout the state.

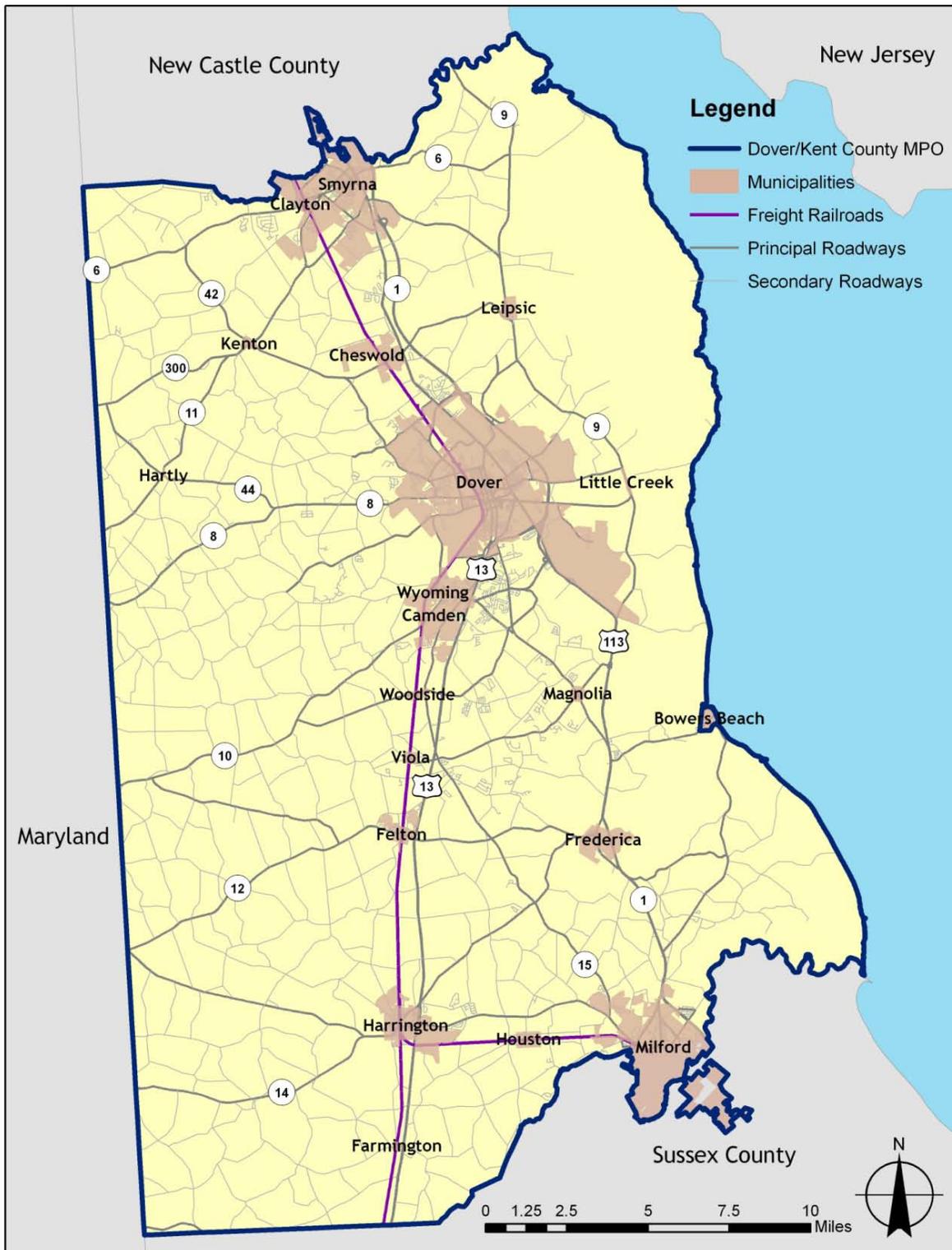
Freight Rail Lines

Rail lines offer important economic benefits for industrial development. Land uses mentioned in the Dover and Kent County comprehensive plans designate areas along rail lines for industrial uses. Kent County has 42.3 miles of active freight railroad lines, operated by Norfolk Southern. The Federal Railroad Administration (FRA) has designated the Delmarva Secondary and Indian River Secondary tracks, which run through Kent County, as Class 3 tracks. At maximum, trains on these tracks run at 40 mph. The Indian River Secondary Track splits from the Delmarva track at the Harrington Yard. **Exhibit 3.33** illustrates the following rail lines:

