INNOVATIONS 2050

Metropolitan Transportation Plan
November 25, 2024
Final Draft

DOVER/KENT COUNTY MPO

METROPOLITAN PLANNING ORGANIZATION

NNOVATIONS 2050:
Metropolitan Transportation Plan

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PREFACE

Dover Kent Metropolitan Planning Organization has prepared this Metropolitan Transportation Plan (MTP) in accordance with applicable the provisions of Title 23 of USC and 23 CFR 450.324 . This version, referred to as the Final Draft, is intended for public review and comment, and for formal review by the MPO Public Advisory Committee, the MPO Technical Advisory Committee, and the Dover Kent MPO Council. Council consideration of adoption is anticipated to occur in January 2025.

Upon adoption by the MPO Council, this MTP shall remain in effect for a period of four (4) years and a new MTP shall be prepared for review and consideration for adoption in 2029.

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ACKNOWLEDGEMENTS

Dover Kent Metropolitan Planning Organization wishes to formally acknowledge and express appreciation to the following individuals for their personal and collective commitments to improving transportation in Central Delaware in the public interest. Without the leadership, oversight and dedication of these persons, this Metropolitan Transportation Plan would not be possible.

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The Dover/Kent County MPO is committed to Title VI compliance. Title VI states "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

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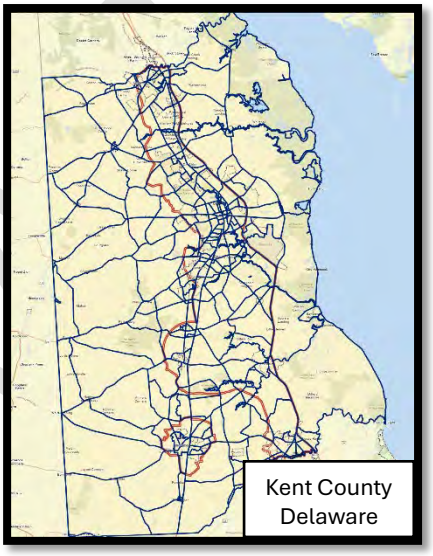
CHAPTER 1 : Introduction

The Metropolitan Transportation Plan

"*Innovations 2050: Metropolitan Transportation Plan*", is the long range transportation plan adopted by Dover Kent Metropolitan Planning Organization (MPO) to guide transportation investment activities, to identify present and emerging transportation system needs and to coordinate system improvements to address current issues and evolving growth and development patterns and trends throughout Central Delaware. The Metropolitan Transportation Plan, or MTP, establishes a broad Vision for the future state of transportation in Kent County and identifies overarching Themes and associated Goals for achieving the future state Vision.



The MTP planning process involves extensive public outreach and engagement with Citizens and Local Government Partners to examine existing conditions and concerns, explore opportunities for system improvements, and to identify needs and aspirations for the future.

A key element of this MTP effort is the development of a Growth Forecast for Kent County that projects growth in Population, Households and Employment over the next 25 years to 2050. The Growth Forecast is used for Future Travel Demand Modeling and Air Quality Conformity Analysis that are essential components of the MTP. Ultimately the MTP establishes a list of fiscally constrained and ranked priority Transportation Projects for Dover Kent MPO to pursue initiation of over the course of four (4) years beginning in 2025 and concluding at the end of 2029.

THE DOVER-KENT COUNTY METROPOLITAN PLANNING ORGANIZATION

In 1991, upon completion of the 1990 Decennial Population Census, the United States Census Bureau determined that the Greater Dover Area had exceeded a resident urbanized population of 50,000 persons and thus became identified as a Metropolitan Statistical Area (MSA). MSA status brings with it certain opportunities and responsibilities for the MSA Area to share in and take advantage of federal financial and programmatic support. Part of this designation involves the establishment of a continuing, comprehensive, and cooperative Urban Transportation Planning process under the direction of a Metropolitan Planning

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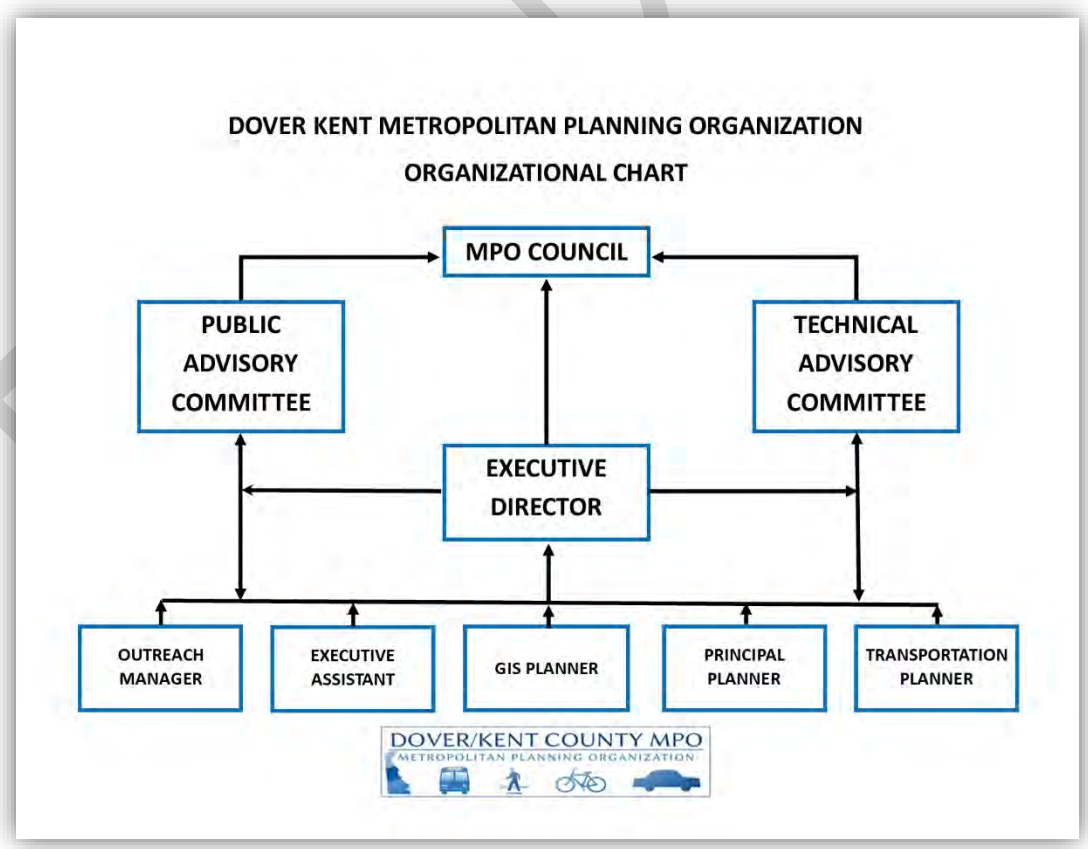
Organization. Thus, in 1992, the Dover Kent Metropolitan Planning Organization was established.

In accordance with federal regulations, Dover Kent MPO directs transportation planning activities and programs for the entirety of Kent County, Delaware, including all urbanized areas and municipalities within this designated metropolitan planning area. It is important to point out that while portions of the Towns of Smyrna and Clayton in northern Kent County, and the City of Milford in southern Kent County cross into the neighboring Counties of New Castle and Sussex respectively, Dover Kent MPO embraces a philosophy of complete community planning and will employ a wholistic approach to transportation planning as projects in these municipalities are proposed.

OUR STRUCTURE

Since that time, Dover Kent MPO has been in the business of identifying the near-term and long-range transportation needs of the Central Delaware Region and developing plans to address those needs. The Dover Kent MPO operates under the leadership and management of an Executive Director who directs professional staff in the implementation of a responsive and well-balanced planning process. The work of Dover Kent MPO involves substantial



reliance on public engagement, the resident technical expertise of State and Local Government agencies, and the representative insight and guidance of local Elected Officials. To that end, Dover Kent MPO is governed by an MPO Council which consists of executive level elected officials and transportation agencies leaders. The MPO Council is supported by a Technical Advisory Committee (TAC) which is comprised of technical/management level representatives of Federal, State, County and Local Government agencies, and a Public Advisory Committee (PAC) which is comprised of citizen representatives appointed by foundational agencies of the MPO Council reflecting the diverse communities within Kent County, Delaware.

FOUNDATIONAL PLANNING PROGRAMS

Unified Planning Work Program (URWP)

In accordance with the goals and objectives of the MTP, on an annual basis the Dover Kent MPO prepares a Unified Planning Work Program (UPWP) which is developed after an open solicitation and selection period during the third quarter each year. The UPWP, which is adopted by the MPO Council in the spring of each year, establishes a Work Plan of specific projects and studies to be undertaken by Dover Kent MPO during the new Fiscal Year. The selected UPWP projects and studies tend to be those that are relatively concise in scope and that can be completed within twelve to eighteen months of initiation. Specific attention is paid to assisting municipalities with safety and connectivity concerns, as well as more broad and regional transportation concerns.

Transportation Improvement Plan (TIP)

In accordance with Federal Law [49 U.S.C. 5303(j)], Dover Kent MPO is also responsible for the preparation and adoption of a document known as the Transportation Improvement Plan, or TIP. The TIP shall be prepared at least every four (4) and shall identify more complex transportation projects to be undertaken over the upcoming four (4) year period. The TIP is developed in cooperation with the Delaware Department of Transportation and the Delaware Transit Corporation and may include capital and non-capital surface transportation projects. The types of projects reflected in the TIP may consist of roadway and safety improvements, pedestrian facilities, bicycle transportation routes, and public transit enhancements. The TIP shall also include all regionally significant projects identified by the MPO including those receiving Federal funding and all that require approval of the Federal Highway Administration and/or the Federal Transit Administration.

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CHAPTER 2 : Vision ~ Themes ~ Goals

Our Vision

The Plan Vision Statement is intended to be a concise expression of purpose that shall serve as the over-arching principle under which all aspects of the Plan shall be in aligned, in conformity with, measured by, adhered to, and advanced.

The Dover Kent MPO and this Metropolitan Transportation Plan are guided by the following statement of Vision:

> ***"The future transportation system in the Dover Kent County Metropolitan region is safe, resilient, and sustainable, supports economic development, allows easy access and mobility for all people and goods to reach their destinations, and serves desired growth patterns in a manner that is fair and just to all people and respectful of community character and our natural environment."***

Meetings with State and Municipal Partners

During the winter and spring of 2024, Dover Kent MPO staff spent time examining the Transportation Elements of local Comprehensive Plans and meeting with Municipal Leaders, Kent County and State agency representatives to discuss transportation concerns within local jurisdictions. A total of thirteen (13) individual partner agency sessions were completed in preparation for this Plan. While we were not able to meet with representatives from each of the twenty (20) local governments in Kent County for various reasons, we believe that our meeting sessions reflect an excellent representative sample that yielded valuable information concerning local and regional transportation issues and concerns. Several topics emerged as common concerns in cities, towns and unincorporated suburban areas. The Table below provides a brief summary of common concerns in rank order.

Issue/Concern	Frequency of Concern	Brief Description
Roadway Conditions	14	Issues include: functional classification deficiencies (i.e. lane widths; lack of shoulders); repair/resurfacing; frequency of site entrances; unsafe intersections; roadway flooding
Sidewalks	10	Lack of sidewalks; incomplete/dead-end sidewalks; non-ADA compliant sidewalks; damaged pavement; obstructions in sidewalk (i.e. utility poles); gaps; lack of curb ramps and marked crosswalks
Economic Development Support	7	Inadequate design of commercial corridors; improvements to support industrial developments; limited access to SR 1;

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		need Transportation Improvement Districts (TIDs) to be operational
Transit	6	Expand routes; additional Stops; lack of Shelters; inadequate or no pedestrian access (sidewalks)
Truck Movements	5	Too many trucks on local roads; lack of off-street parking/storage for trucks
Residential Growth/Traffic	5	Traffic congestion on local roads
Speeding	4	Issue particularly in municipalities. Interest in use of speed cameras (small towns expressed frustration that they cannot participate due to lack of Police Force)
Bicycle Facilities	4	Incomplete, unconnected networks. Safety concerns with on street bicycle lanes. Some bike lanes come to an abrupt end.
Street Lighting	2	Concerns with low/no lighting of travel corridors. Inadequate lighting for pedestrians.
Micro-Transit	1	Concerns with safe use and storage locations of "shared-use" devices like bicycles and scooters

The information gathered from the partner sessions, coupled with input received from the General Public (see Chapter 8 – Public Participation) over the same time period have helped identify main themes and craft goals to pursue with this iteration of the Dover Kent Metropolitan Transportation Plan. These MTP Themes and Goals are articulated in detail below.

Themes and Goals

The Dover Kent MPO endeavors to vigorously advance our Statement of Vision through the implementation of this Metropolitan Transportation Plan. In charting a course toward attainment of this Vision, we have identified six (6) primary Themes that we seek to advance during this MTP planning period. Each Theme is paired with a specific Plan Goal that Dover Kent MPO shall pursue over the next four (4) years in furtherance of this MTP.

THEME 1: Enhanced Mobility – Network Continuity

The work of the Dover Kent MPO is targeted at improving the overall transportation system, ensuring that all modes of transportation are reasonably accommodated to the greatest extent possible in a seamless, safe, and integrated network of transportation alternatives. As transportation needs and preferences are ever evolving we seek opportunities to enhance existing transportation infrastructure, incorporate new modes of travel, and promote utilization of advances in transportation technologies.

GOAL 1: ***To foster the evolution of a seamless Transportation System for all modes of travel that is safe, efficient, continuous, and fluid that effectively accommodates local, regional, and interstate transportation.***

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THEME 2: Inter-Jurisdictional Coordination & Concurrency

As a regional transportation planning agency representing all of Kent County, Delaware and the twenty (20) municipalities therein, Dover Kent MPO plays a significant unifying role in transportation planning with respect to inter-jurisdictional communication, information gathering, identification of local and regional challenges and opportunities for the future, and synthesizing this information into a coherent, fair, and accurate regional model for future growth and transportation investment. This work involves developing plans and support mechanisms to advance local, regional and state growth management, planning and investment strategies.

GOAL 2: ***To synthesize State, Regional and Local Transportation Objectives into a unified Vision and Implementation Plan for Central Delaware.***

THEME 3: Economic Vitality

The health and vitality of our local and regional economy is dependent upon an efficient, effective, and reliable system for the movement and delivery of goods, services and people. The Dover Kent MPO works closely with economic development professionals, the local business community, citizens, and local government leaders to support business activity, address current transportation issues that impact the local and regional economy, and to anticipate and plan for a vibrant economic future.

GOAL 3: ***To support an active and growing Business Development Community by proactively planning for transportation investments that strengthen the economic vitality of the Central Delaware Region.***

THEME 4: Social Equity

Dover Kent MPO seeks to maintain and promote a culture of fundamental fairness, equity and inclusion within the practice of transportation planning. Dover Kent MPO strives to establish abundant and accessible ways for all citizens to share their concerns, ideas, and aspirations, and to enjoy meaningful engagement in the transportation planning process. Transportation improvement plans undertaken by Dover Kent MPO shall endeavor to eliminate bias and to eradicate conditions that negatively impact disadvantaged communities and populations wherever such conditions exist. The fair and equitable distribution of transportation planning resources and transportation investments throughout Central Delaware are essential core values of this MPO.

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GOAL 4: ***To establish opportunity for public participation by all persons in the Transportation Planning Process and to ensure that resultant plans for Transportation Investments are implemented fairly, justly, and equitably in the best interests of all members of the community.***

THEME 5: Resiliency & Sustainability

The degree to which transportation investments can be designed, built, and affordably maintained to withstand and adapt to natural impacts over time without losing their public usefulness or draining public coffers is an important quality of life consideration. As responsible stewards of public financial resources, Dover Kent MPO shall strive to promote transportation investments that minimize impacts to the natural environment, that contribute to improved quality of life for citizens, that are not subject to known threats or vulnerable to damage or destruction due to existing or forecasted environmental influences, and that can be maintained in an efficient and affordable manner.

GOAL 5: ***To give preference to Transportation Investments that demonstrate minimized risk of failure, or avoidance of impacts, due to climate change and extreme weather events, that avoid or minimize disruption to natural communities and processes, and that reduce or eliminate the need for future Investments due to obsolescence, climatic damage, or other loss.***

THEME 6: User Experience

For many years, the operational Level of Service emphasis for roadways has been focused almost entirely on motor vehicle travel, roadway capacity for movement of motor vehicles, and the degree to which the volume of the motor vehicle stream causes time delays for motorists. While this Level of Service metric is valuable for understanding and evaluating roadway capacity for motor vehicles, our roadways have evolved and continue to evolve as essential multi-modal travel ways for pedestrians, bicyclists and other non-motorized modes of travel. Dover Kent MPO endeavors to develop metrics that focus on improved safety, security and visual quality of roadways for all modes of travel.

GOAL 6: ***To incorporate Quality Level of Service features into Transportation Network Improvement Projects that yield a high level of user satisfaction and positive perceptions of user safety, security, and visual quality.***

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Toward Vision Zero and Safe Systems for All

An overarching objective of Dover Kent MPO is to achieve a seamless multi-modal transportation system that is safe for its users and devoid of the risk of serious injury or death. To that end, Dover Kent MPO embraces the Safe Systems Approach to transportation planning and project programming as articulated by US Federal Highway Administration. In pursuit of this overarching goal, Dover Kent MPO acknowledges the six principles of the Safe Systems Approach that include the following: 1) deaths and serious injuries are unacceptable; 2) humans make mistakes; 3) that humans are vulnerable; 4) responsibility is shared; 5) safety is proactive; and, 6) redundancy is crucial.

With the adoption of this MTP, Dover Kent MPO hereby affirms its commitment to the Safe Systems Approach and establishes transportation system safety as its highest priority. As elements of this MTP are implemented, Dover Kent MPO shall strive to ensure that all aspects of its work is centered on the reduction and elimination of transportation related fatalities and serious injuries. This is our pledge and obligation to the public we serve.

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Chapter 3: Community Profile

Geography: Physical Characteristics

Kent County is located in the center of the State of Delaware. To its north is New Castle County and to its south is Sussex County, the two other counties in the state. To its west is the Eastern Shore of Maryland, and to its east, across the Delaware Bay, is the State of New Jersey. Kent County's land area is approximately 586 square miles, or 29.6% of the state's total land area.[1]

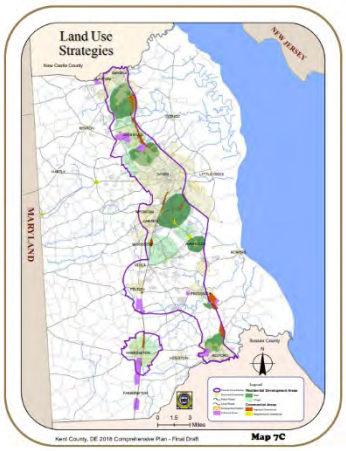

Figure 1: The Kent County growth zone overlay. Source: Kent County Comprehensive Plan (2018).

The largest urban area in the County is the City of Dover and its surroundings. Most of the new growth is taking place along major north-south roads, namely Delaware Route 1 (DE1) and US Route 13 (US13); this corresponds with the Kent County Growth Zone and the Delaware Strategies for State Policies and Spending. The land outside of these areas is mostly rural and predominantly used for agriculture.

Kent County has a low mean elevation and is prone to coastal flooding. Much of the coastline consists of salt marshes; Bombay Hook National Wildlife Refuge, for example, is a large salt marsh that provides vital habitat for migratory birds. Major rivers include the Smyrna River, Leipsic River, Little River, St. Jones River, Murderkill River, and Mispillion River. Historically these bodies of water played a significant role in shaping Kent County's communities, providing a means of transportation and producing an abundance of natural resources. Most of Kent County falls within the Delaware Bay watershed, but the western portion of the County drains into the Chesapeake Bay.

Agriculture is a central industry in the County, and farms depend on the networks of roads to move their equipment and produce. Some of the crops produced include corn, soybeans, wheat, barley, and various fruits and vegetables. Livestock, especially chickens, are also a key part of the local economy. According to the US Department of Agriculture, about 187,248 acres are used for farming.[2] In Delaware and in Kent County there are systems in place to preserve agricultural land, because after the land is developed, it is unlikely to be used for farming again.

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[1] "Cities and Towns." Kent County Levy Court. https://www.kentcountyde.gov/Visitors/Cities-and-Towns.
[2] "County Profile: Kent County, Delaware." US Department of Agriculture, 2022. https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Delaware/cp10001.pdf.

Population: Demographic Trends

Summary of Population Change

According to the 2020 Decennial Census from the US Census Bureau, Kent County had a population of 181,851 in 2020. This is about 18.4% of the state's total population. Kent County is the least populous of the three Delaware counties, but it is growing steadily, primarily within the Kent County Growth Zone. Analysis from the Delaware Population Consortium indicates that the majority of population increase is a result of "net migration" (or the difference between immigration and emigration), rather than "natural increase" (or the difference between births and deaths).

Between 1980 and 2020, Kent County has maintained approximately 17-18% of the state's total population; this percentage has not changed significantly between years. By contrast, Sussex County now has a higher percentage of the total population than in 1980, while New Castle County's percentage has decreased. Kent County is expected to remain at approximately 18% of the total population between 2020 and 2050. Note, however, that this does not mean growth is not happening; instead, it means the County's growth rate will remain stable, while the other two counties will be more dramatically impacted by net migration. It is also worth noting that the current projections are not guaranteed to align with future growth patterns, as there are many other factors that make the forecasting more challenging.

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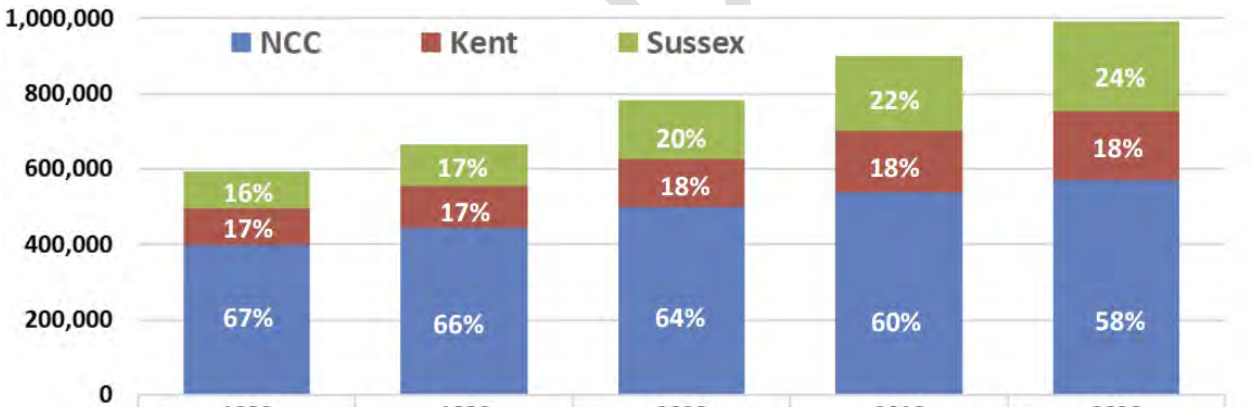

	1980	1990	2000	2010	2020
Sussex	98,004	113,229	156,638	197,970	237,390
Kent	98,219	110,993	126,697	162,310	181,839
NCC	398,115	441,946	500,265	538,479	570,719
DE Total	**594,338**	**666,168**	**783,600**	**898,759**	**989,948**

Figure 2: A graph depicting each of the three Delaware counties and their contribution to the state's total population over time. Source: Delaware Population Consortium.

In order to understand the expected changes in Kent County in the coming years, Dover Kent MPO forecasted the population, household, and employment numbers as far ahead as 2050. This was

done by extrapolating the growth outward from the 2020 baseline and factoring in the housing and economic developments that are currently known. These projections, along with the process, will be discussed in greater detail in Chapter 5: Growth Trends & Forecast.

Environmental Justice Data

In 2023, Dover Kent MPO completed its *Title VI / Environmental Justice Report*. This document describes the MPO's commitment to equity in transportation, which means ensuring all voices in Kent County are able to be heard during the transportation planning process, regardless of physical constraints, language barriers, transportation access, and other constraints. It also details the latest demographic information for Kent County, according to the US Census Bureau. Census data was analyzed not only at a countywide level, but also in a way that compares the numbers between locations. This was done using census block groups to represent the difference in percentages for each topic. Environmental justice topics in the report include racial demographics, age demographics, Limited English Proficiency (LEP), zero-vehicle households, poverty status, and disability status. Census information was verified using DelDOT's Equity Analysis Tool.

As an example, the document examines the racial demographics of Kent County. This was based on the findings of the 2020 Decennial Census. As a whole, the numbers show that 59.2% of the population identifies as "White alone." However, this is not the case throughout the entire county. When looking at the census block groups, it was revealed that specific neighborhoods in Dover, Milford, and other municipalities are far more diverse than the total numbers suggest. These findings can then be used by the MPO to understand which areas may have been historically overlooked and not given adequate transportation investment.

Racial Demographics (Kent County)	Population	% of Total
White alone	107,685	59.2%
Black or African American Alone	46,998	25.8%
American Indian and Alaska Native alone	1,149	0.6%
Asian alone	4,429	2.4%
Native Hawaiian and Other Pacific Islander alone	125	0.1%
Some Other Race alone	5,658	3.1%
Population of two or more races	15,807	8.7%
Total (of all categories)	181,851	100%

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Hispanic and Latino Demographics (Kent County)	Population	% of Total
Hispanic or Latino	13,981	7.7%
Not Hispanic or Latino	167,870	92.3%
Total (of all categories)	181,851	100%

Data from the 2021 American Community Survey (ACS) was also used to examine these topics. According to the ACS, there are 34,595 people aged 65 and over in Kent County, which is about 18.5% of the County's population. This is lower than the State of Delaware's average of 20.9%. For comparison, this same demographic makes up about 17.1% of the population in New Castle County, and about 30.8% in Sussex County. According to the ACS, Kent County's median age is estimated at 37.7, while in New Castle County the median age is 39.8 and in Sussex County it is 52.7.

Age Demographics (Kent County)	Population	% of Total
65 to 69 years	11,744	6.3%
70 to 74 years	7,854	4.2%
75 to 79 years	6,912	3.7%
80 to 84 years	4,546	2.4%
85 years and over	3,539	1.9%
Total (of the above categories)	34,595	18.5%

Another example of ACS data is the poverty status of Kent County, which is estimated to include 9.3% of the population. This is roughly the same as the state average. Both age and poverty status are important considerations during the planning process, as they reveal which communities may have specific needs or are less likely to be represented.

Income Demographics (Kent County)	Population	% of Total
Income in the past 12 months below poverty level	16,932	9.3%
Income in the past 12 months at or above poverty level	165,297	90.7%
Total (of all categories)	182,229	100%

The above examples are a small sample of the census data used by the MPO to assist in its commitment to equity in transportation. The data does not provide a complete understanding of a community, and there are many additional factors that cannot be quantified. However, it does offer a useful starting point. For further information on environmental justice and equity topics, please refer to the MPO's *Title VI / Environmental Justice Report*.[3]

[3] *Title VI / Environmental Justice Report*. Dover/Kent County MPO, 2023. https://doverkentmpo.delaware.gov/files/2023/11/EJ-Report-2023-final-version.pdf.

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Communities: Cities, Towns, Suburban & Rural

There are a total of twenty municipalities in Kent County. Of these, three of them (Dover, Milford, and Harrington) are designated as cities; the remaining are designated as towns. There are also unincorporated communities found throughout the County, such as Little Heaven, Kitts Hummock, and Marydel. The largest municipality is Dover, which has a population of approximately 39,403 and an incorporated area of approximately 25 square miles.

As previously discussed, most of the current growth is happening within the Kent County Growth Zone. Additionally, most of the urban and suburban land is found within this corridor. The areas farther from DE1 and US13, by contrast, are rural and less developed. Small municipalities outside of the Growth Zone include Kenton, Hartly, Leipsic, Little Creek, Bowers, Houston, and Farmington. Kent County has both urban and rural environments, and the transportation networks in each of these areas serve different needs and experience different volumes of traffic.

Figure 3 (l): Loockerman Street in Dover. This road is located in an important economic center of Central Delaware. It contains a sidewalk network for pedestrian access and is abutted by buildings that contain various businesses.

Figure 4 (r): Farmington Road in between Harrington and Farmington. Roads in Kent County's rural areas often lack shoulders and have higher speed limits than in downtown areas.

As defined by the 2020 Decennial Census, an urban area is a densely populated territory that contains at least 2,000 housing units or at least 5,000 people. The US Census Bureau no longer distinguishes between "urban areas" and "urban clusters," and any location that fits the above description is classified as an urban area.[4] Under the current definition, Kent County contains three separate urban areas: Dover (an area that extends between Smyrna and Felton), Milford, and Harrington. When an urban area contains more than 50,000 people, the Federal Highway Administration (FHWA) designates a new MPO to assist with transportation planning in the region. Approximately 72.2% of Kent County's population lives in an urban area.

Dover Kent MPO is committed to working with each of Kent County's municipalities and the unincorporated areas. It is important to provide planning services for the communities that typically may not have the staff or resources to improve transportation conditions on their own. The safety and

[4] "2020 Census Urban Areas FAQs." US Census Bureau, 2022. https://www2.census.gov/geo/pdfs/reference/ua/Census_UA_2020FAQs.pdf.

connectivity needs of small towns should not be overlooked, which is why the MPO has been tracking the geographic distribution of its annual planning studies and ensuring no area is left out of the process. For more information on this topic, please refer to Chapter 8: Public Engagement.

Economic Characteristics: Employment Centers & Work Force

According to the 2022 American Community Survey (ACS) from the US Census Bureau, there are 87,824 employed people in Kent County over the age of 16. The following is a summary of some of the larger employment sectors in the County. It will discuss the number of jobs in each sector and list a few of the relevant employers.

Figure 5: A C-5M Super Galaxy, US Air Force. Source: Dover AFB Public Affairs.

One of the largest employment centers in Kent County is Dover Air Force Base. First opened during the 1940s, the Base is a strategically vital facility for the US Department of Defense. It is used for a wide range of purposes, including overseas distribution of cargo and personnel; dignified transfers; and humanitarian efforts. According to the Dover Air Force Base Compatible Use Plan (2023), the employment at the Base in 2018 was approximately 6,076, and the additional employment throughout Kent County was approximately 1,954. This means in total the base contributes to 8,030 jobs, which is more than 10% of Kent County's total jobs. The Base keeps a close relationship with the City of Dover and other surrounding communities, and actively works to maintain compatible land use and avoid potential conflicting uses. Many former Base personnel have chosen to retire in Kent County. The Base has an approximate annual impact of $537 million.

Figure 6: Cover crops planted in an agricultural field in eastern Kent County.

Agriculture is very prevalent in Kent County, with poultry consisting of roughly two-thirds of the total market value, according to the US Department of Agriculture. The poultry sector includes chicken farms; grain production, storage, and distribution; and chicken processing facilities. Products are then sold by major distributors. Other farms sell locally grown produce that includes apples, peaches, strawberries, and other fruits and vegetables. Many Kent County farms are family-owned, and some have been in the same family for generations. The growing, processing, and distribution of agricultural products depend on a reliable transportation system and sustainable land use practices that preserve the land for farming. There are approximately 1,257 people working in agriculture and related industries in Kent County. (Note that this number does not include the people involved in the manufacturing side of livestock and crop production.)

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Healthcare is an important employment sector in Kent County. According to the 2022 ACS, there are 12,912 people working in healthcare and social assistance in the County. Bayhealth Medical Center's Kent General Campus includes a physician residency program, which is instrumental for training new physicians and maintaining a healthcare workforce within the County.

Education is another key sector. According to the 2022 ACS, there are 8,003 people working in educational services in the County. Colleges in the area include Delaware State University, Delaware Technical Community College, and Wilmington University. Kent County is home to six public school districts: Smyrna, Capital, Caesar Rodney, Lake Forest, Milford, and Polytech. Although a small part of Woodbridge School District extends into Kent County, it is based in Sussex County.

A final sector worth discussing is public administration. According to the 2022 ACS, there are 6,765 people working in this sector in the County. This includes the Delaware state government (such as the state legislature, DelDOT, DNREC, and other departments), the Kent County government, and municipal governments. Many of these employees reside in Kent County, while others commute from neighboring counties.

Additional employment sectors in Kent County include manufacturing, construction, tourism, and others. For further information on this topic, please refer to the latest data from the US Census Bureau.[5]

Transportation System: Composition & Services

Roadways

The major roads that run north to south in Kent County include DE1, US13, and a small part of US113. These roads have the highest volume of vehicle traffic in the County. The roads that provide east-west connections include DE300, DE8, DE10, and DE14, as well as several others. DelDOT is responsible for the ownership and maintenance of approximately 90% of all roads throughout the State of Delaware.

Annual Average Daily Traffic (AADT) is used to describe the volume of vehicle traffic of a road. DE1 has the highest AADT of Kent County's roads, with the segment near Smyrna having more than 55,000 vehicles per day, and the segments near Dover and Milford having more than 45,000 vehicles per day. Note that this is an average from throughout the year, and daily numbers can be much higher than a recorded AADT. For example, DE1 can experience higher volumes during the summer months. By comparison, many of Kent County's rural roads have an AADT of less than 1,000.[6]

An important part of the MTP process is determining when the County's roadways will no longer be able to support their daily traffic volume. This was determined by modeling the roadways with input data for future population growth and planned roadway projects. By doing this, Dover Kent MPO can

[5] "DP03: Selected Economic Characteristics." US Census Bureau, 2022. https://data.census.gov/table/ACSDP1Y2022.DP03?t=Employment&g=050XX00US10001.
[6] "Traffic Counts." Delaware Department of Transportation (DelDOT), 2023. https://deldot.maps.arcgis.com/apps/webappviewer/index.html?id=4f76a1fa5b5c493cb3e1fad44a50dad1.

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then recommend projects in critical areas. The results of this exercise will be discussed further in Chapter 6: Travel Demand Model & Future Needs.

Figure 7: A diagram describing the Safe System Approach. Source: Federal Highway Administration (FHWA).

When studying a particular area, Dover Kent MPO examines the latest crash data to better understand the roadway's safety needs. This technique can also be used for the County as a whole, and it helps determine whether crashes are increasing or decreasing. According to data from the Delaware State Police, there were 32 roadway fatalities reported throughout the County in 2023, which was about 23% of the state's total. There were 33 fatalities reported in 2022, and 37 in 2021. This means despite state and local efforts to improve roadway safety, the number of fatalities has not decreased significantly in recent years. Roadway injuries have also not been reduced: there were 1,468 injuries reported in 2023, 1,429 in 2022, and 1,516 in 2021.[7]

Safety is the primary concern of Dover Kent MPO. This objective informs each of the MPO's regular tasks, including interaction with DelDOT and municipalities, public outreach and education, and the completion of studies. Dover Kent MPO, DelDOT, and other Delaware agencies follow a Safe System approach to transportation safety, which addresses several different aspects of the transportation network rather than focusing on a single aspect. The Safe System approach is part of the national strategy known as "Towards Zero Deaths," which looks at the entire transportation system with the goal of reducing the number of annual roadway deaths to zero.[8]

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[7] Delaware's Annual Traffic Statistical Report. Delaware State Police, 2023. https://dsp.delaware.gov/wp-content/uploads/sites/118/2024/04/2023-Annual-Traffic-Statistical-Report.pdf.
[8] "Zero Deaths and Safe System. Federal Highway Administration (FHWA), 2024. https://highways.dot.gov/safety/zero-deaths.

Transportation Improvement Districts

To improve coordination between land use change and requisite improvements to the transportation system needed to support growth and development, DelDOT has instituted a system of Transportation Improvement Districts (TIDs). A TID is defined by DelDOT as: *"A geographic area defined for the purpose of securing required improvements to transportation facilities in the area."* TIDs have been established mostly in areas experiencing development pressure or that are planned for future growth as an alternative to individual development projects making limited roadway improvements on a development-by-development basis.

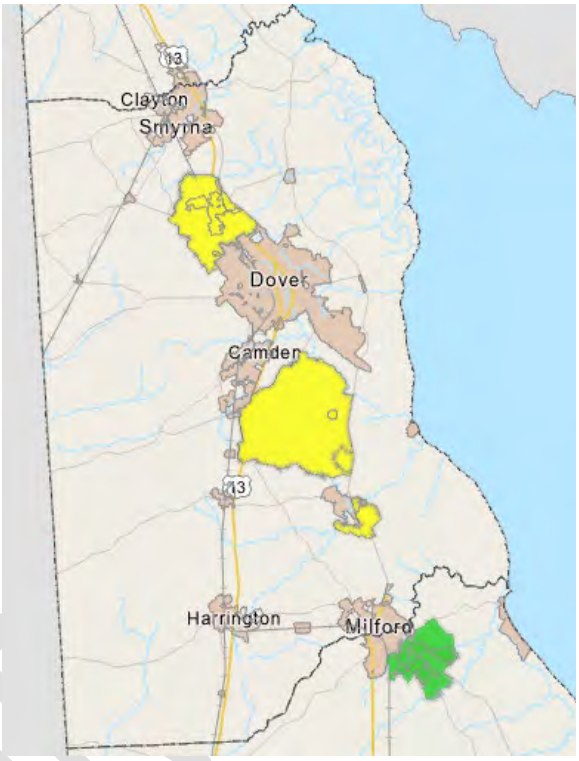

Figure 8: The locations of each of the four TIDs in Kent County, marked in yellow. Source: DelDOT.

Once a TID area has been identified and formalized, DelDOT performs a detailed traffic analysis and determines the future cost of needed roadway improvements in the TID at full build-out. Developers in the TID are then assessed a predetermined Transportation Impact Fee that represents a pro rata share of the cost of roadway improvements within the TID as a whole. Within a TID, DelDOT controls the timing and completeness of necessary roadway improvements, and developers are not burdened with the additional time associated with traffic analysis and making piecemeal road improvements themselves.

In Kent County, currently there are four (4) TIDs "under development" by DelDOT shown in Yellow on the Map above. These TIDs are situated as follows: 1) in the Cheswold Area north of Dover; 2) Magnolia Area southeast of Camden; 3) Little Heaven Area adjoining SR 1 at the Bowers Beach Interchange; and, 4) South Frederica Area north of Milford. These TIDs remain under development at this time and are not yet "operational". The area shown in Green on the south side of the City of Milford is known as the Southeast Milford TID located in Sussex County and is operational.

Dover Kent MPO fully endorses the formation of TIDs in Kent County and anticipates the four (4) areas defined to be advanced to "operational" status during this MTP Planning period.

Freight System

The freight industry is one of the key pieces to Kent County's economy. This industry includes several different types of transportation, including trucks, railways, and air cargo. Goods such as agricultural products, fuel, pharmaceuticals, and manufactured products are transported by freight in the County. Businesses in Dover and Harrington rely on the rail network to transport goods. The roadways as routes to move freight are essential to the success of various businesses, as well as the mission of Dover Air Force Base.

The freight industry depends on a reliable transportation system. For trucks, this means well-maintained roads, designated truck routes that avoid excessive delays, and a sufficient number of rest areas and designated parking. For trains, it means well-maintained rail lines, safe railroad crossings, and compatible use between freight operators and neighbors. It is also important to have available properties along rail lines and designated truck routes that may be used for freight purposes.

One of the recurring concerns throughout Kent County is the lack of available truck parking. This is a problem because when truck drivers cannot find a place to leave their vehicle, they resort to parking on residential streets and near the exit ramps of DE1, which creates challenges for both the drivers and the municipalities. A safe, designated truck parking area in a strategic location would help address this concern.

For more information on Delaware's freight industry, please refer to the 2022 *Delaware State Freight Plan*.[9]

Public Transportation

Public transportation in Delaware is handled by Delaware Transit Corporation (DTC). The multi-modal transit system run by DTC is known as the Delaware Administration for Regional Transit (DART), which uses both diesel and electric buses to meet the public transportation needs of Kent County. Fixed-route buses are currently in use, and paratransit services are also available. Note that the *DART Reimagined* transit report was recently completed, and if its findings are implemented statewide, then DART services may transition from primarily fixed-route to "micro transit" (or on-demand transportation).[10]

Figure 9: A DART bus on New Street in Dover.

According to the 2022 ACS, approximately 0.6% of Kent County workers take public transportation to their place of employment. This is lower than the state average of 1.4%, and significantly lower than the national average of 3.1%. Most of the County's rural communities do not have DART bus service, as well as some neighborhoods in urban areas.

Passenger rail services were present in Kent County until the 1960s, with stations located in each of the major communities (such as George V. Massey Station in Dover). Today there is no passenger rail in the County. There are, however, rail lines that serve commercial purposes. A currently in-progress study, funded by the Federal Railroad Administration (FRA), will determine the feasibility of a new

[9] *Delaware State Freight Plan*. Delaware Department of Transportation (DelDOT), 2022. https://deldot.gov/Business/freight/.
[10] *DART Reimagined: Reshaping Transit Services to Meet the Needs of Today and Beyond*. Delaware Transit Corporation (DTC), 2024. https://www.dartreimagined.com/.

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passenger rail connection from Wilmington/Newark in New Castle County to Salisbury/Berlin in Maryland; this line, if completed, will pass through Kent and Sussex Counties.

Bicycle and Pedestrian Connectivity

Dover Kent MPO contributes to bicycle and pedestrian connectivity in several ways. In addition to transportation studies, municipal plans, and regional bicycle plans, the MPO recommends specific projects through the MTP. These projects are then able to be studied further by DelDOT and added to the project pipeline. There are various sources of funding that Dover Kent MPO and other agencies regularly use to improve bicycling and walking conditions, including the Transportation Alternatives Program (TAP), the Congestion Mitigation and Air Quality (CMAQ), the DelDOT Bicycle and Pedestrian Pool, and the Bikeway Innovation Grant.

Figure 10: A bicyclist alongside motor vehicles on Saulsbury Road in Dover.

While there are many gaps in the bicycle and pedestrian networks of Kent County, there are some existing trails that provide excellent off-road connectivity. These include the Capital City Trail, St. Jones Greenway, and Senator Bikeway in Dover; the shared use path along DE10; the shared use path along the POW-MIA Parkway; and the shared use path on Front Street in Milford. Note that these trails are all located in urban areas.

Rural areas are more challenging to navigate without a personal vehicle, due to the lack of separation from vehicle traffic. The roads in rural areas also tend to be narrower and sometimes have high speed limits. One way to measure roadway safety for bicyclists is to use the road's Level of Traffic Stress (LTS), which is a score between 1 (safe for all types of bicyclists) and 4 (accessible to only the most experienced bicyclists). As an example, many of the rural roads to the west of Dover (such as Denneys Road, Nault Road, and Pearsons Corner Road) have an LTS of 4. This means the dangerous conditions make this area largely inaccessible for bicyclists.

According to the 2022 ACS, approximately 2.2% of Kent County workers either walk or bike to their place of employment. This is lower than the state average of 2.5% and the national average of 2.9%. Historically these modes of transportation have often been overlooked, which is why Dover Kent MPO works hard to ensure those without a personal vehicle can safely reach their destination.

Air Facilities

Dover Air Force Base is by far the largest air facility in Kent County, but it is primarily used for military purposes. The exception to this is the Civil Air Terminal, which, through a joint-use agreement with the US Department of Defense, allows certain non-military aircraft to use the facility's runways. The largest non-military air facility in Kent County is Delaware Airpark, which is located to the west of Cheswold and is also home to the Delaware State University Aviation School. The remaining airports in the County are small in comparison, though they are used for a wide range of purposes, including

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firefighting, law enforcement, air medical services, search-and-rescue, crop-dusting, mosquito-spraying, aircraft salvaging, and recreation. For more information on the air facilities of Kent County, please refer to the 2023 *Kent County Airport Inventory*.[11]

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[11] *Kent County Airport Inventory*. Dover/Kent County MPO, 2023. https://doverkentmpo.delaware.gov/files/2023/03/Airport-Inventory-Final-3.2023.pdf.

CHAPTER 4: Performance Measures & Targets

The Metropolitan Transportation Plan (MTP) has adopted a total of four (4) specific Performance Measures. Three (3) of these Performance Measures were established by the Federal Highway Administration (FHWA) and adopted by the Delaware Department of Transportation and Dover Kent MPO in 2018. They are: 1) PM 1 (Safety); 2) PM 2 (Pavement & Bridge Condition); and 3) PM 3 (System Performance, Freight and Congestion Mitigation & Air Quality). The fourth Performance Measure adopted by Dover Kent MPO is known and referred to as the Transit Asset Management Performance Measure (or TAMP) developed by the Delaware Transit Corporation and adopted by Dover Kent MPO in 2019.

It is important to point out that while Dover Kent MPO does not promulgate jurisdiction-specific performance measures or targets on its own, nor gather performance data on a regular and ongoing basis, it has adopted these specific statewide Performance Measures and associated Targets to guide and inform our program of work and to strive in support of the Delaware Department of Transportation in the pursuit thereof.