Delmarva Secondary Line – This is the longest rail line in Kent County, spanning 34.5 miles within the county. It is primarily a north-south connection along Delmarva, operated by Norfolk Southern. The line roughly parallels U.S. 13 and continues south into Maryland, where it connects to Bay Coast Railroad lines in Pocomoke, Md., and to a barge that floats rail cars across the Chesapeake Bay at Cape Charles, Va. (allowing for a redundant, but very low volume, rail connection onto the Delmarva Peninsula). To the north, this line connects to the Northeast Corridor at Newark, serving many destinations in the northeastern United States. Nearly 39 percent of commodities carried here are chemicals, followed by agriculture products at 36 percent and 16 percent for coal and paper products.

Indian River Secondary Line – Norfolk Southern operates this line in Kent County. It runs due east through Houston to Milford, after splitting from the Delmarva Secondary Line at the Harrington Yard. The line continues south on the east side of U.S. 113 in Delaware, covering 7.8 miles in Kent County. Coal accounts for nearly 41 percent of commodities, followed by 38 percent agriculture products and 15.6 percent in construction aggregates.

Exhibit 3.33: Freight Rail Lines



Source: DelDOT Planning

Freight Rail Yards and Transfer Facilities

Additional intermodal transfer centers, switching yards, and similar facilities greatly increase the ability of rail transport to capture additional traffic, which might otherwise travel its entire journey by truck. Kent County has several such facilities in operation.

- **Corrado America** (not currently in operation) – A rail-to-truck bulk commodity transfer facility, owned by Corrado America, exists in Felton for the transfer of aggregates.
- **Jell-O Yard** – This yard services the General Foods and Proctor & Gamble plants on the west side of Dover. Here, many cars of raw materials arrive from various points in North America, for the manufacture of paper and food products. This location is not fenced and is adjacent to an increasingly busy New Burton Road and residential neighborhoods. This remains a concern among some local residents and lawmakers.
- **Harrington Yard** – Harrington Yard is a location where train crews report to duty. Here, scheduled freights begin and end their journeys for destinations throughout the United States. Also, local trains from the Indian River Secondary Line and destinations on the lower Delmarva Peninsula, begin and end their journey at Harrington. The switching movements needed to build and break train consists can cause traffic issues in downtown Harrington by blocking at-grade crossings.

Passenger Rail

Kent County has no regularly scheduled passenger rail service. The nearest passenger stations are Newark, Churchmans Crossing, and Wilmington in New Castle County. From 2001 to 2004, DelDOT studied the feasibility of commuter rail service between Wilmington and Dover and concluded that the land use pattern, total population and densities did not support passenger rail.

However, the Delaware Transit Corporation, with support from the Maryland Department of Transportation, is conducting a Delmarva Rail Study to explore the feasibility of intercity passenger rail to lower Delaware and/or the Ocean City, Md. areas. This would be an Amtrak-type service, with one-to-two round trips per day, and from destinations on the Northeast Corridor such as Washington, D.C. or New York, stopping in Dover and potentially other locations in Kent and Sussex Counties. This would require a lower level of infrastructure improvements than commuter service. Estimates of capital, operating and maintenance costs vs. ridership and revenue for various service options will be complete in 2012, and will determine if the project should advance.

3.19 Aviation

Kent County has seven aviation facilities available for public use. The primary aviation facility in Kent County is Dover Air Force Base (DAFB), which permits limited public service at the Civil Air Terminal. Charter aircraft operations are limited, and are authorized on a case-by-case basis. DAFB is the largest military or civilian aerial port facility on the East Coast and is an important part of Kent County's economy. In addition to the facilities at DAFB, five of Kent County's other public-use airports provide general aviation services. Another facility, the DelDOT Helistop is a publicly-owned helicopter landing pad, located at the DelDOT complex in Dover, and available for public use. The County continues to pursue opportunities for economic development within these facilities and in the surrounding areas.