Below is a summary of our adopted Performance Measures (or PM's) and attendant Targets:

PM1 Safety: (Dover Kent MPO Goal: Safely moving people and commodities efficiently on connected and reliable transportation networks). ***Adopted on 03-07-18.***

PM1 Targets:

A) Reduction of Motor Vehicle Crash Fatalities:

- Reduce Statewide Vehicle Crash Fatalities over 5 Years from 119.4 to 119
- Reduce Statewide Motor Vehicle Crash Fatalities by 3 per Year
- Reduce Statewide Motor Vehicle Crash Fatalities 50% by 2035

B) Reduction in Ratio of Fatalities per 100 Million Vehicle Miles Traveled (VMT):

- Reduce Statewide Ratio over 5 Years from 1.226 to 1.190 Fatalities Per 100 Million VMT

C) Reduction in Number of Serious Injuries from Motor Vehicle Crashes:

- Reduce Number of Serious Injuries over 5 Years from 577.4 to 507.4
- Reduce Number of Serious Injuries by 15 per Year
- Reduce Number of Serious Injuries 50% by 2035

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D) Reduction in Number of Non-Motorized Fatalities & Serious Injuries Combined:

- Reduce Combined Statewide Number of Non-Motorized Fatalities/Serious Injuries over 5 Years from 97 to 85 (12%)

PM2 Pavement & Bridge Conditions: (Infrastructure Conditions) ***Adopted 11-14-18.***

PM2 Road Pavement Condition Targets:

- % of Interstate Pavement in Good Condition - ≥ 50%
- % of Interstate Pavement in Poor Condition - ≤ 5%
- % on Non-Interstate NHS Pavement in Good Condition- ≥ 50%
- % of Non-Interstate NHS Pavement in Poor Condition- ≤ 2%

PM2 Bridge Condition Targets:

- % of Bridges Classified as in Good Condition - ≥ 10%
- % of Bridges Classified as in Poor Condition - ≤ 10% of Bridge Deck Structurally Deficient

PM3 Travel Time Reliability, System Performance, Freight & CMAQ: ***Adopted 11-14-18.***

PM3 Travel Time Reliability:

- % Person-Miles Traveled on Interstate that are "Reliable"- >75%
- % Person-Miles Traveled on Non-Interstate NHS that are "Reliable" - >89%
- Annual Hours of Peak Hour Excessive Delay (PHED) per Capital – 17.2 Hrs/Capita

Freight Movement:

State Long Range Transportation Plan:

- Truck Travel Time Reliability (TTTR) Ratio of Peak Hr Delay /Normal Delay – < 2.5

Congestion Management & Air Quality (CMAQ):

- % Non-Single Vehicle Occupancy (N-SOV) Travel – 4 Year Target of 28.1%
- Total Emissions Reduction

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- Volatile Organic Compounds (VOC) – 2 Year Target – 10.521 kg/D
  – 4 Year Target – 26.23 kg/D
- Nitrogen Oxides (NOx) - 2 Year Target – 7.354 kg/D
  – 4 Year Target – 16.084 kg/D
- Particulate Matter-Fine (PM 2.5) - 2 Year Target - 3.291 kg/D
  - 4 Year Target – 3.294 kg/D

TAM Performance Measures: ***Adopted 03-06-19.***

- % of Revenue Vehicles that meet or exceed FTA Useful Life Benchmark - <10%
- % of Other Equipment that meets or exceeds FTA Useful Life Benchmark - <10%
- % of Facilities Rated Less than Adequate (<3 TERM Score) - <20%
  (TERM -Transit Economic Requirement Model Scoring System)

In addition to the above Performance Measures, on March 6, 2024, the MPO Council unanimously adopted the 2022 Transit Safety Performance Targets as promulgated and adopted by the Delaware Transit Corporation. The Table below provides a summary of the 2022 Transit Safety Performance Targets as adopted:

Transit Safety Performance Management

2022 Delaware Transit Corporation (DTC) Safety Performance Targets

**MDBF: Mean Distance Between Major Mechanical Failures (in miles)*

	Three-Year Average System Results for DTC		Performance Target
Mode of Service	**FIXED ROUTE**	**PARATRANSIT**	
Vehicle Miles (VRM)	**8,518,626**	**6,544,790**	
Fatalities			
Total	**0**	**0**	**Maintain at 0%**
Rate per 100K VRM	**0**	**0**	
Injuries			
Total	**59**	**16**	**Reduce by 10%**
Rate per 100K VRM	**0.69**	**0.19**	
Safety Events			
Total	**26**	**9**	**Reduce by 10%**
Rate per 100K VRM	**0.31**	0.11	
System Reliability			
Total MMFs	**1,742**	**221**	
VRM/MMF*	**4,894**	**29,614**	**Increase by 10%**

SOURCE: **Delaware Transit Corporation Safety Plan – December 2022**

Similar to the other Performance Measures and Targets discussed above, while Dover Kent MPO is not directly in the business of providing Public Transportation Services, it endeavors to support the mission of the Delaware Transit Corporation in attaining adopted Performance Targets through the projects and studies undertaken by Dover Kent MPO.

Performance Measure Targets Summary Report

On an annual basis, the Delaware Department of Transportation and the Delaware Office of Highway Safety work collaboratively to collect essential highway safety performance data and to monitor statewide progress toward attainment of adopted Performance Targets. Part of their collective work involves adjustments to Performance Targets based upon data collected over a 5 Year rolling average. Below is a Summary Table from their recent 2024 Safety Performance Measure Targets Report dated 07-25-23:

Year	SPM # 1 Number of Fatalities	SPM # 2 Rate of Fatalities	SPM # 3 Number of Serious Injuries	SPM # 4 Rate of Serious Injuries	SPM # 5 Combined Number of Non-Motorized Fatalities & Serious Injuries
2018	111	1.09	377	3.70	93
2019	132	1.29	402	3.92	104
2020	116	1.39	447	5.36	95
2021	139	1.37	558	5.50	114
2022	165	1.61	587	5.72	110
2022 Baseline* *(2018-2022 Rolling Average)*	132.6	1.349	474.2	4.841	103.2
Required CY2023 and CY2024 Average to Match Baseline	121.5	1.189	389.5	3.814	98.5
2024 Targets *(2020-2024 Rolling Average)*	108.2	1.104	424.3	4.328	82.4
Required CY2023 and CY2024 Average to Match Target	60.5	0.576	264.75	2.531	46.5

** 2022 Baseline values are based on best available data at time of target setting and are subject to change when FARS and HPMS data are finalized.*

Delaware's 2024 safety performance measure targets based on 5-year rolling averages are summarized below:

1. Delaware's 2024 5-year rolling average target for the *number of fatalities* is **108.2**.
2. Delaware's 2024 5-year rolling average target for the *rate of fatalities* (per 100 million vehicle miles traveled) is **1.104**.
3. Delaware's 2024 5-year rolling average target for the *number of serious injuries* is **424.3**.
4. Delaware's 2024 5-year rolling average target for the *rate of serious injuries* (per 100 million vehicle miles traveled) is **4.328**.
5. Delaware's 2024 5-year rolling average target for the *combined number of non-motorized fatalities and serious injuries* is **82.4**.

***SOURCE:* Delaware Office of Highway Safety – 2024 Safety Performance Measures Summary**

CHAPTER 5: Growth Trends & Forecast

The value of the Metropolitan Transportation Plan as a long range plan for the community is directly connected to the veracity of a credible Growth Forecast for the jurisdiction of Kent County, Delaware. For purposes of this MTP, a Growth Forecast Model has been developed that projects the quantities and locations of future growth in Population, Households, and Employment at the Traffic Analysis Zone (TAZ) level. Traffic Analysis Zones are units of geography developed by the Delaware Department of Transportation for analysis and planning purposes that are fairly homogeneous in terms land use and built composition, and the TAZ boundaries are generally defined by physical features such as roads, rivers and other waterbodies, railroads, and geo-political boundaries. At the present time, Kent County, Delaware is comprised of a total of 266 individual Traffic Analysis Zones.

In developing the Growth Forecast Model for this MTP, we began with base year 2020 Decennial Census data for total Population, Households, and Employment as recorded by the US Census Bureau. The 2020 Census Data has been georeferenced to the Traffic Analysis Zone (TAZ) level. Future Growth in Population, Households, and Employment is then analyzed and modeled for the years 2030, 2040 and 2050 utilizing the Demographic Projection Series for Kent County, Delaware developed by The Delaware Population Consortium.

Kent County Growth Projections
Control Totals

DELAWARE POPULATION CONSORTIUM PROJECTIONS **					
Growth Metric	2020*	2030	2040	2050	% Change
Population	181,497	196,709	205,139	211,150	16.3% ↑
Households	68,224	77,683	82,151	84,615	24.0% ↑
Employment	66,246	74,416	77,965	81,136	22.5% ↑

* Source: US Census Bureau - 2020 Census (adjusted to remove Group Quarters Population)

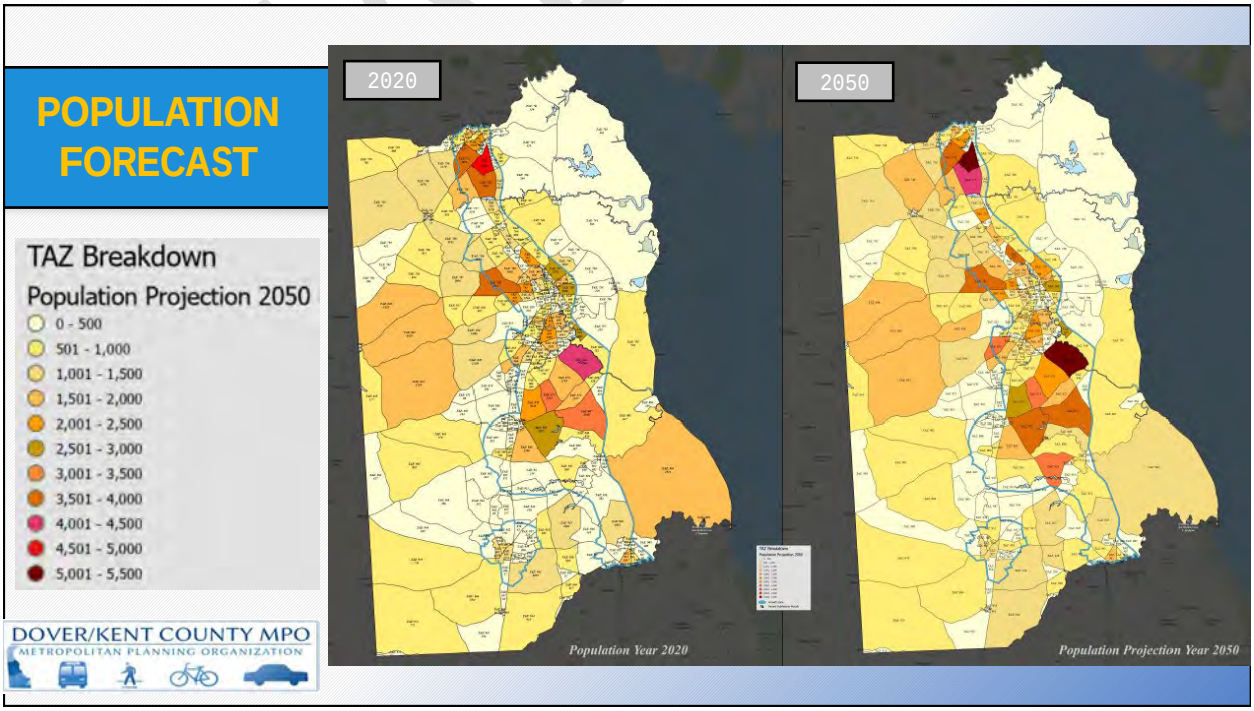
** Source: Delaware Population Consortium Projection Series - 10/26/23 (adjusted to remove Group Quarters Population)

DOVER/KENT COUNTY MPO
METROPOLITAN PLANNING ORGANIZATION

For this MTP, DelDOT [through the Wilmington Area Planning Council (WILMAPCO)] provided Dover Kent MPO with a preliminary Growth Forecast for the years 2030, 2040 and 2050 with Control Totals for Population, Households and Employment for each projection year. Dover Kent MPO then analyzed this preliminary data for relative accuracy and reasonableness for each Traffic Analysis Zone and applied "ground-truthing adjustments" to the Growth Forecast to more accurately reflect locations of existing and future growth in Kent County. As we met with our Municipal and County partners through the winter and spring of 2024, we shared the TAZ Forecast Data in map form as received from DelDOT and solicited review and input to further verify accuracy.

Our georeferencing of Projection Data is based upon several factors including: recent growth patterns and trends; current development activity; approved but not built development projects; the availability of supporting infrastructure such as central sanitary sewer and water services; and, local and regional growth management and land preservation policies, strategies, and regulatory programs.

The Growth Forecast Model was completed in June of 2024 and submitted to DelDOT for the purposes of developing Future Travel Demand Models for each of the projection years 2030, 2040 and 2050. The Travel Demand Models project future traffic volumes based upon increases in Population, Households and Employment for each of the projection years and identify road segments, intersections, and corridors that may require improvements in the future to increase roadway capacity to accommodate future traffic volumes. Various roadway improvement scenarios are incorporated into the Travel Demand Modeling to analyze the beneficial impacts of certain roadway improvements on traffic flows through the roadway network.



The results of the Travel Demand Modeling is discussed further in Chapter 6 (Travel Demand Model & Future Needs).

Growth Trends

The Delaware Population Consortium forecasts a continued modest rate of Population Growth for Kent County through the planning period to 2050 at an annual rate of 0.55%. Over the 30 year period from 2020 to 2050, the resident population is expected to increase by 29,653 persons resulting in a total population of 211,150 by 2050. Nearly all of this new population will reside within the regulatory Growth Zone established by Kent County Government following the north/south Delaware Route 1/US Route 13 transportation corridor. Significant population growth is expected in and around the towns of Smyrna, Camden-Wyoming, Frederica, Milford and Harrington, and in the unincorporated area surrounding the town of Magnolia. The City of Dover is forecast to grow to 44,653 people, an increase of over 6,700 new residents.

The rate of growth in Households is forecast to outpace growth in Population reflecting a trend toward fewer persons per household. Employment Growth is forecast to occur mostly within the Growth Corridor described above, mostly within municipal boundaries, at an annualized rate of about 0.75%.

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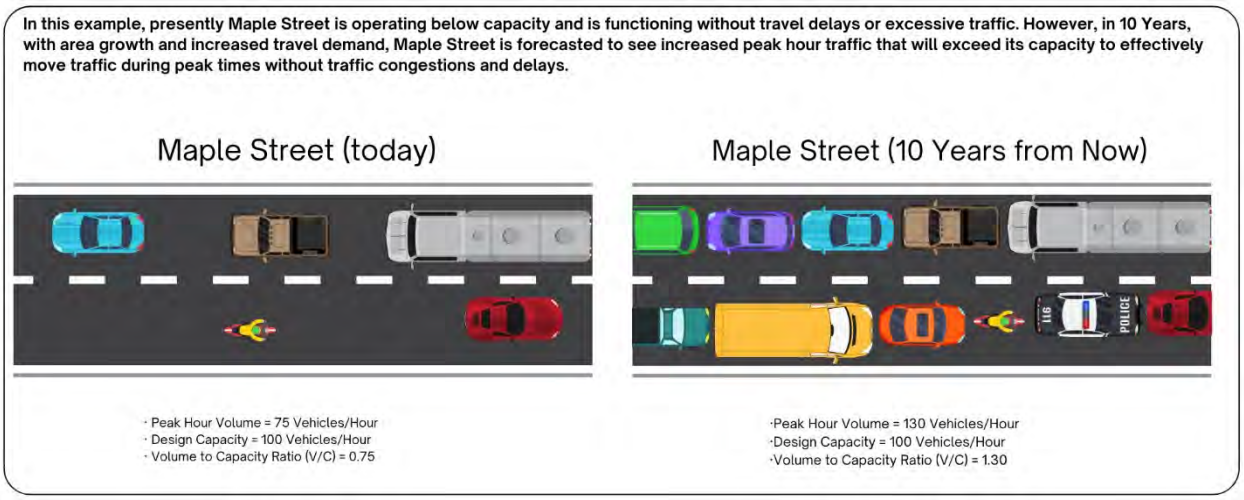
CHAPTER 6: Travel Demand Model & Future Needs

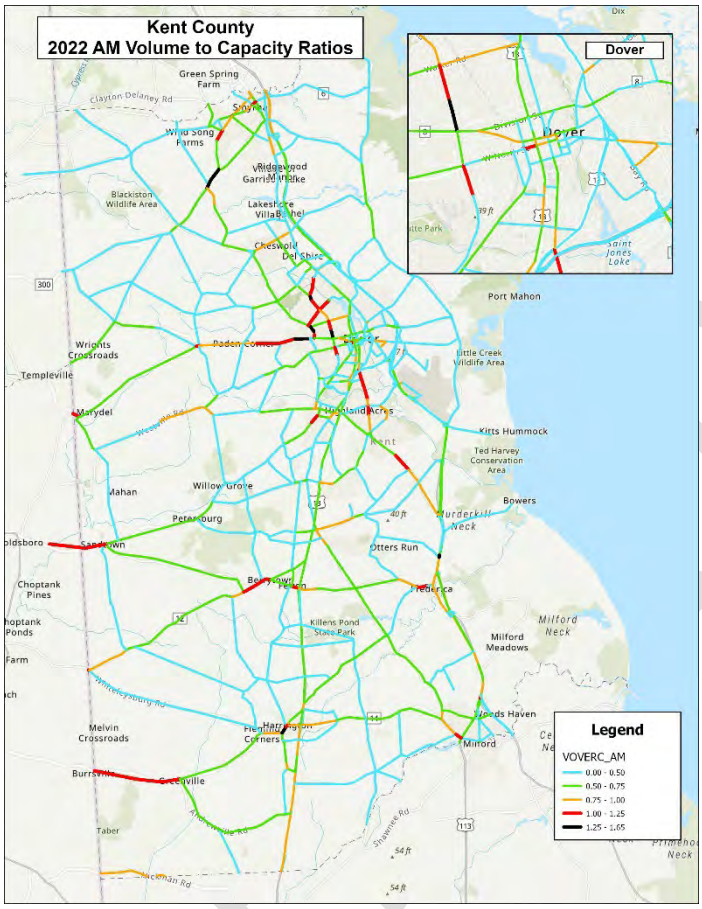
As explained in Chapter 5, the Growth Forecast Model was developed at the Traffic Analysis Zone (TAZ) level to depict future growth in Population, Households, and Employment for the Projection Years of 2030, 2040, and 2050. The Growth Forecast Model data for the Projection Years was then utilized to model future Travel Demand in the form of future motor vehicle traffic volumes and resultant impacts to the existing roadways system. For the analysis of Future Travel Demand, all roadways within Kent County have been analyzed including all Major and Minor Arterial and Collector Roadways. For purposes of this Plan, local streets in residential and commercial subdivisions, industrial parks, and private roads are not included in this Travel Demand Modeling. However, the trip generation and distribution of motor vehicles from such local and private streets is captured and analyzed as they contribute to the volume impacts on the roadway network.

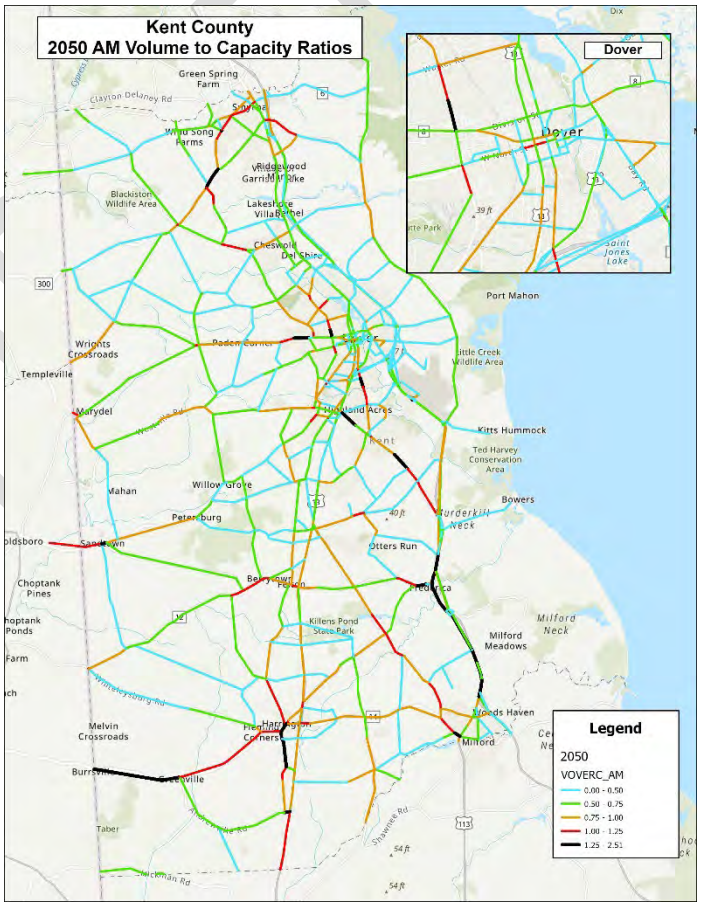
Each roadway (and roadway segment) has an established design capacity for adequately accommodating travel and traffic loading and distribution which we refer to as Existing Capacity. Road segments are linear sections of a roadway between nodal points (or intersection points) such as intersections with other roadways, site entrances, railroad crossings and terminal points. Travel Demand modeling software calculates Future Motor Vehicle Trip Generation and Distribution for Peak Hours in the morning and evening within the transportation network based upon future growth data inputs (i.e. Growth Forecast Data). Future Vehicle Trip Generation and Distribution is expressed as Future Volumes of motor vehicles at the road segment level for each roadway segment within the Plan Area.

Future Traffic Volume is analyzed against the Existing Traffic Capacity for each road segment during the AM and PM Peak Hour (commonly referred to as "Rush Hour"). The resultant Volume to Capacity Ratio (or V/C Ratio) is a measure of the capability of the existing roadway segment to accommodate future traffic. The concept of Volume to Capacity Ratio is further explained in the example below.



For this Plan, Travel Demand Modeling was performed by Whitman Requardt Associates (WRA) under contract with the Delaware Department of Transportation (DelDOT). Below are two (2) maps of the Kent County roadway network. The map on the left depicts Existing AM Peak Hour Volume to Capacity Ratios. The map on the right depicts Future AM Peak Hour Volume to Capacity Ratios for the year 2050. Road Segments highlighted in Red and Black reflect those for which Future Volumes will exceed existing Capacities without roadway improvement interventions. Similar maps for AM and PM Peak Hour Volume to Capacities Ratios for 2030, 2040 and 2050 may be found in Appendix A.





The Travel Demand Modeling series for 2030, 2040 and 2050 has enabled MPO Staff to analyze forecasted V/C Ratio data and to identify travel corridors and specific locations within our Roadway Network that will experience significant capacity deficiencies in the future. The following section provides a list and description of the most significantly impacted corridors and locations and offers recommendations for addressing forecasted impacts through the transportation planning process.

Travel Corridors Recommended for Future Study

Studies recommended in this section would involve a wholistic analysis of the travel corridor from point to point. Existing conditions for all modes of travel would be evaluated and projected travel demand modeling will serve as the targeted benchmark for the corridor. All studies will include plan recommendations for accommodating for all modes of travel through the corridor in accordance with Complete Streets principles advanced by the Delaware Department of Transportation (DelDOT).

SR 300 Corridor from SR 6 (Glenwood Avenue) south to Shaws Corner Road (Kenton). Roadway Capacity is currently exceeded between Underwoods Corner Road and School Lane in Clayton and between Sunnyside Road and Mt. Friendship Road during the AM Peak Hour. The segment from Underwoods Corner Road to School Lane has been selected for immediate study as part of the 2024 Unified Project Work Plan. By 2030, the segment of SR 300 from SR 42 to Shaws Corner Road is forecast to experience volumes exceeding the existing roadway capacity during both the AM and PM Peak Hours. Recommended Study Initiation: Spring 2026.

South State Street Corridor from US 13 south to SR1. This corridor currently exhibits Peak Hour deficiencies on segments between SR 10 and US 13, especially during the AM Peak. Roadway capacity challenges are forecast to continually worsen through 2040 and beyond, with particularly significant impacts during the AM Peak Hour. A phased Corridor Study is recommended in this instance, with Phase I focusing on segments between US 13 and SR 10. Phase II would study segments from SR 10 south to Irish Hill Road in Magnolia. Phase III would study segments from Irish Hill Road south to SR 1. Recommended Study Initiation Schedule: Phase I – Spring 2026; Phase II – upon completion of Phase I Study; Phase III – upon completion of Phase II Study.

College Road Corridor from Kenton Road to US 13. Currently College Road experiences capacity deficiencies during both the AM and PM Peak Hours. An improvement project is slated to begin in 2026 to incorporate sidewalk on the section of College Road from Kenton Road to McKee Road. Travel Demand Model runs indicate that the section of College Road from McKee Road to Delaware State University will experience AM Peak Hour deficiencies beginning in 2030 and the entire corridor is forecast to suffer Peak Hour deficiencies beginning in 2040. Recommended Study Initiation: Spring 2027.

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SR 1 Corridor from Bowers Beach Interchange south to US 113 Exits in Milford. This corridor is currently experiencing capacity exceedances during Peak Hours at both the Bowers Beach Exits and at Barratt's Chapel On-Ramp. Travel demand modeling reveals increasing capacity deficiencies in 2030 with increasing volumes in 2040 through 2050. Significant congestion and delays are forecast by 2050 during the AM and PM Peak Hours. It is anticipated that a Study of a corridor of this magnitude would span multiple budget cycles. Recommended Study Initiation: Spring 2028.

SR 12 Corridor (Felton) from Hopkins Cemetery Road eastward to Canterbury Road. Roadway capacity exceedances occur currently during the AM and PM Peak Hours on the segment between Sandtown Road and Peach Basket Road. AM Peak Hour congestion also currently occurs on Main Street from Little Mastens Corner Road eastward to US 13. These conditions are forecast to persist and worsen through 2050. Recommended Study Initiation: Spring 2029.

SR 14 Corridor Study from US 113 in Milford westward to the Maryland State Line. This Study is recommended to be accomplished in two (2) phases. The Phase I Study is recommended to focus on the corridor from US 13 in Harrington, westward to the Maryland State Line. This section of the corridor is currently experiencing peak hour capacity deficiencies from the Maryland State Line to Arthursville Road and in central Harrington on Commerce Street between Walt Messick Road and Clark Street. Volumes on these road segments are forecast to increase further by 2030. A Phase II Study is recommended from US 13 eastward to US 113 in Milford. SR 14 from US 113 to Williamsville Road is currently experiencing Peak Hour deficiencies. Traffic volumes are forecast to increase through 2050 resulting in capacity shortfall between US 113 and SR 15 (Canterbury Road) by 2040. Recommended Study Initiation: Phase I - Spring 2030; Phase II – Spring 2035.

SR 15 (Canterbury Road) Corridor Study from SR 14 (Milford) northward to US 13 at Canterbury. Canterbury Road is an important travel route between Milford and Central Kent County and US 13. Travel Demand Model runs reflect increasing volumes and minor capacity exceedances at a few intersections by 2030. Peak Hour capacity exceedances appear more significant by 2040 on segments between Carpenter Bridge Road and Waterside Drive and between Andrews Lake Road and Plymouth Road. By 2050, the AM Peak Hour traffic volume is forecast to exceed capacity from SR 14 to Waterside Drive south of SR 12 (Mid-State Road). Recommended Study Initiation: Spring 2033.

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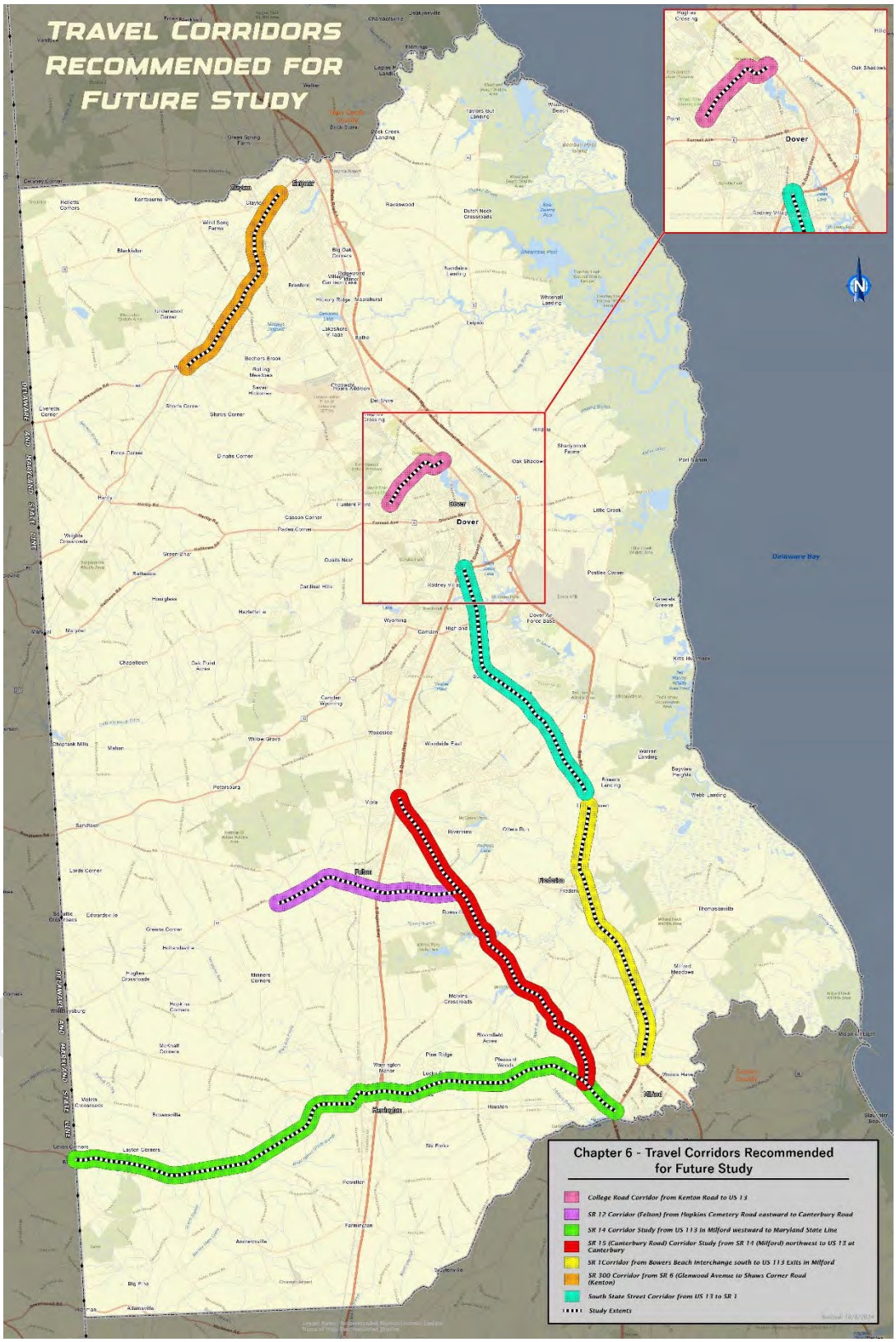
TRAVEL CORRIDORS RECOMMENDED FOR FUTURE STUDY
Dover
Delaware Bay
Chapter 6 - Travel Corridors Recommended for Future Study
College Road Corridor from Kenton Road to US 13
SR 12 Corridor (Felton) from Hopkins Cemetery Road eastward to Canterbury Road
SR 14 Corridor Study from US 113 in Milford westward to Maryland State Line
SR 15 (Canterbury Road) Corridor Study from SR 14 (Milford) northwest to US 13 at Canterbury
SR 1Corridor from Bowers Beach Interchange south to US 113 Exits in Milford
SR 300 Corridor from SR 6 (Glenwood Avenue to Shaws Corner Road (Kenton)
South State Street Corridor from US 13 to SR 1
Study Extents

Potential Studies for Future Consideration

In addition to travel corridors with existing and future capacity shortfalls, Travel Demand Modeling also reveals specific road segments and locations where volumes will exceed capacity that may be the subject of future study by Dover Kent MPO. The following is a list of potential location specific studies for consideration during this MTP planning period.

Rising Sun Road Study. Model runs reveal excessive peak hour volumes from SR 10 to Old Mill Road beginning in 2030 with worsening conditions during the AM Peak Hour.

SR 8 Study from Mifflin Road to Dover High Drive. This segment of SR 8 is currently experiencing capacity exceedances during the AM and PM Peak Hours with the more severe volumes during the AM Peak Hour.

Frederica Road/SR 12 Study. Frederica Road runs parallel to SR 1 along the east side of the Town of Frederica and serves as the primary access point to SR 1 for north and south bound travelers to and from Frederica and SR 12 (Mid-State Road). Model Runs indicate that the AM Peak Hour roadway capacity of Frederica Road will be exceeded by 2030. The SR 12 approach to Frederica from the west is forecast to experience AM and PM Peak Hour deficiencies by 2030 as well between Carpenters Bridge Road and W. David Street. Peak Hour deficiencies are forecast to increase by 2040 with capacity exceedance of SR 12 extending westward to Andrews Lake Road.

Walker Road Study. Beginning in 2030, Travel Demand Model runs forecast capacity deficiencies in the AM Peak Hour for the segment of Walker Road from Pear Street to North State Street. Currently this section of Walker Road lacks bicycle travel accommodations as well.

North Street Study. Currently, North Street in Central Dover experiences capacity exceedances during the AM Peak Hour between South Queen Street and South Governors Avenue. This segment is also impacted during the PM Peak by 2030. The AM Peak Hour shortfall is forecast to extend to South State Street by 2030 as well.

US 13 Harrington/Farmington Corridor. By 2030, model runs begin to reveal capacity shortfall between Farmington and the Sussex County Line. By 2040, capacity stress appears

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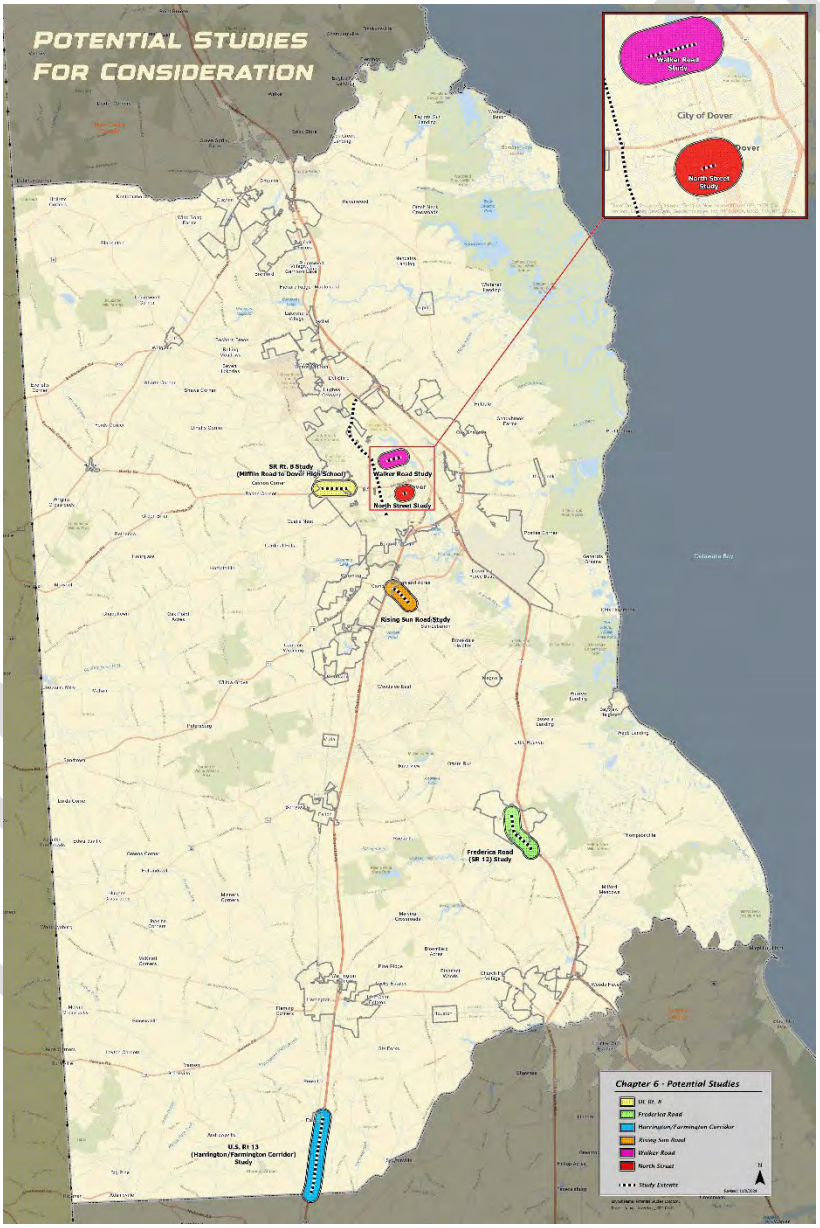
to negatively impact SR 14 TR (Harrington Truck Route) that runs parallel and to the west of US 13 south of the Delaware State Fair Complex during the AM Peak Hour. The volume impact becomes significant into Central Harrington from Dorman Street south to SR 14 TR.

US 113 North/South Study – Milford. In recognition of ongoing dialogue between the City of Milford and DelDOT concerning growth impacts affecting the US 113 Corridor we acknowledge that DelDOT is evaluating the need for potential improvements and/or alternative alignments to this important travel route. Dover Kent MPO is prepared to support this effort as it advances.



This list of Potential Studies are identified as possible projects that have considerable merit and that may or may not be pursued by Dover Kent MPO during this MTP planning period depending upon the backlog of active projects, available funding, and Staff resources. Dover Kent MPO will evaluate this list of the potential studies listed annually along with other active requests for consideration of inclusion above in our annual Plan of Work.

Travel Demand Modeling: Collector and Arterial Roads Not Reflected in Model

It is important to point out that several Collector Roads and/or portions of Collector Roads are not reflected in the Volume to Capacity Ratio modeling performed by DelDOT consultants WRA, Incorporated. While most are presently low volume roads in sparsely populated areas, there are several situated within areas that are in transition from rural areas to burgeoning suburbs. The absence of such Collector Roads from the Travel Demand Modeling should not be construed to mean that they do not currently experience capacity deficiencies or will not at a future time during this plan horizon. The following Table lists those Collector Roads and Collector Road Segments that are not reflected in the Travel Demand Model, but that are experiencing development induced capacity deficiencies and thus warrant further Volume to Capacity Analysis and improvement planning:

TAZ #	ROAD NAME	DelDOT Maint #	Road Class
721,723,728	Brenford Road	42	Major Collector
721,723	Rabbit Chase Road	145	Minor Collector
785	Chestnut Grove Road	158	Major Collector
891	Barratt's Chapel Road	371	Major Collector
893	Andrews Lake Road	380,385	Minor Collector
798	Bay Road (Dover)	7	Minor Arterial
955	Clark Street (SR 14 – Harrington)	60	Minor Arterial

With future iterations of the Metropolitan Transportation Plan, all roads designated in the DelDOT Functional Classification System as "Collector Road" (including "Minor" and "Major") and "Arterial Road" (including "Minor", "Other Principal", and "Expressway & Freeway") shall be reflected in the Travel Demand Modeling.

The full list of Collector Roads and Collector Road Segments not reflected in the Travel Demand Modeling may be found in Appendix B of this document.

Looking Toward the Future of Transportation

Much like the rest of the country, the future of transportation in Kent County, Delaware, is set to undergo a transformative shift driven by technological advancements, environmental

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sustainability, and the community's demand for safer, more accessible options. At the heart of this transformation is a growing focus on electric vehicles (EVs), a network of charging stations, autonomous vehicles, improved infrastructure for non-motorized transportation, alternative fuels, and the possible expansion of passenger rail services, all working together to create a cleaner, safer, and more efficient transportation network.

Electric Vehicles and Charging Stations

As the demand for electric vehicles continues to rise, Kent County is poised to embrace this change by expanding its network of EV charging stations. These stations should be strategically located along key corridors, public parking areas, and workplaces, ensuring drivers can recharge their vehicles conveniently. The goal is to build a comprehensive charging infrastructure that not only supports the current demand but also anticipates the growth of EV ownership in the years to come. Encouraging EV adoption will reduce greenhouse gas emissions, improve air quality, and promote a more sustainable transportation system. Partnering with private companies and public utilities will be critical in meeting this demand and providing reliable, fast-charging solutions across the region.

Autonomous Vehicles

One of the most significant benefits of autonomous vehicles is their potential to drastically reduce traffic-related accidents and fatalities. With advanced sensors, machine learning algorithms, and real-time data processing, AVs can react more quickly and accurately to dynamic road conditions than human drivers. They are equipped to detect obstacles, pedestrians, and other vehicles with a level of precision that minimizes the risk of human error, which is responsible for over 90% of traffic accidents today. Autonomous vehicles also have the potential to significantly improve mobility for many underserved residents, particularly for those who are elderly, disabled, or otherwise unable to drive. With self-driving cars, individuals who previously relied on public transportation, taxis, or ridesharing services can regain independence and mobility, allowing for greater participation in community life and access to employment, healthcare, and social activities. In addition to passenger vehicles, autonomous technology is expected to revolutionize freight and delivery services. Kent County could see an increase in autonomous trucks and delivery vehicles that will streamline logistics, reduce transportation costs, and increase supply chain efficiency. Autonomous trucks can operate continuously without breaks, reducing travel times and increasing the reliability of goods delivery.

Passenger Rail Expansion

With the region's growing population and economic development, the idea of creating passenger rail services in Kent County has resurfaced. This could play a pivotal role in reducing traffic

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congestion and offering residents an efficient and sustainable alternative to driving. While passenger rail has always seemed to be a “pipe dream, " the MPO with other stakeholders and partner agencies are currently studying how it can increase accessibility, provide connections to larger urban centers, and reduce the need for single-occupancy vehicle trips. By integrating passenger rail with other modes of transportation, such as bus services and bike-sharing programs, Kent County can create a seamless, multi-modal transportation system that enhances mobility and reduces the region's overall carbon footprint.

Alternative Fuels

In addition to electric vehicles, the future of clean transportation will be shaped by the development and deployment of alternative fuels, such as hydrogen, biofuels, and compressed natural gas (CNG). These cleaner energy sources could power a variety of vehicles, including public transit buses, commercial fleets, and heavy-duty trucks, helping to reduce emissions and dependence on traditional fossil fuels. Encouraging alternative fuels will require public and private investment in infrastructure, such as fueling stations and vehicle conversion capabilities. By embracing these alternatives, we can significantly reduce our environmental impact while supporting the local economy through green jobs and innovation.

Bicycle and Pedestrian Safety

Ensuring the safety of bicyclists and pedestrians is a crucial priority for the future of transportation in Kent County. As more residents choose active modes of transportation, such as biking and walking, we will invest in infrastructure improvements that prioritize safety and connectivity. Expanding the network of dedicated bike lanes, improving crosswalks, and adding pedestrian-friendly signal timing at intersections will help make roads safer for everyone. Additionally, the development of off-road trails, multi-use paths, and traffic-calming measures in residential areas will encourage more people to consider biking or walking as a viable option for commuting and leisure.

By adopting a complete streets approach all over the county, Kent County will create a transportation environment that accommodates all users, regardless of their mode of travel. This will improve safety, promote healthier lifestyles, reduce traffic congestion, be more equitable, and support the region’s sustainability goals.

Looking Ahead

In the coming decades, Kent County’s transportation landscape will evolve into a more sustainable, connected, and inclusive system that meets the diverse needs of its residents. Through investments

in EV infrastructure, passenger rail, alternative fuels, and road safety for bicyclists and pedestrians, the region will create a resilient transportation network that benefits the environment, economy, and quality of life for all. By embracing these innovations, Kent County will position itself as a forward-thinking community, prepared to meet the challenges and opportunities of the future.

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Chapter 7: Air Quality Conformity Analysis

Background

Importance of Air Quality Monitoring

Transportation is a sector that contributes heavily to poor air quality. Air pollutants that come from motor vehicles include carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NO_x), and volatile organic compounds (VOCs). These pollutants can cause respiratory issues and other health issues in humans. Due to the dangers associated with them, they are classified as "criteria air pollutants" by the Environmental Protection Agency (EPA) and are regulated at the federal level.

Ozone (O_3) is created through a chemical reaction between VOCs, NO_x, sunlight, and heat. There are two types of ozone: 1) Ozone that naturally forms in the Earth's upper atmosphere and provides a barrier against the sun's ultraviolet rays; 2) Ground-level ozone, which forms through emissions and is hazardous to human health. Ground-level ozone is classified as a criteria air pollutant, as it can lead to coughing, difficulty breathing, and the increased risk of an asthma attack. The pollutants that form ground-level ozone come from motor vehicles, factories, and other sources. These pollutants are some of the main contributors to smog.[12]

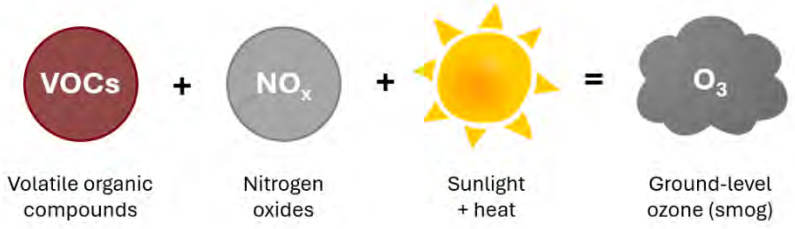

Figure 11: A simplified process of the creation of ground-level ozone.

Vehicles also release carbon dioxide (CO_2), which, while not a criteria air pollutant, is one of the largest contributors to global climate change. According to Delaware's Climate Action Plan (2021), transportation is the largest contributor of in-house greenhouse gas (GHG) emissions in Delaware; and within the transportation sector, light-duty passenger vehicles make up 61% of emissions. Climate change is expected to lead to higher average sea levels, higher average temperatures, and other consequences in Delaware. Please refer to Chapter 9: Operations & Management for more information on the impacts of sea level rise.

Air quality in Delaware is affected by both internal and external sources. For example, in the summer of 2023, wildfires in eastern Canada led to air quality alerts in Delaware and across the Mid-Atlantic, even in areas that did not traditionally experience poor air quality. Monitoring is an important part of

[12] "Ground-level Ozone Basics." United States Environmental Protection Agency (EPA), 2024. https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics.

keeping the public safe when there are harmful levels of ozone and particulate matter in the air. When this happens, it is advised that people limit the amount of time they spend outdoors, especially children, older adults, and those with pre-existing health conditions. Updates on current air quality are provided online by the Delaware Department of Natural Resources and Environmental Control (DNREC), Dover Kent MPO, and the Air Quality Partnership of Delaware (AQP).

Color	Level of Concern	Value	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

Figure 12: The Air Quality Index (AQI), which uses colors and numeric values between 0 and 500 to show the current level of concern for air pollution. Source. Delaware Department of Natural Resources and Environmental Control (DNREC).

History of Regulation

The Clean Air Act (or US Code, Title 42, Chapter 85) was first enacted in 1963. This was done in response to increasing concern about the impact of air pollution on public health. Amendments to the law were made in 1970, 1977, and 1990 to further bolster the Clean Air Act and clarify its role in monitoring air pollution in various sectors, including transportation.[13]

A key part of the Clean Air Act is the National Ambient Air Quality Standards (NAAQS), which monitors and sets limits for six criteria air pollutants. Those that stem from the transportation sector include ozone (O_3), carbon monoxide (CO), particulate matter (PM_{10} and $PM_{2.5}$), and nitrogen dioxide (NO_2). Areas that do not meet NAAQS requirements are designated as "nonattainment areas." Areas the previously did not meet the requirements are designated as "maintenance areas."

Transportation conformity has been a part of the Clean Air Act since 1977. The conformity requirements pertaining specifically to MPOs were enacted by the EPA in 1993 and have undergone several amendments since then. Section 176(c) of the Clean Air Act outlines the procedures for determining air quality conformity.

[13] "Evolution of the Clean Air Act." United States Environmental Protection Agency (EPA), 2023. https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act.

Current Policy

Federal Standards

The Clean Air Act is one of the primary pieces of legislation that oversees air quality conformity in the transportation sector. The Environmental Protection Agency (EPA) sets the Federal standards for ambient air quality, and these standards determine which areas are designated as nonattainment. The work behind air quality conformity is a collaboration between the Federal Highway Administration (FHWA), State DOTs, MPOs, and various other entities.

The goal of Section 176(c) of the Clean Air Act is to ensure that federally funded transportation projects are consistent with State air quality goals, as listed in the State Implementation Plan (SIP). In other words, by looking at each of the transportation projects and their projected emissions, MPOs can then determine whether the projects as a whole exceed the emissions budget. Projects that are consistent with State air quality goals are eligible for FHWA and Federal Transit Administration (FTA) funding.[14]

Note that there are many other examples of Federal legislation focused on air quality. These include emission standards for motor vehicles, reporting requirements for industries, and goals and strategies for reducing emissions. There are also various funding opportunities for increasing the energy efficiency of homes and businesses, enhancing nonmotorized transportation, and similar purposes.

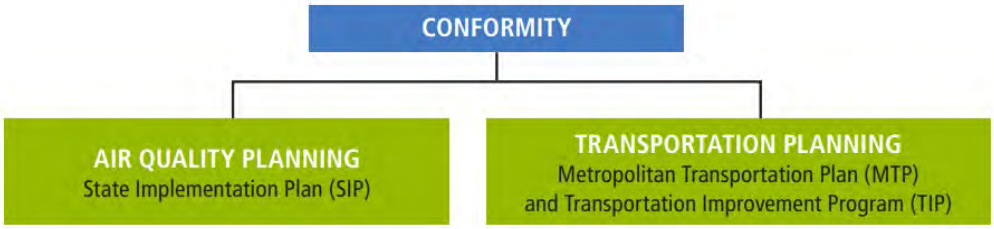

Figure 13: A diagram showing the connection between air quality and transportation planning through air quality conformity. Source: Federal Highway Administration (FHWA).

State Goals and Actions

The State of Delaware's air quality goals are outlined in its State Implementation Plan (SIP). This document is a roadmap for how Delaware plans to meet Federal emissions requirements. It includes details of ambient air quality standards, emissions limits from various sources, and the step-by-step process of carrying out air quality conformity alongside MPOs. DelDOT is the entity responsible for facilitating modeling of air quality conformity. Many of the steps listed in the SIP require coordination between FHWA, DelDOT, Delaware MPOs, and the EPA.

[14] *Transportation Conformity: A Basic Guide for State & Local Officials*. Federal Highway Administration (FHWA), 2017. https://www.fhwa.dot.gov/environment/air_quality/conformity/2017_guide/fhwahep17034.pdf.

Delaware's Climate Action Plan outlines the steps being used by the State for both mitigating greenhouse gas emissions and improving resilience against global climate change. While climate and greenhouse gases are the focus of this document, these steps have the added benefit of reducing emissions of harmful pollutants such as carbon monoxide and particulate matter. Many of the transportation goals are focused on improving access to electric vehicles (EV) or hybrid vehicles and adding charging stations throughout the state. (Municipalities in Kent County have recently been applying for Federal and State programs which have allowed them to acquire EVs and charging stations.) Aside from this, there are goals that relate to other modes of transportation, such as creating new opportunities for walking and biking, and lowering the cost of public transit.

Figure 14: Traffic on US Route 13 in Dover.

Across all sectors, the State of Delaware intends to reduce greenhouse gas emissions by 26% to 28% by 2025 (as compared to 2005 levels). A goal specific to transportation is to reduce vehicle miles traveled (VMT) within the state by 10% by 2030 by offering more opportunities for nonmotorized travel. A more recent goal from the State is to have 82% of new vehicles sold in Delaware to be zero-emission by 2032; rather than restricting the use of internal combustion engine vehicles, these rules are intended to expand the availability of EVs and hybrid vehicles for consumers. Other steps are also being taken to maintain clean air at the State level.

For more details on greenhouse gas mitigation, please refer to Delaware's Climate Action Plan.[15] For more information on transportation conformity in Delaware, please refer to the Delaware SIP.[16]

MPO Goals and Actions

As a Metropolitan Planning Organization, Dover Kent MPO is responsible for carrying out air quality conformity for transportation projects. Included in the State of Delaware's SIP is a description of tasks the MPOs must complete to meet Federal requirements. These include regularly developing a Unified Planning Work Program (UPWP), Metropolitan Transportation Plan (MTP), and Transportation Improvement Program (TIP); approving transportation and socioeconomic data for use in air quality analysis; and demonstrating that Transportation Control Measures (TCMs) are implemented in a timely fashion. The MTP is updated every four years.

[15] *Delaware's Climate Action Plan*. Delaware Department of Natural Resources and Environmental Control (DNREC), 2021. https://dnrec.delaware.gov/climate-plan/.
[16] "Delaware SIP: Regulation 1132, Transportation Conformity." United States Environmental Protection Agency (EPA), 2008. https://www.epa.gov/air-quality-implementation-plans/delaware-sip-regulation-1132-transportation-conformity.

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Maintaining healthy air is a goal that Dover Kent MPO actively works towards. The expected impact to air quality is one of the criteria used by the MPO during project scoring, and projects that reduce roadway emissions are given a higher score. The MPO also works closely with DNREC and DelDOT in initiatives such as promoting alternative modes of transportation; seeking funding for bicycle and pedestrian projects; filling gaps in the DART public transportation network; researching the potential for passenger rail in southern Delaware; planning for EV charging networks in Kent County; and supporting the use of alternative fuels such as hydrogen.

Another significant activity from the MPO is its participation in the Air Quality Partnership of Delaware (AQP), a public/private coalition of businesses, agencies, and individuals interested in clean air. The AQP regularly conducts outreach with the goal of raising awareness and informing Delawareans about practices that improve air quality and public health. It also uses social media to alert the public of changes in regional air quality. Additional members of the AQP include WILMAPCO, DNREC, DART First State, Delaware Commute Solutions, and others.

Air quality connects to the broader MPO goals of Equity and Environmental Justice. It has been found that low-income communities are often at greater risk of exposure to air pollution, due to their proximity to local pollution sources such as industrial sites and busy roadways. In many parts of the country these neighborhoods were historically used to build new highways, which further eroded the buffer between residential areas and air pollution. With this in mind, Dover Kent MPO uses DelDOT's Equity Analysis Tool and data from the US Census Bureau to determine which communities may be the most vulnerable to changes in air quality and related environmental concerns, and which would benefit the most from alternative modes of transportation.

Air Quality Modeling

In the summer and fall of 2024, Dover Kent MPO worked with Whitman, Requardt & Associates, LLP (WRA) in association with the Delaware Department of Transportation (DelDOT) and Delaware Department of Natural Resources and Environmental Control (DNREC) to produce the "Air Quality Conformity Analysis Report" for *Innovations 2050*. This report documents the analysis of air quality implications of the MTP and demonstrates transportation conformity under the 8-hour ozone and NAAQS.

Data used in the emissions modeling includes Vehicle Miles Traveled (VMT), vehicle speed, vehicle class and age, fuel data, meteorological data, and Federal and State policy implications. VMT is derived from the travel demand model for Kent County, which uses inputs such as population, employment, highway networks, and trip rates. The many datasets used in the modeling result in the output of projected total emissions, which are then compared to the emissions budget.

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According to the results of the "Air Quality Conformity Analysis Report," the projects of *Innovations 2050* fall within the Motor Vehicle Emissions Budget (MVEB) for air quality conformity, specifically in regard to VOC and NOx emissions (see below). Please refer to Appendix C for the full report.

Exhibit D: VOC Emission Test Results - MVEB Test (tons/summer weekday)2

VOC(tpsd)	2023	2030	2040	2050
Emissions	1.21	0.98	0.85	0.81
2009 Budget	3.95	3.95	3.95	3.95
Result	Pass	Pass	Pass	Pass

Exhibit E: NOx Emission Test Results - MVEB Test (tons/summer weekday)

NOx(tpsd)	2023	2030	2040	2050
Emissions	2.09	1.16	0.71	0.68
2009 Budget	9.04	9.04	9.04	9.04
Result	Pass	Pass	Pass	Pass

Figure 15: A summary of results for air quality conformity in the MTP. Full results are available in Appendix C.

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CHAPTER 8: Public Outreach

Why Public Outreach is Important

Effective transportation planning hinges on understanding the community it serves. Transportation systems and programs impact people's daily lives, facilitating their movement from Point A to Point B and beyond. This makes transportation planning a critical component in addressing infrastructure needs. No matter how comprehensive the plans and programs are, they hold little value without community engagement and use.

Moreover, there is a legal responsibility for transparency and opportunity for public participation. The roads, trails, and other facilities resulting from transportation plans and programs are usually funded by public money. As a metropolitan planning organization, the Dover Kent MPO is legally bound to have a detailed public involvement plan, as Title 23 of the Code of Federal Regulations on the Federal U.S. Department of Transportation and the Federal Highway Administration stipulates. With an increasing demand for government transparency, the importance of involving community members in the planning process has grown.

Transportation planners must strive to understand and incorporate the desires and needs of the community, particularly those traditionally underserved, including individuals with low incomes, disabilities, older adults, and minorities. Ensuring the inclusion of all people is a legal obligation and fundamental to creating effective and equitable transportation systems.

Public engagement is a cornerstone of compelling transportation planning, ensuring our community's diverse needs and perspectives are understood and addressed. For the MTP Innovations 2050, we prioritized a robust and inclusive public outreach strategy to gather input from a broad cross-section of Kent County's population.

The Money Game

Central to our outreach efforts was an interactive and engaging activity known as the Money Game. This game was designed to gather input on transportation priorities by allowing participants to allocate funds to various transportation projects and initiatives. Recognizing the importance of reaching residents where they live and gather, we took the Money Game to over 30 festivals, trade shows, community events, grocery stores, and local libraries. These venues provided a diverse array of participants, reflecting the varied demographics and perspectives within our community. The response was substantial, with 944 individuals participating in the Money Game. (see Appendix C)

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The Money Game was comprised of giving each player 10 million "MPO Bucks" and allowing them to decide how the funds should be spent. Participants made their decisions by placing the money, one million at a time, into baskets labeled Fixing Roads, Building New Roads, Transit, Sidewalks/Crosswalks, Bike Paths, Passenger Rail, Traffic Calming, New Tech, Drivers Education, and Air Quality. The money was also color-coded to distinguish the age bracket of each player. This interactive approach made the engagement process enjoyable and gave valuable insights into the community's transportation priorities.

In addition to the Money Game, we conducted an online survey to further broaden our reach. While the online survey garnered 57 responses, it complemented our in-person efforts. It ensured that those who prefer digital engagement had the opportunity to contribute their insights.

	average
Fixing Roads	17.3%
Driver's Education	12.1%
Passenger Rail	11.1%
Air Quality	10.9%
Sidewalks/Crosswalks	10.1%
Transit	9.7%
Traffic Calming	8.0%
Bike Paths	7.3%
New Technology	7.0%
Building New Roads	6.7%

See Appendix C for more information on the results from the Money Game and online surveys.

	Under 18 yrs	18 - 35 yrs	36 - 55 yrs	Over 55 yrs
Fixing Roads	13.9%	17.2%	19.1%	18.8%
Building New Roads	7.6%	5.2%	7.0%	6.8%
Transit	8.1%	10.5%	10.0%	10.0%
Sidewalks/Crosswalks	8.3%	12.6%	10.2%	9.4%
Bike Paths	7.6%	7.3%	7.3%	6.9%
Passenger Rail	8.9%	10.0%	12.7%	12.9%
Traffic Calming	8.0%	6.2%	8.9%	9.0%
New Technology	9.1%	8.1%	4.8%	5.8%
Driver's Education	14.5%	11.6%	11.6%	10.6%
Air Quality	14.0%	11.3%	8.5%	9.9%

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Outreach Strategies

We implemented an extensive public engagement campaign to maximize our outreach and drive people to our website (https://doverkentmpo.delaware.gov/innovations2050). There, we hosted informative videos explaining the MTP and highlighting the importance of public involvement. The website also provided links to the online surveys and schedules for the live Money Game events. Our outreach strategy included ads with QR codes, which we disseminated via social media, our website, the local newspaper, restaurant placemats, business cards, and sandwich boards around the county. We released several ads, videos, and press releases, significantly boosting public engagement.

Prioritization Working Group

The Dover Kent MPO Principal Planner organized a working group from the MPO Public Advisory Committee (PAC) and Technical Advisory Committee (TAC), along with several representatives from DelDOT and the MPO staff. This working group met to establish the priority criteria by which each project would be graded. The members then participated in an exercise that established the weights and measures for each prioritization criterion.

General Comments at Meetings

All MPO Committee and Council meetings include time for public comments. The committees considered all comments received during these meetings. Since these meetings are open to the public, any citizen attending had their comments or concerns taken under advisement.

Meetings with Municipalities/Comprehensive Plans

The Dover Kent MPO partners include all towns, cities, and the county land area within Kent County, Delaware. According to Delaware State Code (22 Delaware Code §702), municipal governments must develop and regularly update land use plans. Although smaller cities and towns (with populations under 2,000) only need to establish a municipal development strategy, all 20 municipalities in Kent County have developed Comprehensive Land Use Plans, updated every ten years. Each plan identifies specific projects crucial to that municipality. MPO Staff conducted 12 meetings with municipal leaders to better understand their needs and the projects they want to see.

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Public Workshops

We scheduled public workshops at different process stages to ensure comprehensive public involvement. The first workshop, held on May 30, 2024, after concluding the information-gathering phase, provided a foundational understanding of our public outreach efforts. During this session, we detailed the meetings conducted to date, explained the outreach goals, and offered direction for the overall plan. This initial workshop was crucial in setting the stage for continued community involvement and feedback.

The second workshop series was designed as a drop-in workshop format, consisting of three in-person sessions and a virtual session. This approach was intended to maximize participation and ensure that all community members had the opportunity to review and comment on the draft MTP. We met in Milford on September 16, in Smyrna on the 17th, and in Camden on the 18th. We had small but engaged crowds, and the feedback we received was very helpful. It was great to hear directly from the community about what they feel are the most important transportation needs and projects in the region. The workshops provided an overview of growth patterns, transportation needs, and infrastructure improvements projected over the next 20 years. Attendees had the opportunity to review plans, ask questions, and make suggestions in an open-house format.

We also made the draft MTP accessible for public review and comments on our website. We aimed to incorporate various perspectives and insights into the final plan by releasing the draft and actively seeking public comments. This iterative process of feedback and revision is essential for creating a transportation plan that truly reflects the needs and desires of Kent County's residents.

Final Presentation

The final draft of the MTP will be posted on the MPO website. The final MTP will then be presented to the PAC and TAC, who will recommend it to the Council for adoption. The Council will then vote to adopt the MTP, which will be officially recorded by January 2025.

This comprehensive outreach initiative underscores our commitment to inclusivity and community involvement in planning. We have captured a rich and representative data set by engaging nearly a thousand residents through the Money Game and online surveys and leveraging a multi-faceted marketing approach. This input will play a critical role in shaping the transportation priorities and policies of Innovations 2050, ensuring that our plans reflect the aspirations and needs of Kent County's residents.

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CHAPTER 9: Operations & Management Strategies

In previous chapters, this Plan establishes a 25 Year Growth Forecast and models Future Travel Demand that results from projected growth. Later, in Chapter 10, we propose a prioritized list of fiscally constrained transportation projects to address the impacts of growth for consideration of inclusion in future State Capital Transportation Plans.

In this Chapter we set forth four (4) distinct management strategies for advancing the MTP Themes and Goals established in Chapter 2 as essential elements of all activities and projects undertaken by Dover Kent MPO.

1) Social Equity – Performance & Policy Guidance

Dover Kent MPO strives to promote the fair and equitable distribution of transportation planning resources and transportation investments throughout Central Delaware. Goal 4 of this MTP is reiterated below:

GOAL 4: ***To establish opportunity for public participation by all persons in the Transportation Planning Process and to ensure that resultant plans for Transportation Investments are implemented fairly, justly, and equitably in the best interests of all members of the community.***

On November 3, 2023, Dover Kent Metropolitan Planning Organization adopted an Environmental Justice Report and Policy that shall serve to guide the organization generally in all respects to maintain compliance with Title VI of the Civil Rights Act of 1964. The EJ Report and Policy outline the MPO's intent to affirmatively pursue and maintain equity and environmental justice in all actions and investments in transportation planning that this organization undertakes.

Dover Kent MPO hosted its first-ever Equity Roundtable on June 6, 2023. Several Action Items were identified that could be pursued by attendees, either independently or collectively. The MPO is committed to hosting the Equity Roundtable on a biennial basis.

Dover Kent Metropolitan Planning Organization intends to utilize the recently completed Equity Analysis Tool developed by the Delaware Department of Transportation (DelDOT) as part of its evaluation and ranking of potential Projects and Studies.

Retrospective (10 Year review)

In order to chart a course for the future, it is beneficial and informative to evaluate past performance. In this section, Dover Kent MPO examines the past 10 Years of its Project History to understand the socio-geographic distribution of transportation planning

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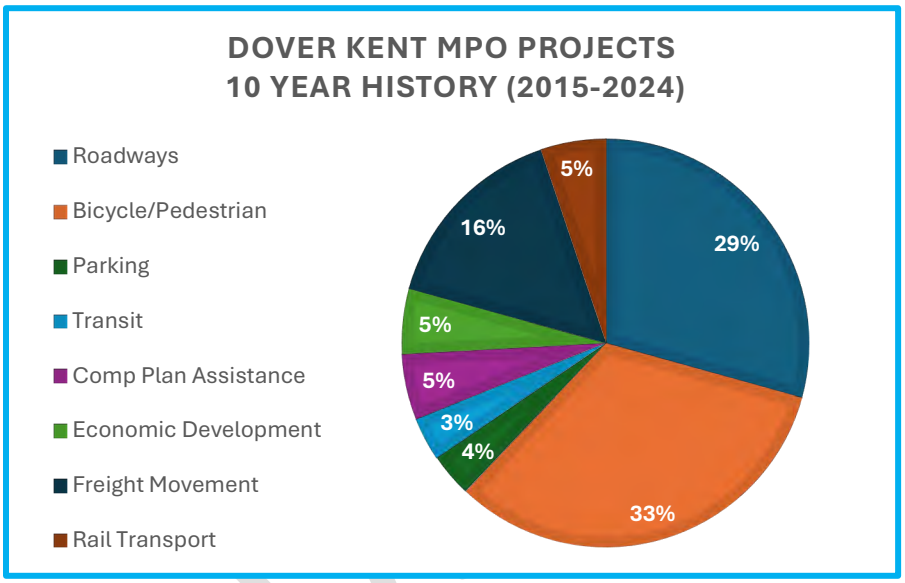
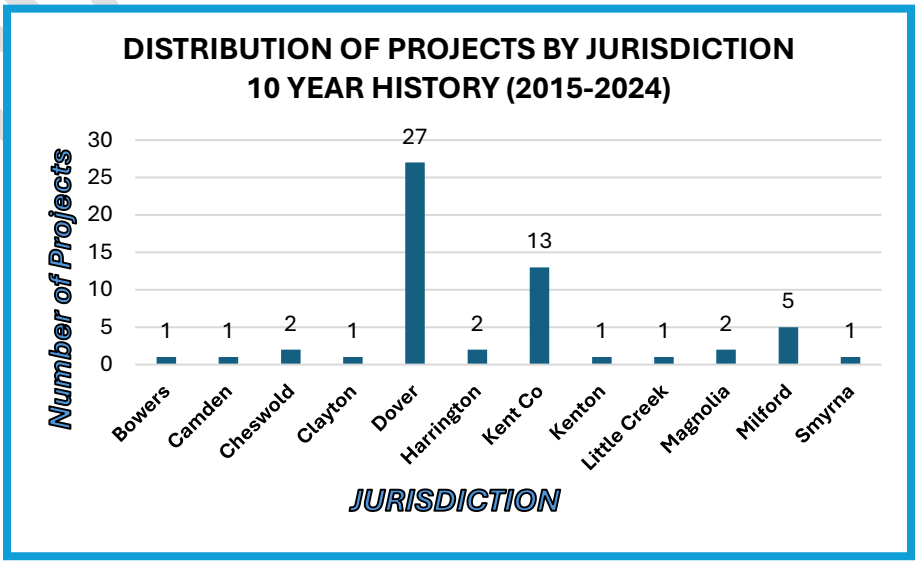
activities. The objective here is to gauge how well Dover Kent MPO has performed in achieving fairness, justice and equity in transportation planning investments and avoiding bias.

As the chart to the right indicates, the vast majority of projects and studies undertaken by Dover Kent MPO over the last 10 years have focused on improving Roadways (29%) and Bicycle and Pedestrian Facilities (33%). While Roadway Projects over this period largely examined motor vehicle traffic congestion and roadway volume and capacity issues on existing roadways, Bicycle and Pedestrian Studies focused on accommodating safe and effective bicycle and pedestrian travel. The third most significant consideration over this period has been analysis of Freight Movement (16%) in and through Central Delaware as an essential element of our local economy.



The Chart below illustrates the locational distribution of Transportation Studies undertaken by the MPO during the 10 Year review period. It is obvious that a high concentration of transportation planning work has occurred in and around the City of Dover, the capital city of Delaware. The corporate limits of the City of Dover, comprising an area of over 25 Square Miles, making it the largest incorporated area in the State of Delaware. Situated in the center of our metropolitan planning area, Dover has a resident population of 38,879[17].

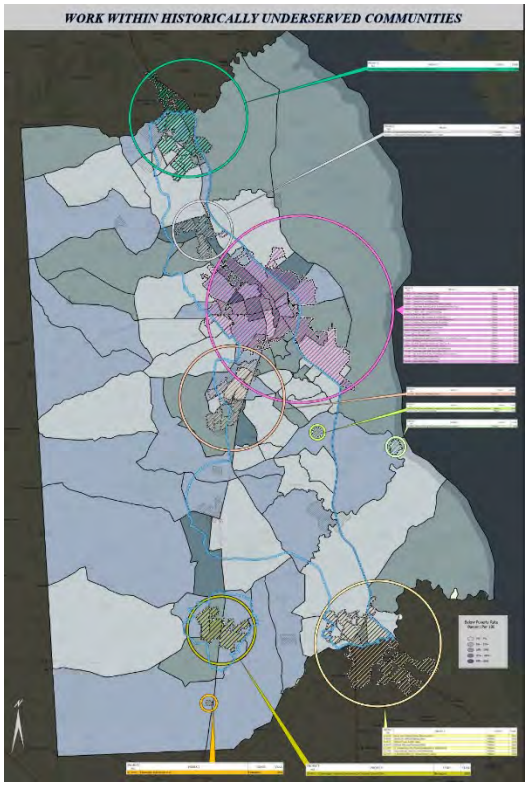


[17] 2022 American Community Survey Estimate, US Census Bureau

The Dover metropolitan region is home to well over half of the resident population of Kent County. As the economic center of Central Delaware, Dover is home to abundant commerce, industry, healthcare, higher education, State and Local Government, and our largest single employer, Dover Air Force Base. Dover like all expanding metropolitan cities, is challenged with addressing the transportation needs of a growing region. Since the inception of Dover Kent MPO, Dover has been the most intensely urbanized area and is expected to remain as a leading area of transportation focus through this MTP plan horizon.

On an annual basis, Dover Kent MPO opens a County-wide solicitation for the submission of projects by local jurisdictions for consideration of inclusion in its annual Unified Planning Work Program (UPWP). The UPWP process is a great opportunity for local jurisdictions to examine local transportation concerns and to develop plans in a way that is very affordable. The typical UPWP Project will cost the local sponsoring jurisdiction about 10% of the total project cost.

In recent years, we have seen increasing number of submissions from smaller towns and cities as indicated in the referenced Chart. This may be attributed to a number of factors including improved public outreach and awareness of submission cycles, and increased travel demand in small towns and cities on roadways that have historically been low volume travel routes. Additionally, with greater promotion of alternative modes of travel such as mass transit, bicycling and walking in all localities, many jurisdictions have come to realize deficiencies in local accommodations which has led to greater interest in planning through the UPWP process. Through the UPWP process, local jurisdictions are equipped with actionable plans and better positioned to seek capital funding for transportation improvements. While some projects undertaken by Dover Kent MPO are fairly concise and address a very specific local issue (e.g. a Railroad Crossing), most are more regional in capture and have jurisdiction-wide implications. For example, Dover Kent MPO has completed a number of Bicycle and Pedestrian Master Plan documents that address these modes of travel throughout an entire jurisdiction or region. Similarly, Roadway Corridor Studies will examine impacts of traffic and potential improvements along a corridor as it traverses a municipality.



The Map to the right highlights several projects undertaken by Dover Kent MPO over the past 10 Years that were broad in scope and reflect community wide benefits. The vast majority of these projects were within urbanized centers within Kent County.

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Policy Guidance Implementation

Prior to selection for inclusion in future work programs of the Dover Kent MPO, each project shall be evaluated utilizing the Equity Analysis Tool developed by the Delaware Department of Transportation. The degree to which each proposal addresses the social equity objectives of Dover Kent MPO Environmental Justice Policy shall be reported as part of the written evaluation and ranking of candidate projects.

Each Project or Study accepted by Dover Kent MPO for inclusion in any future Unified Planning Work Program or Transportation Improvement Plan shall be accompanied by a written Social Equity Narrative prepared by Dover Kent MPO that describes how the Project or Study will conform with MTP Goal 4 as stated above and with the overall objectives the Dover Kent MPO Environmental Justice Policy.

2) Transportation Systems – Layer Analysis

An over-arching objective of this MTP is to promote the evolution and maintenance of a safe, efficient, attractive and complete Transportation Network that supports all modes of travel within the Dover Kent MPO Region. Our guidepost in pursuit of enhanced mobility and network continuity is expressed in Goal 1 below:

GOAL 1: ***To foster the evolution of a seamless Transportation System for all modes of travel that is safe, efficient, continuous, and fluid that effectively accommodates local, regional, and interstate transportation.***

Whether by evolutionary urban/suburban forces or by advanced design, Transportation Networks consist of various transportation sub-networks that function to accommodate different modes of travel. Ideally, these sub-networks form complete modal systems that connect with and support each other in a seamless Transportation Network environment. In a very real sense, the "as-built" Transportation Network may reflect the dominant transportation priorities and capital spending choices and constraints within a region or municipality.

While levels of roadway maintenance may vary from place to place, it is fairly universal that the roadway sub-network supporting motor vehicle travel is continuous and complete, reflecting its relative high degree of importance. In any given locality, other sub-networks such as pedestrian sidewalks, bicycle pathways, or transit support facilities may not be as continuous or complete but may be fragmented, incomplete, or non-existent, reflecting relative low priority for such amenities. The reasons for such disparate treatment can be

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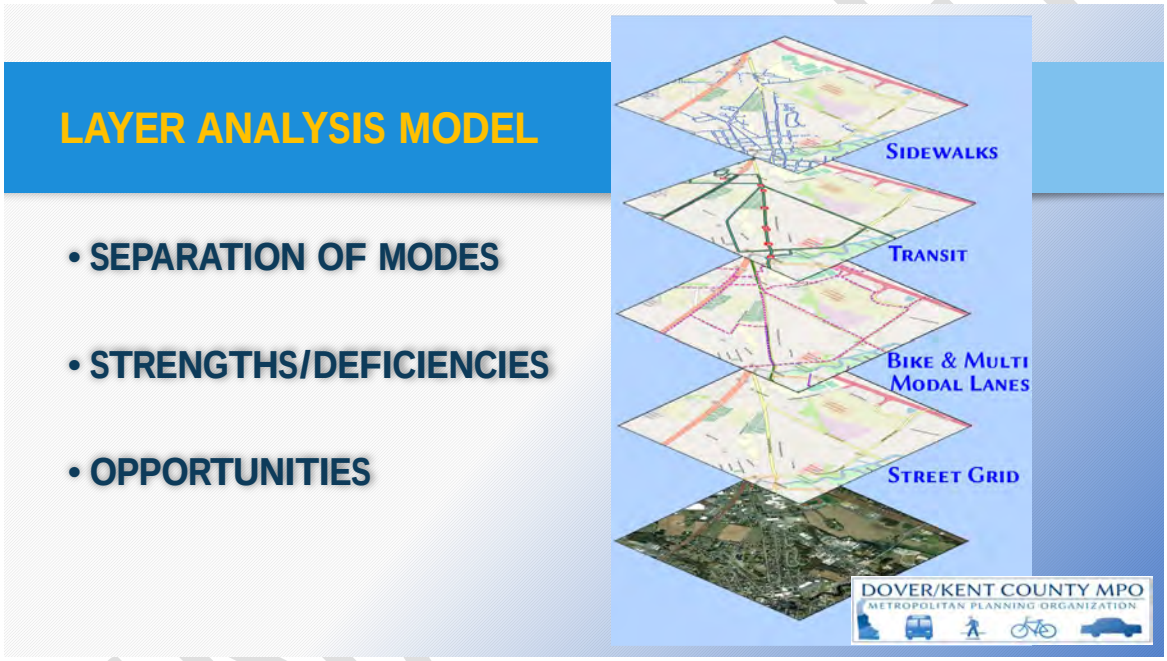
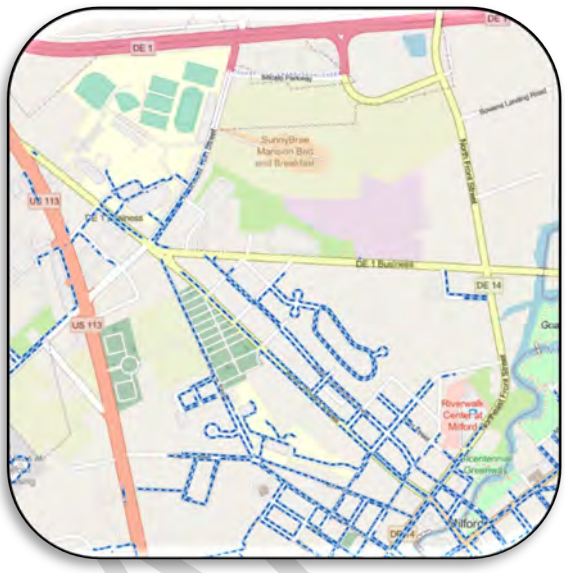
attributable to a variety of situations including but not limited to: awareness of deficiencies; real or perceived public demand; inertia; unclear authority and responsibility; insufficient regulatory controls; and/or, limited capital resources.

In the purest sense, these sub-networks will equitably coexist and intersect in time and space at specific nodal points to form a continuous, connected Transportation Network that accommodates multiple travel modes. In analyzing the effectiveness of a Transportation Network, we believe it is beneficial to examine each sub-network in isolation to understand existing conditions, strengths, deficiencies, and completeness of each sub-network. The illustration below graphically describes the Layer Analysis Concept.



The illustrations below compare the Existing Street Grid Layer and the Pedestrian Sidewalk Layer for a specific quadrant of a local municipality. While the Existing Street Grid Layer reflects a continuous and connected street sub-network, the Pedestrian Sidewalk Layer reflects a discontinuous and disconnected pedestrian sub-network. Using this simple analysis exercise, we can easily identify deficiencies in a sub-network (in this case, the Pedestrian Sidewalk Layer), and locate opportunities for improvements to yield a complete sub-network.

EXISTING STREETS LAYER



EXISTING SIDEWALKS LAYER (with Streets)

As we compare two Existing Conditions Layers of the Transportation Networks displayed above, Existing Streets and Existing Sidewalks, it becomes very clear that gaps and terminal points exist within the existing Sidewalk Sub-Network. We can see that safe pedestrian circulation is limited and compromised. From this simple, yet effective analysis we can develop a Sidewalk Futures Layer that depicts improved pedestrian circulation with elimination of gaps and terminal points within the Pedestrian Sub-Network. With System gaps and terminal points identified, priorities for improving the Pedestrian Sub-Network can be developed.

For the same location, we examine the existing Transit Service Layer in association with the Pedestrian Sidewalk Layer to determine how well these Sub-Networks support each other. This analysis helps to understand how well the pedestrian is served when traveling to or from a Transit Stop and whether deficiencies exist that make connections difficult, unwelcoming, or unsafe.

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EXISTING SIDEWALKS LAYER (with Streets)

TRANSIT LAYER (with Streets)

Application of Layer Analysis

Dover Kent MPO intends to employ the Layer Analysis Model as a standard study element when conducting Community Level Transportation Studies and Plans involving multi-modal system analysis. Analysis by Layer will aid in identifying gaps in the Transportation Network that may be prioritized and addressed through the planning process.

3) Transportation Investment Areas

Transportation officials often find themselves in a reactive response role to expansive development pressure and working to catch up with the seemingly random timing of land use change as transportation facility design capacities are stressed and exceeded. Various public agencies have been working for many years to curb sprawling suburban development in part to improve delivery and management of support infrastructure and associated costs. At the same time, levels of government have been actively promoting growth and economic development while also advancing programs to preserve and protect working agricultural lands and natural resource areas.

Viewed in isolation, these public goals may seem inherently at odds with one another. However, planning agencies at the State, County and Local levels work to coordinate plans

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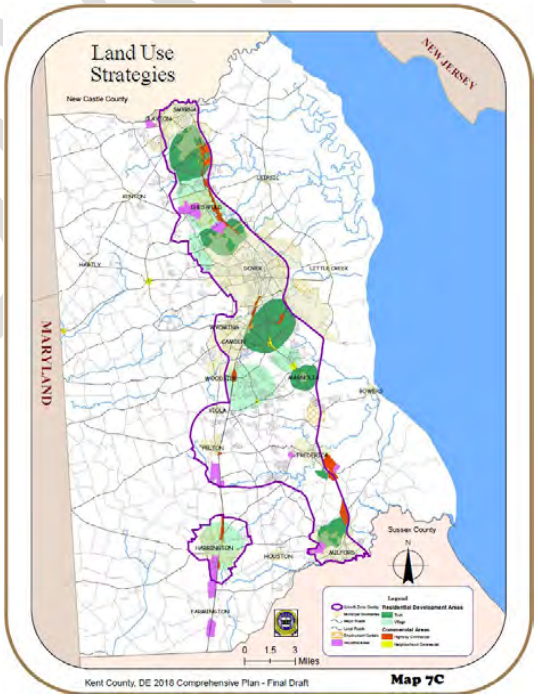
and to articulate goals and objectives to manage growth, promote a vibrant economy, and to mitigate potential conflicts.

The common thread upon which the human landscape built is our transportation system. As a long-range plan, this MTP intends to establish strong bonds with partner agencies that are actively addressing some of the most complex planning challenges of our time. Dover Kent MPO is in a unique position to be a vital transportation planning integration link to support and advocate for the implementation of plans and policies of partner agencies. To that end, we propose a system of Transportation Investment Areas that is built upon contemporary regional planning programs and policies affecting Kent County, Delaware discussed below.

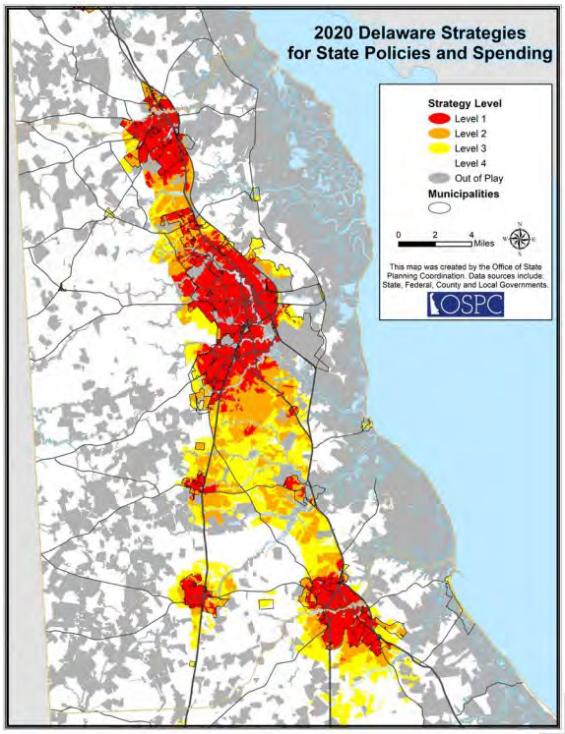
Growth Management Strategies



Several years ago, in response to random outward suburban expansion, Kent County Government established a growth management strategy and associated regulatory controls to better direct growth into areas best suited to accommodate urban and suburban development. The Kent County Growth Zone Overlay District is situated in the central portion of the County and generally aligns with the US Route 13/113 and Delaware Route 1 transportation corridors. The Growth Zone occupies roughly 20 Percent of the land area of Kent County and encompasses all major cities and towns in the County including the State Capital of Dover, Delaware. The Growth Zone is comprised of urban, suburban, and vacant developable lands where more compact, higher density, and mixed use development patterns are permitted in close proximity to principal transportation facilities and other support infrastructure and services[18].

The Office of State Planning Coordination (OSPC) plays a significant role in reviewing Comprehensive Plans to coordinate community land use and development goals and to weed out conflict.

[18] Kent County 2018 Comprehensive Plan



More recently, the Delaware OSPC has developed a system for guiding regional growth into areas where support infrastructure exists and where the State expects to invest the majority of its resources to improve and/or expand support services and infrastructure in such areas. This State system, known as "Delaware Strategies for State Policies and Spending" adopted in 2020, establishes a fully mapped hierarchy of State Spending Areas. Areas designated as Spending Levels 1 and 2 include existing cities, towns and surrounding areas with concentrations of population and places of employment, exhibiting urban/suburban characteristics, where the State expects to concentrate investment. Level 3 areas are those locations outside of Levels 1 and 2 that that are not expected to experience growth pressure in the near term. Rural, sparsely populated, open lands are designated as Level 4 Areas and are those places where the State of Delaware does not expect to invest in services and infrastructure to promote growth. Lands that are permanently preserved through conservation easement or other form of protective covenant are considered "Out of Play" Areas under the State Policy[19].

This MTP seeks to support and strengthen the efforts of our County and State Partners. To that end, a broadly stated theme of this MTP is the promotion of Inter-Jurisdictional Coordination & Concurrency. In furtherance of this theme, Goal 2 of this Plan is:

GOAL 2: ***To synthesize State, Regional and Local Transportation Objectives into a unified Vision and Implementation Plan for Central Delaware.***

As this Plan seeks to strengthen inter-jurisdictional coordination and concurrency, it also seeks to advance transportation plans and projects that support the health and vitality of the regional economy in Central Delaware. With Goal 3, Dover Kent MPO is dedicated to:

GOAL 3: ***To support an active and growing Business Development Community by proactively planning for transportation investments that strengthen the economic vitality of the Central Delaware Region.***

In considering the local economy, Agriculture is a major industry in Central Delaware that plays a significant role in the overall economic wellbeing of the Region and State. According to the USDA's 2022 Farm Census, there are 770 working farms in Kent County totaling

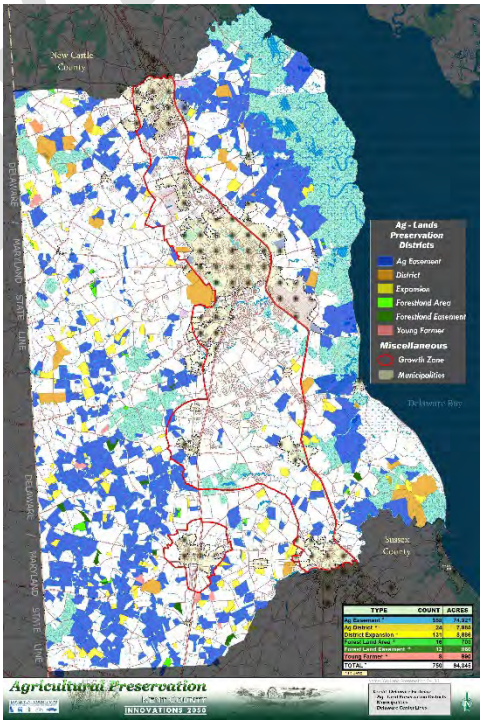
[19] "*Delaware Strategies for Policies and Spending 2020*" - OSPC

187,248 Acres (49.9% of County land area). The Delaware Department of Agriculture's 2022-23 Statistical Bulletin indicates that the 2022 economic value of Agricultural Production in Kent County exceeded $570 Million annually.

The State of Delaware and Kent County have invested substantially in the permanent preservation of working farmlands and forests in Kent County. Over 73,000 Acres have been permanently preserved for Agriculture in Kent County alone at a public investment cost of over $112 Million. The Table below provide a brief summary of Agland Preservation investments through 2023.

2023 Agland Preservation Program Summary – Kent County, Delaware				
Preservation Item	**Agland Preserved**	**Forestland Preserved**	**Young Farmer Program**	**TOTALS**
Easement	**564**	**12**	**9**	**585**
Acreage	**73,698**	**869**	**985**	**75,552**
Cost	**$112,819,978**	**$1,017,105**	**$2,644,657**	**$116,481,740**

The Map to the right shows the locations of Farm Parcels that are in the Agland Preservation Program in Kent County. Parcels shown in Blue are those upon which a Preservation Easement has been purchased. Parcels shown in Orange are in the Agland District Program which is a voluntary 10 Year agreement and a precursor to qualifying for Easement Purchase. With a very few exceptions, the vast majority of Agricultural Preservation Easements are situated outside of the Kent County Growth Zone in areas characterized as rural, low density and agricultural.



With this iteration of the MTP, we endeavor to support the transportation needs of the Agricultural Industry as a vital part of the regional economy, while respecting the rural character of working lands in Central Delaware.

Resiliency & Sustainability

While Dover Kent MPO pursues appropriately planned transportation investments that support economic vitality and growth in areas best suited, it will also seek to advance plans that avoid impacts associated with flood prone areas, forecasted climatic impacts, and sea

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level rise. Over the past several years, the planning disciplines have been focused on ways to best position communities and the built environment to be more resilient to the ever changing forces of nature, and for public investments to be economically sustainable over time. The resiliency and sustainability interests of Dover Kent MPO are captured in Goal 5 below:

GOAL 5: ***To give preference to Transportation Investments that demonstrate minimized risk of failure, or avoidance of impacts, due to climate change and extreme weather events, that avoid or minimize disruption to natural communities and processes, and that reduce or eliminate the need for future Investments due to obsolescence, climatic damage, or other loss.***

Flood Prone Areas

The National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA) was initiated by Congress in 1968 with the passage of the National Flood Insurance Act. This program establishes a regulatory system for mitigating risk and for making property insurance available to properties that are situated within designated flood prone areas. A significant part of this program is the Flood Insurance Rate Map Program (FIRM) which maps out the physical locations and attributes of regulatory Flood Plan Boundaries (e.g. 100 Year Flood Plain) and related features. It is important to note that the NFIP does not prohibit development within flood prone areas. However, it does establish flood protection measures to be incorporated into construction of buildings. It also establishes minimum regulations that preserve the flood discharge capacities of flowing streams and rivers (e.g. Floodways). Maintaining the floodway flow capacity of stream corridors is an extremely important aspect of roadway and bridge design considerations to avoid impedance of flood and tidal flows. This important consideration may be amplified as mean sea levels increase along the coast and within stream corridors. As increasing sea level is realized, FEMA will need to adjust its Base Flood Elevation Modeling on the Flood Insurance Rate Maps accordingly.

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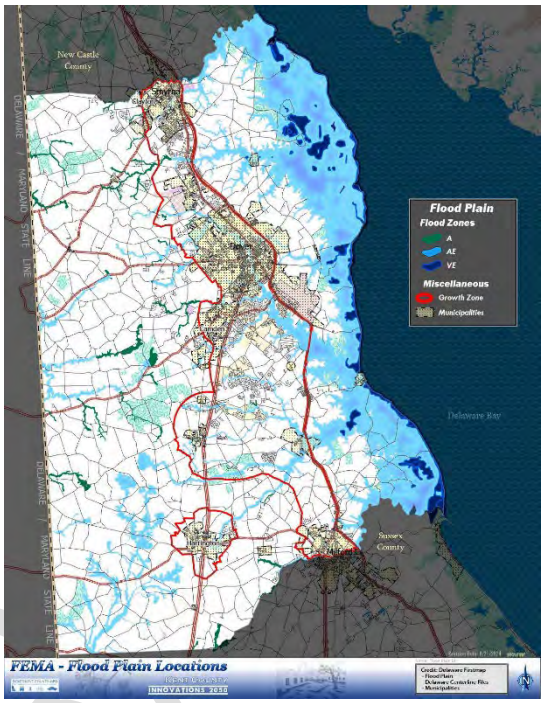
The Map to the right depicts the limits of the Regulatory Flood Plain in Kent County, Delaware (in Green). When we consider this information within a Resiliency and Sustainability framework for potential Transportation Improvements, certain questions arise. Is a project proposed within a location that is threatened by increased frequency or probability of inundation and/or flood damage? Will a transportation project be subject to the impacts of flooding accompanied by wave action and tide cycles that could reduce the lifecycle of a proposed improvement or cause recurring damage? Does a proposed transportation project represent a safety enhancement for existing populations or communities located within flood prone areas? Will a proposed transportation project enable (or result in) increased development pressure in flood prone areas or within the Regulatory Flood Plain?



While the NFIP does not prohibit development in flood prone areas, the FIRM Maps are useful in locating places where floodwater inundation is to be expected with regularity and/or frequency. As Dover Kent MPO seeks to pursue resilient and sustainable investment in the transportation system the impact of flooding and periodic inundation should be made part of the project evaluation process. Dover Kent MPO views the NFIP as an informative resource for consideration in the project evaluation process.

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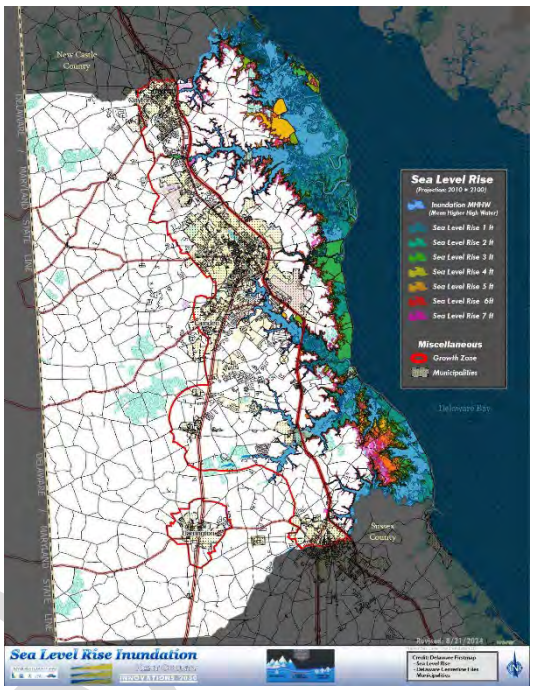
Sea Level Rise

Since 2009, the Delaware Department of Natural Resources and Environmental Control (DNREC) has been studying sea level rise and potential impacts for coastal Delaware. Projections for the rate of sea level rise and its effects on Delaware have been refined over the course of analysis. DNREC in conjunction with the Delaware Geological Survey have developed sea level rise projections and probabilities extending to 2100. According to the "*Delaware's Climate Action Plan*" document released in late 2021 by DNREC, sea levels along the coast of Delaware are projected to rise another 9 to 23 Inches by 2050 with increases up to 5 Feet by 2100. Projected increases in sea level are directly correlated to rising global temperatures. Sea level increase is projected as a range (9 to 23 Inches) that correlates to the degree of success realized in reducing greenhouse gas emissions and resultant global temperatures.

Several factors contribute to projected sea level rise in the Mid-Atlantic Region including receding polar ice caps resulting in increasing ocean water, subsidence of the flat coastal plain that forms most of the Delmarva Peninsula, thermal expansion of ocean water due to rising global temperatures, and slowing of the Atlantic Ocean Gulf Stream resulting in higher seas in the Mid-Atlantic. With the convergence of these factors, Delaware is deemed a sea level rise "Hotspot" where sea level rise is accelerating faster that in most places around the world[20]. The Map to the right depicts the possible extent of projected sea level rise developed by DNREC for Kent County. Through the end of the 21st Century, substantial inundation is projected along the Kent County coast and into several major drainage basins including Duck Creek, Leipsic River, St. Jones River, Murderkill River, and Mispillion River basins.



A more recent study commissioned by DNREC in 2022 titled "*An Economic Analysis of the Impacts of Climate Change in the State of Delaware*" examines the probable physical and economic impacts of climate change and sea level rise over three future time periods: Near Century (2020 -2039) at plus 0.75 Feet; Mid-Century (2040-2059) at plus 1.5 Feet; and Late Century (2080-2099 at plus 3.0 Feet). The Table below from this recent study reflects projected sea level elevations for each County in Delaware in Feet above the year 2000 mean sea level elevation, plus increases associated with storm surges for the 10% (10 Year Flood) and 1% (100 Year Flood) storm events.