Air Cargo Ramp at Dover Air Force Base

The DFAB's primary mission is to house C-5 and C-17 transport planes. Civilian use is secondary. A joint-use agreement between the United States Air Force and DelDOT authorizes DelDOT to permit scheduled commuter or commercial charters, as well as general aviation aircraft that the installation commander has approved in advance. The ability to land large planes makes this facility unique in Kent County.

The Air Cargo Ramp (formerly known as the Civil Air Terminal) is instrumental in facilitating NASCAR events at Dover Downs. The Air Cargo Ramp's ability to accommodate high numbers of operations and the large, private airplanes that racing teams employ, keeps it a competitive venue. Potential for service level and facility expansion might be constrained by the primacy of the Air Force mission at the base.

There are discussions to expand the parking apron adjacent to the Air Cargo Ramp to accommodate large civilian cargo planes that serve the Air Base. The Air Cargo Ramp will need more parking pads if the goal remains to increase in private/chartered passenger flights.

The Kent County AeroPark is a 115-acre county-owned industrial/business park located adjacent to the Ramp, and adjacent to the perimeter of DAFB. County officials would like to attract industries such as manufacturing, publishing, and warehousing to take advantage of available land and buildings. The Kent Economic Development Office is committed to work with Dover Air Force Base and its related businesses, to protect and support its mission. Kent County, DelDOT, and the Delaware Office of Economic Development (DEDO) have partnered and are evaluating different options to expand the aeronautic capabilities in this area. The project is currently undergoing environmental studies (wetlands and archeological) associated with the expansion of the Air Cargo Ramp. The studies are currently anticipated to be completed in late 2013.

Delaware Airpark

DelDOT has owned the Delaware Airpark in Cheswold since 2000. Operated by the Delaware River and Bay Authority (DRBA), the airport serves general and corporate aviation in Kent County, as well as Delaware State University's Aviation Flight Training Program. The River and Bay Authority plans to expand the runway in 2013. DRBA also is interested in pursuing safety upgrades to provide additional private and corporate airport capacity and enhanced safety and security. DelDOT is committed to protecting the airport by working with the local land use agencies to locate compatible development and discourage incompatible uses.

Other Aviation Facilities

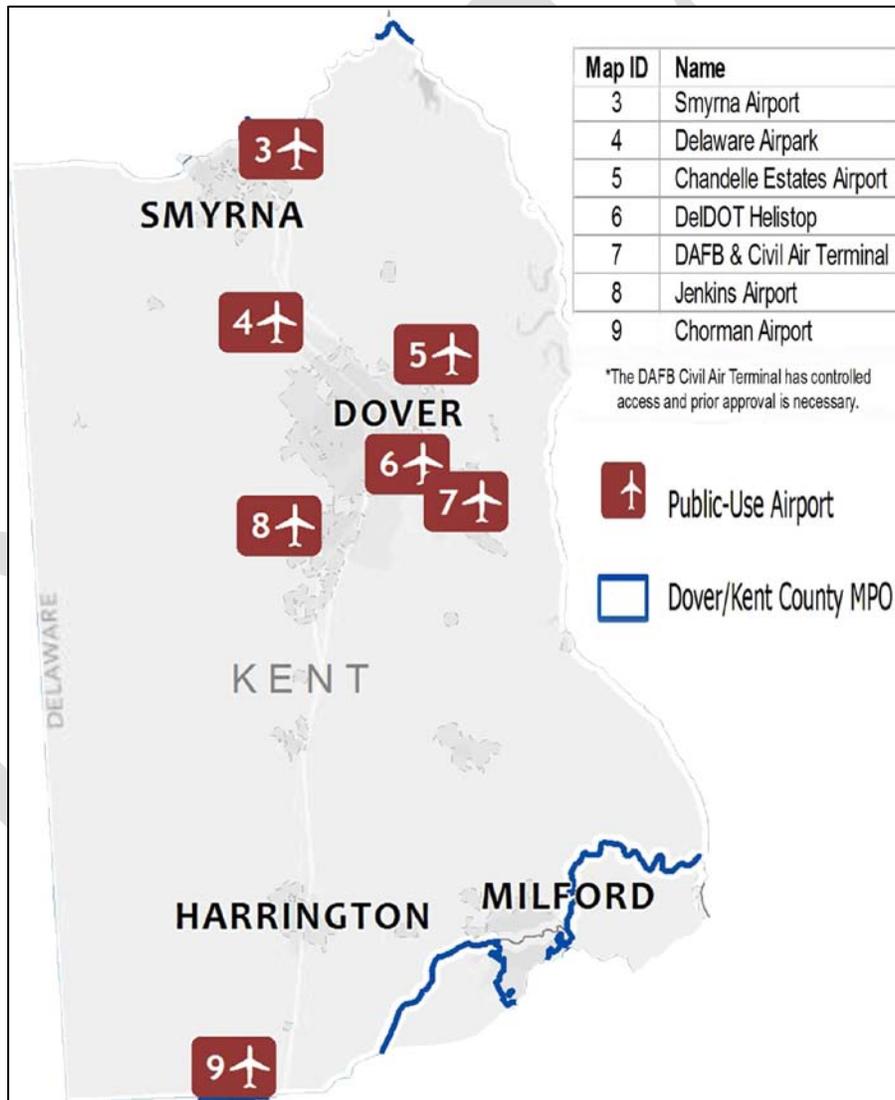
Other public use facilities that provide general aviation services include Smyrna Airport, Chandelle Estates Airport, Jenkins Airport, Chorman Airport, and the DelDOT Helistop. All the airports are privately owned and operated facilities. The DelDOT Helipad is state owned for public-use. Most privately owned airports support some sort of business, from recreational flying to equipment salvage and repair. Crop dusting, or the aerial application of fertilizers and pesticides, remains an important activity associated with private airports. The state contracts crop dusters for mosquito control spraying, as well. These activities are crucial to the viability of Delaware's agricultural community and general quality of life.