TABLE 2-4. SEA LEVEL RISE AND STORM SURGE HEIGHTS (FEET)

Sea level elevations, in feet, above the year 2000 mean higher high water, for 10- and 1-percent storm events (measured by NOAA tide gauges) during three future eras, by county.

	NEAR CENTURY (0.75 FT SLR)		MID-CENTURY (1.5 FT SLR)		LATE CENTURY (3.0 FT SLR)	
	SLR + 10% STORM	SLR + 1% STORM	SLR + 10% STORM	SLR + 1% STORM	SLR + 10% STORM	SLR + 1% STORM
Kent County	3.427	4.089	4.177	4.839	5.677	6.339
New Castle County	3.344	4.314	4.094	5.064	5.594	6.564
Sussex County	4.337	6.652	5.087	7.402	6.587	8.902

Notes: SLR + storm surge heights are capped at 7 ft in the analysis due to data availability (capping applied to the scenarios highlighted in orange). The term "mean higher high water" is a technical expression representing the average height of the highest tide recorded at a tide station for the subject year. It is used here, and in NOAA technical analyses of climate change, as a common base datum from which to measure future SLR.

[20] "*Delaware's Climate Action Plan*", DNREC – November 2021

According to DNREC's Climate Action Plan, a 5-foot rise in sea levels could inundate 5% of the state's roads and bridges and 6% of evacuation routes[21]. Such impacts to the roadway network would present an eminent threat to public safety and would hinder the movement of goods and services in the region. With changing weather patterns and more intense coastal storms, DNREC projects up to a 10% increase in annual precipitation by the end of this century. Flood events affecting roadways can result in structural damage to roads, bridges and culverts further impacting public safety and travel. The combined effect of sea level rise and the heavy precipitation from more intense climate events may also present challenges for evacuation of people from coastal areas with limited accessibility.

The Table below projects the added cost of maintenance and repair of roadways in Kent County resulting from climate change and sea level rise under two (2) scenarios for greenhouse gas emissions reductions. RCP4.5 and RCP8.5 (representative concentration pathways) represent lower and higher greenhouse emission levels respectively. As indicated, costs are projected to be excessively higher with higher concentrations of greenhouse gas emissions.

TABLE 5-4. ANNUAL ECONOMIC IMPACTS TO ROADWAYS FROM CLIMATE CHANGE ($MILLION)

Economic impacts are defined as repair and delay costs on paved and unpaved roads above the baseline climate scenario (1986-2005) costs. Impacts are measured in millions of dollars (2019) per year and averaged over 5 GCMs. Values may not sum due to rounding.

	NEAR CENTURY (2020-2039)		MID-CENTURY (2040-2059)		LATE CENTURY (2080-2099)	
	RCP8.5	RCP4.5	RCP8.5	RCP4.5	RCP8.5	RCP4.5
Kent County	$2.8	$3.2	$4.9	$4.2	$14	$6.0

Source: DNREC Publication – "Economic Analysis of the Impacts of Climate Change in the State of Delaware" by Industrial Economics, Inc. 2022

Transportation Improvement Areas Concept

How can Dover Kent MPO contribute to improved inter-jurisdictional coordination? What can Dover Kent MPO do to aid in the advancement of established growth management strategies through focused transportation planning? Should Dover Kent MPO concern itself with transportation system choices that lead to a more resilient and sustainable future?

To support the regional plans and objectives of partner agencies, and to advance the notion of improved inter-jurisdictional coordination and concurrency, Dover Kent MPO establishes Transportation Investment Areas. Transportation Investment Areas are based upon existing

[21] "*Delaware's Climate Action Plan*", DNREC – November 2021

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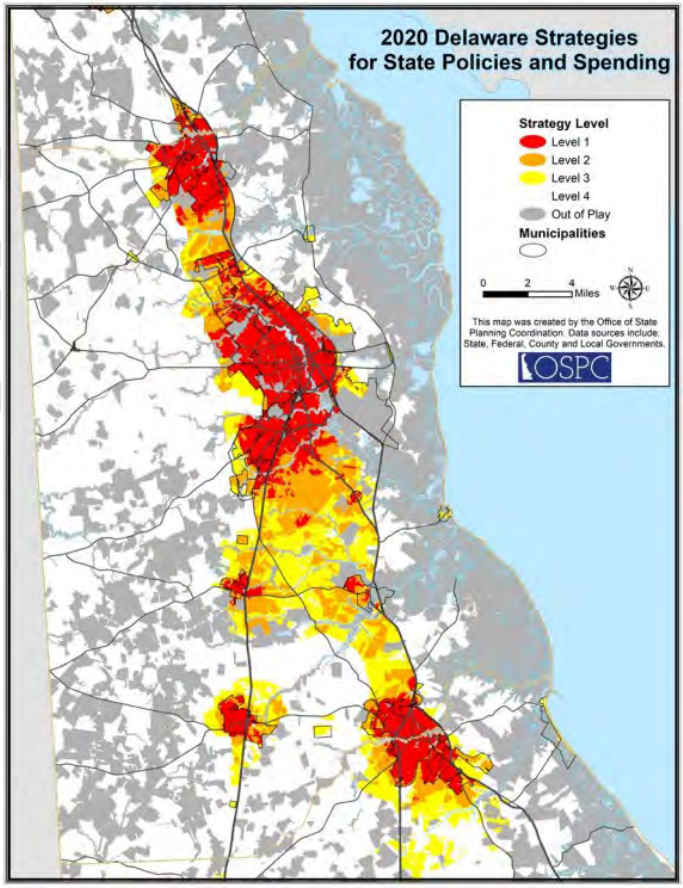
long-range planning tools established by partner agencies and identify locations that are most favored for investment in transportation infrastructure.

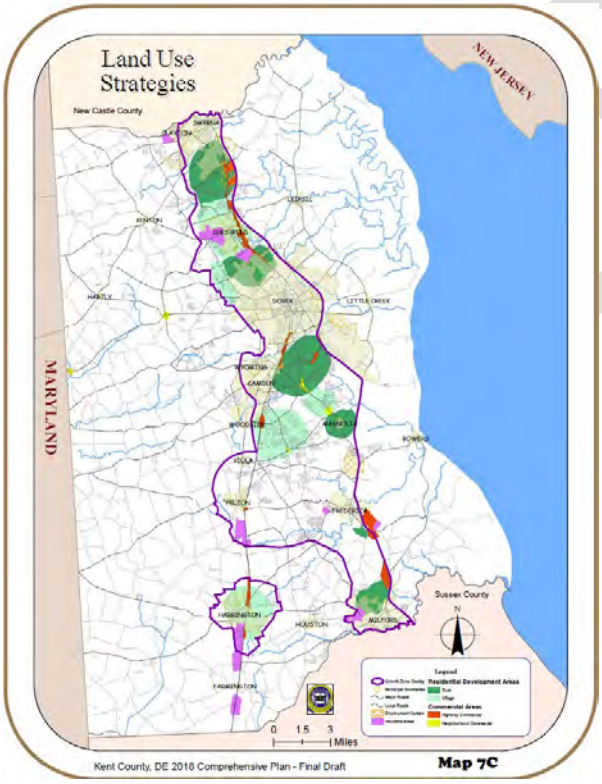
Presented below in Concept Form is a Project Evaluation Metric for Regional Concurrency that proposes a Scoring System that is aligned with and supportive of State and Regional growth management plans and policies. As envisioned, this metric would be employed by Dover Kent MPO in conjunction with existing project evaluation tools as an aid in establishing organizational work plans and priorities.

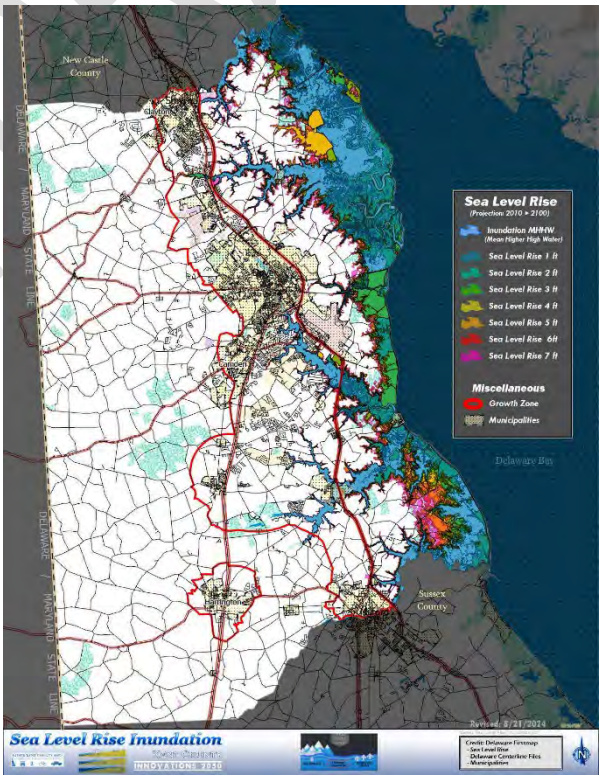
Investment Areas *	Points
❑ Urban Core – Level 1	+ 1.0
❑ Urban – Level 1	+ 0.75
❑ Suburban – Level 2	+ 0.50
❑ Suburban Fringe – Level 3	+ 0.30
❑ Rural – Level 4	+ 0.15
❑ Out of Play Areas	- 0.50

* **Based on "*Delaware Strategies for Policies and Spending 2020*" - OSPC**

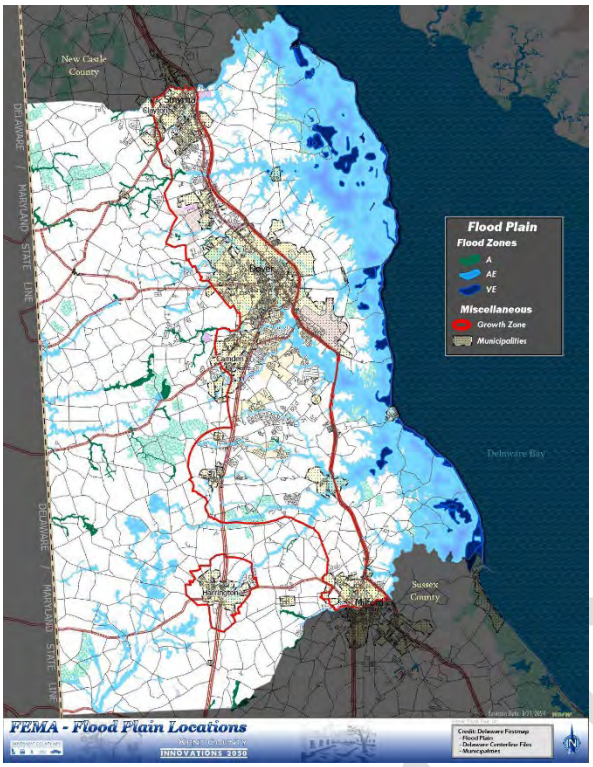


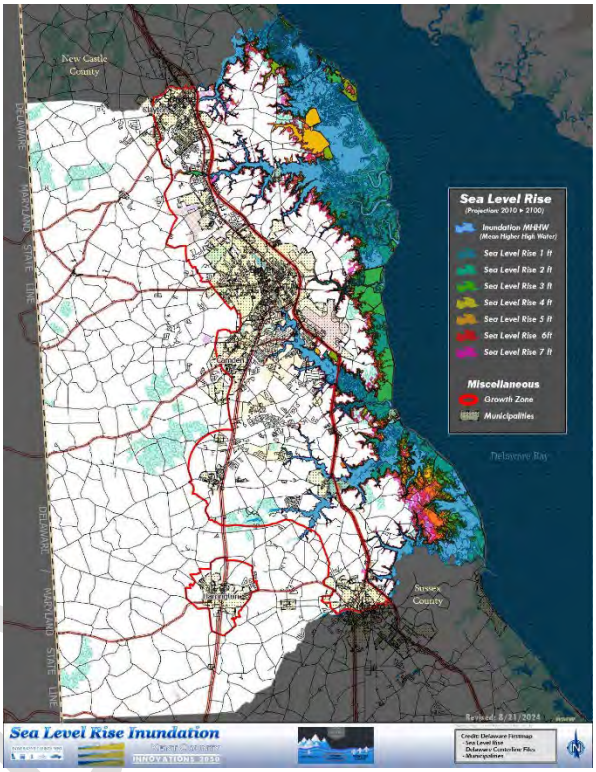
Impact Area Additions/Deductions	Points
❑ In County Growth Zone[22]	+ 0.50
❑ Outside County Growth Zone	+ 0.15
❑ Transportation Improvement District[23]	+ 0.50
❑ Regulatory Flood Plain[24]	- 0.20
❑ Projected Sea Level Rise Area[25]	- 0.15
❑ Agland Preservation Easement - PDR[26]	- 0.10
❑ Exception for Ag Industry Transportation Support in PDR	+ 0.20





[22] Kent County 2018 Comprehensive Plan
[23] DelDOT Transportation Improvement Districts
[24] FEMA Flood Insurance Rate Map (FIRM)
[25] Delaware FirstMap – DNREC & DGS
[26] DE Department of Agriculture Report May 2024





Recommendations

1) Prepare and adopt a detailed Transportation Investment Areas (TIA) Policy and Program as a project evaluation and prioritization tool for use by MPO Staff. The TIA Policy shall formalize the Purpose, Applicability, and Implementation Processes and Metrics of the Program for consideration of enactment by the MPO Council.

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4) Enhancement Index

As indicated in Chapter 2, the Dover Kent MPO endeavors to develop a process for evaluating and ranking transportation projects for the degree to which they will address enhancement factors for all modes of transportation while focusing on improved safety, security and visual quality of travel ways in our jurisdiction. This objective is articulated in Goal 3 and Goal 6 of this MTP are follows:

GOAL 3: ***To support an active and growing Business Development Community by proactively planning for transportation investments that strengthen the economic vitality of the Central Delaware Region.***

GOAL 6: ***To incorporate Enhancement Index elements into Transportation Network Improvement Projects that yield a high level of user satisfaction and positive perceptions of user safety, security, and visual quality.***

The Enhancement Index (EI) provides an evaluation framework for proposed multi-modal transportation projects to gauge the degree to which such projects incorporate design features that promote environmental balance, visual quality, and a sense of user safety and security. For purposes of this MTP, we will consider the quality of the user experience for four (4) major modes of travel in Kent County, Delaware: motor vehicle; pedestrian (including device assisted mobility); bicycling; and, transit. Traditionally, the notion of transportation system safety, security and effectiveness has been almost entirely a quantitative analysis of traffic volume, roadway capacity, peak hour volumes and delays, and accident data. The Level of Service (LOS) metric is centered on comparative analysis of traffic volumes, roadway capacity, and travel times at intersections and on roadway segments. While quantitative measures are essential to understanding the relative effectiveness and performance of roadways for maximizing efficiencies in carrying vehicles, we should also concern ourselves with the quality of the experience for all users of the transportation system. The system users include pedestrians, cyclists, and transit riders, along with operators and occupants of motor vehicles. As humans spend increasing amounts of our days in the travel stream in various modes, how we perceive and interact with the spaces we travel through becomes a real quality of life matter. This Enhancement Index (EI) establishes a generalized scoring metric that is an expression of the degree of attainment of specific quality factors within the transportation facility.

In this Section, we consider our travel ways beyond mere conduits to convey vehicles, people, goods and services from point to point within the Community. As physical features of the human landscape, our roadways, sidewalks, bike paths, trails systems, and bus stops are places we all utilize, interact with, and inhabit. This Section begins a dialogue about the

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physical qualities of our travel ways and how they are significant contributors to community character and sense of place. Human perceptions of place may be influenced by physical features that are unique to a location, the built attributes that exist in a place, and the degree to which there is a balancing between built attributes and natural features. Attractive travel ways support local business and tourism activity by creating pleasant places that people want to visit and to live. Here we contemplate human perceptions of security, the preservation of natural features, landscape improvements, and other enhancements to the functional and visual quality of transportation facilities.

The following Table identifies specific types of Enhancement Factors that form the basis of the Enhancement Index scoring system. As conceptualized below, you will notice that each Enhancement Factor is given an equal EI Point Value. It is anticipated that the Dover Kent MPO Public Advisory Committee and the Technical Advisory Committee will evaluate each Enhancement Factor and may recommend alternative EI points values for consideration of adoption by the MPO Council.

ENHANCEMENT FACTORS	DESCRIPTION	EI POINTS
Sidewalk	Minium width of 5 Feet. Typically comprised of Portland cement. Designed to comply with ADA in all respects. Preference is given to sidewalk that is separated from the back-of-curb (edge of cartway) an optimal distance of 4 Feet+/- to provide space from vehicular travel lanes for pedestrian safety purposes (real and perceived) and to provide space for green edges, tree plantings and landscaping within the transportation corridor.	.083
Multi-Use Paved Pathway	Minimum width of 8 Feet. Typically comprised of bituminous asphalt. Designed to comply with ADA in all respects.	.083
Pervious Surfaces/Green Space	Include: vegetated surface treatments at pavement edges, traffic islands, and medians; biofiltration stormwater management features; pervious Sidewalk and Pathway surfacing; and other non-impervious surface treatments.	.083
Shade Trees	Native shade canopy trees – preferred plant spacing of 10' to 15' on-center.	.083
Landscape Features	Intersection edges and traffic islands associated with pedestrian cross walks where traffic is frequently stopped offer good opportunities for low maintenance landscape enhancements that give definition and emphasis to the pedestrian way and improve community image from roadway.	.083
Preservation of Natural Features	Planned preservation of existing natural features such as trees, woodlands, wetland areas, and open meadows along travel corridors to include installation of perimeter protection measures during construction period.	.083
Corridor/Facility Lighting	Over 75% of fatal pedestrian crashes occur during dark hours. Pedestrian facilities and crosswalks should be illuminated to levels recommended by Federal Highway Administration[27] .	.083

[27] Research Report: Street Lighting for Pedestrian Safety – FHWA (Report No. FHWA-SA-20-062)

Underground Utilities	Minimize aerial utility lines in the public right-of-way by underground installation. Projects should remove aerial lines and replace with underground utility runs to minimize visual clutter. Visual enhancement.	.083
Transit Shelters	Provision for safe and conveniently located structures for transit riders to await connection that provide seating, shade and protection from precipitation, road noise and wind. Supports transit ridership.	.083
Wayfinding Signage	Within town and city environments, a system of Wayfinding Devices can be very beneficial navigation features that assist visitors and add visual interest to streetscapes. Uniquely designed, thematic, easily identifiable wayfinding signage that is built at the pedestrian scale and visually connected to the locality can go a long way in directing traveler to key destinations. Scoring credit shall be offered for proposals incorporating a pedestrian scale Wayfinding System where appropriate.	.083
Community Gateway Features	For the purpose of presenting an attractive, landscaped, pedestrian scaled "welcome" treatment, emphasizing the unique qualities of the locality and that conveys the message that you have arrived at a "special place". Considered important community identifiers for villages, towns and cities that define main entrance points, and work to reenforce community character and sense of place. Gateway treatments present opportunities for incorporating special materials into the street scape such as stone/precast paver surfacing, precast curbing; thematic crosswalk designs, and informational kiosks. Typically situated in the public right-of-way or on land in public ownership.	.083
Local Historic Elements	Many of our dominant travel routes have been in use since the earliest settlement periods. It is fairly common for historic structures, landmarks, and events to be associated with historic travel routes. Towns and cities more often than not, evolved from mere crossroads where travel routes intersected. Because travel routes themselves played (and continue to play) such a significant role in the history of a place, they present opportunities for sharing that history with the public along travel corridors. Historic markers, monuments, interpretive message boards, and the preservation of historic structures and viewsheds along travel corridors are ways that communities can emphasize and promote their unique character. Such features provide visual interest and authentic aesthetic quality that can elicit a pleasure response and foster positive perceptions of the travel experience for users. Scoring credit shall be given for the preservation of existing historic elements and inclusion of interpretive features where appropriate in the public right-of-way.	.083

Towns and Cities should be provided meaningful input and latitude into the transportation corridor design process to incorporate a variety of corridor design elements that create and/or re-enforce the image and character of their particular jurisdiction.

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Recommendations:

1. Employ Enhancement Index (EI) metric as an internal tool for promoting the incorporation of aesthetic and complete street elements into transportation improvement plans as an organizational goal as DK/MPO conducts transportation studies and projects for sponsor organizations. To accomplish this recommendation, the Enhancement Index (EI) metric shall be incorporated into the overall candidate project scoring process utilized by DK/MPO to evaluate and prioritize projects.

2. Commission the development of a Transportation Corridor Design Manual that will establish a Master Design Template for Transportation Corridors by corridor type. The Transportation Corridor Design Manual will refine the Enhancement Index (EI) metric and serve as a resource for Communities and agencies in promoting the evolution of superior transportation corridors that are safe for all modes of travel, aesthetically attractive and promote desired community image and character, and that better incorporate green infrastructure into the built environment.

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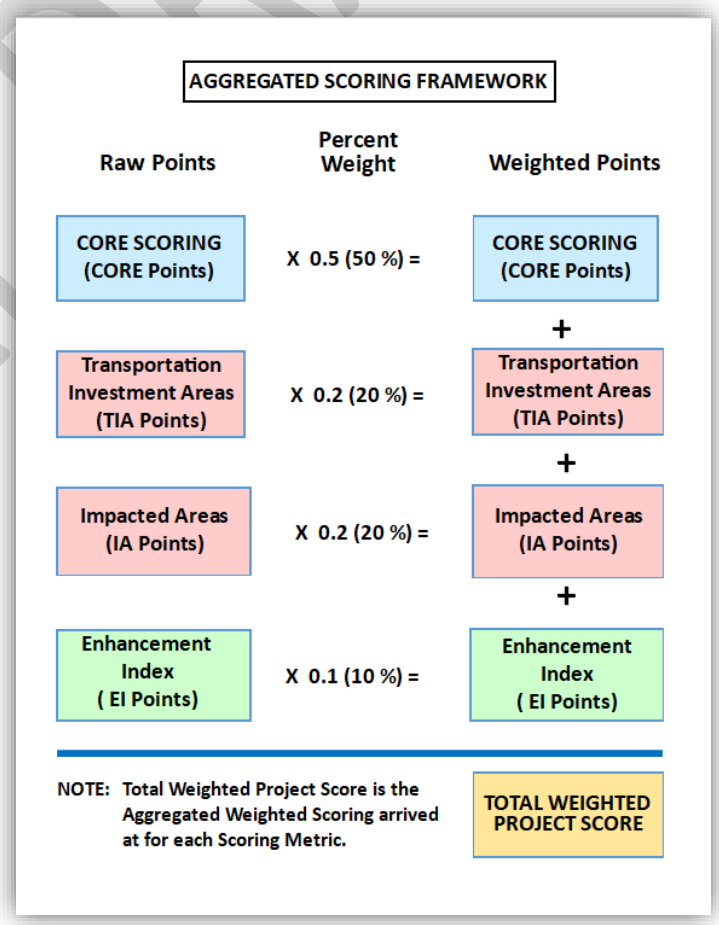
Incorporating Proposed TIA, IA and EI Project Scoring Metrics

Since the formation of Dover Kent MPO in 1992, this organization has utilized various forms of a Project Scoring Metric Process to evaluate and prioritize transportation project proposals for inclusion in the UPWP, the TIP and the MTP. In 2014, DelDOT began to utilize a software product known as "Decision Lens®" for the purpose of ranking and prioritizing transportation projects as part of development of the annual Capital Transportation Plan (CTP). With assistance from DelDOT, Dover Kent MPO began utilizing Decision Lens in 2016 for project prioritization and ranking in preparing the 2017 TIP document. This project prioritization solution has been in use by Dover Kent MPO since that time until the end of 2023 when DelDOT determined that it would no longer maintain its license with the Decision Lens software vendor.

In preparation for the expiration of the Decision Lens relationship, Dover Kent MPO Staff developed a commensurate Core Scoring Metric System in-house for project ranking and prioritization purposes. This Core Scoring systems remains in use at this time.

With this iteration of the MTP, Dover Kent MPO Staff has conceptualized three (3) additional project ranking criterion for the expressed purpose of advancing specific goals established by Dover Kent MPO as set forth in Chapter 2. Specifically, in this Chapter we have modeled the following expanded scoring concepts for consideration: 1) Transportation Investment Areas Metric (or TIA's); 2) Impacted Areas (or IA's); and, 3) the Enhancement Index Metric (or EI). As envisioned, these three (3) new scoring matrices would be employed alongside the existing Core Scoring Platform.

The Chart to the right illustrates how an expanded Scoring Platform would be arranged with considerable weight being maintained in the Core Scoring Platform (50%). Under this scenario, Transportation Investment Areas and Impacted Areas would be weighted at 20% respectively while the Enhancement Index would be given a weight of 10% of total project score.



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CHAPTER 10: Transportation Investments Plan

Project List

Appendix E of this document contains a list of fiscally constrained priority transportation projects that Dover Kent MPO will consider for incorporation into the MPO's **Transportation Improvement Plan (TIP)**. Projects listed in the MPO TIP become eligible for advancement to DelDOT for evaluation and consideration of inclusion in future iterations of the **Delaware Capital Transportation Plan (CTP)**. The term "fiscally constrained" simply means that the estimated cost of listed priority projects set forth in this MTP in the aggregate shall demonstrate conformity with the estimated capital expenditure budget developed by DelDOT for future year investments in transportation improvements in Kent County.

Attributes corresponding to each item include the project categories, project location, description, origin, and estimated cost. Project categories include roadway improvements, bicycle and pedestrian improvements, transit-related projects, freight-related projects, potential for carbon reduction, and transportation studies. (Projects that meet each category are marked with an "X" in the table.) Items are prioritized based on the MPO's assessment of their need and feasibility.

Capital Projects

The primary purpose of the project list in Appendix E is to highlight **Capital Projects**. These are typically larger in scale and can include roadway improvements and bicycle and pedestrian pathways, but they can also cover other topics. Capital Projects are sorted into the following three categories to indicate the projected year of completion:

- Short-range **(0 – 5 years)**
- Mid-range **(6 – 10 years)**
- Long-range **(11+ years)**

There is a total of **80 Capital Projects** in the list. 40 items (50.0%) are listed as short-range, 24 items (30.0%) are listed as mid-range, and 16 items (20.0%) are listed as long-range.

The estimated cost of a project includes the study cost, preliminary engineering (PE), right-of-way acquisition (ROW), and construction (C). The total estimated cost of Capital Projects falls within the given fiscal constraint; in other words, it does not exceed the estimated capital expenditure budget. Cost estimates are intended for the time of publication, and in future years the cost may be increased. Also note, any funding that has already been included in the DelDOT CTP was factored into the cost estimates; this is signified by a fiscal

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year (e.g., “FY 25 & 26”), which indicates when the preliminary engineering, right-of-way acquisition, or construction is scheduled.

The following tables show the Capital budget as far ahead as 2050, as well as the total cost estimates from the project list. The tables demonstrate that the MPO’s project list is fiscally constrained and does not exceed the given budget.

Year	**2040**	**2050**	**Total**
Available Budget	$213,370,000	$193,799,000	**$407,169,000**

Year	**Short-Range (0 – 5 Years)**	**Mid-Range (6 – 10 Years)**	**Long-Range (11+ Years)**	**Total**
Cost Estimate	$203,300,693	$136,777,363	$67,092,800	**$407,170,856**

Capital Projects included in the MTP will be considered for inclusion in the MPO TIP, as well as submission to the DelDOT CTP. The full project list is included in Appendix E of this document. For further information about specific items in the list or the methodology behind it, please contact Dover Kent MPO.

<u>System Maintenance Projects</u>

Appendix E also features a list of **System Maintenance Projects**, which are typically smaller in scale and can include improvements such as crosswalks and streetscaping. These are not prioritized in the same way; instead, they are listed in descending order from the northernmost to the southernmost locations in Kent County. As they are not part of the Capital Project list, cost estimates are not needed for System Maintenance Projects.

The purpose of including System Maintenance Projects in the list is to raise awareness of transportation and streetscape concerns that are not large enough to qualify as a Capital Project or do not meet the definition. These items can then be completed using other means.

<u>Sources</u>

Sources are listed in full at the end of the project list. These include the previous MTP, the most recent TIP and CTP, municipal comprehensive plans, bicycle and pedestrian plans, and MPO transportation studies. The numbers associated with each source are included in the project list for reference. (For example, Source #1 represents *Innovation 2045*, the previously completed MTP.)

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APPENDIX A

GROWTH FORECAST MAP SERIES

Contents

Population Maps:

2020 Population Map – Decennial Census Base Year

2030 Population Projection Map

2040 Population Projection Map

2050 Population Projection Map

Household Maps:

2020 Households Map – Decennial Census Base Year

2030 Households Projection Map

2040 Households Projection Map

2050 Households Projection Map

Employment Maps:

2020 Employment Map – Decennial Base Year

2030 Employment Projection Map

2040 Employment Projection Map

2050 Employment Projection Map

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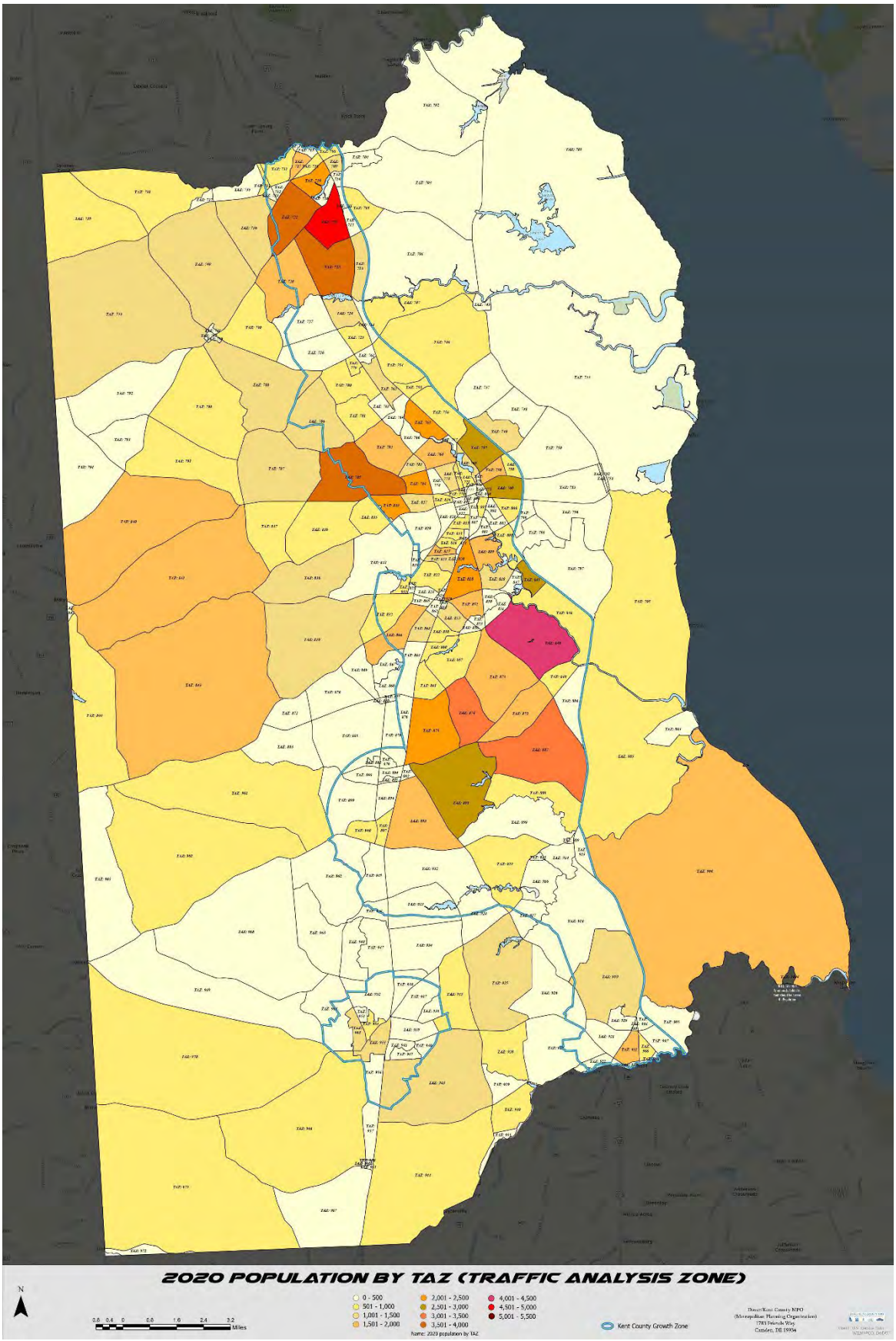
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Miles
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1,001 - 1,500
1,501 - 2,000
2,001 - 2,500
2,501 - 3,000
3,001 - 3,500
3,501 - 4,000
4,001 - 4,500
4,501 - 5,000
5,001 - 5,500
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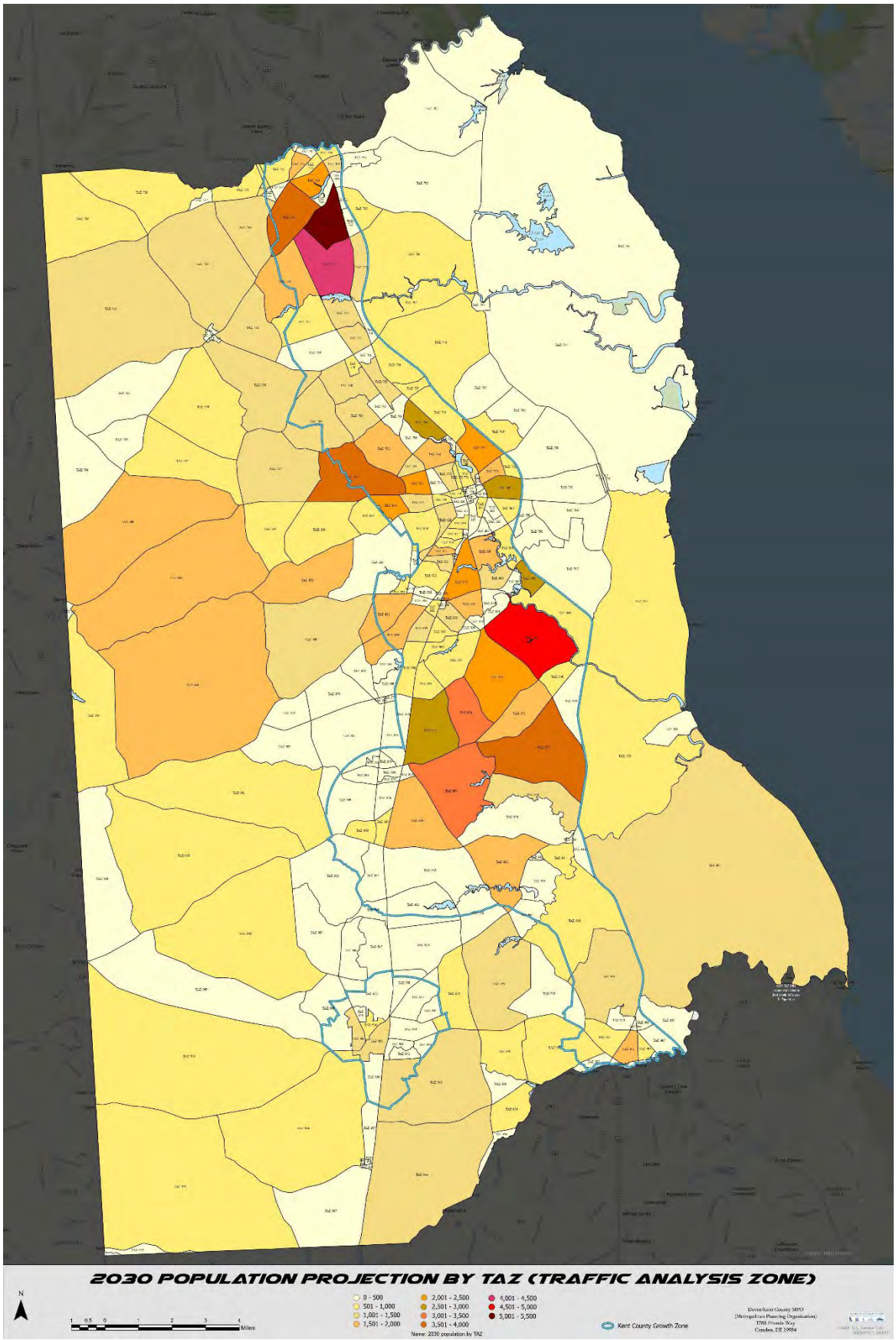
Kent County Growth Zone
Dover/Kent County MPO
(Metropolitan Planning Organization)
1783 Friends Way
Camden, DE 19934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Miles
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3,001 - 3,500
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Dover/Kent County MPO
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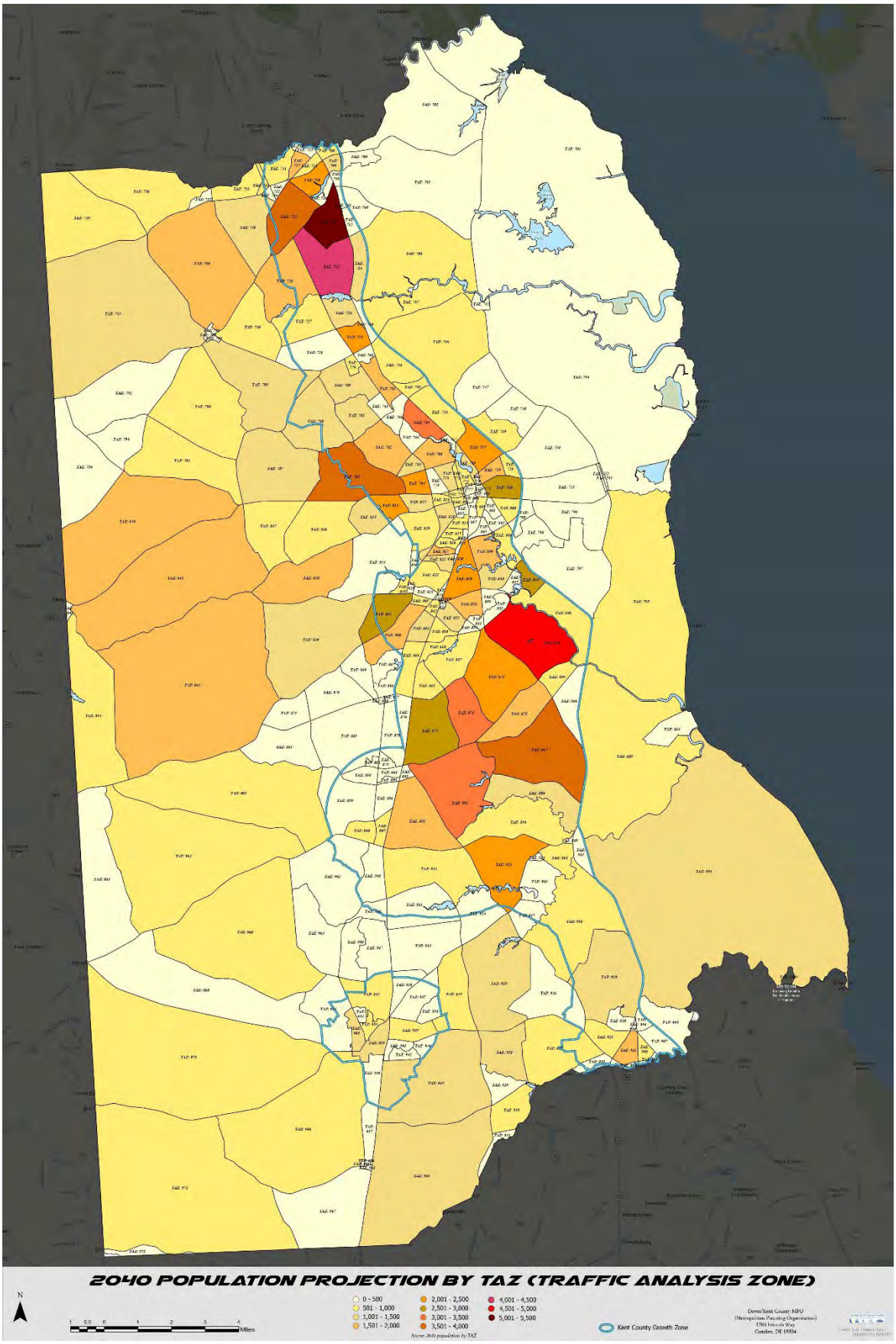
Camden, DE 19934


2040 POPULATION PROJECTION BY TAZ (TRAFFIC ANALYSIS ZONE)
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Miles
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1,001 - 1,500
1,501 - 2,000
2,001 - 2,500
2,501 - 3,000
3,001 - 3,500
3,501 - 4,000
4,001 - 4,500
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5,001 - 5,500
Kent County Growth Zone
Dover/Kent County MPO
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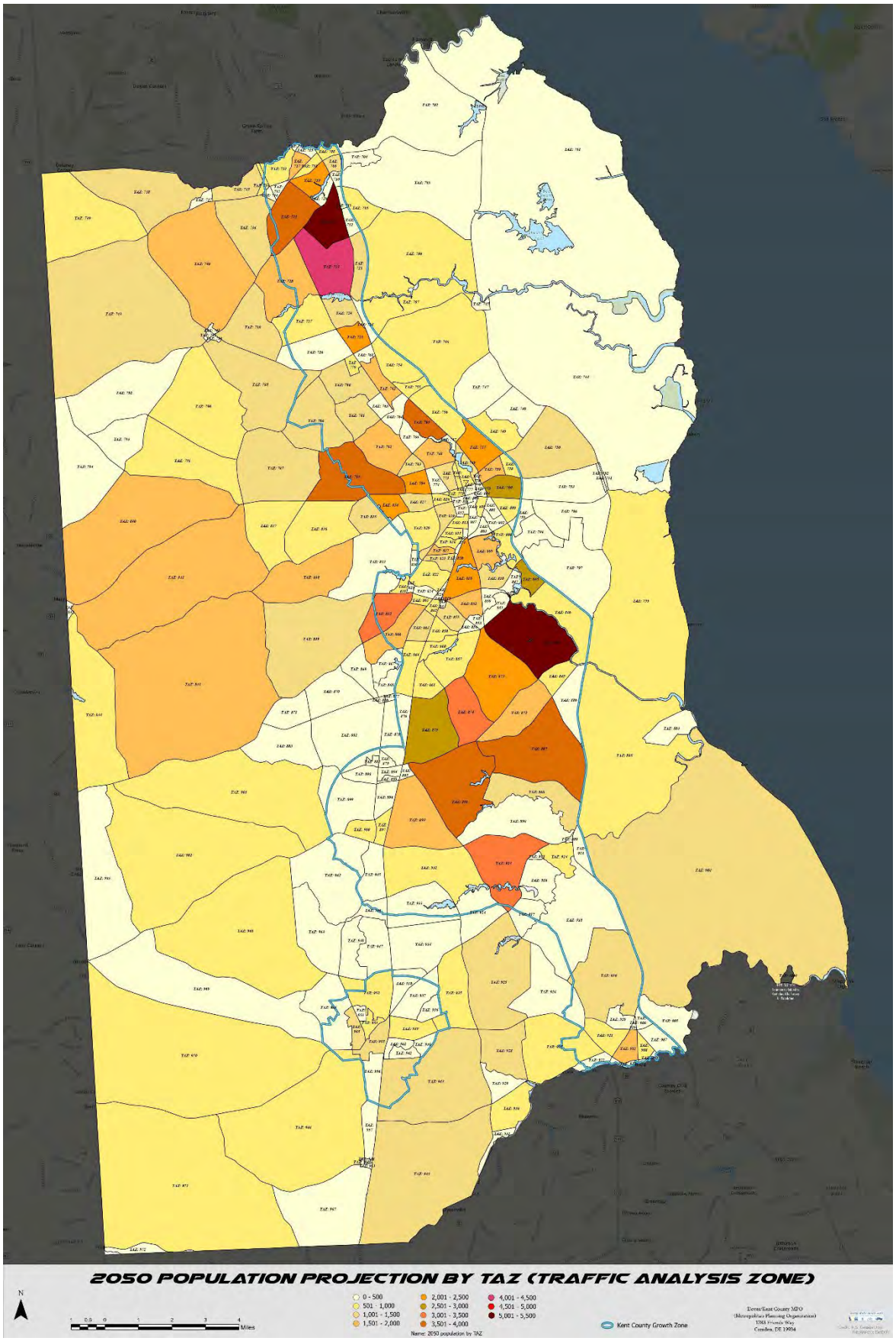
Camden, DE 19934


2050 POPULATION PROJECTION BY TAZ (TRAFFIC ANALYSIS ZONE)
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Miles
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1,001 - 1,500
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2,501 - 3,000
3,001 - 3,500
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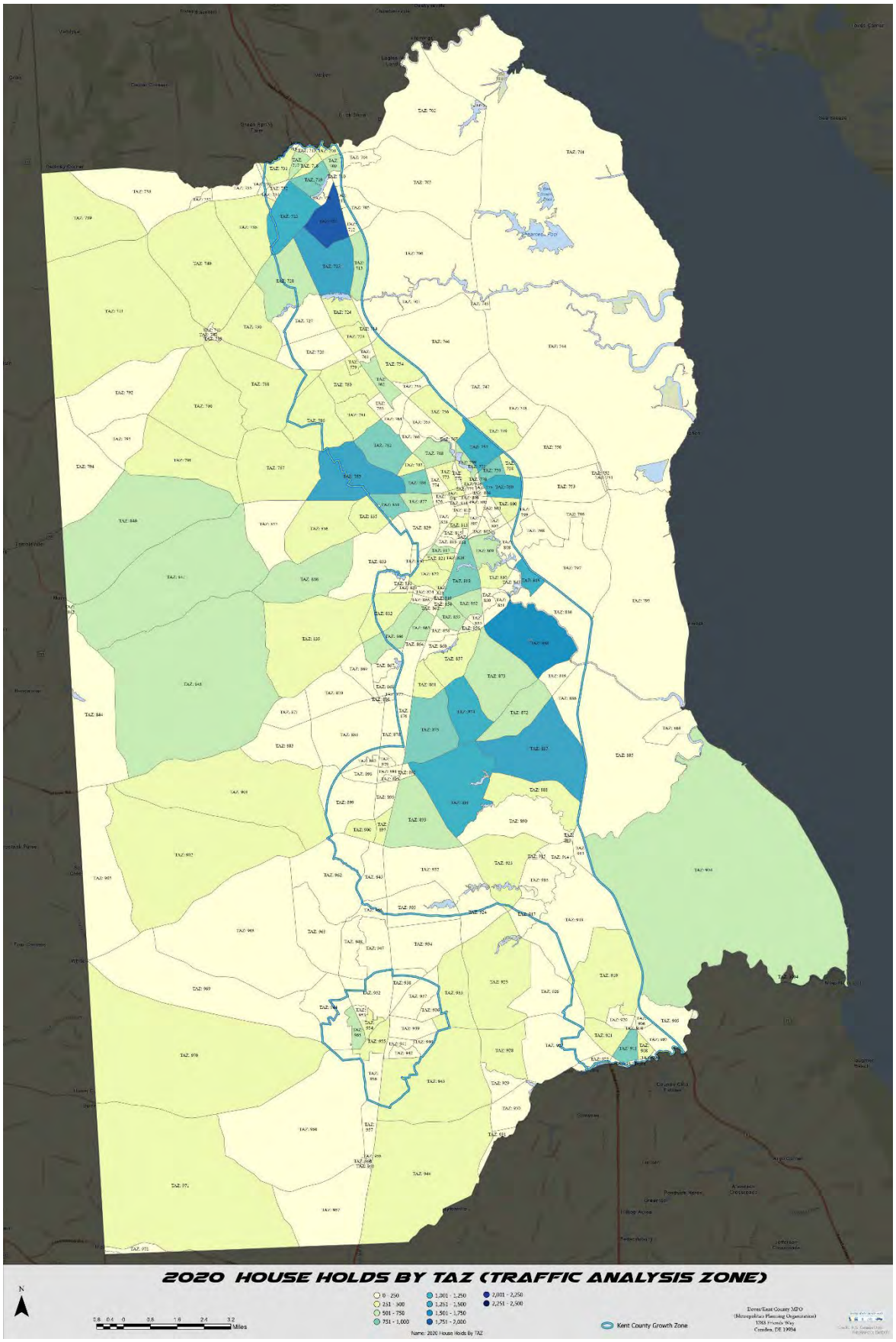
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Miles
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501 - 750
751 - 1,000
1,001 - 1,250
1,251 - 1,500
1,501 - 1,750
1,751 - 2,000
2,001 - 2,250
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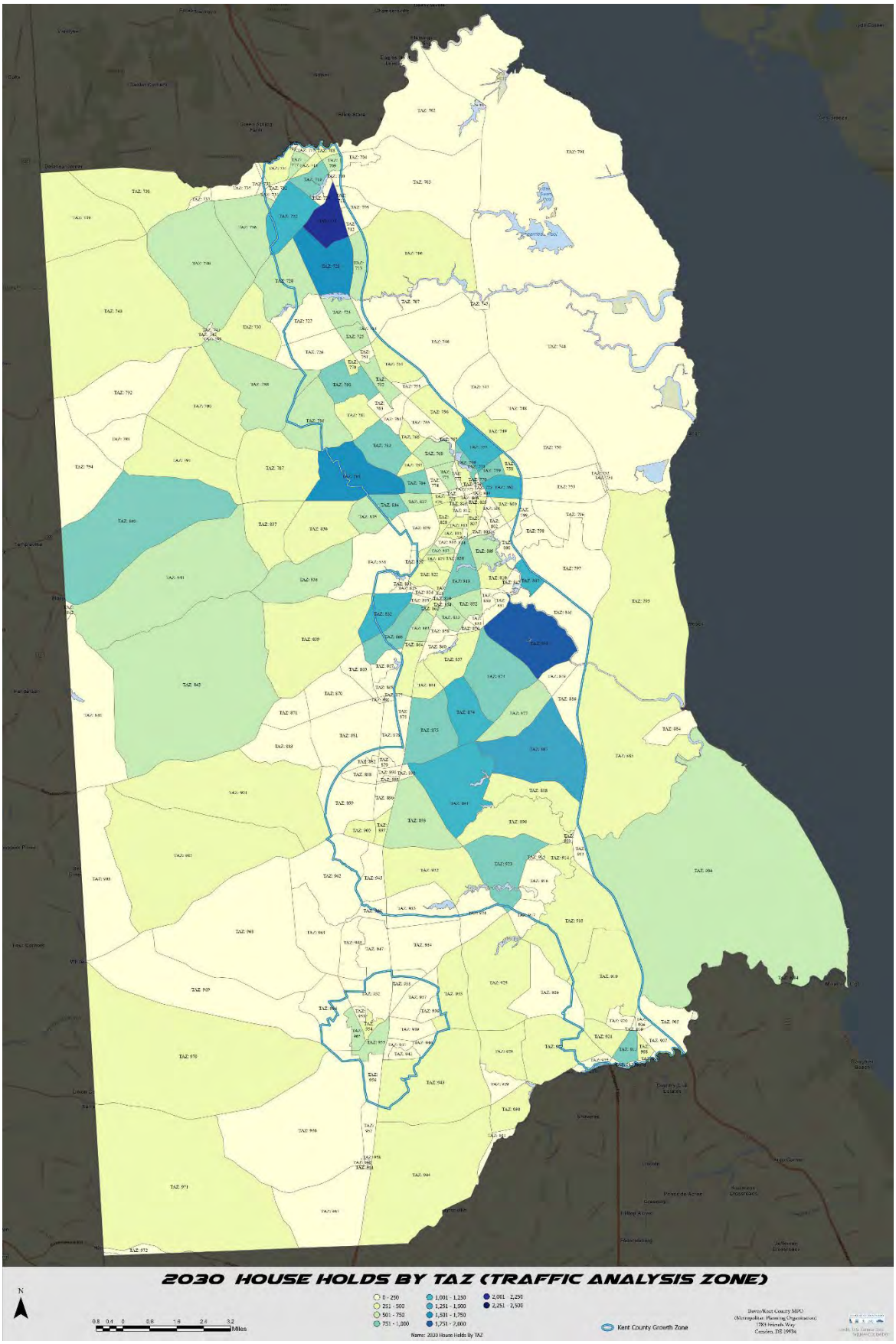
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501 - 750
751 - 1,000
1,001 - 1,250
1,251 - 1,500
1,501 - 1,750
1,751 - 2,000
2,001 - 2,250
2,251 - 2,500
0.8 0.4 0 0.8 1.6 2.4 3.2
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Kent County Growth Zone
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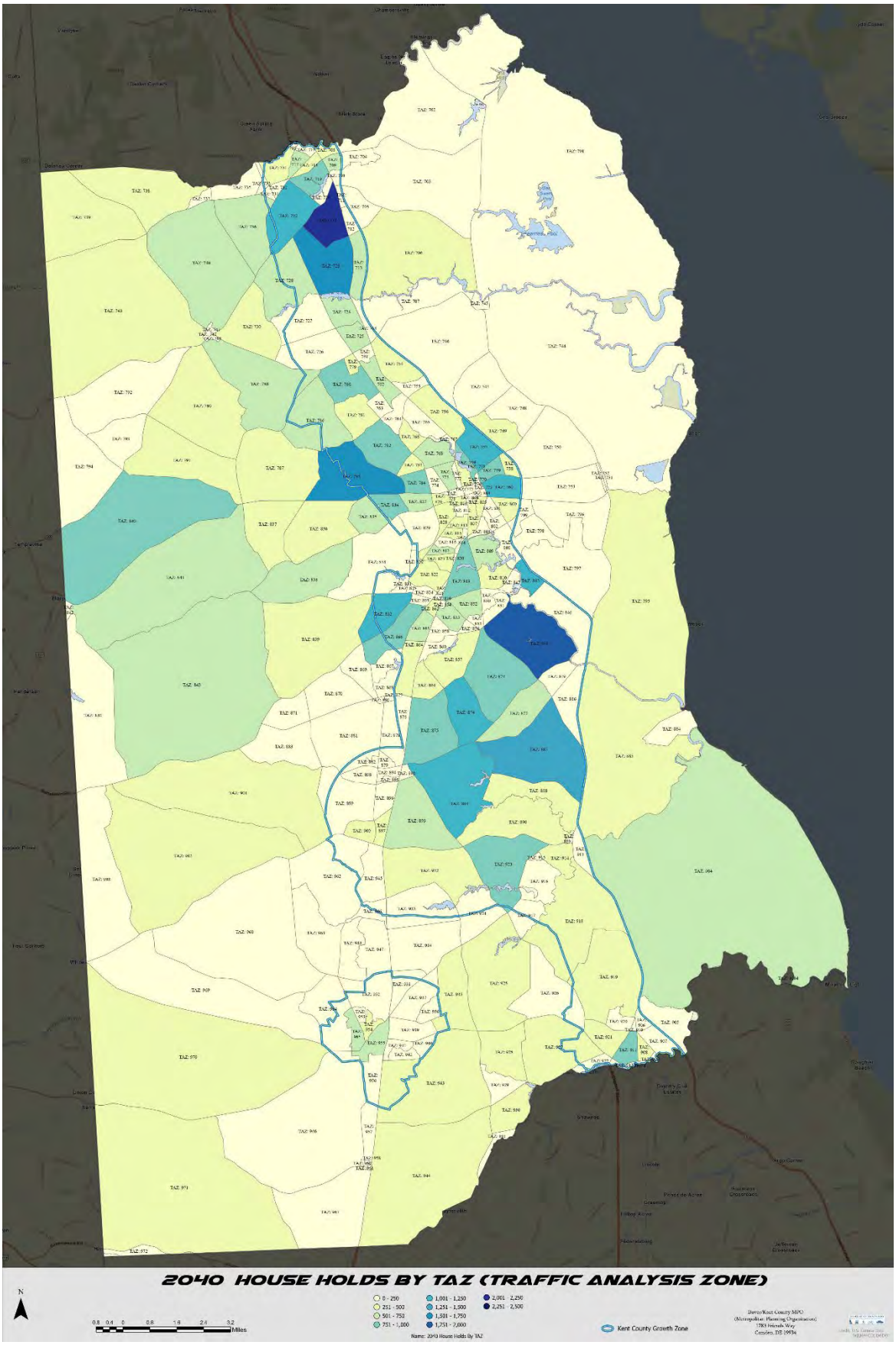
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2,251 - 2,500
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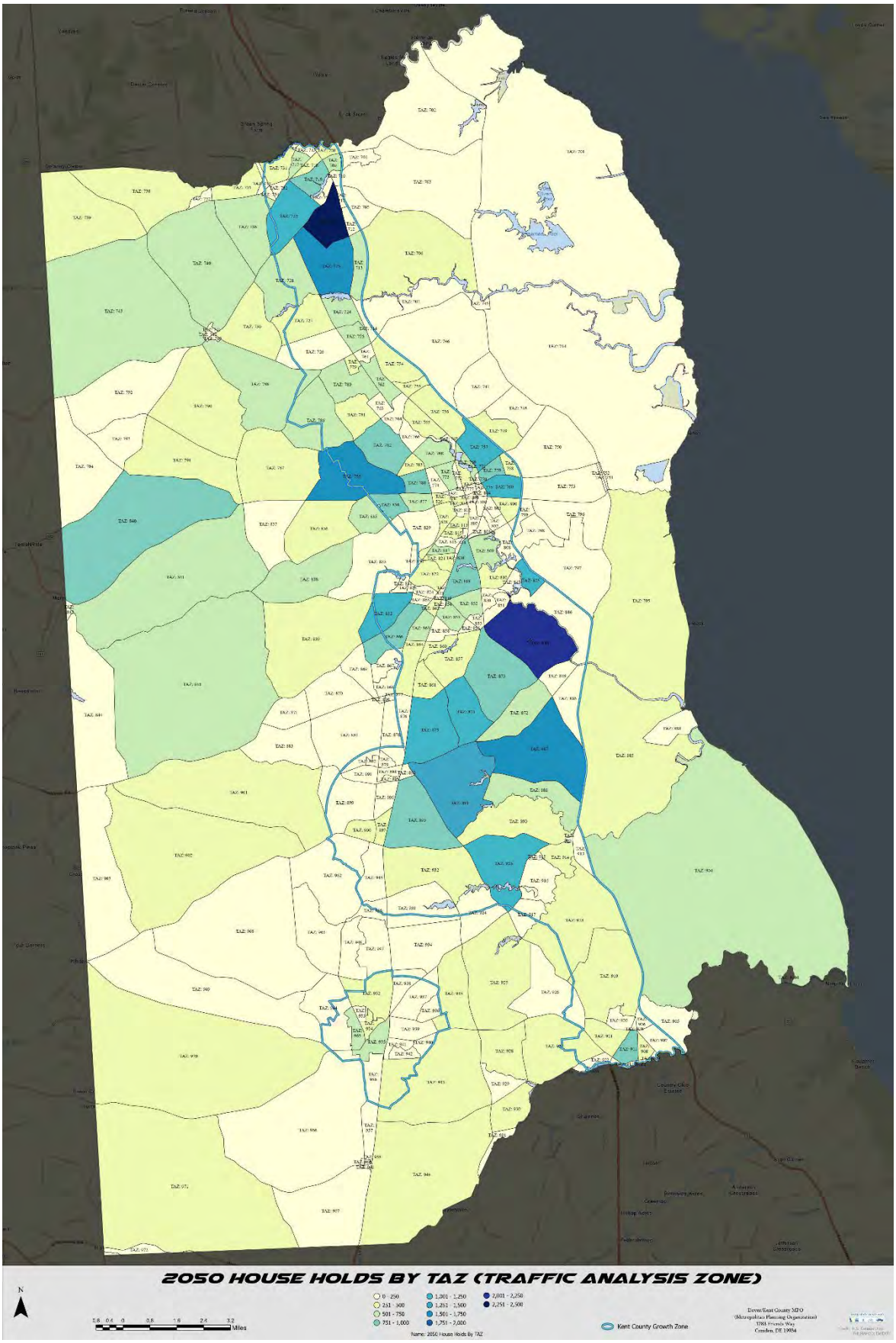
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501 - 750
751 - 1,000
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1,251 - 1,500
1,501 - 1,750
1,751 - 2,000
2,001 - 2,250
2,251 - 2,500
Miles
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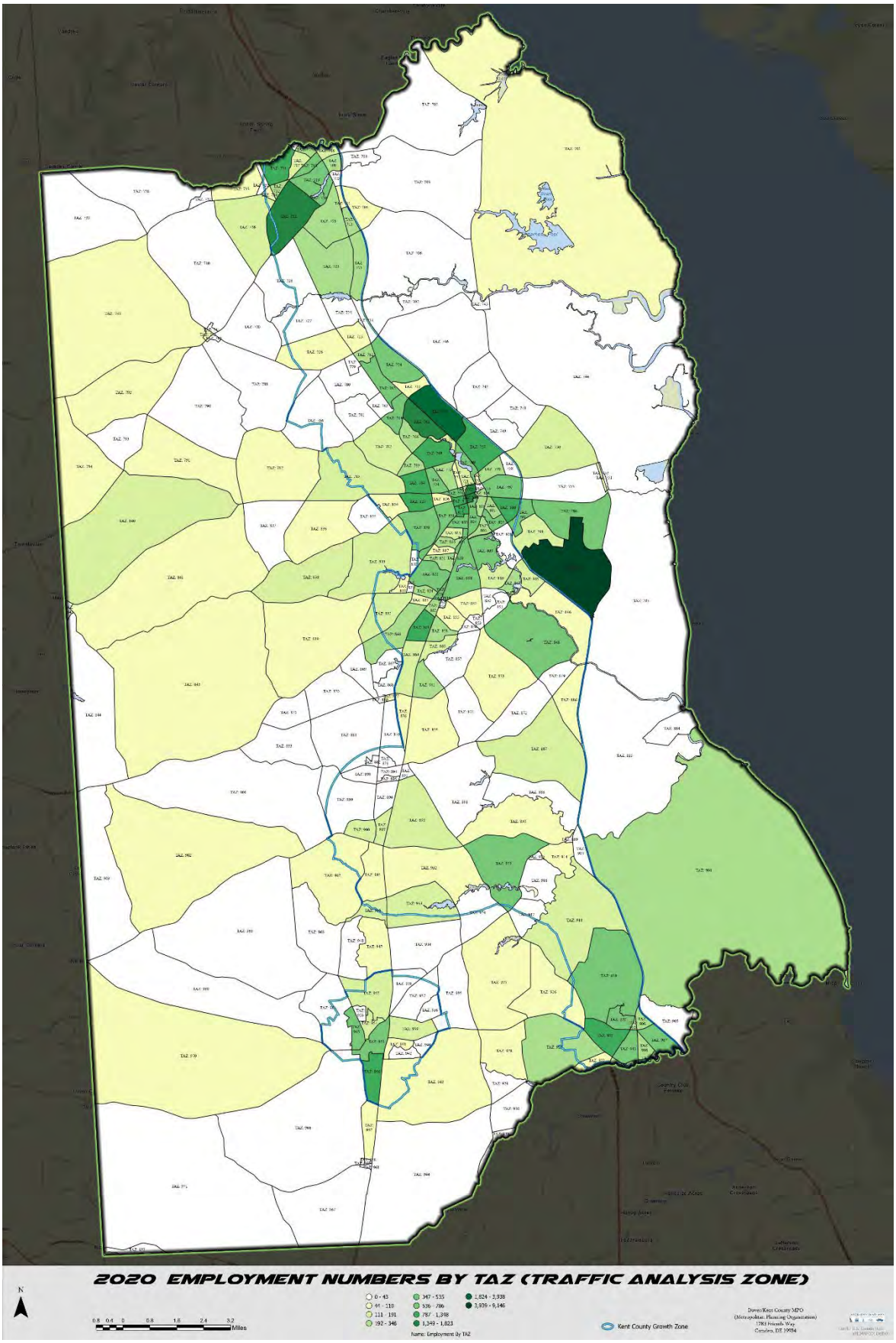
2020 EMPLOYMENT NUMBERS BY TAZ (TRAFFIC ANALYSIS ZONE)
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Miles
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44 - 110
111 - 191
192 - 346
347 - 535
536 - 786
787 - 1,348
1,349 - 1,823
1,824 - 3,938
3,939 - 9,146
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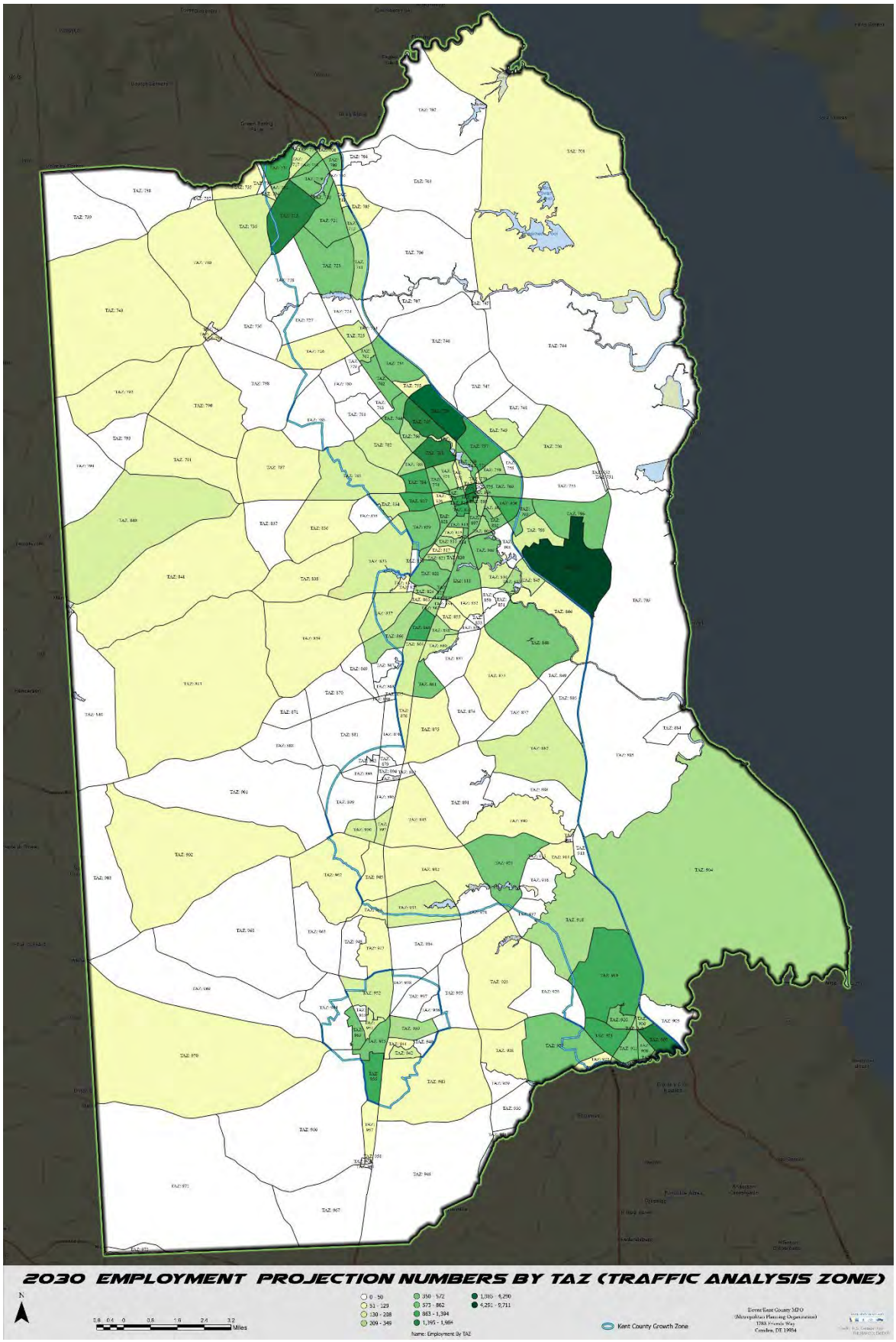
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Miles
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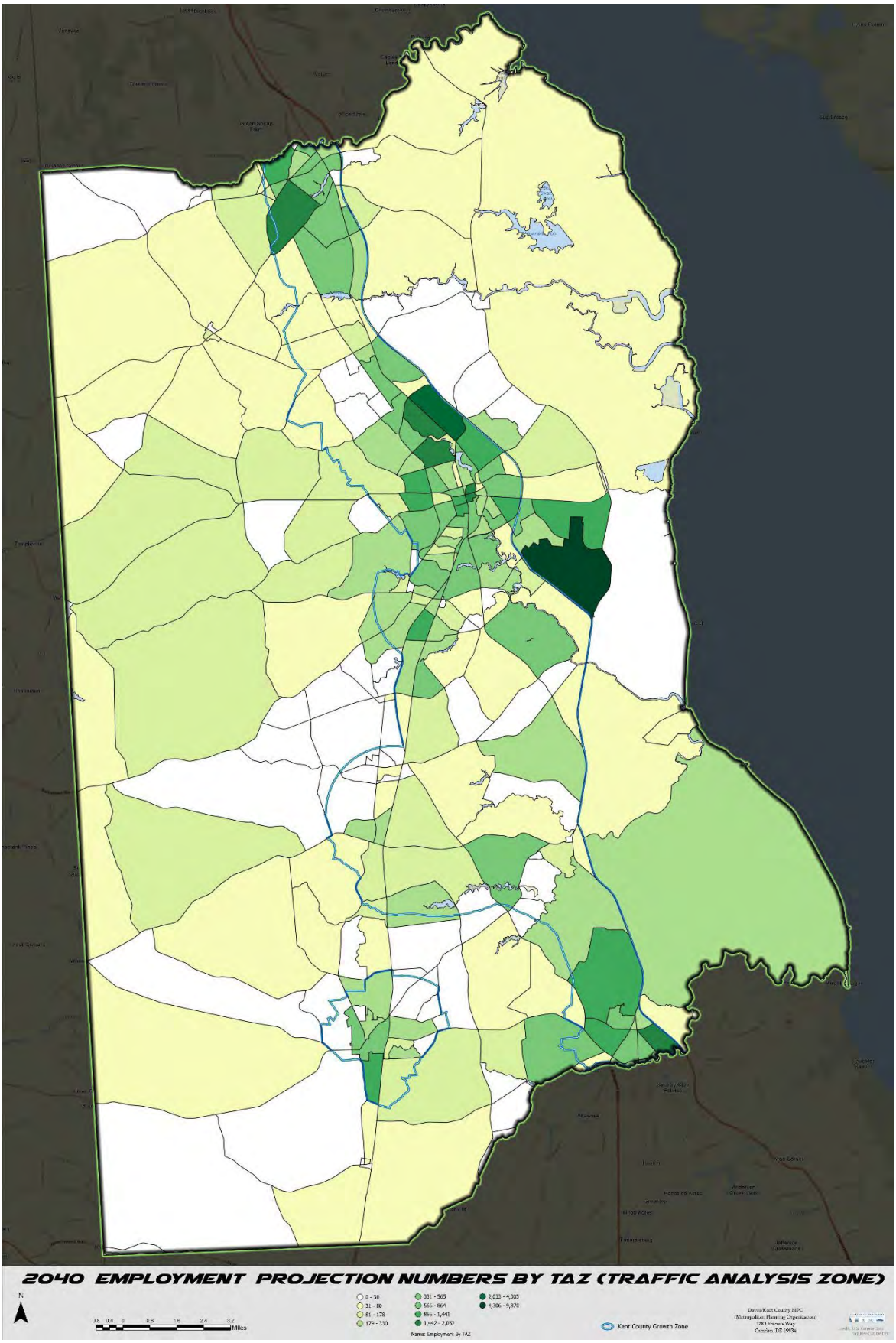
130 - 208
209 - 349
350 - 572
573 - 862
863 - 1,394
1,395 - 1,984
1,985 - 4,290
4,291 - 9,711
Name: Employment By TAZ
Kent County Growth Zone
Dover/Kent County MPO
(Metropolitan Planning Organization)
1783 Friends Way
Camden, DE 19934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N
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Miles
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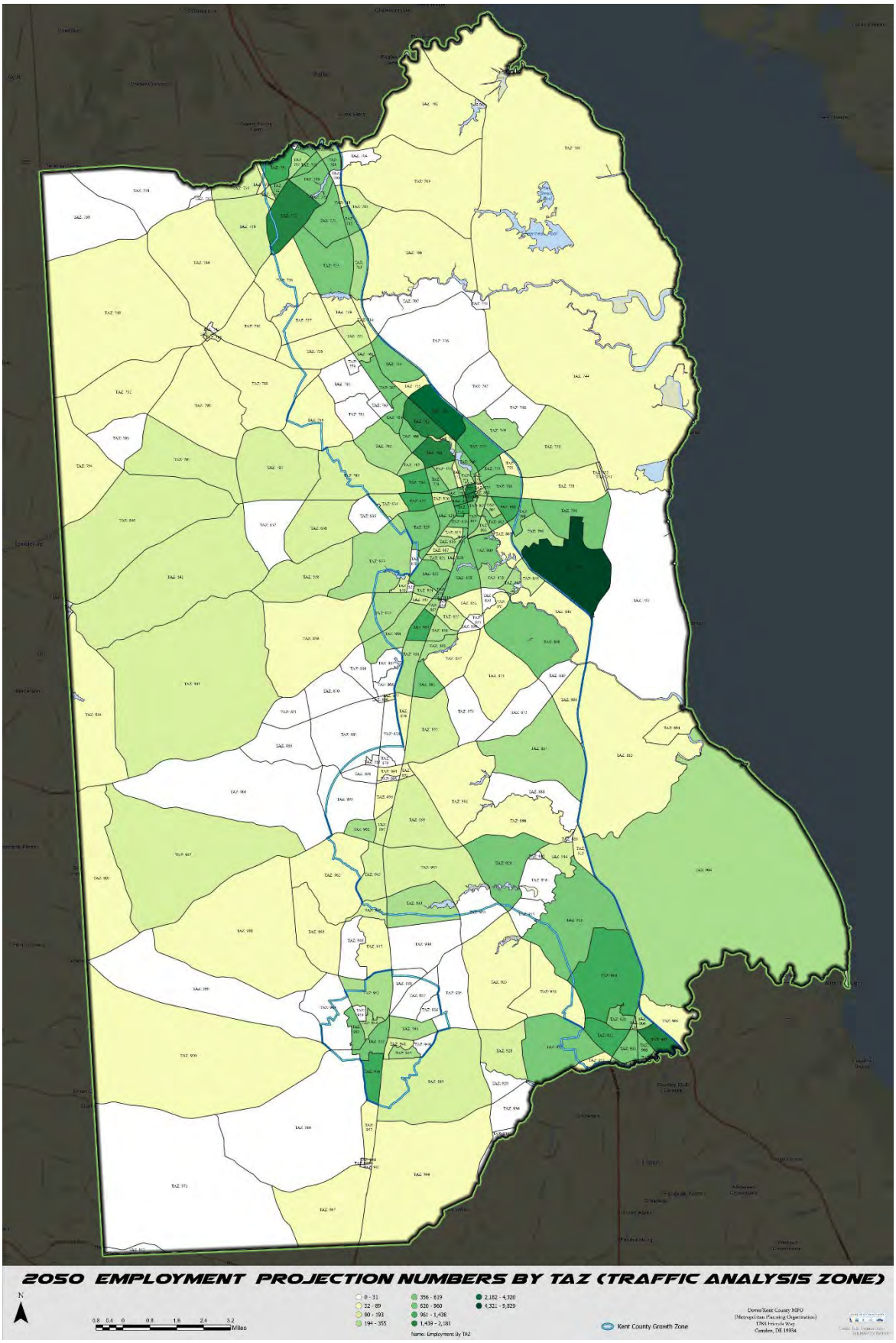
81 - 178
179 - 330
331 - 565
566 - 864
865 - 1,441
1,442 - 2,032
2,033 - 4,305
4,306 - 9,870
Name: Employment By TAZ
Kent County Growth Zone
Dover/Kent County MPO
(Metropolitan Planning Organization)
1783 Friends Way
Camden, DE 19934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Miles
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32 - 89
90 - 193
194 - 355
356 - 619
620 - 960
961 - 1,438
1,439 - 2,181
2,182 - 4,320
4,321 - 9,829
Name: Employment By TAZ
Kent County Growth Zone
Dover/Kent County MPO
(Metropolitan Planning Organization)
1783 Friesels Way
Camden, DE 19934

APPENDIX B

TRAVEL DEMAND MODEL MAP SERIES

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2022 PM Volume to Capacity Ratios

2030 AM Volume to Capacity Ratios

2030 PM Volume to Capacity Ratios

2040 AM Volume to Capacity Ratios

2040 PM Volume to Capacity Ratios

2050 AM Volume to Capacity Ratios

2050 PM Volume to Capacity Ratios

List of Roads & Road Segments Not Reflected on Travel Demand Map Model Runs

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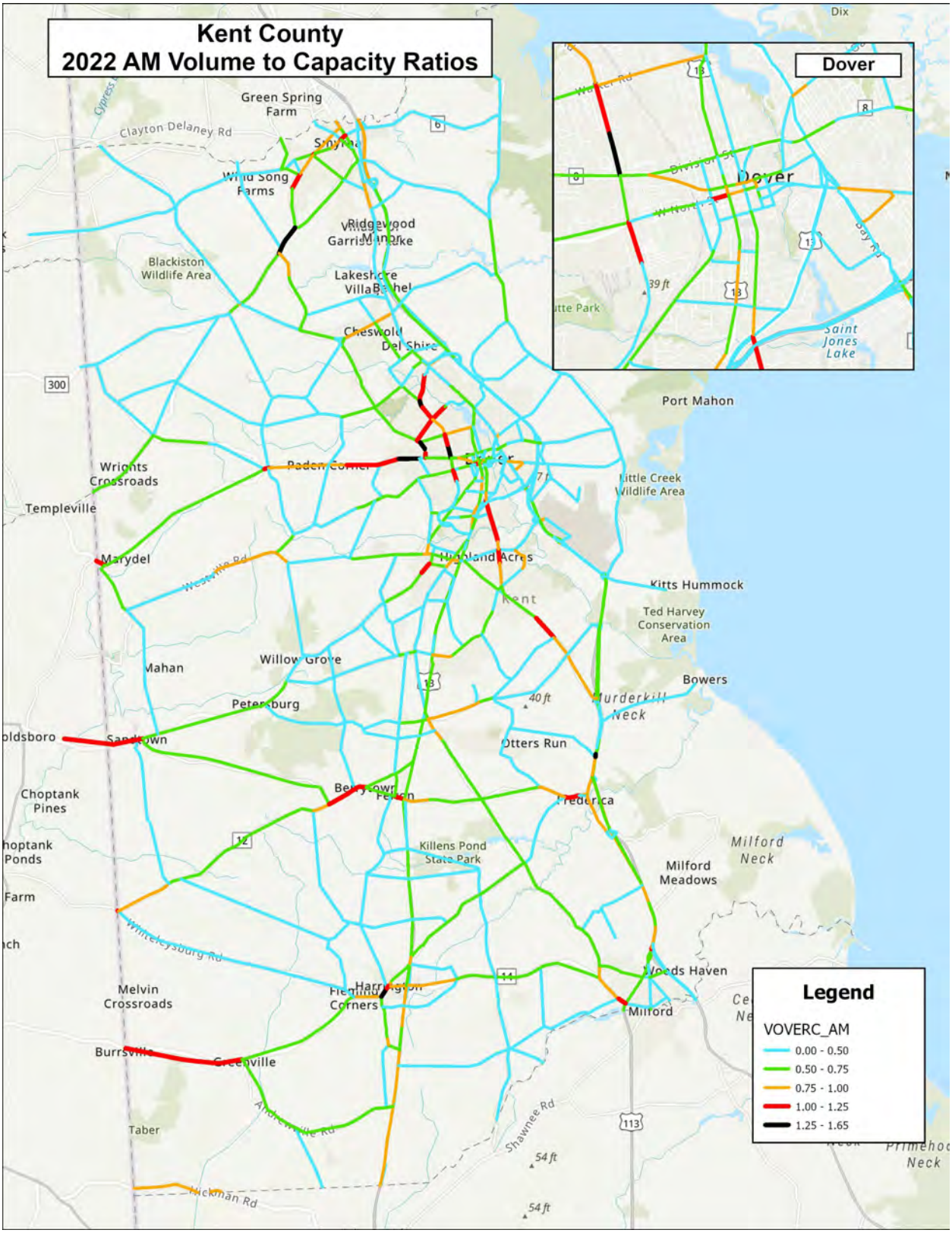
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1.25 - 1.65
Green Spring Farm
Clayton Delaney Rd
Blackiston Wildlife Area
Port Mahon
Little Creek Wildlife Area
Wrights Crossroads
Templeville
Marydel
Kitts Hummock
Ted Harvey Conservation Area
Bowers
Mahan
Willow Grove
Petersburg
Sandtown
Otters Run
Choptank Pines
Killens Pond State Park
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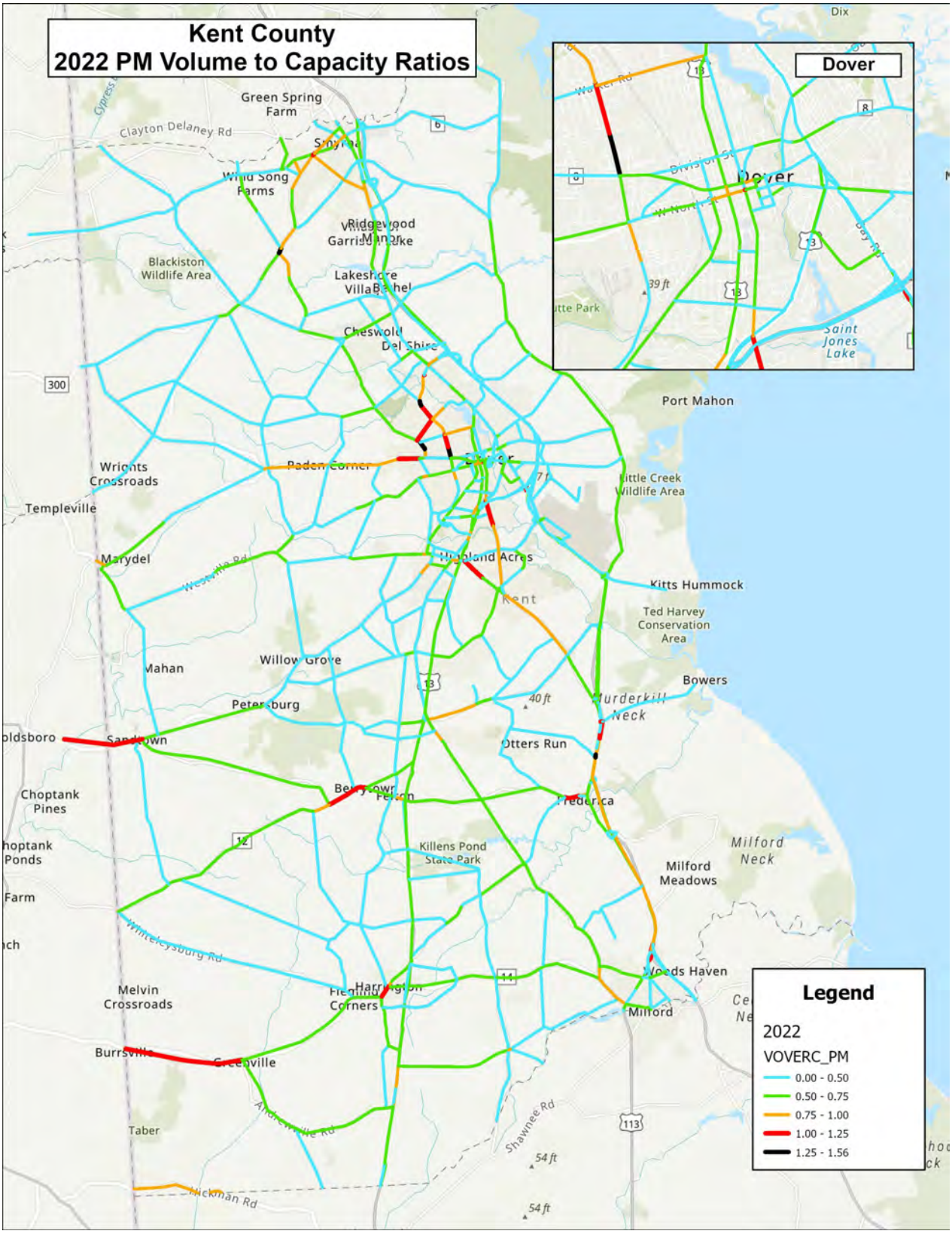
Milford
Taber
Shawnee Rd
Hickman Rd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1.25 - 1.56
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Clayton Delaney Rd
Wild Song Farms
Blackiston Wildlife Area
Port Mahon
Wrights Crossroads
Templeville
Marydel
Little Creek Wildlife Area
Kitts Hummock
Ted Harvey Conservation Area
Bowers
Mahan
Willow Grove
Peterburg
Sandtown
Otters Run
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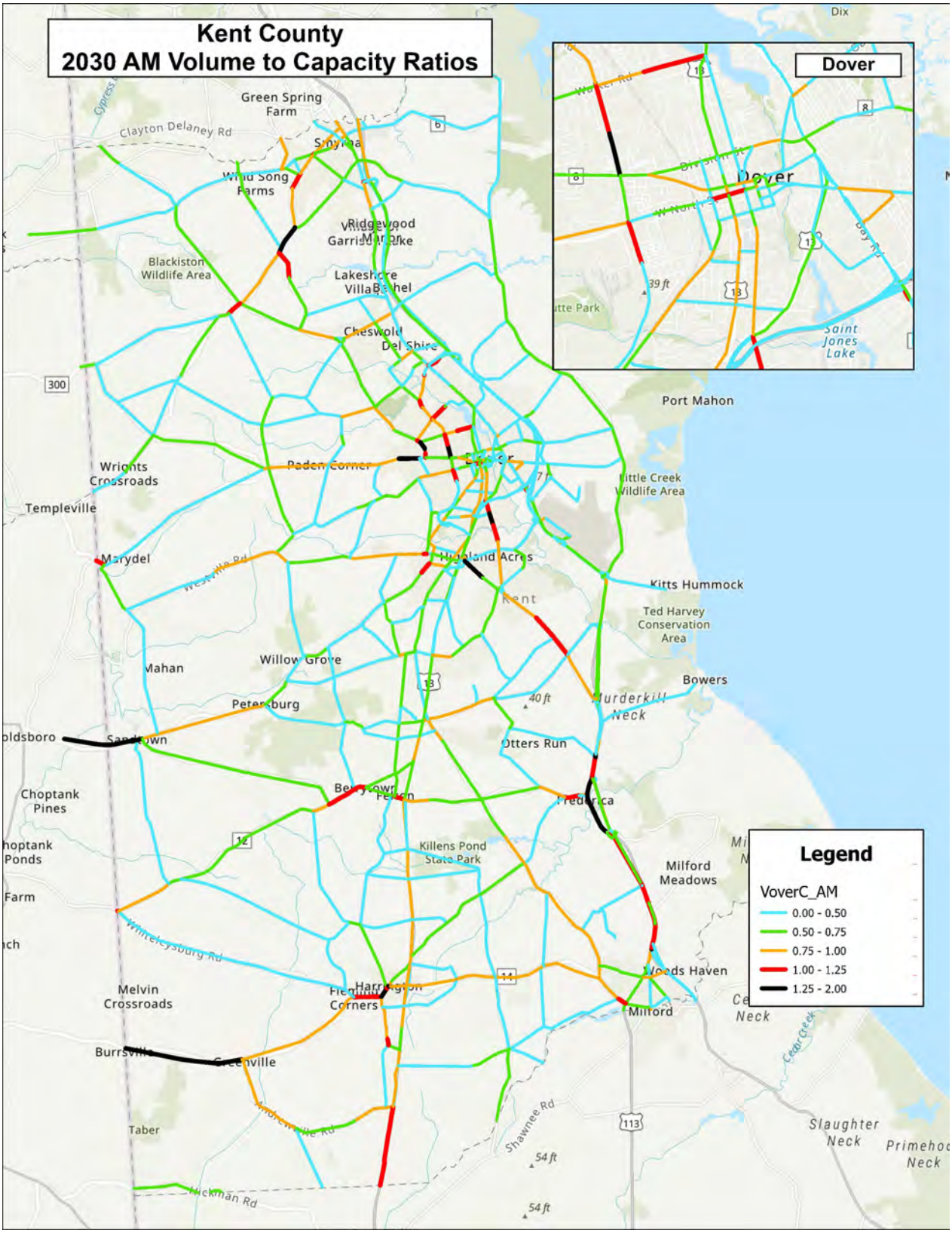
Hickman Rd
Saint Jones Lake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1.00 - 1.25
1.25 - 2.00
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Wind Song Farms
Ridgewood
Blackiston Wildlife Area
Lakeshore Village
Bethel
Cheswold
Del Shire
Port Mahon
Wrights Crossroads
Paden Corner
Little Creek Wildlife Area
Templeville
Marydel
Highland Acres
Kitts Hummock
Ted Harvey Conservation Area
Mahan
Willow Grove
Bowers
Petersburg
Murderkill Neck
Sandtown
Otters Run
Choptank Pines
Frederica
Killens Pond State Park
Milford Meadows
Farm
Whiteleysburg Rd
Woods Haven
Melvin Crossroads
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Corners
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Slaughter Neck
Primehook Neck
Hickman Rd
Saint Jones Lake
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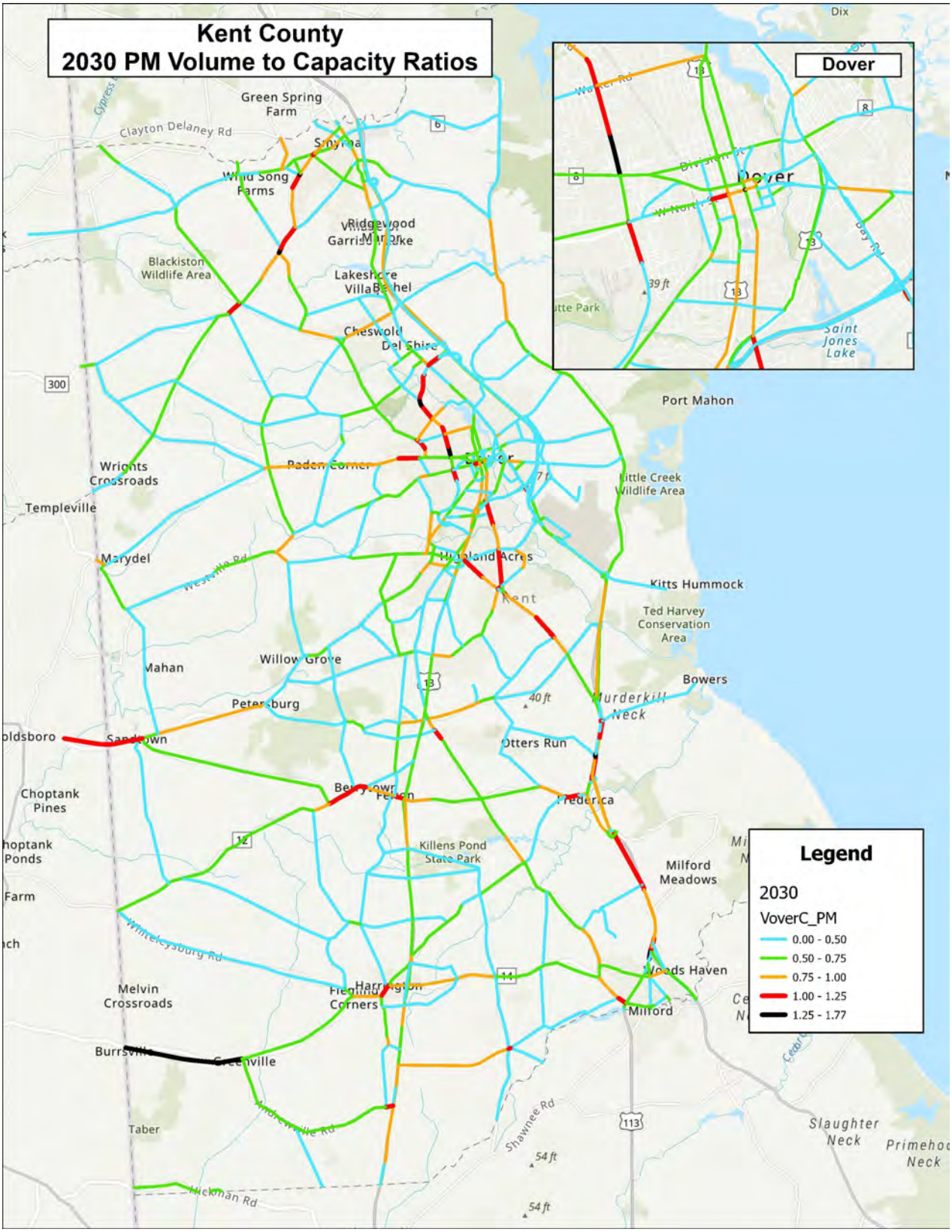
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1.00 - 1.25
1.25 - 1.77
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Smyrna
Wind Song Farms
Ridgewood Manor
Blackiston Wildlife Area
Lakeshore Villa
Bethel
Cheswold
Del Shire
Port Mahon
Wrights Crossroads
Paden Corner
Little Creek Wildlife Area
Templeville
Marydel
Highland Acres
Kitts Hummock
Ted Harvey Conservation Area
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Willow Grove
Bowers
Petersburg
Murderkill Neck
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Otters Run
Choptank Pines
Frederica
Killens Pond State Park
Milford Meadows
Farm
Whiteleysburg Rd
Woods Haven
Melvin Crossroads
Harrington
Fleming Corners
Milford
Burrsville
Greenville
Taber
Shawnee Rd
Slaughter Neck
Primehook Neck
Hickman Rd
Saint Jones Lake
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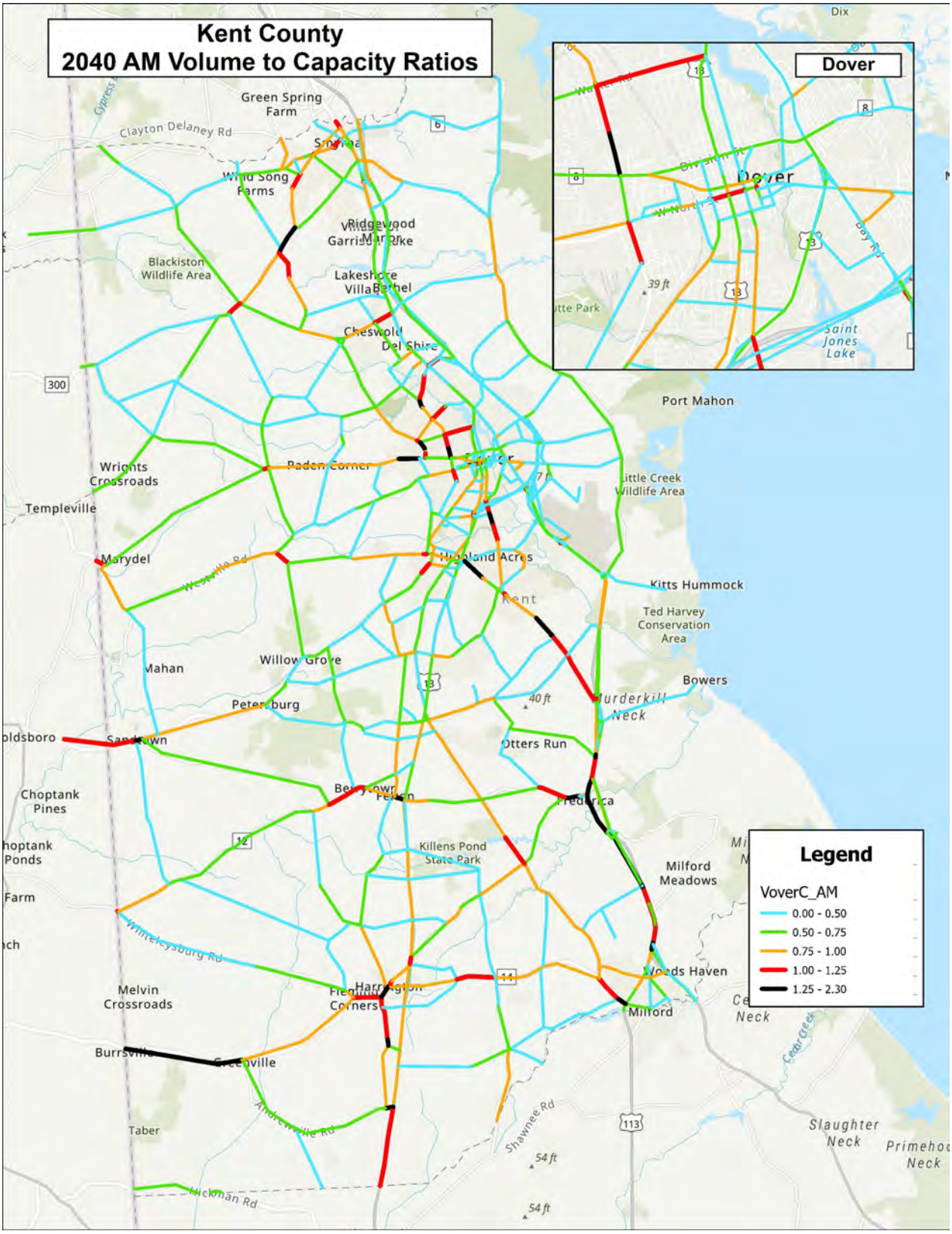
39 ft
40 ft
54 ft
300
13
12
14
113
6
8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Clayton Delaney Rd
Blackiston Wildlife Area
Lakeshore Villa
Cheswold
Del Shire
Port Mahon
Wrights Crossroads
Templeville
Marydel
Little Creek Wildlife Area
Kitts Hummock
Ted Harvey Conservation Area
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Willow Grove
Bowers
Petersburg
Murderkill Neck
Otters Run
Choptank Pines
Killens Pond State Park
Milford Meadows
Woods Haven
Melvin Crossroads
Milford
Burrsville
Greenville
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Hickman Rd
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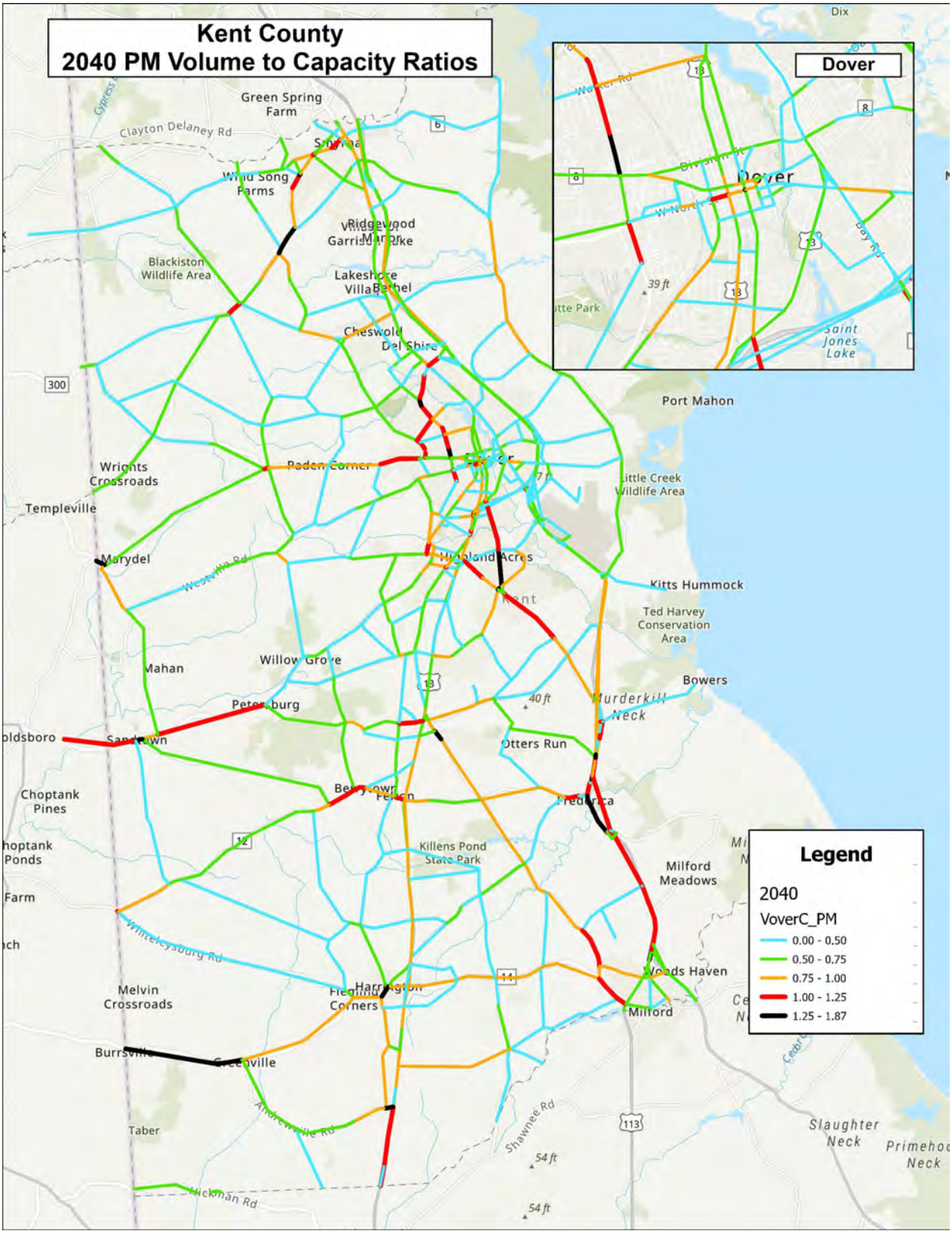
Division St
Dover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1.25 - 1.87
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Wind Song Farms
Ridgewood
Blackiston Wildlife Area
Lakeshore Villa
Cheswold
Port Mahon
Wrights Crossroads
Templeville
Marydel
Little Creek Wildlife Area
Kitts Hummock
Ted Harvey Conservation Area
Willow Grove
Mahan
Bowers
Murderkill Neck
Otters Run
Choptank Pines
Killens Pond State Park
Milford Meadows
Woods Haven
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Melvin Crossroads
Slaughter Neck
Taber
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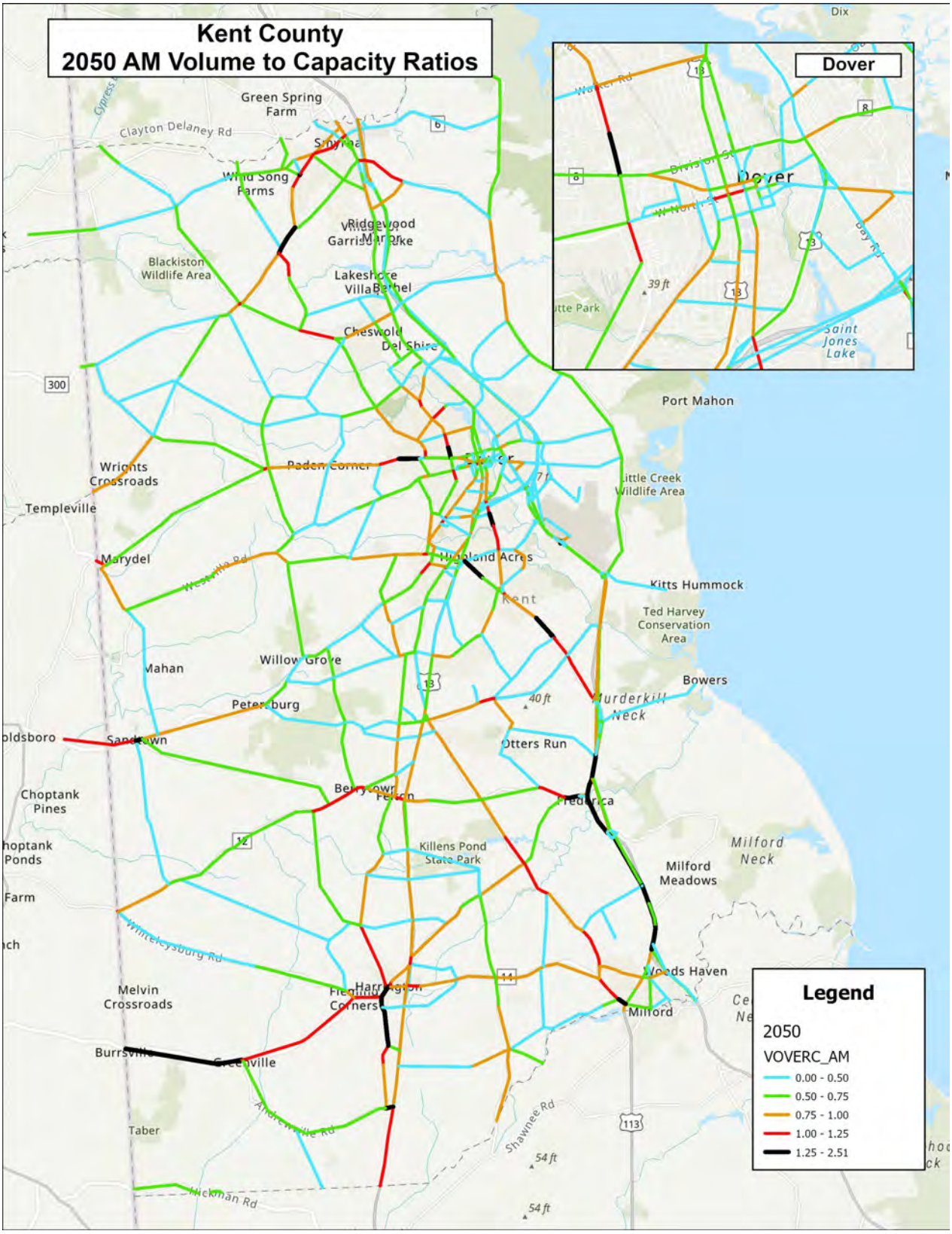
Hickman Rd
Saint Jones Lake
39 ft
40 ft
54 ft
54 ft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Legend
2050
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1.00 - 1.25
1.25 - 2.51
Green Spring Farm
Clayton Delaney Rd
Wild Song Farms
Ridgevood
Blackiston Wildlife Area
Lakeshore Villa
Cheswold
Port Mahon
Wrights Crossroads
Templeville
Marydel
Little Creek Wildlife Area
Highland Acres
Kitts Hummock
Ted Harvey Conservation Area
Willow Grove
Bowers
Peterburg
Murderkill Neck
Sandtown
Otters Run
Choptank Pines
Killens Pond State Park
Milford Neck
Milford Meadows
Woods Haven
Melvin Crossroads
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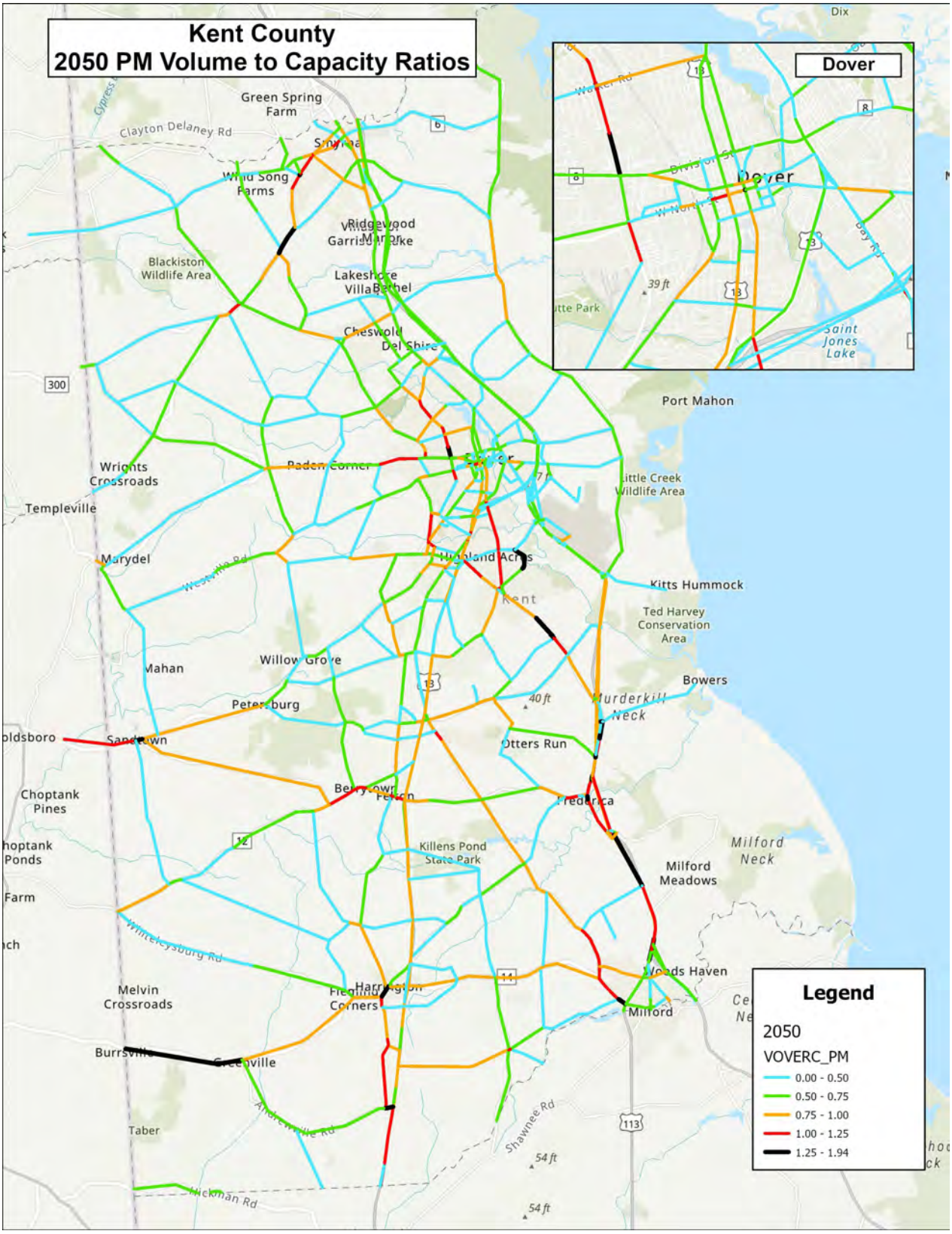
Burrsville
Greenville
Taber
Shawnee Rd
Hickman Rd
Saint Jones Lake
Dix