The annual number of operations at each public-use facility is well within the facility's capacity for annual service volume. However, most of the privately owned airfields are anticipated to have inadequate capacity within the next

15 to 20 years. Delaware has many excellent air cargo facilities, including Dover Air Force Base, which could accommodate large cargo planes, but there is not a market for high-value imports/exports at present that could efficiently utilize that capacity. UPS has a major facility in Philadelphia, and FedEx has a facility in Salisbury, Md. This makes truck delivery to and from those locations cost-effective.

DelDOT completed an Air Cargo Study for the Civil Air Terminal in 2006. The study recommended expanding the facility to accommodate commercial (privately-owned) air cargo that serves the military base. This activity could lay the groundwork for additional nonmilitary-oriented commercial aircraft in the future as demand grows in the region, but the major challenge is funding these types of expansions. Delaware continues to make progress on implementing recommendations from the 2008 Delaware Aviation System Plan. While there is no current progress on attracting commercial aviation service to Kent County, the provision of general aviation services continues to be a high priority for the county. An update of the statewide Aviation System Plan will be completed in 2013.

Exhibit 3-33: Summary of Airports



Source: DelDOT Planning

3.20 Marine

Rivers, ports, bays, and estuaries are all used for movement of people, goods, services and for recreation. The Delaware Bay, Leipsic River, St. Jones River, Murderkill River, and other waterways historically filled these uses. The one existing waterborne cargo operation is fuel delivery by barge at Port Mahon. The estuary formed by the Delaware River and Delaware Bay meets the Atlantic Ocean at Cape Henlopen, south of Kent County.

Part of the Intercoastal Waterway, which runs along the entire eastern seaboard, this estuary is also a major shipping channel serving the ports of Wilmington and Philadelphia. Most of the bay coastline in Kent County is tidal marsh, and is home to the Bombay Hook National Wildlife Refuge and other important wildlife areas. Most of the water access in the county, therefore, is in small-scale recreational use. Commercial and recreational fishing facilities in Bowers Beach are the most significant docking facilities in the county. Smaller operations exist in Leipsic.

The environmental sensitivity of the area's waterways and the protective restrictions of the Delaware Coastal Zone Act are important factors in determining the viability of waterborne commerce for Kent County. As a whole, the bay/river is the world's largest freshwater port, and the combined activities of the various shippers using it, rank the waterway second in the United States in total waterborne commerce. The Delaware River carries approximately 2,700 ships per year to and from several public ports and private industry facilities along its banks in northern Delaware, Pennsylvania, and New Jersey.