Kent County
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Dover
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Green Spring Farm
Clayton Delaney Rd
Smyrna
Wind Song Farms
Ridgewood
Garrison Lake
Blackiston Wildlife Area
Lakeshore Villa
Bethel
Cheswold
Del Shire
Port Mahon
Wrights Crossroads
Templeville
Paden Corner
Little Creek Wildlife Area
Marydel
Highland Acres
Kitts Hummock
Ted Harvey Conservation Area
Mahan
Willow Grove
Bowers
Petersburg
Murderkill Neck
Sandtown
Otters Run
Choptank Pines
Berrytown
Fenton
Frederica
Killens Pond State Park
Milford Neck
Milford Meadows
Farm
Whiteleysburg Rd
Woods Haven
Melvin Crossroads
Harrington
Fleming Corners
Milford
Burrsville
Greenville
Taber
Andrewville Rd
Shawnee Rd
Hickman Rd
Saint Jones Lake
Dix
Division St
W North St
Bay Rd
39 ft
40 ft
54 ft
300
6
13
12
14
113
8

Roads & Road Segments that DO NOT Appear on Travel Demand Model Map Runs

TAZ #	Roadway Name	DelDOT Maintenance #	Road Classification
731	Duck Creek Parkway	134	Major Collector
718,719	S Main Street (Smyrna)	65	Major Collector
719	W South Street (Smyrna)	136	Major Collector
721	S Carter Road	137	Major Collector
721,723,728	Brenford Road	42	Major Collector
745	Denny Street (Leipsic)	12	Major Collector
762	Fork Branch Road	153	Major Collector
765	Crawford Carroll Boulevard	?	Major Collector
747	Persimmon Tree Road	337	Major Collector
785	Chestnut Grove Road	158	Major Collector
891	Barratt's Chapel Road	371	Major Collector
844	Westville Road	52,206	Major Collector
907	NE Front Street	22	Major Collector
739	Underwoods Corner Road	94	Minor Collector
728	Hilyard Road	147	Minor Collector
727	Moorton Road	92	Minor Collector
781,786	Central Church Road	155	Minor Collector
843,844	Mud Mill Road	207	Minor Collector
893	Andrews Lake Road	380,385	Minor Collector
701	Woodland Beach Road	9	Minor Collector
724	Messina Hill Road	102	Minor Collector
798	Bay Road (Dover)	7	Minor Arterial
955	Clark Street (SR 14) Harrington	?	Minor Arterial

Methodology: The above list is derived from a GIS analysis involving layering of TAZ Boundaries on top of the Functional Classification Map to locate Collector (and higher) road segments that do not form part of a TAZ Boundary. This approach was predicated on the notion indicated to Dover Kent MPO that only road segments forming part of a TAZ Boundary are reflected in the Travel Demand Model. This exercise revealed that some Collector (and higher order roads) Roads as well as some TAZ Boundary Roads are not reflected in the Travel Demand Modeling.

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APPENDIX C

AIR QUALITY CONFORMITY ANALYSIS

Air Quality Conformity Analysis Report

Dover Kent Metropolitan Planning Organization
2050 Metropolitan Transportation Plan (MTP)

Prepared for:

Dover Kent Metropolitan Planning Organization

In association with:

Delaware Department of Transportation
Delaware Department of Natural Resources and Environmental Control

Prepared by:

Whitman, Requardt & Associates, LLP
1013 Centre Road, Suite 302
Wilmington, Delaware 19805

November 2024

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INTRODUCTION

The Dover Kent Metropolitan Planning Organization (DKMPO) is the federally designated agency responsible for coordinating transportation planning and programming in Kent County, Delaware, including all of Milford and Smyrna. Plans and programs adopted by the MPO outline how federal transportation funds will be spent and, must comply with federal laws governing clean air and transportation. DKMPO is responsible for developing a Metropolitan Transportation Plan (MTP) in cooperation with the Delaware Department of Transportation (DelDOT) and affected transit operators.

In accordance with federal planning requirements, a collaborative process has been developed wherein state, county, and local governments and transportation providers are partners in the planning and programming process.

Dover Kent MPO is required by law to demonstrate that the MTP conforms to the transportation emission budgets set forth in the Statewide Implementation Plan (SIP) for each state. If emissions generated from the projects programmed in the MTP are equal to or less than the emission budgets in the SIPs, then conformity has been demonstrated.

Kent County is cited as a non-attainment area for the 1997 standard. It was revoked because they were attaining the 2008 standard; however, is now impacted as a result of the court decision.

This report documents the analysis of Air Quality implications of the Dover Kent MPO 2050 MTP. This document demonstrates the transportation conformity of the Dover Kent MPO's 2050 MTP under the 8-hour ozone and NAAQS. Kent County has never been designated as non-attainment area for PM2.5. The PM2.5 emission analyses are included in this report - for informational purposes only – to demonstrate the PM2.5 emission in Kent County for the Dover Kent MPO's 2050 MTP.

The methodology and data assumptions used for the conformity analysis are illustrated. Detailed emission results are presented for each analysis year, by summer weekday and by daily and annual average. Modeling input and output files have been reviewed by Delaware Department of Natural Resources and Environmental Control (DNREC). The public engagement component of the MTP may be found in Chapter 8 (Public Engagement) beginning on Page 8-1, and in Appendix D (Public Engagement Documentation) beginning on Page D-1.

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NATIONAL AMBIENT AIR QUALITY STANDARD

The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set NAAQS designations for pollutants considered harmful to public health and the environment. A nonattainment area is any area that does not meet the primary or secondary NAAQS. Once a nonattainment area meets the standards and additional redesignation requirements in the CAA (Section 107(d)(3)(E)), EPA will designate the area as a maintenance area.

Kent County is considered in nonattainment for the 1997 8-hour ozone standard, as part of the Philadelphia-Wilmington-Atlantic City nonattainment area. It is in attainment for the stricter 2008 and 2015 standards. Though the 1997 standard was revoked by EPA (relieving Kent County of performing transportation conformity for years) a recent court decision partially reinstated the 1997 standard. The result is that all TIPs and RTPs in Kent County, moving forward, must once again show conformity to the 1997 standard. The previous TIPs and 2045 MTP complied with the requirements of the 1990 CAA and subsequent amendments. A challenge to the ozone standards released by the EPA was partially upheld, however, and the Dover Kent MPO is now required to comply with the 1997 ozone standard as well.

Information concerning other pollutants (i.e. PM2.5) is not necessary as the Kent County, Delaware area is in attainment for that standard. This report only includes analysis regarding the ozone standard of non-attainment/maintenance.

1. Ozone Background

Ozone is an odorless, colorless gas composed of three atoms of oxygen (O3). While ozone in the stratosphere forms a protective layer, shielding the earth from the sun's harmful rays, ground-level ozone is a harmful air pollutant to people's health and the environment, and it is a key contributor to smog.

Ozone exposure is detrimental to public health. Ozone can irritate lung airways and cause inflammation similar to sunburn. Other symptoms include wheezing, coughing, and pain when taking a deep breath and breathing difficulties during exercise or outdoor activities. People most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. In addition, people with certain genetic characteristics, and people with reduced intake of certain nutrients, such as Vitamins C and E, are at greater risk from ozone exposure. Even at very low levels, ground-level ozone triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses such as pneumonia and bronchitis.[28]

In addition to adverse health effects, ground-level ozone also interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, other pollutants, and harsh weather. As a result, ground-level ozone negatively impacts both agricultural productivity and ecosystem stability. Furthermore, ozone damages the leaves of trees and other plants, ruining the appearance of cities, national parks, and recreation areas.

[28] *Ozone and your health* - https://www3.epa.gov/airnow/ozone-c.pdf

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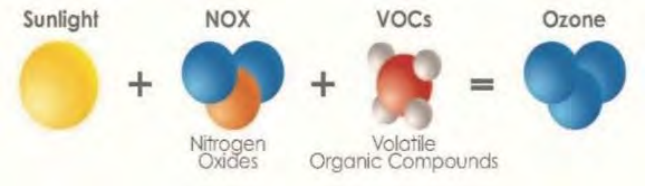

Ground-level ozone is not emitted directly into the air but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents, and natural sources all contribute to NOx and VOC emissions. Since ozone is formed in the presence of heat and sunlight, it is considered a summertime pollutant.

2. 8-Hour Ozone National Ambient Air Quality Standards

On July 18, 1997, EPA published the 1997 8-hour ozone NAAQS via the Federal Register (62 FR 38856) with an effective date of September 16, 1997. An area was in nonattainment of the 1997 8-hour ozone NAAQS if the 3-year average of the individual fourth highest air quality monitor readings, averaged over 8 hours throughout the day, exceeded the NAAQS of 0.08 parts per million (ppm). On May 21, 2013, the EPA published a rule revoking the 1997 8-hour ozone NAAQS, for the purposes of transportation conformity, effective one year after the effective date of the 2008 8-hour ozone NAAQS area designations (77 FR 30160).

On May 21, 2012, EPA issued a final rule via the Federal Register (77 FR 30088) establishing initial air quality designations for the 2008 primary and secondary NAAQS for ozone. The 2008 standard is set at an 8-hour average concentration of 0.075 ppm and retains the same general form and averaging time as the 0.080 ppm NAAQS set in 1997. The effective date of the 2008 ozone standard designations was July 20, 2012.

On October 26, 2015, EPA issued 2015 primary and secondary NAAQS for ozone via Federal Register 80 FR 65292. The 2015 standards revised the levels of primary and secondary standards to 0.070 ppm, and retained their indicator (O3), forms (fourth-highest daily maximum, average across three consecutive years), and averaging time (eight hours).

Under the CAA, the EPA Administrator is required to make all attainment designations within two years after a final rule revising the NAAQS is published. However, the deadline for EPA to issue designations for the 2015 NAAQS for ozone passed on October 1, 2017. Once designations are final, transportation conformity would be required within 12 months for any areas designated nonattainment under the standard.

Kent County is considered in nonattainment for the 1997 8-hour ozone standard, as part of the Philadelphia-Wilmington-Atlantic City nonattainment area. It is in attainment for the stricter 2008 and 2015 standards. Though the 1997 standard was revoked by EPA (relieving Kent County of performing transportation conformity for years) a 2018 court decision partially reinstated the 1997 standard. The result is that all TIPs and MTPs in Kent County, moving forward, must once again show conformity to the 1997 standard.

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TRANSPORTATION CONFORMITY

Transportation conformity was first introduced and included in the 1977 CAA to ensure that federal funding and approval go to the transportation activities are consistent with air quality goals. These goals are set in the air quality State Implementation Plan (SIP) in each state. Transportation conformity requirements were made substantially more rigorous in the CAA Amendments of 1990, and the implementation details of the CAA requirements were first issued in the November 24, 1993 through the Federal Register. The regulations establish the criteria and procedures for transportation agencies to demonstrate that air pollutant emissions from MTP, TIP, and projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) are consistent with the State's air quality goals in the SIP. The most recent amendment of transportation conformity implementation requirements was issued in April 2012.

The SIP is a federally-approved and enforceable plan by which an area identifies how it will attain and/or maintain the health-related primary and welfare-related secondary NAAQS. Under the CAA, transportation and air quality modeling procedures must be coordinated to ensure that the TIP and the LRTP (i.e., MTP) are consistent with the SIP applicable to Kent County.

Transportation conformity requires nonattainment and maintenance areas to demonstrate that all future transportation projects will not hinder the area from reaching and maintaining its attainment goals. The integration of transportation and air quality planning is intended to ensure that transportation plans, programs, and projects will not:

- Cause or contribute to any new violation of any applicable NAAQS
- Increase the frequency or severity of any existing violation of any applicable NAAQS
- Delay timely attainment of any applicable NAAQS, any required interim emissions reductions, or other NAAQS milestones

3. Status of the Dover Kent MPO 2050 MTP

Dover Kent MPO is charged with authoring a long-range MTP with at least a 20-year planning horizon. The MTP presents recommendations for enhanced transportation efficiency and functionality, including the construction of new facilities, improved connectivity to multiple travel modes, and the enhancement of existing highway, transit, and bicycle/pedestrian facilities.

The 2050 MTP is the long-range transportation plan for the Dover Kent MPO region. The MTP identifies transportation needs, provides strategies to address those needs, guides transportation investment, and provides measurable goals for the region's transportation system through the year 2050. The Plan, which is updated every 4 years, is required of all MPOs, as only projects found in the MTP are eligible for federal funding. The Dover Kent MPO prepared its initial long-range transportation plan in 1996, and Innovation 2050 is the seventh update to the original plan. In 2024, the Dover Kent MPO sought public input through several outreach methods to update the most recent plan for 2025-2050. In January 2025, the Dover Kent MPO Council is expected to adopt the 2025-2050 MTP.

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INTERAGENCY CONSULTATION

The federal transportation conformity rule requires that the conformity process include cooperative interaction among federal, state, and local agencies. Interagency consultation for this analysis was conducted, as required by Delaware SIP, through coordination with local county and city representatives, the MPO, and representatives from both state and federal agencies, including:

- Dover Kent MPO (DKMPO)
- Delaware Transit Corporation (DTC)
- Delaware Department of Transportation (DelDOT)
- Delaware Department of Natural Resources and Environmental Control (DNREC)
- City of Dover
- Kent County
- Federal Highway Administration (FHWA)
- Environmental Protection Agency (EPA)
- Federal Transit Administration (FTA)

As part of the interagency consultation, the Technical Advisory Committee (TAC) and Delaware Transportation Conformity Interagency Consultation Working Group met and collaborated in order to achieve the following goals related to the transportation conformity process:

- Determine planning assumptions
- Develop a definitive list of future year projects to be analyzed
- Develop a format for presenting determination
- Develop and standardize the public participation process

DETERMINE PLANNING ASSUMPTIONS

The transportation conformity determination includes an assessment of future highway emissions for defined analysis years. Emissions are estimated using the latest available planning assumptions and available analytical tools, including EPA's latest approved on-highway mobile sources emissions model, the Motor Vehicle Emission Simulator (MOVES), and the most current version of DelDOT's statewide travel demand model.

4. Ozone

The emission estimates resulted from the implementation of regionally-significant transportation projects that do not qualify as exempt under 40 CFR 93.126 and 127 are compared to DNREC's Motor Vehicle Emissions Budget (MVEB).

The ozone emissions budgets of record were developed by DNREC using the MOBILE6b for 2009. The following budgets were used:

- VOC: 3.95 tons/summer day
- NOx: 9.04 tons/summer day

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The EPA regulations, as outlined in the Final Transportation Conformity Rule, Section 93.118, require emissions analyses for the following years:

- Attainment year
- A near-term year, one to five years in the future
- The last year of the MTP's forecast period
- An intermediate year or years such that analysis years are no more than ten years apart

According to 40 CFR 93.106, the following analysis years were chosen for the ozone analysis:

- 2023 (base year)
- 2030 (near-term year)
- 2040 (interim year to keep analysis years less than ten years apart)
- 2050 (Dover Kent MPO Plan horizon year)

As discussed above, ozone formation is a direct result of VOC and NOx emissions reacting with each other in the presence of sunlight. The EPA has ruled that both precursor emissions, VOC and NOx, must be included in a regional analysis of 8-hour ozone for transportation conformity.

ANALYSIS METHODOLOGY AND DATA

Under the CAA, transportation and air quality modeling procedures must be coordinated to ensure that the 2050 MTP are consistent with the SIP applicable to Kent County. The air quality analysis conducted for the 2050 MTP used a series of computer-based modeling techniques. These techniques are consistent with methods Dover Kent MPO and DelDOT have used in conducting air quality analyses required by the CAA amendments, and are similar to those used by other state and regional transportation agencies in preparing air quality analyses. They are also consistent with the modeling procedures Dover Kent MPO and DelDOT have used assisting in the preparation of various SIP documents with DNREC.

5. Travel Demand Modeling Methodology

A statewide travel demand model for Delaware, including Kent County, is maintained by DelDOT. The model applies a variety of data regarding roadway network conditions, vehicular travel patterns, automobile ownership, and the location of population and employment sites. The model follows a five-step process of trip generation, distribution, mode split, assignment, and feedback that is commonly used throughout the transportation planning industry. The model components were processed through the CUBE Voyager software package. The primary products of the model used in the air quality analysis were estimated volumes and average speeds for each segment or "link" of the roadway system.

The modeling process developed for the 2050 MTP used a 2023 base year network. Model networks were developed for the years 2023, 2030, 2040 and 2050 for Kent County. Networks included major capacity improvement projects that are expected to be in place and open to service

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during these years. The types of projects tested included roadway upgrades (such as new or improved shoulders), highway widening (one lane or more), and new construction.

Demographic projections, including employment, households, and population, were developed for each of the analysis years through the Wilmington Area Planning Council (WILMAPCO) Data & Demographic Subcommittee and DKMPO.

Travel estimates were developed for this conformity analysis using the five-step travel demand modeling process noted above. This type of process is required by Federal air quality conformity regulations and is a set of planning tools commonly used among MPOs and State DOTs.

The travel demand modeling process uses two sets of primary input data. The first is socio-economic data for Traffic Analysis Zones (TAZs) for the Dover Kent MPO region. The modeling process maintained for Dover Kent MPO by DelDOT's Division of Planning uses a single, integrated model of the Delaware/Maryland portion of the Delmarva Peninsula. The Delaware Population Consortium (DPC) develops demographic data projections for Kent County and the City of Dover. Dover Kent MPO staff assisted in the analysis of DPC annual distribution projections, developed the smaller TAZ geographies, and allocated the DPC projections. This demographic data generally consists of:

1. Population
2. Dwelling Units
3. Total Employment by Place of Work
4. Employment by Job Sector, by Place of Work
5. Total Employed Persons (Employment by Place of Residence)
6. Average Income
7. Income Quartiles
8. Average Vehicle Ownership
9. Vehicle Ownership Quartiles

For each TAZ, the demographic data for each of these items was obtained from the most recent census and updated as needed to the base year of the long-range plan. The 2020 Census was used with other locally obtained information to develop a set of TAZ estimates for 2023 for this conformity analysis. The employment by place of work is developed through a series of local, county, and state-agency data sources to achieve consensus on TAZ-based employment locations.

The second primary travel model input is the so-called "travel network" representation of Kent County and Dover roadways and streets. The network file stores the following data for each street segment:

1. Functional Class (or road type)
2. Number of Lanes
3. Lane Capacity
4. Posted Speed
5. Operating Speed
6. Average Peak Period Capacity (Lanes X Lane Capacity)

The current set of DelDOT/MPO travel demand models is typical of advanced TAZ-based travel models in use in the United States. DelDOT staff (with assistance from Whitman, Requardt &

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Associates, LLP, an engineering consulting firm) estimated these models using data from the 1997 – 2011 Delaware Travel Monitoring Survey (DTMS). The current TAZ-based models are referred to as "aggregate demand models" because they are applied at an aggregate, zonal level with extensive market segmentation.

The trip generation models include a precursor step, which disaggregates TAZ-based household data using workers per household, persons per household, and vehicles per household data from US Census PUMS, then applies cross classification-based trip generation rates to estimate productions and attractions for each TAZ, for several trip purposes including:

6. Home-Based Work (HBW)
7. Home-Based Local Shopping (HBLS)
8. Home-Based Regional Shopping (HBRS)
9. Home-Based Other (HBO)
10. Non-Home Based (NHB)
11. Journey-to-Work (JTW)
12. Journey-at-Work (JAW)
13. Trucks

The trip distribution models are standard gravity model formulations using trip length frequencies for each trip purpose based on analysis of the entire 1997 – 2011 DTMS dataset.

The mode choice model used by DelDOT and the MPOs is a nested logit choice format. Non-motorized trips (separate modes for bicycling and walking) are included as an option in certain sets of model runs that are based on tax-parcel TAZ geography. Non-motorized trips are not currently modeled in the TAZ-based regional modeling process used for county-based conformity analyses.

The trip assignment procedures use network capacity-constrained equilibrium methods, which emphasize average weekday peak period congestion levels to allocate roadway volumes and speeds by time period of day. Four peak period times are used: AM, Midday, PM, and Offpeak. The process uses customized speed-flow delay curves representing freeway, arterial, collector, and local speeds separately.

The model process methods, as required by conformity regulations, incorporate full feedback from trip assignment back through trip distribution. The travel model was run in the CUBE Voyager software package (Version 6.54.1 of the software dated July 10, 2023) under license from the vendor, Bentley.[29]

The modeling process for this conformity analysis used a 2023 base year network. Model was validated to year 2023 average annual daily traffic count. Model networks were developed for 2023, 2030, 2040 and 2050 for Kent County and for the Delaware/Maryland peninsula counties within the DelDOT/MPO "Peninsula Travel Model." For the horizon years, regionally significant projects from Dover Kent MPO MTP were coded onto the networks. Detailed assessments were only performed for those projects which may have significant effect on emissions in accordance with Federal Register 40 CFR Parts 51 and 93. The types of projects tested were corridor improvements, highway widening, and new roadway construction. Regionally significant

[29] http://www.citilabs.com/

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transportation projects in Kent County that were modeled are listed in Exhibit A. Projects were included in the network based on the in-service date and falling before the model year.

Exhibit A: Kent County Regionally Significant Projects

Project Name	Limit	Description	in Service
HEP KC, US 13	Lochmeath Way to Puncheon Run Connector	Add a third through lane	2030
HEP KC, US 13	Walnut Shade Road to Lochmeath Way	Add a third through lane	2030
North Main Street Smyrna,	Glenwood Ave to Duck Creek Parkway	Improve shoulders for non-motorize user	2030
East Camden Bypass	Intersection of US 13 at Old North Road to US 13 at the entrance road to Wawa	New collector road	2030
West Camden Bypass	Willow Grove Road to US 13	New collector road	2030
Kenton Road,	SR8 to Chestnut Grove Road	Widening of lane and shoulder	2030
NE Front Street	Rehoboth Blvd to SR 1	Upgrade roadway functional classification, add bike/ped facilities.	2030
Garrison Oak Connector Road (SR 1 via White Oak Road)		New collector road	2030
College Road	Kenton Road to Saulsbury / McKee Road)	Sidewalks, shoulders, bicycle lanes for non-motorize user	2030
Walnut Shade Road	US 13 to Peachtree Run Road	Upgrade roadway functional classification, add bike/ped facilities.	2030
West Street	New Burton Road (Queen Street) to North Street	Upgrade roadway functional classification, add bike/ped facilities	2030
Irish Hill Road	Fox Chase Road to McGinnis Pond Road	Realignment of Woodleytown Road with Irish Hill Road	2030
South State Street/Plaindealing Road/Woodlytown Road Intersection Improvements	South State Street/Plaindealing Road/Woodlytown Road Intersection	Intersection Improvement	2030
Duck Creek Parkway	Bassett St. to Main St.	Road improvements and non-motorized access	2030
HSIP KC, SR 15 and SR 42 Intersection Improvements	SR 15 and SR 42 Intersection	Intersection improvements.	2030
McKee Road/Saulsbury Road Corridor Improvements	Between US 13	corridor widening and intersection improvement	2040
Smyrna Clayton Blvd (DE 6) and Wheatleys Pond Road (DE 300) Intersection Improvements	SR 6 and SR 300 Intersection	Intersection improvements.	2040

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Glenwood Avenue Upgrade	US 13 to Smyrna Clayton Blvd	Upgrade roadway functional classification, add bike/ped facilities	2040
US 13 at White Oak Road Intersection Improvements	US 13 at White Oak Road Intersection	Intersection improvements.	2040
SR1-Trap Shooters Road Interchange Improvements	SR1-Trap Shooters Road Interchange	Intersection improvements.	2040
Existing Horsepond Road Improvements	S Little Creek Road to Starlifter Avenue and Lafferty Lane	widening of roadway to facilitate travel particularly for large trucks	2040
Irish Hill Road Upgrade	McGinnis Pond Road to Magnolia	Upgrade roadway functional classification	2040
Irish Hill Road Upgrade	US 13 to Glen Forest Road	Upgrade roadway functional classification	2040
Horsepond Road Extension -	N Little Creek Road to S Little Creek Road	New collector road	2040
Starlifter Avenue Extension	North of Galaxy Drive to S.Little Creek Road	New collector road	2040
Banning Street/Clarence Street Improvements	Forest Street and W. North Street	New collector road	2040
Canterbury Road Upgrade	SR 12 to US 13	Upgrade roadway functional classification, add bike/ped facilities	2040
Rabbit Chase Road Upgrade	Rabbit Chase Lane	Upgrade roadway functional classification, add bike/ped facilities	2040
Peachtree Run Road	Voshells Mill Road to Irish Hill Road	Upgrade roadway functional classification, add bike/ped facilities	2040
Brenford Road	SR 13 to SR 42	Upgrade roadway functional classification, add bike/ped facilities	2040
Mifflin Road Widening Upgrade	West North Street to DE Rt 8	Shoulders and roundabout improvement for bike (Not included)	2040
DE Rt 15 Widening	Moose Lodge Road & Dundee Road	Bike lane for bike (Not included)	2040

14. Key MOVES Input Data

A large number of inputs to MOVES are needed to fully account for the numerous vehicle and environmental parameters that affect emissions. These include traffic flow characteristics, vehicle descriptions, fuel parameters, inspection/maintenance (I/M) program parameters, and environmental variables. MOVES includes a default national database of meteorology, vehicle fleet, vehicle activity, fuel, and emissions control program data for every county. EPA, however, cannot certify that the default data is the most current or best available information for any specific area. As a result, local data is recommended for use when completing a regional conformity analysis. Local data sources are used for all inputs that have a significant impact on calculated emission rates. These data items are discussed in the following sections.

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15. Roadway Data

The emission calculation process uses key traffic data from the regional travel demand model to estimate regional Vehicle Miles Traveled (VMT) and speeds. This data includes individual roadway traffic volumes and physical roadway descriptive characteristics including area type, facility type, lanes, distances, capacity, and free-flow speeds. Travel demand model runs are produced for future analysis years and include the impact of regionally significant transportation projects. The model provides a key resource for estimating the impact of population and employment growth on roadway volumes and calculating the diversions due to transportation projects.

VMT was determined for each roadway class/setting by multiplying the length of road by the number of vehicles using the road per day. Additional adjustments were made to convert the VMT to an average monthly day and summer day (including weekday and weekend), including:

- Seasonal adjustment factors reflecting traffic variation within the spring, summer, fall, and winter months and weekday and weekend derived from permanent count station monitoring[30] in Kent County, and

- Highway Performance Monitoring System (HPMS) adjustments used to align annual VMT estimates with HPMS reported totals for the base year for Kent County[31].

Speed data was calculated for each highway segment and hour of the day, based on roadway capacity, traffic volume, and other physical roadway features (e.g. traffic signals). Thus, the travel demand model provided VMT according to the speed bins required by the MOVES software, thereby accounting for certain physical highway conditions and congestion caused by traffic volume. A speed bin is essentially an increment of speed range; for example: "VMT for the 30-35 mph range." For future horizon years, congestion (and thereby speed) can be affected by traffic growth and changes in physical conditions due to planned transportation improvements and other projects assumed to be "in-service" in horizon years.

16. Vehicle Class Data

Emission rates within MOVES vary significantly by vehicle type. The MOVES model produces emissions and rates by thirteen MOVES vehicle source types. However, VMT is input into MOVES by five HPMS vehicle groups. MOVES requires that VMT for any 2-axle, 4-tire vehicle weighing less than 10,000 lbs – regardless of wheelbase length – is entered together. The new HPMSVtypeID 25 (short + long wheelbase light-duty vehicles) comprise passenger car and other 4-tire trucks. Exhibit B summarizes the MOVES source type and HPMS vehicle class group definitions.

[30] https://www.deldot.gov/Publications/manuals/traffic_counts/index.shtml

[31] https://www.deldot.gov/information/projects/hpms/2015/DVMT2015.pdf?081116

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Exhibit B: MOVES Source Type and HPMS Vehicle Groups

sourceTypeID	sourceTypeName	HPMSVtypeID	HPMSVtypeName
11	Motorcycle	10	Motorcycles
21	Passenger Car	25	Light Duty Vehicles
31	Passenger Truck		
32	Light Commercial Truck		
41	Intercity Bus	40	Buses
42	Transit Bus		
43	School Bus		
51	Refuse Truck	50	Single Unit Trucks
52	Single Unit Short-haul Truck		
53	Single Unit Long-haul Truck		
54	Motor Home		
61	Combination Short-haul Truck	60	Combination Trucks

For this emissions analysis, vehicle type pattern data was developed by DNREC for year 2020. All future year assumes the same VMT distribution pattern between different vehicle types as year 2020.

The impact of trucks on traffic flow is accounted for within the travel demand modeling process. A heavy truck weight factor is used by functional class to adjust the rates at which increasing numbers of vehicles (congestion) cause average traveling speeds to drop. This effect generally is due to larger trucks taking up more roadway space than a given number of cars; they also tend to have slower average traveling speeds than cars for most functional classes. The final loaded speeds from the travel model (used to define which speed bin a given road segment's VMT is placed in) reflect this truck adjustment.

17. Vehicle Age

Vehicle age distributions were input to MOVES for Kent County by the thirteen source types. The age distributions reflect the percentage of vehicles for each model year in the fleet. The vehicle age distributions were prepared by DNREC based on information obtained from DMV vehicle registration data.

The base year vehicle age distributions for this conformity analysis were based on 2020 DMV vehicle registration data. The future year vehicle age distributions were estimated using the EPA's "Age Distribution Projection Tool for MOVES4(xltm)[32] based on the base year data.

18. Vehicle Population Data

Vehicle fleet information such as the number and age of vehicles has an impact on the forecasted start and evaporative emissions within MOVES. The MOVES model requires the number of

[32] https://www.epa.gov/moves/tools-develop-or-convert-moves-inputs#moves4-inputs

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vehicles (called “vehicle population”) to be defined for each of the thirteen source type categories, for each year emissions estimates are needed including future horizon years.

The base year (2020) vehicle population data was prepared and provided by DNREC based on the 2020 DMV vehicle registration data. For the analysis years 2023, 2030, 2040 and 2050, the vehicle populations were estimated for Kent County by developing a growth factor based on the projected increase in total countywide vehicles from 2020 to each horizon year.

19. Fuel Data

The DNREC Division of Air Quality (DAQ) used the fuel formulation and supply data that has been assigned to Kent County by the EPA in the MOVES model. The EPA obtains data on all fuel shipments from the refineries in the Delaware area and develops the formulations based on these data. Data inputs include fields such as ethanol content, sulfur content, aromatic content, benzene content, olefin content, Methyl ter-butyl ether (MTBE) volume, Ethyl-tertiary-butyl-ether (ETBE) volume, and Tertiary-amyl-methyl-ether (TAME) volume.

20. Meteorological Data

Evaporative emissions are influenced significantly by the temperatures of the surrounding air. DNREC used the 2020 data from the National Centers for Environmental Information from Dover Air Force Base. These values are presented as month-by-month, hourly data sets for Kent County.

21. Other Vehicle Technology and Control Strategy Data

The default I/M data was reviewed and updated by DNREC DAQ for Kent County. The current I/M program known as the Vehicle Emission Inspection Program (VEIP) was utilized for these analysis runs and is described below.

DE Vehicle Emission Inspection Program: This program tests the following gasoline-powered and diesel-powered vehicles: model year 1968 and newer light duty passenger cars, as well as 1970 and newer light duty trucks up to 8,500 pounds. The test is done biennially and on change of ownership. There is a seven-year grace period for new vehicles.

In Kent County, 1996 and newer light duty vehicles subject to the regulation receive an On-Board Diagnostics (OBD) II test. Model year 1968-1980 vehicles subject to the regulation receive an idle test; those of model year 1981-1995 receive a two-speed idle test. In addition, model year 1975-1995 vehicles receive a tank and cap pressure test. Finally, all 1975 and newer light duty vehicles in Kent County subject to this regulation receive a visual inspection of the catalytic converter. The compliance factors reflect the fail and waiver rates observed in the program, combined with an assumed 96% compliance rate for vehicles showing up for testing.

Federal Programs*:* Current federal vehicle emissions control and fuel programs are incorporated into the MOVES software. These include the National Program standards covering model year vehicles through 2026. Modifications of default emission rates are required to reflect the implementation of the National Low Emission Vehicle (NLEV) program in Delaware. To reflect

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these impacts, EPA has released instructions and input files that can be used to model these impacts. This inventory utilized the August 2010 version of the files[33].

***Delaware Clean Car Program**:* Under the Delaware Low Emission Vehicle Program, 7 DE Admin Code 1140[34], which was revised December 2013, Delaware required manufacturers of 2014 model year vehicles to comply with Non-Methane Organic Gas (NMOG) emission requirements and California Low Emission Vehicle (LEV II) phase-in requirements. The regulation also requires manufacturers of 2015 and subsequent model year vehicles to comply with NMOG plus NOx emission requirements, as well as California LEV III phase-in requirements. Zero emission vehicles are currently not required by this regulation. California adopted the Low-Emission Vehicle regulation entitled LEV III (third generation low emission vehicle standards) in March 2012. These amendments create more stringent emission standards for new motor vehicles. These new standards will be phased in over the 2015-2025 model years.

The impacts of this program were modeled for all analysis years using EPA's guidance document, *Instructions for Using LEV and NLEV Inputs for MOVES*[35]. EPA provided input files to reflect the CAL LEV III program with the standard phase-in schedules for new emission standards. Modifications to those schedules were done per EPA's instructions, to reflect a later start for the State of Delaware beginning with vehicle model year 2014.

22. Air Quality Analysis Process

As presented above, a modeling process that integrates DelDOT's travel demand model and the EPA's Motor Vehicle Emission Simulator (MOVES) model is applied for estimating emissions in Kent County.

The travel model software, CUBE Voyager, was arranged by DelDOT staff with consultant assistance to include the DNREC "MOVES inventory method" for estimating mobile source emissions in Kent County. That process was incorporated, step-by-step, into the CUBE Voyager software so that conformity analysis process is based directly on the DNREC application of the MOVES inventory method. A series of quality-control checks were performed by DelDOT and the consulting firm staff ensuring the CUBE-model generated emissions data accurately replicated the DNREC spreadsheet method.

Along with updated socio-economic data and other travel behavior parameters, the regionally significant projects were coded to the network and input into the travel demand model to generate the VMT and speed distribution. Adjustment factors are then used to account for seasonal traffic variations and alignment of Delaware-based VMT estimates with the federally-required Highway Performance Management System (HPMS). The 2015 HPMS data are used to standardize the Delaware specific VMT data as required by the EPA so that direct comparisons can be made among different years and modeling scenarios.

The vehicle characteristics data was generated by DNREC based on the 2017 DelDOT DMV vehicle registration data. The fuel formulation and supply data that has been assigned to Kent

[33] https://www.epa.gov/emission-standards-reference-guide/all-epa-emission-standards

[34] http://regulations.delaware.gov/AdminCode/title7/1000/1100/1140.shtml#TopOfPage

[35] https://nepis.epa.gov/Exe/ZyPDF.cgi/P100KUBY.PDF?Dockey=P100KUBY.PDF

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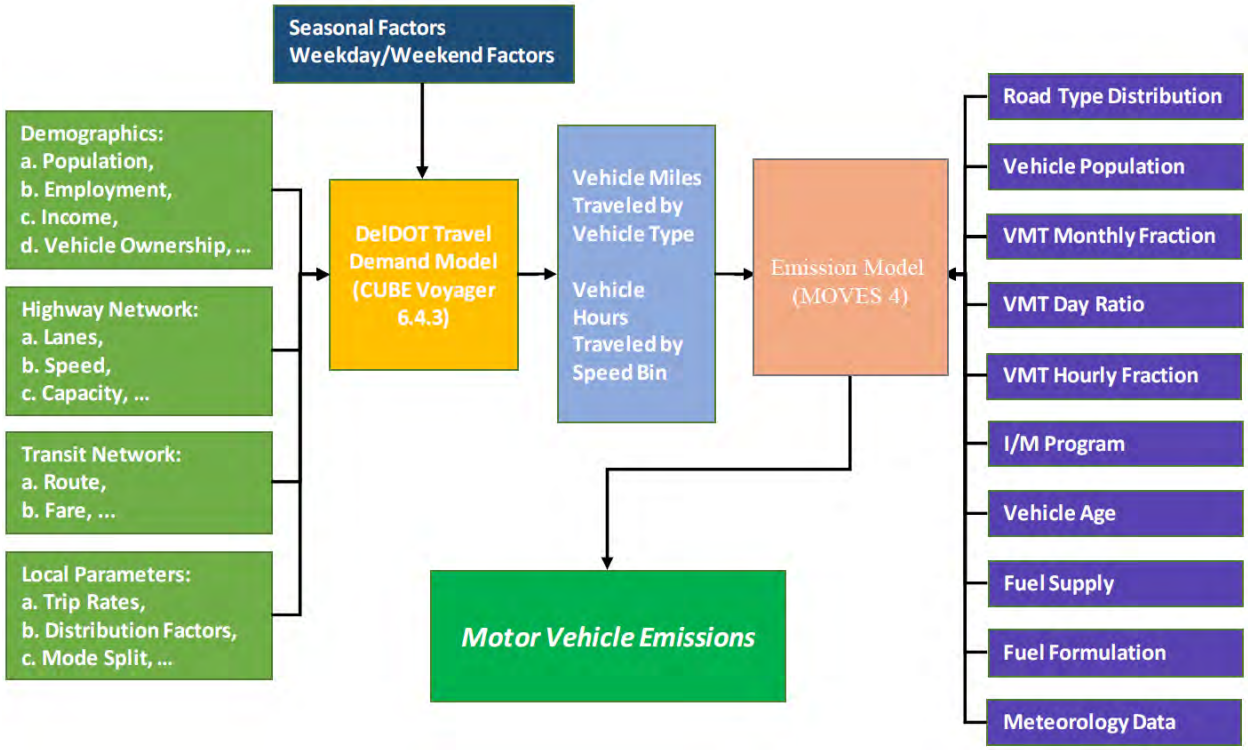
County by the EPA in the MOVES model was used in this analysis. The 2017 temperature data from the National Centers for Environmental Information from Dover Air Force Base was used for meteorological input.

The estimates of emissions for Kent County are generated jointly by DelDOT and DNREC. The model post-processor takes data produced by CUBE Voyager model output for Kent County and adjusts it for input into the MOVES mobile emissions process noted above. This process links the estimated roadway speeds and volumes generated by the travel demand model with emission trends derived from MOVES. The product of this process presented in this document is countywide emission estimates.

Exhibit C presents an overview of the process used to generate travel model and emission model data for this conformity analysis.

Exhibit C: Air Quality Analysis Modeling Process



CONFORMITY ANALYSIS RESULTS

Exhibit D and Exhibit E present the results of the budget tests for ozone emissions. All baselines and budget tests pass, which demonstrates conformity. Both VOC and NOx emission are aligning to the past analysis with minor difference which reflect the impact of the minor change in social-economic forecasting and the new proposed projects in the updated MTP.

Exhibit D: VOC Emission Test Results - MVEB Test (tons/summer weekday)2

VOC(tpsd)	2023	2030	2040	2050
Emissions	1.21	0.98	0.85	0.81
2009 Budget	3.95	3.95	3.95	3.95
Result	**Pass**	**Pass**	**Pass**	**Pass**

Exhibit E: NOx Emission Test Results - MVEB Test (tons/summer weekday)

NOx(tpsd)	2023	2030	2040	2050
Emissions	2.09	1.16	0.71	0.68
2009 Budget	9.04	9.04	9.04	9.04
Result	**Pass**	**Pass**	**Pass**	**Pass**

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RESOURCES

1. *EPA Motor Vehicle Emission Simulator Model MOVES4*. https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves

2. *MOVES4 Technical Guidance*, United States Environmental Protection Agency, EPA-420-B-23-011, August 2023. https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101862T.pdf

3. Age Distribution Projection Tool From MOVES4. https://www.epa.gov/moves/tools-develop-or-convert-moves-inputs#moves4-inputs

4. Delaware Low Emission Vehicle Program. http://regulations.delaware.gov/register/october2017/proposed/21%20DE%20Reg%20278%2010-01-17.htm

5. *National Ambient Air Quality Stands for Ozone*, Federal Register/Vol. 80, 206/Monday, October 26, 2015. https://www.gpo.gov/fdsys/pkg/FR-2015-10-26/pdf/2015-26594.pdf

6. National Ambient Air Quality Standards for Particle Pollution. https://www.epa.gov/sites/production/files/2016-04/documents/2012_aqi_factsheet.pdf

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AIR QUALITY ANALYSIS GLOSSARY

AADT	Average Annual Daily Traffic, average of ALL days
CAA	Clean Air Act as amended
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CH4	Methane
CO2	Carbon Dioxide
CO2Eq	Carbon Dioxide Equivalent. A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as "million metric tons of carbon dioxide equivalents (MMTCO2Eq)."
DAQ	Division of Air Quality
DelDOT	Delaware Department of Transportation
DMV	Department of Motor Vehicles
DNREC	Department of Natural Resources and Environmental Control
DPC	Delaware Population Consortium
EPA	Environmental Protection Agency
FC	Functional code. Applied to road segments to identify their type (freeway, local, etc.).
FHWA	Federal Highway Administration
FR	Federal Register
FTA	Federal Transit Administration
HPMS	Highway Performance Monitoring System
I/M	Vehicle emissions inspection/maintenance programs
LEV	Low Emission Vehicle
LRTP	Long Range Transportation Plan
MMT	Million Metric Tons
MOBILE6b	EPA earlier version motor vehicle emission estimation model
MOVES	Motor Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
MVEB	Motor vehicle emissions budget
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standard
NOx	Oxides of nitrogen
PM2.5	Particulate Matter less than 2.5 microns in diameter
Road Type	Functional code, applied in data management to road segments to identify their type (rural/urban highways, rural/urban arterials, etc.)
RMS	Roadway Management System
SIP	State Implementation Plan
Source Type	One of thirteen vehicle types used in MOVES modeling
TIP	Transportation Improvement Program
VHT	Vehicle hours traveled
VMT	Vehicle miles traveled
VOC	Volatile organic compound emissions

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APPENDICES

23. Appendix A Conformity Review Check List

Exhibit A 1: Conformity Review List

Regulation (40 CFR Part 93)	Criteria	Yes	No	Comments
§§93.11	Are the conformity determinations based upon the latest planning assumptions?			
(a)	Is the conformity determination, with respect to all other applicable criteria in §§93.111 - §§93.119, based upon the most recent planning assumptions in force at the time of the conformity determination?			
(b)	Are the assumptions derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other designated agency? Is the conformity determination based upon the latest assumptions about current and future background concentrations?			
(c)	Are any changes in the transit operating policies (including fares and service levels) and assumed transit ridership discussed in the determination?			
(d)	The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time.			
(e)	Key assumptions shall be specified and included in the draft documents and supporting materials used for the interagency and public consultation required by §93.105			
§§93.111	Is the conformity determination based upon the latest emissions model?			
	Did the MPO make the conformity determination according to the consultation procedures of the conformity rule or the state's conformity SIP?			
§§93.106(a)(1)	Are the Horizon Years correct?			
§§93.106(a) (2)(i)	Does the plan quantify and document the demographic and employment factors influencing transportation demand?			
§§93.106(a) (2)(ii)	Is the highway and transit system adequately described in terms of the regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in the horizon years?			
§§93.108	Is the Transportation Plan Fiscally Constrained?			
§§93.113(b)	Are TCMs being implemented in a timely manner?			
§§93.118	For Areas with SIP Budgets: Is the Transportation Plan, TIP or Project consistent with the motor vehicle emissions budget(s) in the applicable SIP?			

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Regulation (40 CFR Part 93)	Criteria	Yes	No	Comments
§§93.11	Are the conformity determinations based upon the latest planning assumptions?			
(a)	Is the conformity determination, with respect to all other applicable criteria in §§93.111 - §§93.119, based upon the most recent planning assumptions in force at the time of the conformity			
(b)	Are the assumptions derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other designated agency? Is the conformity determination based upon the latest assumptions about current and future background			
(c)	Are any changes in the transit operating policies (including fares and service levels) and assumed transit ridership discussed in the determination?			
(d)	The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls			
(e)	Key assumptions shall be specified and included in the draft documents and supporting materials used for the interagency and public consultation			
§§93.111	Is the conformity determination based upon the latest emissions model?			
	Did the MPO make the conformity determination according to the consultation procedures of the conformity rule or the state's conformity SIP?			
§§93.106(a)(1)	Are the Horizon Years correct?			
§§93.106(a) (2)(i)	Does the plan quantify and document the demographic and employment factors influencing transportation demand?			
§§93.106(a) (2)(ii)	Is the highway and transit system adequately described in terms of the regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in the horizon			
§§93.108	Is the Transportation Plan Fiscally Constrained?			
§§93.113(b)	Are TCMs being implemented in a timely manner			
§§93.118	For Areas with SIP Budgets: Is the Transportation Plan, TIP or Project consistent with the motor vehicle emissions budget(s) in the applicable SIP?			

FINAL DRAFT

24. Appendix B Detailed Emission Results

Exhibit B 1: Kent County Annual Ozone & PM 2.5 Emissions (Tons)

Month	2023			2030			2040			2050		
	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25
1	29.39	60.64	2.08	25.11	33.49	1.49	22.70	21.59	1.20	21.75	21.22	1.18
2	25.43	51.93	1.78	21.75	28.65	1.27	19.64	18.43	1.02	18.78	18.10	1.00
3	30.46	65.53	2.21	25.83	36.18	1.56	23.18	23.04	1.26	22.17	22.56	1.26
4	29.66	63.79	2.13	25.22	35.52	1.49	22.63	22.64	1.21	21.69	22.15	1.21
5	34.65	66.78	2.38	29.31	37.35	1.70	26.03	23.46	1.37	24.98	22.81	1.37
6	34.50	61.67	2.22	28.31	33.88	1.55	24.55	20.41	1.26	23.31	19.59	1.27
7	38.02	63.56	2.39	30.84	34.99	1.67	26.59	21.06	1.36	25.21	20.19	1.38
8	36.81	63.72	2.42	29.98	35.22	1.69	25.95	21.27	1.37	24.66	20.40	1.39
9	32.66	57.49	2.14	27.04	31.91	1.50	23.59	19.48	1.21	22.41	18.76	1.23
10	30.90	64.29	2.23	25.94	35.70	1.54	22.99	22.32	1.25	21.90	21.69	1.27
11	28.83	60.71	2.04	24.35	33.33	1.42	21.65	20.89	1.15	20.55	20.34	1.16
12	31.34	67.37	2.32	26.65	37.23	1.67	24.16	24.11	1.34	23.26	23.73	1.31
Total	**382.64**	**747.48**	**26.33**	**320.31**	**413.44**	**18.54**	**283.66**	**258.70**	**15.00**	**270.68**	**251.54**	**15.03**

Exhibit B 2: Kent County Summer Weekday Ozone & PM 2.5 Emission (Tons)

Month	2023			2030			2040			2050		
	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25
6	1.17	2.09	0.08	0.96	1.16	0.05	0.83	0.70	0.04	0.79	0.68	0.05
7	1.25	2.08	0.08	1.01	1.16	0.06	0.87	0.70	0.05	0.83	0.68	0.05
8	1.21	2.09	0.08	0.98	1.17	0.06	0.85	0.71	0.05	0.81	0.68	0.05
Average	**1.21**	**2.09**	**0.08**	**0.98**	**1.16**	**0.06**	**0.85**	**0.71**	**0.05**	**0.81**	**0.68**	**0.05**

Exhibit B 3: Kent County Annual Greenhouse Gas Emissions (MMT)

Month	2023			2030			2040			2050		
	CO2e	NOx	CH4	CO2e	NOx	CH4	CO2e	NOx	CH4	CO2e	NOx	CH4
1	65,774	60.6	4.8	65,988	33.5	5.3	65,498	21.6	5.9	70,835	21.2	6.4
2	56,431	51.9	4.1	56,617	28.7	4.5	56,195	18.4	5.0	60,776	18.1	5.5
3	72,651	65.5	5.0	72,939	36.2	5.7	72,441	23.0	6.3	78,386	22.6	6.9
4	70,729	63.8	4.9	71,051	35.5	5.5	70,600	22.6	6.1	76,416	22.2	6.7
5	77,300	66.8	5.6	77,704	37.3	6.3	77,259	23.5	6.9	83,660	22.8	7.5
6	77,570	61.7	5.2	78,051	33.9	5.8	77,693	20.4	6.3	84,194	19.6	7.0
7	85,660	63.6	5.6	86,217	35.0	6.3	85,856	21.1	6.8	93,058	20.2	7.5
8	85,415	63.7	5.6	85,951	35.2	6.3	85,567	21.3	6.9	92,731	20.4	7.6
9	73,236	57.5	5.0	73,663	31.9	5.6	73,291	19.5	6.1	79,405	18.8	6.7
10	76,459	64.3	5.0	76,843	35.7	5.7	76,392	22.3	6.3	82,724	21.7	6.9
11	68,721	60.7	4.6	69,012	33.3	5.2	68,562	20.9	5.7	74,215	20.3	6.3
12	71,537	67.4	5.4	71,747	37.2	5.9	71,184	24.1	6.5	76,970	23.7	7.1
Total	**881,482**	**747.5**	**60.6**	**885,783**	**413.4**	**68.1**	**880,537**	**258.7**	**74.9**	**953,370**	**251.5**	**82.1**

Exhibit B 4: Kent County Summer Weekday Greenhouse Gam Emission (MMT)

Month	2023			2030			2040			2050		
	CO2e	NOx	CH4	CO2e	NOx	CH4	CO2e	NOx	CH4	CO2e	NOx	CH4
6	2,603	2.09	0.18	2,622	1.16	0.20	2,614	0.70	0.22	2,837	0.68	0.24
7	2,782	2.08	0.18	2,803	1.16	0.21	2,796	0.70	0.23	3,035	0.68	0.25
8	2,774	2.09	0.19	2,794	1.17	0.21	2,786	0.71	0.23	3,024	0.68	0.25
Average	**2,720**	**2.09**	**0.18**	**2,740**	**1.16**	**0.20**	**2,732**	**0.71**	**0.22**	**2,965**	**0.68**	**0.25**

Exhibit B 5: Kent County Annual Road Type Ozone & PM2.5 Emission (Tons)

Road Type	2023			2030			2040			2050		
	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25
Off-Network	283.3	148.4	5.1	246.3	116.0	4.4	217.0	102.9	3.2	200.9	105.0	2.5
Rural Restricted Access	9.4	105.2	2.8	6.4	53.8	1.5	5.3	29.0	1.0	5.8	28.5	1.1
Rural Unrestricted Access	24.9	159.2	5.8	18.7	83.7	3.8	17.9	46.9	3.4	18.0	41.5	3.5
Urban Restricted Access	19.4	140.5	4.0	14.9	67.4	2.5	12.8	33.3	1.9	15.8	36.5	2.3
Urban Unrestricted Access	45.7	194.2	8.6	34.1	92.6	6.3	30.7	46.7	5.5	30.2	40.0	5.6
Total	**382.6**	**747.5**	**26.3**	**320.3**	**413.4**	**18.5**	**283.7**	**258.7**	**15.0**	**270.7**	**251.5**	**15.0**

Exhibit B 6: Kent Summer Weekday Road Type Ozone & PM 2.5 Emission (Tons)

Road Type	2023			2030			2040			2050		
	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25
Off-Network	0.870	0.426	0.012	0.725	0.319	0.010	0.614	0.272	0.007	0.558	0.276	0.006
Rural Restricted Access	0.031	0.292	0.009	0.022	0.152	0.005	0.019	0.079	0.003	0.021	0.075	0.004
Rural Unrestricted Access	0.085	0.443	0.018	0.066	0.238	0.012	0.064	0.131	0.011	0.065	0.115	0.011
Urban Restricted Access	0.065	0.384	0.012	0.051	0.187	0.008	0.045	0.091	0.006	0.056	0.099	0.007
Urban Unrestricted Access	0.157	0.541	0.027	0.121	0.265	0.020	0.110	0.133	0.018	0.109	0.114	0.018
Total	**1.209**	**2.086**	**0.078**	**0.985**	**1.161**	**0.055**	**0.851**	**0.705**	**0.045**	**0.809**	**0.678**	**0.047**

Exhibit B 7: Kent County Annual Road Type Greenhouse Gas Emission (MMT)

Road Type	2023			2030			2040			2050		
	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4
Off-Network	76,885	148.4	22.3	73,419	116.0	22.3	70,097	102.9	23.1	71,249	105.0	24.2
Rural Restricted Access	98,354	105.2	4.1	100,464	53.8	5.2	97,587	29.0	5.8	109,875	28.5	6.7
Rural Unrestricted Access	196,816	159.2	11.4	200,494	83.7	14.3	212,699	46.9	17.3	218,081	41.5	18.6
Urban Restricted Access	193,665	140.5	7.2	203,572	67.4	8.7	193,443	33.3	9.4	245,655	36.5	12.3
Urban Unrestricted Access	315,762	194.2	15.7	307,834	92.6	17.6	306,711	46.7	19.4	308,510	40.0	20.3
Total	**881,482**	**747.5**	**60.6**	**885,783**	**413.4**	**68.1**	**880,537**	**258.7**	**74.9**	**953,370**	**251.5**	**82.1**

Exhibit B 8: Kent County Summer Weekday Road Type Greenhouse Gas Emission (MMT)

Road Type	2023			2030			2040			2050		
	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4
Off-Network	215.6	0.426	0.056	207.2	0.319	0.055	199.9	0.272	0.056	202.5	0.276	0.059
Rural Restricted Access	302.7	0.292	0.013	309.7	0.152	0.017	301.3	0.079	0.019	339.3	0.075	0.022
Rural Unrestricted Access	611.9	0.443	0.037	624.6	0.238	0.046	664.2	0.131	0.056	683.6	0.115	0.061
Urban Restricted Access	598.0	0.384	0.023	628.6	0.187	0.028	599.3	0.091	0.030	762.3	0.099	0.040
Urban Unrestricted Access	991.6	0.541	0.052	969.5	0.265	0.058	967.1	0.133	0.064	977.8	0.114	0.068
Total	**2,719.7**	**2.086**	**0.182**	**2,739.7**	**1.161**	**0.204**	**2,731.8**	**0.705**	**0.225**	**2,965.5**	**0.678**	**0.249**

Exhibit B 9: Kent County Annual Source Type Ozone & PM 2.5 Emission (Tons)

Source Type	2023			2030			2040			2050		
	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25
Motorcycle	27.1	8.4	0.3	27.9	9.2	0.3	26.8	9.7	0.3	28.4	10.7	0.3
Passenger Car	135.4	72.8	4.3	120.4	35.5	4.6	96.3	24.1	4.2	86.0	23.2	4.2
Passenger Truck	119.7	129.3	6.1	98.9	62.0	5.3	93.8	43.3	4.6	90.9	41.6	4.4
Light Commercial Truck	74.8	104.9	4.5	59.0	47.7	3.5	56.8	27.4	2.9	55.4	26.1	2.8
Intercity Bus	0.1	1.9	0.0	0.1	1.5	0.0	0.1	0.9	0.0	0.1	0.9	0.0
Transit Bus	0.4	5.1	0.1	0.3	3.8	0.1	0.2	2.0	0.0	0.2	2.0	0.0
School Bus	1.0	14.9	0.4	0.7	11.5	0.3	0.4	6.9	0.2	0.4	6.8	0.2
Refuse Truck	0.3	3.9	0.1	0.2	2.5	0.0	0.3	1.8	0.0	0.3	1.8	0.0
Single Unit Short-haul Truck	10.4	72.4	2.4	6.2	40.3	1.1	5.0	23.2	0.7	5.1	22.6	0.8
Single Unit Long-haul Truck	0.8	6.9	0.2	0.4	4.0	0.1	0.3	2.1	0.1	0.3	2.1	0.1
Motor Home	1.0	4.8	0.2	0.6	2.5	0.1	0.4	1.0	0.0	0.3	0.8	0.0
Combination Short-haul Truck	4.3	108.6	2.5	2.5	68.2	1.2	1.9	41.6	0.8	2.0	42.1	0.8
Combination Long-haul Truck	7.5	213.7	5.2	3.1	124.9	2.0	1.6	74.7	1.2	1.5	70.9	1.2
Total	**382.6**	**747.5**	**26.3**	**320.3**	**413.4**	**18.5**	**283.7**	**258.7**	**15.0**	**270.7**	**251.5**	**15.0**

Exhibit B 10: Kent County Summer Weekday Source Type Ozone & PM 2.5 Emission (Tons)

Source Type	2023			2030			2040			2050		
	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25	VOC	NOx	PM25
Motorcycle	0.096	0.031	0.001	0.097	0.034	0.001	0.094	0.036	0.001	0.102	0.039	0.002
Passenger Car	0.421	0.189	0.012	0.363	0.087	0.013	0.280	0.056	0.013	0.248	0.053	0.013
Passenger Truck	0.376	0.361	0.018	0.300	0.175	0.015	0.277	0.121	0.013	0.266	0.117	0.013
Light Commercial Truck	0.240	0.303	0.013	0.184	0.138	0.010	0.171	0.078	0.008	0.165	0.074	0.008
Intercity Bus	0.000	0.005	0.000	0.000	0.004	0.000	0.000	0.002	0.000	0.000	0.002	0.000
Transit Bus	0.001	0.014	0.000	0.001	0.010	0.000	0.001	0.005	0.000	0.001	0.005	0.000
School Bus	0.003	0.042	0.001	0.002	0.033	0.001	0.001	0.019	0.001	0.001	0.019	0.001
Refuse Truck	0.001	0.011	0.000	0.001	0.007	0.000	0.001	0.005	0.000	0.001	0.005	0.000
Single Unit Short-haul Truck	0.030	0.201	0.007	0.017	0.114	0.003	0.013	0.065	0.002	0.013	0.063	0.003
Single Unit Long-haul Truck	0.002	0.019	0.001	0.001	0.011	0.000	0.001	0.006	0.000	0.001	0.005	0.000
Motor Home	0.003	0.013	0.001	0.002	0.007	0.000	0.001	0.003	0.000	0.001	0.002	0.000
Combination Short-haul Truck	0.013	0.303	0.008	0.007	0.192	0.004	0.006	0.110	0.002	0.006	0.110	0.003
Combination Long-haul Truck	0.023	0.593	0.016	0.009	0.350	0.006	0.005	0.199	0.004	0.005	0.183	0.004
Total	**1.209**	**2.086**	**0.078**	**0.985**	**1.161**	**0.055**	**0.851**	**0.705**	**0.045**	**0.809**	**0.678**	**0.047**

Exhibit B 11: Kent County Annual Source Type Greenhouse Gas Emission (MMT)

Source Type	2023			2030			2040			2050		
	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4
Motorcycle	4,746	8.4	1.4	5,332	9.2	1.4	5,708	9.7	1.4	6,353	10.7	1.6
Passenger Car	213,575	72.8	9.1	213,119	35.5	7.7	217,752	24.1	7.2	239,063	23.2	7.6
Passenger Truck	272,112	129.3	9.9	271,316	62.0	8.0	265,416	43.3	7.6	285,281	41.6	7.9
Light Commercial Truck	166,354	104.9	7.0	168,035	47.7	5.4	163,489	27.4	4.9	174,843	26.1	4.9
Intercity Bus	836	1.9	0.6	899	1.5	0.7	935	0.9	0.8	991	0.9	0.9
Transit Bus	2,465	5.1	1.6	2,698	3.8	1.8	2,814	2.0	2.3	2,991	2.0	2.4
School Bus	9,985	14.9	1.8	10,468	11.5	2.3	10,468	6.9	2.7	11,217	6.8	3.1
Refuse Truck	1,742	3.9	2.8	1,870	2.5	4.6	1,934	1.8	5.9	2,101	1.8	6.7
Single Unit Short-haul Truck	54,106	72.4	10.0	54,589	40.3	13.6	54,635	23.2	15.7	59,233	22.6	17.4
Single Unit Long-haul Truck	5,668	6.9	1.0	5,695	4.0	1.4	5,672	2.1	1.6	6,168	2.1	1.8
Motor Home	2,791	4.8	0.1	2,895	2.5	0.1	2,970	1.0	0.0	3,184	0.8	0.0
Combination Short-haul Truck	56,798	108.6	14.2	57,316	68.2	20.2	58,059	41.6	23.8	63,654	42.1	26.9
Combination Long-haul Truck	90,304	213.7	1.1	91,549	124.9	1.0	90,683	74.7	0.9	98,291	70.9	1.0
Total	**881,482**	**747.5**	**60.6**	**885,783**	**413.4**	**68.1**	**880,537**	**258.7**	**74.9**	**953,370**	**251.5**	**82.1**

Exhibit B 12: Kent County Summer Weekday Source Type Greenhouse Gas Emission (MMT)

Source Type	2023			2030			2040			2050		
	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4	CO2Eq	NOx	CH4
Motorcycle	20.4	0.031	0.006	22.9	0.034	0.007	24.5	0.036	0.007	27.3	0.039	0.007
Passenger Car	662.6	0.189	0.027	663.1	0.087	0.023	680.6	0.056	0.021	749.7	0.053	0.022
Passenger Truck	843.8	0.361	0.029	843.6	0.175	0.022	827.7	0.121	0.021	892.2	0.117	0.022
Light Commercial Truck	516.9	0.303	0.021	523.5	0.138	0.016	510.7	0.078	0.014	547.7	0.074	0.014
Intercity Bus	2.5	0.005	0.002	2.7	0.004	0.002	2.8	0.002	0.003	3.0	0.002	0.003
Transit Bus	7.4	0.014	0.005	8.1	0.010	0.006	8.5	0.005	0.007	9.0	0.005	0.008
School Bus	30.2	0.042	0.005	31.6	0.033	0.007	31.7	0.019	0.008	34.0	0.019	0.010
Refuse Truck	5.2	0.011	0.008	5.6	0.007	0.014	5.8	0.005	0.018	6.4	0.005	0.021
Single Unit Short-haul Truck	162.1	0.201	0.028	163.6	0.114	0.039	163.9	0.065	0.045	178.0	0.063	0.051
Single Unit Long-haul Truck	17.0	0.019	0.003	17.1	0.011	0.004	17.0	0.006	0.005	18.5	0.005	0.005
Motor Home	8.4	0.013	0.000	8.7	0.007	0.000	9.0	0.003	0.000	9.6	0.002	0.000
Combination Short-haul Truck	171.3	0.303	0.044	173.0	0.192	0.062	175.6	0.110	0.074	192.8	0.110	0.085
Combination Long-haul Truck	272.0	0.593	0.003	276.0	0.350	0.003	273.9	0.199	0.003	297.1	0.183	0.003
Total	**2,719.7**	**2.086**	**0.182**	**2,739.7**	**1.161**	**0.204**	**2,731.8**	**0.705**	**0.225**	**2,965.5**	**0.678**	**0.249**

Exhibit B 13: Kent County Annual VMT by Vehicle Type

HPMSVTypeID	Kent County HPMS Annual VMT			
	2023	2030	2040	2050
Motorcycles	11,342,317	12,715,242	13,643,349	15,075,742
Light Duty Vehicles	1,578,459,788	1,769,523,569	1,898,684,081	2,098,023,902
Buses	9,400,976	10,538,912	11,308,165	12,495,392
Single Unit Trucks	62,095,545	69,611,865	74,692,953	82,534,847
Combination Trucks	79,376,487	88,984,570	95,479,704	105,503,966
Total	**1,740,675,114**	**1,951,374,158**	**2,093,808,252**	**2,313,633,849**

FINAL DRAFT
Page 1

Exhibit B 14: Kent County Vehicle Population by Vehicle Type

SourceTypeName	Kent County Vehicle Population			
	2023	2030	2040	2050
Motorcycle	5,817	6,175	6,369	6,437
Passenger Car	65,636	69,669	71,860	72,621
Passenger Truck	59,566	63,226	65,215	65,904
Light Commercial Truck	31,884	33,843	34,907	35,277
Intercity Bus	12	12	13	13
Transit Bus	35	37	38	39
School Bus	505	536	553	559
Refuse Truck	23	24	25	25
Single Unit Short-haul Truck	1,954	2,074	2,139	2,161
Single Unit Long-haul Truck	143	152	157	158
Motor Home	216	229	237	239
Combination Short-haul Truck	376	399	411	415
Combination Long-haul Truck	264	280	289	292
Total	**166,429**	**176,657**	**182,213**	**184,140**

Exhibit B 15: Kent County Average Daily VMT by Functional Class

Functional Class	Kent County HPMS Adjusted Daily VMT			
	2023	2030	2040	2050
Interstate-rural	0	0	0	0
Freeway-rural	162,653	185,402	193,215	227,255
PA-rural	352,486	402,191	444,860	495,656
Minor Arterial-rural	246,966	273,579	305,744	336,071
Major collector-rural	244,823	275,691	318,065	277,727
Minor collector-rural	170,989	198,958	216,828	225,479
Local-rural	250,779	288,031	346,573	391,595
Interstate-urban	0	0	0	0
Freeway-urban	1,008,124	1,187,102	1,204,610	1,587,065
PA-urban	557,177	631,516	670,988	758,845
Minor Arterial-urban	1,006,891	1,079,460	1,135,792	1,038,725
Major collector-urban	361,589	394,806	421,264	475,027
Minor collector-urban	67,167	76,220	87,918	93,814
Local-urban	333,177	346,378	383,204	423,287
Total	**4,762,821**	**5,339,334**	**5,729,061**	**6,330,546**

APPENDIX D

PUBLIC ENGAGEMENT DOCUMENTATION

Contents

Results from Online Survey

Money Game By Age

Money Game By Category

Money Game By Category (continued)

Schedule of Money Game

FINAL DRAFT

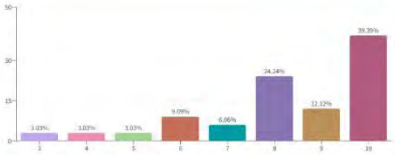
RESULTS FROM OUR SURVEY ONLINE

Bus Schedules/Stops

Answered: 33 Skipped: 0

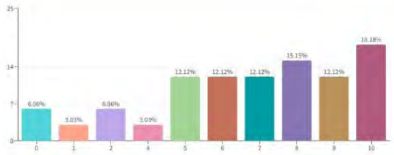
Fixing existing roads

Answered: 33 Skipped: 0



Bike Paths

Answered: 33 Skipped: 0



Traffic Congestion

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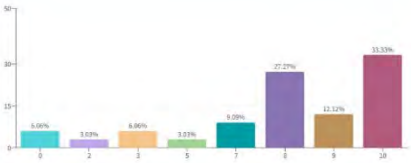
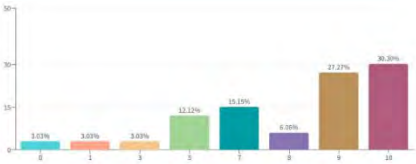


New Tech (electric vehicles, autonomous vehicles, hyperloops, etc...)

Answered: 33 Skipped: 0

Sidewalks/Crosswalks

Answered: 33 Skipped: 0



Air Quality

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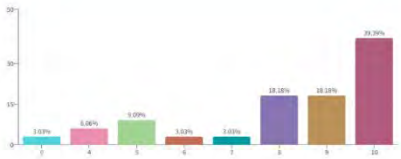

Passenger Rail

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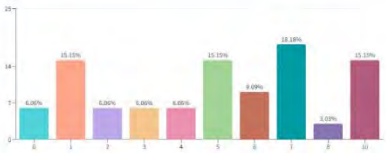
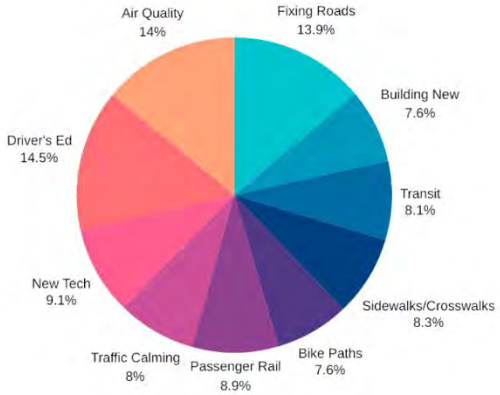


DOVER/KENT COUNTY MPO

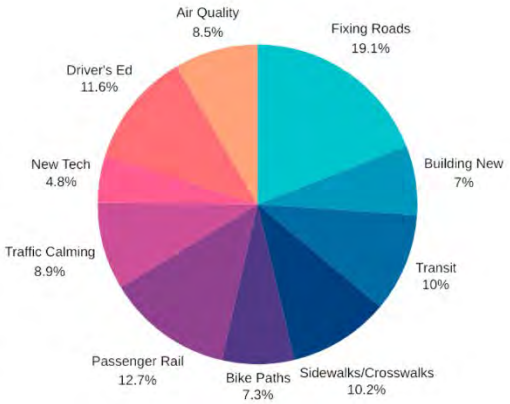
METROPOLITAN PLANNING ORGANIZATION

MONEY GAME BY AGE

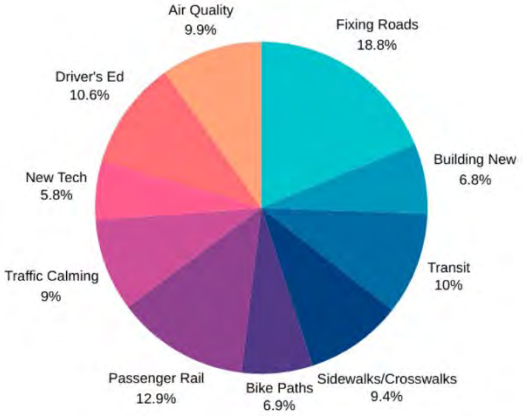
Under 18



36-55



Over 55



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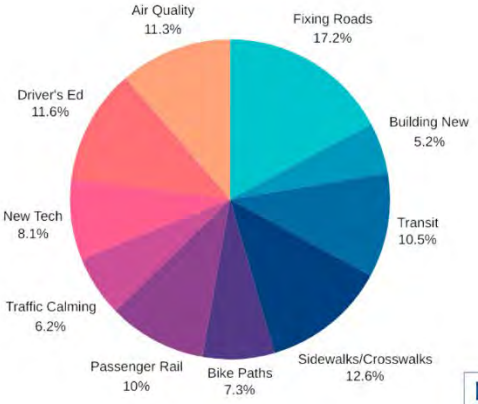
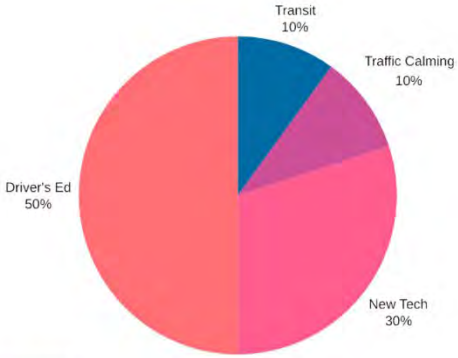


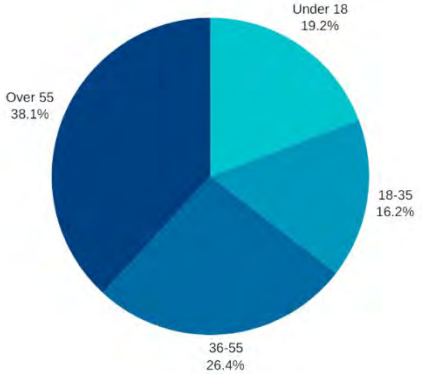
No Answer



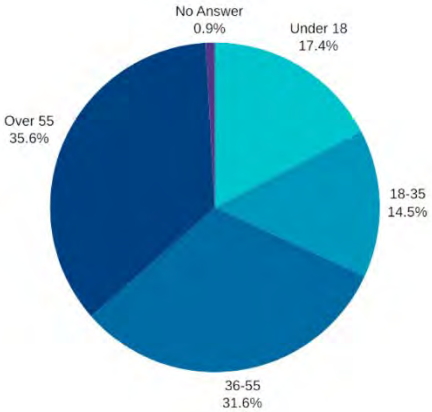
DOVER/KENT COUNTY MPO
METROPOLITAN PLANNING ORGANIZATION

MONEY GAME BY CATEGORY

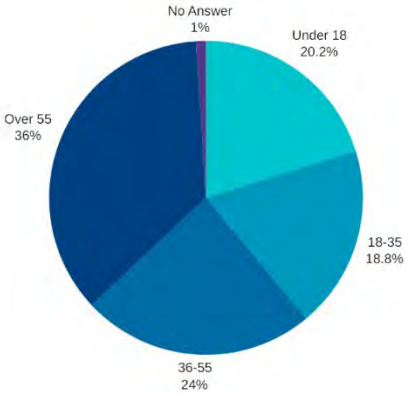
Air Quality



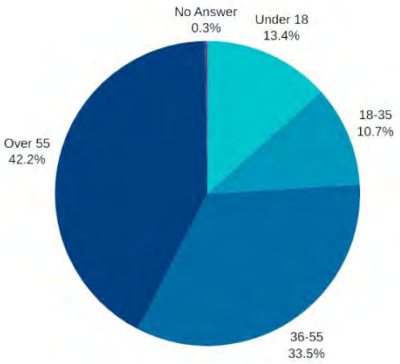
Drivers Education



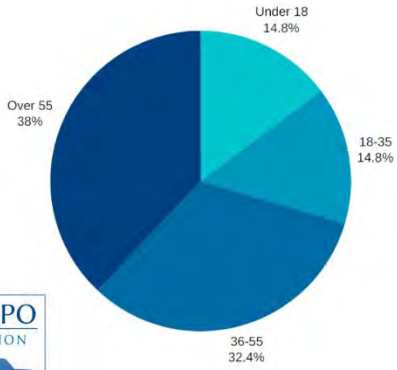
New Tech



Traffic Calming



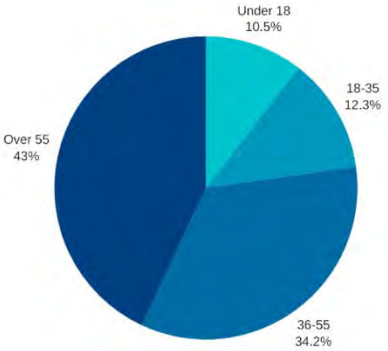
Bike Paths



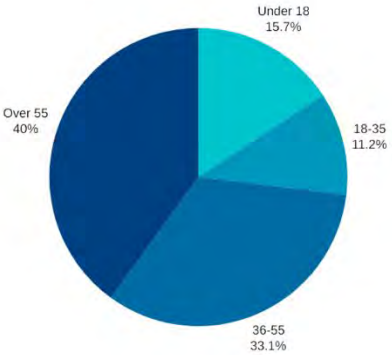
DOVER/KENT COUNTY MPO
METROPOLITAN PLANNING ORGANIZATION

MONEY GAME BY CATEGORY CONTINUED

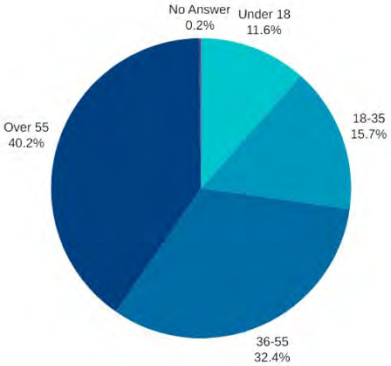
Passenger Rail



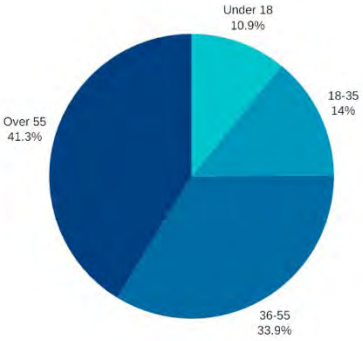
Building New Roads



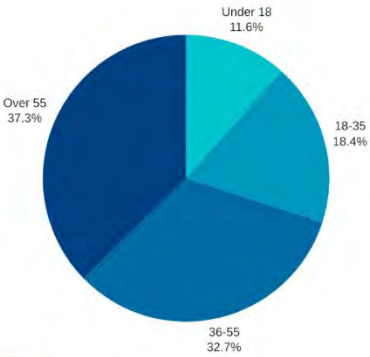
Transit



Fixing Roads



Sidewalks/Crosswalks



DOVER/KENT COUNTY MPO
METROPOLITAN PLANNING ORGANIZATION

Schedule for Money Game

Venue	Date
Redner's Camden	2/14/2024
Redner's Camden	2/14/2024
Redner's Milford	2/20/2024
Redner's Milford	2/20/2024
Smyrna Library	2/22/2024
Home & Garden Show CDCC (fairgrounds)	2/23/2024
Home & Garden Show CDCC (fairgrounds)	2/24/2024
Redner's West Dover	2/28/2024
Redner's West Dover	2/28/2024
Redner's North Dover	3/5/2024
Redner's North Dover	3/5/2024
Council Town Hall	3/7/2024
Smyrna Library	3/12/2024
Redner's Camden	3/13/2024
Redner's Camden	3/13/2024
Redner's West Dover	3/19/2024
Redner's West Dover	3/19/2024
Redner's Milford	3/21/2024
Redner's Milford	3/21/2024
Youth Leadership Solid Rock Community Center	3/23/2024
Milford Library	3/25/2024
Redner's North Dover	3/26/2024
Redner's North Dover	3/26/2024
Magnolia Youth Event	4/6/2024
Restore	4/9/2024
Over 55 Expo CDCC (Bally's)	4/11/2024
Delaware State University Student Event	4/13/2024
Smyrna High Career Fair	4/18/2024
Old Dover Days	5/9/2024

APPENDIX E

PROJECT LIST – FISCALLY CONSTRAINED PRIORITY PROJECTS

The following is a list of items to be included in the MTP project list. The list of Capital Projects is sorted into short-range (0 – 5 years), mid-range (6 – 10 years), and long-range (11+ years) projects. It includes cost estimates for the study cost, preliminary engineering (PE), right-of-way acquisition (ROW), and construction (C). Appendix E also contains a list of System Maintenance Projects, as well as a list of sources.

Each item may belong to various project categories, including roadway improvements, bicycle and pedestrian improvements, transit-related projects, freight-related projects, potential for carbon reduction, and transportation studies. Projects that meet each category are marked with an "X" in the table.

FINAL DRAFT

Short-term (0-5 years)

Project Name	Jurisdiction	Sources	Description	Study$	PE$	ROW$	C$	Total estimate	Roadway	Bicycle	Pedestrian	Transit	Freight	Carbon	Study
North Main Street Smyrna, Glenwood Ave to Duck Creek Parkway	Smyrna	1, 2, 3	Provide continuous shoulders and bike/ ped facilities. The preferred solution would to apply the Complete Streets ideal to the entire length from Glenwood to Duck Creek Parkway, with adequate shoulders, sidewalks on both sides of the street and bicycle facilities that help students ride to school.		FY26 & 27	$ 220,000	$ 2,750,000	$ 2,970,000	X	X	X			X	
US 13 at White Oak Road Intersection Improvements	Dover	1, 3	The intersection of Kings Highway/White Oak Road and US Route 13 needs improvements to meet an acceptable level of service, and because of the multi-use paths to be constructed along with this commercial development, pedestrian and bicyclist safety improvements will be needed as part of the intersection upgrade as well.		$ 600,000	$ 637,500	$ 2,500,000	$ 3,737,500	X	X	X			X	
Garrison Oak Connector Road (SR 1 via White Oak Road)	Dover	1, 3, 4, 14	Provide a direct access to State Route 1 via a connector road to White Oak Road. Listed in previous MTP and in the Dover Air Cargo study; project engineering is funded in the CTP.		FY 25 & 26	$ 4,598,880	$ 5,748,600	$ 10,347,480	X				X		
Duck Creek Parkway (Bassett St. to Main St.)	Smyrna / Clayton	2, 3	This is a proposal for road improvements and non-motorized access on the Parkway to support the student population and those participating in sporting activities on the various playing fields.		FY 26 & 27	$ 220,000	$ 3,300,000	$ 3,520,000	X	X	X			X	
Irish Hill Road Upgrade (US 13 to Fox Chase Road)	Kent County	3	Upgrade to functional classification (major collector). Add contiguous shoulders and bike/ped facilities. (Included in CTP; the entire roadway between Magnolia and US 13 is included in the previous MTP.)		FY 27 & 28	$ 2,546,400	$ 3,183,000	$ 5,729,400	X	X	X			X	
West Street, New Burton Road (Queen Street) to North Street	Dover	1, 2, 3, 4, 9	Upgrade to functional classification (major collector), add bike/ped facilities. The project will include improvements to the road surface and installation of pedestrian and bicycle access for users of the road and the Transit Center.		FY 25	$ 275,000	$ 715,000	$ 990,000	X	X	X	X		X	
Canterbury Road Upgrade (DE Rt 12 to US 13)	Kent County	1, 2, 3	Upgrade to functional classification (minor arterial). This project includes improvements along Canterbury Road (DE 15) in the limits specified to include road improvement, bicycle lanes, sidewalks and shoulders where possible.		FY 26 & 27	$ 1,100,000	$ 3,520,000	$ 4,620,000	X	X	X			X	
Peachtree Run Road (Voshells Mill Road to Irish Hill Road)	Kent County	1, 2, 3, 7	Upgrade to functional classification (major collector). The preferred solution would to create a shoulder on both sides where it is missing, add the missing sidewalks, at least in the more urbanized areas of the road, and identify the appropriate bicycle facilities.		FY 25, 26, 27	$ 880,000	$ 8,800,000	$ 9,680,000	X	X	X			X	
Brenford Road (SR 13 to DE 42)	Smyrna / Kent County	1, 3	Upgrade to functional classification (major collector). Add contiguous shoulders and bike/ped facilities.		FY 27 & 28	$ 2,546,400	$ 3,183,000	$ 5,729,400	X	X	X			X	
McKee Road/Saulsbury Road Corridor Improvements	Dover	17	Recommendations based on the outcome of the study (most recommended: Options 1 and 3).		$ 4,547,862	$ 2,200,000	$ 29,990,076	$ 36,737,938	X	X	X			X	
Smyrna Clayton Blvd (DE 6) and Wheatleys Pond Road (DE 300) Intersection Improvements	Smyrna	18	Recommendations based on the outcome of the study (Concept Option 2, with additional study recommendations).		$ 1,021,900	$ 275,000	$ 6,264,500	$ 7,561,400	X	X	X			X	
Bay Road Shared Use Paths	Dover	9, 21	Add a shared use path to both sides of Bay Road between S Little Creek Road and the Puncheon Run Connector.		$ 500,000	$ 1,000,000	$ 2,200,800	$ 3,700,800		X	X			X	
New Burton Road Shared Use Path	Dover	1, 9	Add a shared use path on the eastern side of New Burton Road between West Street and the Kent County Recreation Center.		$ 1,000,000	$ 2,000,000	$ 10,500,000	$ 13,500,000		X	X			X	

Short-term (0-5 years)

Project Name	Jurisdiction	Sources	Description	Study$	PE$	ROW$	C$	Total estimate	Roadway	Bicycle	Pedestrian	Transit	Freight	Carbon	Study
Intersection of Rehoboth Boulevard, Walnut Street, and 10th Street	Milford	12, 19, 25	Recommendations based on the outcomes of the 2023 study. Includes several phases that reconfigure the intersection to improve safety, traffic flow, and bicycle and pedestrian connectivity.		$ 593,775	$ 1,000,000	$ 5,160,000	$ 6,753,775	X	X	X			X	
North Rehoboth Boulevard / North Walnut Street Shared Use Path	Milford	12, 25	Add a shared use path on Rehoboth Boulevard and Walnut Street in Milford, between US113 and NE Front Street. Includes upgrades to driveway entrances so that vehicle traffic is delineated and pedestrian crossings are clearly identified. Part of the Buccaneer Loop in the Milford Bicycle Master Plan.		$ 1,500,000	$ 2,000,000	$ 21,600,000	$ 25,100,000		X	X			X	
Mifflin Road Improvements (North Street/Hazlettville Road to DE Rt 8)	Dover / Kent County	1, 7, 9, 22	Improve Mifflin Road to support use by all modes of transportation, including bicycle and pedestrian travel. This may include improvements to the shoulders, sidewalks in the road's shoulder, and improvements to the roundabout to support bicycle use.		$ 276,000	$ 1,104,000	$ 1,380,000	$ 2,760,000	X	X	X			X	
Cheswold US13 Shared Use Path	Cheswold / Kent County	26	Add a shared use path on US13 between Main Street and Rose Bowl Road.		$ 1,200,000	$ 2,000,000	$ 9,600,000	$ 12,800,000		X	X			X	
Dover US13 Sidewalk Connections	Dover	1, 23	Fill all remaining sidewalk gaps on both sides of US13 in Dover between Scarborough Road and the Puncheon Run Connector. Substandard facilities should also be improved, and shared use paths should be added when possible. This has been a priority for the City of Dover for many years.		$ 3,630,000	$ 5,445,000	$ 18,150,000	$ 27,225,000		X	X			X	
Glenwood Avenue Upgrade	Smyrna	1, 5	Glenwood Ave, US 13 to Smyrna Clayton Blvd. Upgrade to functional classification and add bicycle/pedestrian facilities.		$ 636,600	$ 2,546,400	$ 3,183,000	$ 6,366,000	X	X	X			X	
Connection Between DSU Campuses	Dover	27	Add a bicycle route along College Drive, US13, N State Street, and N Governors Ave between the two DSU campuses. The route may involve the use of shared use paths, bicycle boulevards, and other improvements.		$ 1,000,000	$ 2,000,000	$ 6,000,000	$ 9,000,000		X				X	
US 133 and Cluckey Drive Intersection Improvements	Harrington	15	Recommendations based on the outcome of the study. Involves reconfiguring the intersection of US 13 and Cluckey Drive to prohibit left turn exits from Cluckey Drive, with all traffic exiting the site turning right, or to the north. The modifications allow US 13 and Cluckey Drive to operate safely as an unsignalized intersection.		$ 600,000	$ -	$ 2,500,000	$ 3,100,000	X				X		
Cluckey Drive Vehicle Access	Harrington	15	Recommendations based on the outcome of the study. Involves extending Cluckey Drive to the east, which will provide vehicle access to existing and future industrial park facilities. This will be especially critical with the development of a multimodal freight terminal and direct access to the nearby rail line.		$ 150,000	$ -	$ 850,000	$ 1,000,000	X				X		
DART Bus Stop Improvements	Kent County	30	Improve DART bus stops throughout Kent County. Changes may include ADA-accessible pathways and waiting platforms, covered shelters, better signage, and other improvements.		$ 100,000	$ -	$ 272,000	$ 372,000				X		X	
SR 300 Corridor	Smyrna / Clayton / Kenton / Kent County	29	SR 6 (Glenwood Avenue) south to Shaws Corner Road (Study).	$ 200,000				$ 200,000	X					X	X
South State Street Corridor	Dover / Magnolia / Kent County	29	US 13 to SR 1 (Study).	$ 200,000				$ 200,000	X					X	X
College Road Corridor	Dover	29	SR 15 (Kenton Rd) to US 13 (Study).	$ 200,000				$ 200,000	X					X	X
SR 1 Corridor	Milford / Frederica / Kent County	29	SR 1 Bowers Beach Interchange (Exit 88) south to US 113 Exits in Milford (Study).	$ 200,000				$ 200,000	X					X	X

Short-term (0-5 years)

Project Name	Jurisdiction	Sources	Description	Study$	PE$	ROW$	C$	Total estimate	Roadway	Bicycle	Pedestrian	Transit	Freight	Carbon	Study
SR 12 Corridor (Felton)	Felton / Kent County	29	Hopkins Cemetery Road eastward to Canterbury Road (Study).	$ 200,000				$ 200,000	X					X	X
SR 14 Corridor	Milford / Harrington / Kent County	29	US 13 in Milford westward to the Maryland State Line (Study).	$ 200,000				$ 200,000	X					X	X
SR 15 (Canterbury Road) Corridor	Milford / Kent County	29	SR 14 (Milford) northward to US 13 at Canterbury (Study).	$ 200,000				$ 200,000	X					X	X
Rising Sun Road	Camden / Kent County	29	SR 10 to Old Mill Road (Study).	$ 200,000				$ 200,000	X					X	X
SR 8 from Mifflin Road to Dover High Drive	Dover	29	SR 8 from Mifflin Road to Dover High Drive (Study).	$ 200,000				$ 200,000	X					X	X
Frederica Road/SR 12	Frederica / Kent County	29	SR 12/Frederica Rd between SR 1 Exit 83 and Exit 86; and, SR 12 from Carpenders Bridge Rd to W. David St (Study).	$ 200,000				$ 200,000	X					X	X
Walker Road	Dover	29	From Pear St to N State St (Study).	$ 200,000				$ 200,000	X					X	X
North Street	Dover	29	From S Queen St to S Governors Ave (Study).	$ 200,000				$ 200,000	X					X	X
US 13 Harrington/Farmington Corridor	Harrington / Farmington / Kent County	29	US 13 from SR 14 TR to Sussex County Line (Study).	$ 200,000				$ 200,000	X					X	X
Kent County School Walk Zone Studies	Kent County	22, 30	Study the walk zone of each of the schools in Kent County and determine which areas are in need of pedestrian and bicycle improvements.	$ 200,000				$ 200,000		X	X			X	X
First and Final Mile Study for Kent County	Kent County	30	Complete a study on Kent County's first/final mile connections, the roads that link businesses to state and national highway networks. This study will highlight ongoing transportation and freight needs so that the State, County, MPO, and municipalities can more thoroughly address them. Based on the approach of the 2021 Delaware First/Final Mile Freight Network Development report.	$ 200,000				$ 200,000	X				X		X
Smyrna Commerce Street Connections Study	Smyrna	30	Study the Commerce Street corridor in Smyrna, which is separated by US13. Investigate the possible means of reconnecting the two sides of Commerce Street. Study should also include streetscapes and additional improvements.	$ 200,000				$ 200,000	X	X	X			X	X
POW-MIA Parkway Intersection Safety Study	Dover / Camden / Kent County	30	Study the intersection of the POW-MIA Parkway and the Wyoming Mill Spur. Research the frequency of crashes and propose alternatives to improve vehicle, bicycle, and pedestrian safety.	$ 200,000				$ 200,000	X	X	X				X
Short-term sub total				$ 3,400,000	$ 17,356,137	$ 34,594,580	$ 151,349,976	$ 203,300,693							

Mid-term (6-10 years)															
Project Name	**Jurisdiction**	**Sources**	**Description**	**Study$**	**PE$**	**ROW$**	**C$**	**Total estimate**	**Roadway**	**Bicycle**	**Pedestrian**	**Transit**	**Freight**	**Carbon**	**Study**
Irish Hill Road Upgrade (McGinnis Pond Road to Magnolia)	Magnolia / Kent County	1	Upgrade to functional classification (major collector). Add contiguous shoulders and bike/ped facilities. (Remaining segment that is not yet included in CTP.)		$ 4,320,000	$ 14,880,000	$ 18,600,000	$ 37,800,000	X	X	X			X	
SR1-Trap Shooters Road Interchange Improvements	Kent County	20	Recommendations based on the outcome of the study (most recommended: Alternates 1 and 2).		$ 3,683,471	$ 1,540,000	$ 22,536,746	$ 27,760,217	X						
Existing Horsepond Road Improvements - S Little Creek Road to Starlifter Avenue and Lafferty Lane	Dover	14	Recommendations based on the outcome of the study (Phase 3: Existing Horsepond Road Improvements).		$ 629,261	$ 225,500	$ 5,780,500	$ 6,635,261	X				X		
Horsepond Road Extension - N Little Creek Road to S Little Creek Road	Dover	14	Recommendations based on the outcome of the study (Phase 2: N Little Creek Road to S Little Creek Road).		$ 495,000	$ 44,000	$ 4,413,200	$ 4,952,200	X				X		
Starlifter Avenue Extension	Dover	14	Recommendations based on the outcome of the study (Phase 4: Starlifter Avenue Extension).		$ 321,569	$ 93,500	$ 2,310,000	$ 2,725,069	X				X		
Intersection of US13 and Pinewood Acres Ave	Kent County	26	Add a traffic signal at the intersection of US13 and Pinewood Acres Ave. Include pedestrian crossings to improve safety of nonmotorized travel.		$ 600,000	$ 1,000,000	$ 2,000,000	$ 3,600,000	X		X				
North Rehoboth Boulevard Left Turn Lane	Milford	25	Add a left turn lane in the center of the road in front of the KSI facility, which will allow for safer lefthand turns into the property and improve the flow of traffic on the roadway.		$ 500,000	$ -	$ 1,500,000	$ 2,000,000	X				X		
Hazlettville Road Left Turn Lane	Dover	30	Add a left turn lane on Hazlettville Road so that freight trucks are able to safely turn into the Procter & Gamble facility. This will also improve the flow of traffic in the roadway.		$ 500,000	$ -	$ 1,500,000	$ 2,000,000	X				X		
The Green to Capital City Trail	Dover	1, 7	A safe bicycle route is needed to connect downtown Dover and the National Historic Park with the Capital City Trail; either an off- or on-road safe bicycle route needs to be identified between the Capital City Trail and The Green.		$ 112,000	$ 168,000	$ 560,000	$ 840,000		X				X	
Connection Between Energy Lane and Village at Blue Hen	Dover	21	Connecting the path behind the retention pond on Energy Lane to Haslet Street (the Village at Blue Hen) and Crawford Avenue; involves removing a piece of the existing fence and adding new shared use paths.		$ 30,000	$ 42,000	$ 210,000	$ 282,000		X	X			X	
Mallard Pond Park Trail Extension	Dover	1, 11, 22	New shared use paths connecting neighborhoods in DHS walk zone to Fox Hall Road and Pebble Valley Drive; would improve the DHS walk zone by providing an off-road path to the school.		$ 20,000	$ 40,000	$ 200,000	$ 260,000		X	X			X	
Traffic Signal/Crosswalks at Intersection of Hazlettville Road, Cannon Mill Drive, and Brittingham Drive	Dover	22	Signalize the intersection and add crosswalks to allow for safe crossing by pedestrians.		$ 100,000	$ -	$ 400,000	$ 500,000	X		X			X	
Camden to Dover Trail	Dover / Camden / Kent County	1, 7, 10	Construct a new trail to connect Schutte Park and Brecknock Park. There is currently a shared use path along the POW/MIA Parkway, but this path still needs to be linked to each of the parks. Wetlands and streams would need to be navigated in several locations.		$ 495,000	$ 1,000,000	$ 3,300,000	$ 4,795,000		X	X			X	
Cheswold Improved Right Turn Lane	Cheswold	26	Improve the eastbound righthand turn lane from Main Street onto US13, so that vehicles do not block the crosswalk when turning, and so they are less likely to cause a crash.		$ 150,000	$ -	$ 850,000	$ 1,000,000	X		X				
Banning Street/Clarence Street Improvements	Dover	3, 16	Recommendations based on the outcome of the study (most recommended: Alternatives A and B; both of-street and on-street parking options).		$ 1,162,172	$ 1,430,000	$ 3,852,894	$ 6,445,066	X	X	X			X	
Buccaneer Loop	Milford	12	Add bicycle accommodations to NW Front Street, US 113, and other roads to create a safe loop connecting to Milford's schools and downtown.		$ 1,214,000	$ 2,000,000	$ 6,069,600	$ 9,283,600		X	X			X	

Mid-term (6-10 years)															
Project Name	**Jurisdiction**	**Sources**	**Description**	**Study$**	**PE$**	**ROW$**	**C$**	**Total estimate**	**Roadway**	**Bicycle**	**Pedestrian**	**Transit**	**Freight**	**Carbon**	**Study**
Benjamin Banneker Bypass Loop	Milford	12	Add bicycle accommodations to North Street, Walnut Street, and other roads to create a safe loop connecting to Milford's schools and downtown.		$ 481,000	$ 1,000,000	$ 2,404,200	$ 3,885,200		X	X			X	
Delaware Veterans Loop	Milford	12	Add bicycle accommodations to Airport Road, Delaware Veterans Boulevard, and other roads to create a safe loop connecting to the Boys & Girls Club and other key destinations.		$ 1,407,000	$ 2,000,000	$ 7,035,000	$ 10,442,000		X	X			X	
Bowers Beach Road Bicycle and Pedestrian Improvements	Bowers / Kent County	24	Add a low-stress bikeway on Bowers Beach Road between Little Heaven and the Town of Bowers. This will allow bicyclists to safely travel to and from the town. For the purpose of planning improvements, the roadway is broken into six segments (A through F).		$ 1,248,000	$ 1,872,000	$ 6,240,000	$ 9,360,000		X	X			X	
Blue Hen Boulevard and Levy Court Lane Pedestrian Improvements	Dover	21	Add shared use paths to Blue Hen Boulevard and Levy Court Lane.		$ 180,000	$ 300,000	$ 1,197,000	$ 1,677,000		X	X			X	
Energy Lane Pedestrian Improvements	Dover	21	Add a shared use path on Energy Lane that connects to Bay Road.		$ 30,000	$ 46,200	$ 184,800	$ 261,000		X	X			X	
Smyrna to Bombay Hook Connection	Smyrna / Kent County	1, 7	Add painted bicycle lanes to the existing shoulder of Smyrna Leipsic Road. Signage will also be included in the improvements.		$ 36,500	$ 54,750	$ 182,500	$ 273,750		X				X	
Milford/Lincoln US113 North/South Improvements Study	Milford / Kent County	30	Complete a study that would identify limited access alignment for the purpose of alleviating congestion along the US113 corridor around Milford. This would act as a continuation of previous discussions on the topic.	$ 250,000					X				X		X
Diamond State Line Development	Kent County	28	DTC's Diamond State Line Project will study the reestablishment of passenger rail service to the Delmarva Peninsula region. It will consider the possibility of restarting passenger rail service to the peninsula starting from either Wilmington or Newark and terminating in either Berlin, MD or Salisbury, MD. The service would serve Middletown, Dover, Georgetown, and Harrington depending upon the selected passenger rail route. Delaware Transit Corporation (DTC) is the Grantee. Dover Kent MPO is a Project Partner.	$ 250,000								X		X	X
Mid-term sub total				$ 500,000	$ 17,714,973	$ 27,735,950	$ 91,326,440	$ 136,777,363							

Long-term (11+ years)															
Project Name	**Jurisdiction**	**Sources**	**Description**	**Study$**	**PE$**	**ROW$**	**C$**	**Total estimate**	**Roadway**	**Bicycle**	**Pedestrian**	**Transit**	**Freight**	**Carbon**	**Study**
Harrington Multimodal Freight Terminal and Rail Connection	Harrington	15	Recommendations based on the outcome of the study. Involves reconfiguring the intersection of US 13 and Cluckey Drive to prohibit left turn exits from Cluckey Drive, with all traffic exiting the site turning right, or to the north. The modifications allow US 13 and Cluckey Drive to operate safely as an unsignalized intersection.		$ 5,000,000	$ 6,360,000		$ 11,360,000					X	X	
Rabbit Chase Road Upgrade	Smyrna	1, 5	Upgrade to functional classification (minor collector). Add contiguous shoulders and bike/ped facilities.		$ 636,600	$ 2,546,400	$ 3,183,000	$ 6,366,000	X	X	X			X	
DE Rt 15 Widening (Moose Lodge Road & Dundee Road)	Wyoming / Woodside / Kent County	1, 7	The roads need to be widened and bike lanes added along the lengths of Moose Lodge and Dundee Roads, between Westville Road near Wyoming to Main Street in Woodside, a length of 3.3 miles.		$ 283,680	$ 1,134,720	$ 1,418,400	$ 2,836,800	X	X				X	
SR 300 Corridor	Smyrna / Clayton / Kenton / Kent County	29	SR 6 (Glenwood Avenue) south to Shaws Corner Road (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
South State Street Corridor	Dover / Magnolia / Kent County	29	US 13 to SR 1 (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
College Road Corridor	Dover	29	SR 15 (Kenton Rd) to US 13 (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
SR 1 Corridor	Milford / Frederica / Kent County	29	SR 1 Bowers Beach Interchange (Exit 88) south to US 113 Exits in Milford (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
SR 12 Corridor (Felton)	Felton / Kent County	29	Hopkins Cemetery Road eastward to Canterbury Road (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
SR 14 Corridor	Milford / Harrington / Kent County	29	US 13 in Milford westward to the Maryland State Line (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
SR 15 (Canterbury Road) Corridor	Milford / Kent County	29	SR 14 (Milford) northward to US 13 at Canterbury (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
Rising Sun Road	Camden / Kent County	29	SR 10 to Old Mill Road (Preliminary Engineering).		$ 1,000,000			$ 1,000,000	X					X	
SR 8 from Mifflin Road to Dover High Drive	Dover	29	SR 8 from Mifflin Road to Dover High Drive (Preliminary Engineering).		$ 600,000			$ 600,000	X					X	
Frederica Road/SR 12	Frederica / Kent County	29	SR 12/Frederica Rd between SR 1 Exit 83 and Exit 86; and, SR 12 from Carpenders Bridge Rd to W. David St (Preliminary Engineering).		$ 4,000,000			$ 4,000,000	X					X	
Walker Road	Dover	29	From Pear St to N State St (Preliminary Engineering).		$ 600,000			$ 600,000	X					X	
North Street	Dover	29	From S Queen St to S Governors Ave (Preliminary Engineering).		$ 330,000			$ 330,000	X					X	
US 13 Harrington/Farmington Corridor	Harrington / Farmington / Kent County	29	US 13 from SR 14 TR to Sussex County Line (Preliminary Engineering).		$ 5,000,000			$ 5,000,000	X					X	
Long-term sub total					$ 52,450,280	$ 10,041,120	$ 4,601,400	$ 67,092,800							
TOTAL				$ 3,900,000	$ 87,521,390	$ 72,371,650	$ 247,277,816	**$ 407,170,856**							

$213,370,000 2040 fiscal constraint target
$193,799,000 2050 fiscal constraint target
$407,169,000

System Maintenance Projects

Project Name	Jurisdiction	Sources	Description	Roadway	Bicycle	Pedestrian	Transit	Freight	Carbon
Smyrna Bus Stop Improvements	Smyrna	5, 30	Add shelters to DART bus stops in the Town of Smyrna and improve accessibility by adding sidewalks or other pathways.				X		X
Smyrna School Link	Smyrna	1, 7	Install a (1,000 ft.) bicycle trail connecting the eastern terminus of the existing trails to North Main Street.		X	X			X
Cheswold Main Street Pedestrian Crossings	Cheswold	26	Install ADA-accessible crosswalks at critical locations on Main Street in Cheswold.			X			X
Cheswold US13 Streetscaping	Cheswold	26	Includes upgrades to DART bus stops, small plantings in the roadway's median, street lighting, and "Welcome to Cheswold" signs on US13. The speed limit of US13 through Cheswold should also be reduced, as is the case with most other municipalities.				X		X
Harrington Street Lighting	Harrington	6, 30	Improve street lighting in critical areas in downtown Harrington.			X			
Rose Valley School Road Resurfacing	Kent County	30	Resurface Rose Valley School Road in between Forrest Ave and Hazlettville Road.	X					
Wyoming Street Lighting	Wyoming	30	Improve street lighting in critical areas in downtown Wyoming.			X			
Little Creek Main Street Pedestrian Crossings	Little Creek	30	Install ADA-accessible crosswalks at critical locations on Main Street in Little Creek.			X			X
Connection between Bay Road and St. Jones River Greenway Trail	Dover	21	New connection between Bay Road and the St. Jones River Greenway Trail via Shop Sign Road (north of Puncheon Run Connector).		X	X			X
Pine Cabin Road Improvements	Dover	1, 7, 27	Pine Cabin Road needs to be marked with sharrows and evaluated as to whether additional lighting should be added.		X				X
Bowers Streetscaping and Recreational Improvements	Bowers	24	Includes various streetscaping and other improvements throughout the Town of Bowers, such as sharrows on the low-stress roads, wayfinding signage that point to destinations, and informational signage describing the human and natural history of the town.		X	X			X
Forrest Ave Sidewalk and Crosswalk to Dover High Drive	Dover	22	Add a sidewalk heading westward from the entrance to Cranberry Run, and a crosswalk across Route 8 (Forrest Ave) to the western entrance to Dover High Drive.			X			X
Dover High Drive Crossing at Entrance to Leander Lakes	Dover	22	Add a crosswalk running east to west across Dover High Drive at the entrance to Leander Lakes, to improve safety conditions for students.			X			X
Dover High Drive Intersection Signal Conversion	Dover	22	Convert the existing HAWK light at the eastern entrance to Dover High Drive into a signalized intersection. This will be easier for motorists to follow, and it will require them to slow down and allow students to cross the road.		X	X			X
Mifflin Road Crosswalk	Dover	22	Add a crosswalk at the entrance to the walking path on Mifflin Road.			X			X
Crosswalks in Village of Westover and Cannon Mills Neighborhoods	Dover	22	Add crosswalks at critical locations in the neighborhoods close to Dover High School. Vehicles tend to speed through these neighborhoods, and designated crossings would help improve pedestrian safety.			X			X
Loockerman Plaza Sidewalk and Crosswalk	Dover	1, 27	Improve walking and biking conditions in downtown Dover, based on the recommendations of the Downtown Dover Pathways Plan. These include sidewalk and crosswalk improvements to Loockerman Plaza, safer pedestrian crossings on Division Street, daylighting and curb extensions, sidewalk upgrades, and better bicycling facilities throughout the downtown.		X	X			X
Camden Bus Stop Improvements	Camden	30	Add shelters to DART bus stops in the Town of Camden and improve accessibility by adding sidewalks or other pathways. Locations of note include South Street and Caesar Rodney High School.				X		X
Crosswalk at Rehoboth Boulevard / Walnut Street / 10th Street	Milford	12, 19, 25	Install an ADA-accessible crosswalk between the eastern and western sides of Rehoboth Boulevard/Walnut Street for use by Milford High School students.			X			X
Crosswalk at Rehoboth Boulevard and Washington Street	Milford	12, 25	Add a crosswalk that runs north to south at the corner of Rehoboth Boulevard and Washington Street.			X			X
Crosswalk at Rehoboth Boulevard and Front Street	Milford	12, 25	Add a crosswalk that runs east to west at the corner of Rehoboth Boulevard and Front Street.			X			X
North Rehoboth Boulevard Streetscaping	Milford	12, 25	Includes various streetscaping upgrades to North Rehoboth Boulevard in Milford, such as better lighting, street trees, and upgrades to DART bus stops.				X		X

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APPENDIX F

ADDITIONAL PROJECT RESOURCE MAPS

Contents

General Kent County Map

2020 Delaware Strategies Map

Kent County Land Use Strategies Map

MPO Projects within Historically Underserved Areas Map

Agland Preservation Program Map

Regulatory Flood Plain Areas Map

Sea Level Inundation Forecast Map

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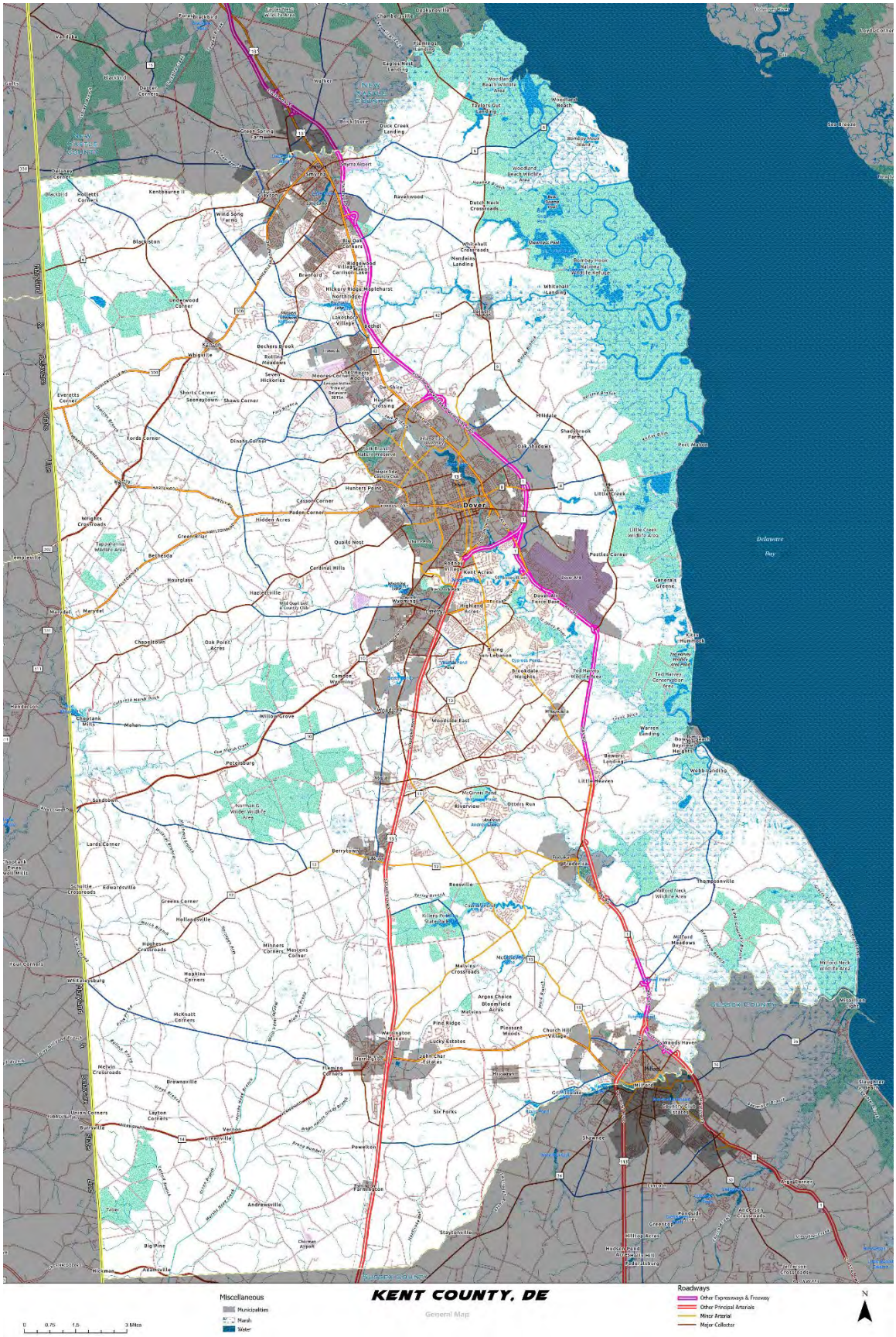
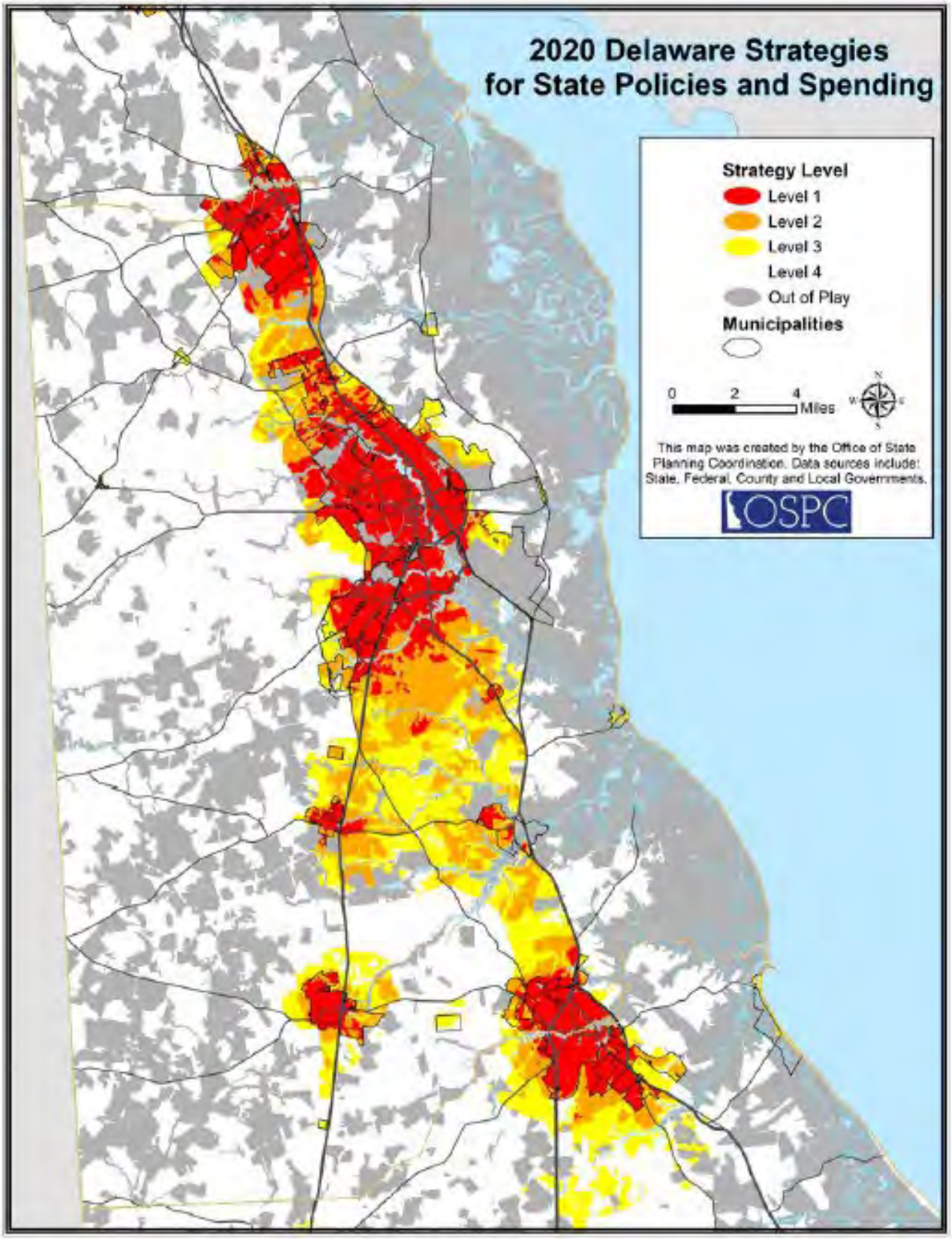

KENT COUNTY, DE
General Map
Miscellaneous
Municipalities
Marsh
Water
Roadways
Other Expressways & Freeway
Other Principal Arterials
Minor Arterial
Major Collector
N
0 0.75 1.5 3 Miles
Dover
Delaware Bay


2020 Delaware Strategies
for State Policies and Spending
Strategy Level
Level 1
Level 2
Level 3
Level 4
Out of Play
Municipalities
0
2
4
Miles
N
W
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S
This map was created by the Office of State Planning Coordination. Data sources include: State, Federal, County and Local Governments.
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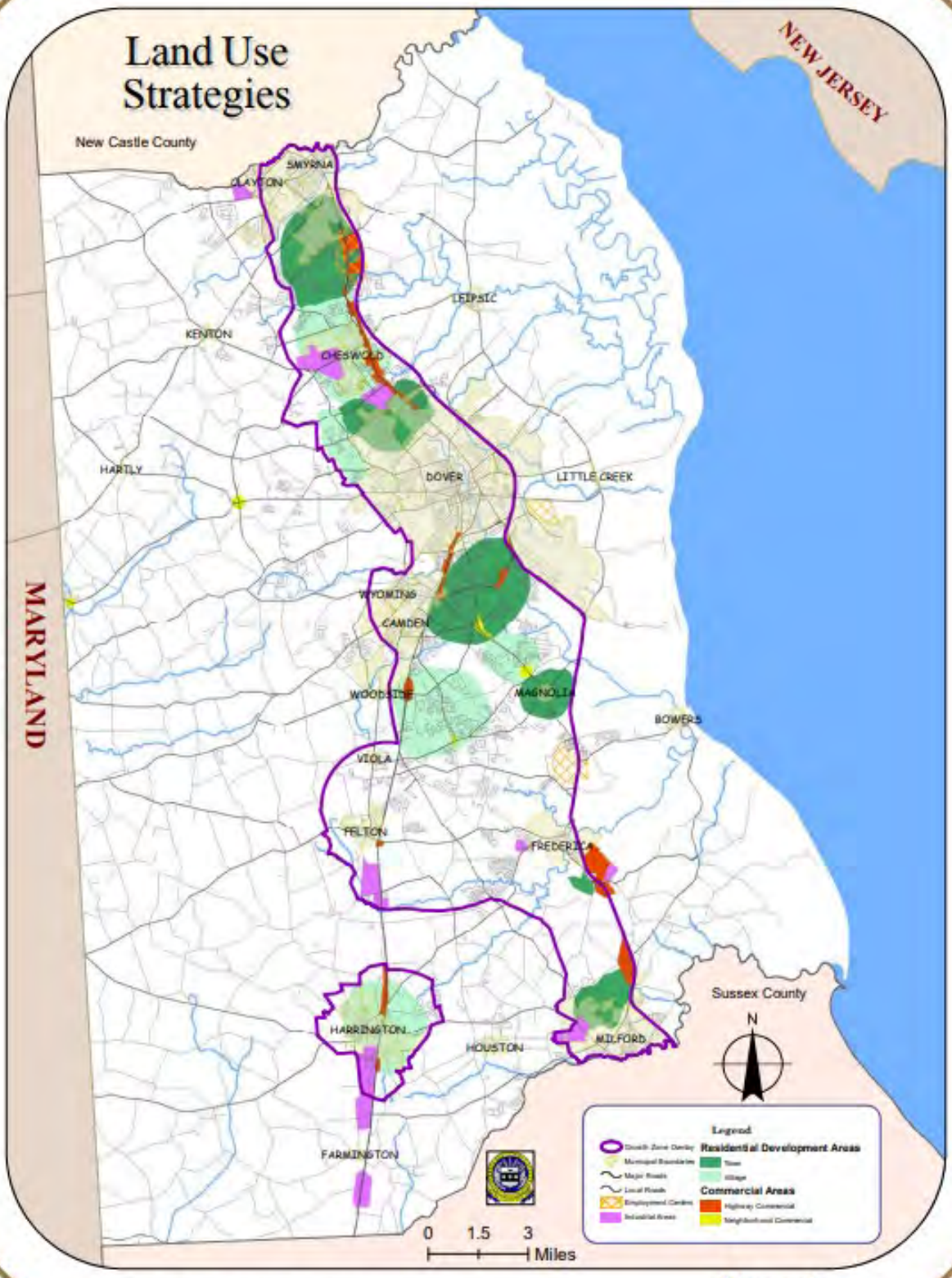
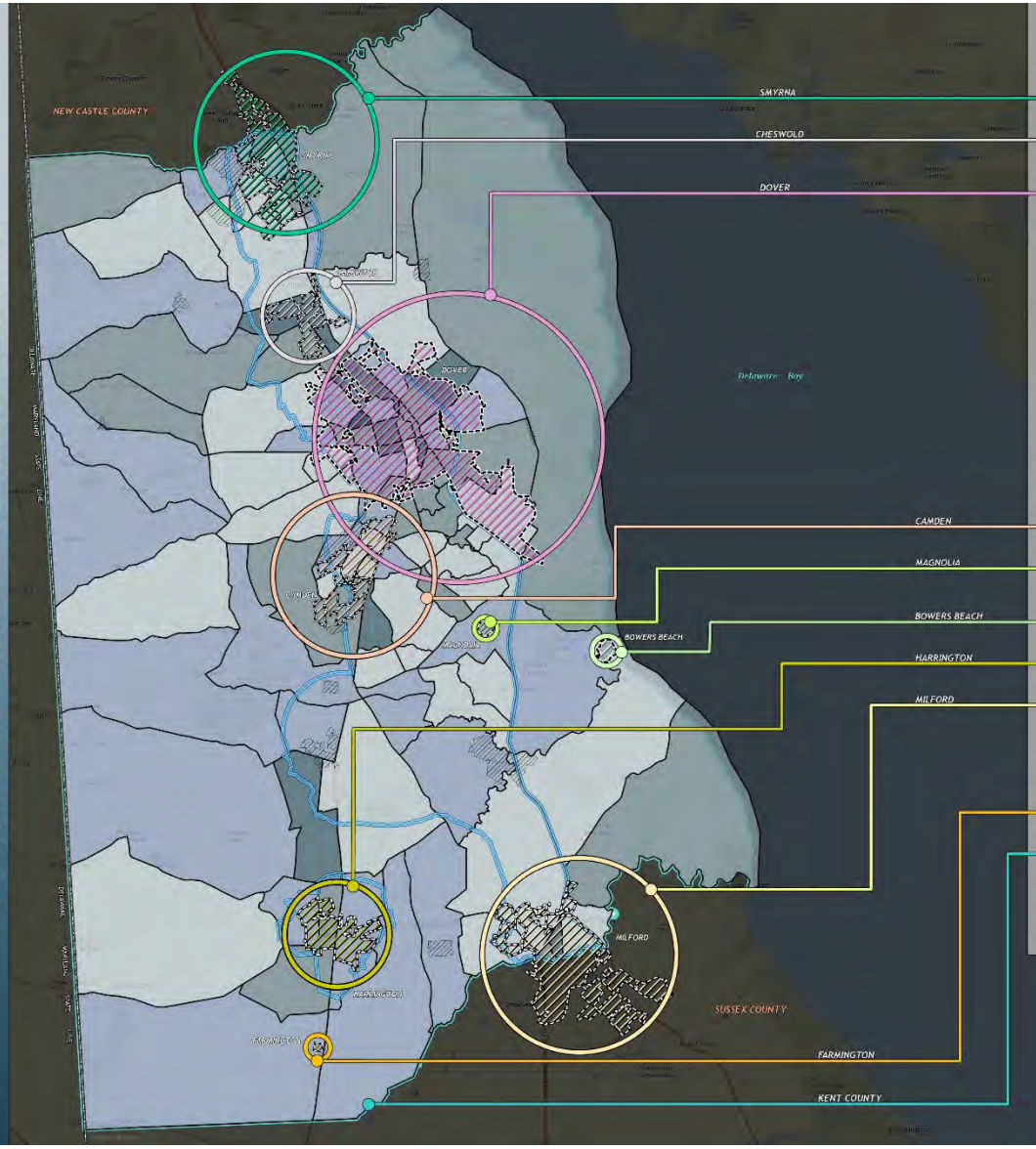


Kent County, DE 2018 Comprehensive Plan - Final Draft

Map 7C

WORK WITHIN HISTORICALLY UNDERSERVED COMMUNITIES - BY CENSUS BLOCKS



PROJECT LIST

PROJECT NO.	SMYRNA PROJECT(S) - 1	YEAR
23-10.02	Smyrna-Clayton Blvd. at Wheatley's Pond Road Intersection	2023

PROJECT NO.	CHESWOLD PROJECT(S) - 2	YEAR
22-08.05.d1	Transportation Improvement District Support	2022
24-10.01	Cheswold US13 Pedestrian Safety and Connectivity Study	2024

PROJECT NO.	DOVER PROJECT(S) - 27	YEAR
15-08.04	U.S. Route 13 Pedestrian Counts	2015
16-08.04	Capital Gateway Planning Study	2016
16-08.06	Downtown Dover Parking Study	2016
17-08.06	Downtown Dover Parking Study	2017
17-08.07	Garrison Oak Technology Park Traffic Analysis	2017
18-08.05	North State Street Bicycle & Pedestrian Feasibility Study	2018
18-08.08	Delaware State University Pedestrian Study	2018
18-08.12	Transit Center Conceptual Planning	2018
19-08.05.a.1	Bank Lane Bike/Ped	2019
19-08.05.a.2	Delaware State University Pedestrian Study	2019
20-08.05.c.1	Dover Freight Management/Air Cargo Ramp Study	2020
20-08.05.c.2	Saulsbury/McKee/Scarborough Road Study	2020
20-08.05.c.3	SR1/Trap Shooters Road Intersection Study	2020
20-08.05.c.4	Banning Street/Clarence Street Study	2020
20-08.05.c.5	Route 8 Study Update	2020
20-08.05.a.2	Dover Bike and Pedestrian Plan	2020
21-08.05.h.1	Truck Parking Study	2021
21-08.05.d.1	Transportation Improvement District US 13 and Bay Road Corridor	2021
20-08.05.c.2	Banning Street/Clarence Street Study	2021
21-08.05.h.1	Traffic Circulation Analysis for City of Dover	2021
22-08.05.c1	McKee Road / Saulsbury Road Corridor	2022
23-10.05	US13 Sidewalk Construction Gap Identification	2023
23-10.06	Sidewalks in the Walk Zone of Dover HS	2023
23-10.07	Bay Rd Ped Path & Bay Rd Walking Trail Connections	2023
23-10.08	US13 North Kent Corridor Plan	2023
23-11.01	McKee/Saulsbury Corridor Study	2023
24-10.09	Dover Municipal Freight Plans	2024

PROJECT NO.	CAMDEN PROJECT(S) - 1	YEAR
15-08.05	Route 10 Trail Planning Study	2015

PROJECT NO.	MAGNOLIA PROJECT(S) - 2	YEAR
20-08.05.h.1	Traffic Study and mitigation strategies at the North/South Main Street and East/West Walnut Streets intersection.	2020
23-10.04	SR1 / Trap Shooters Interchange	2023

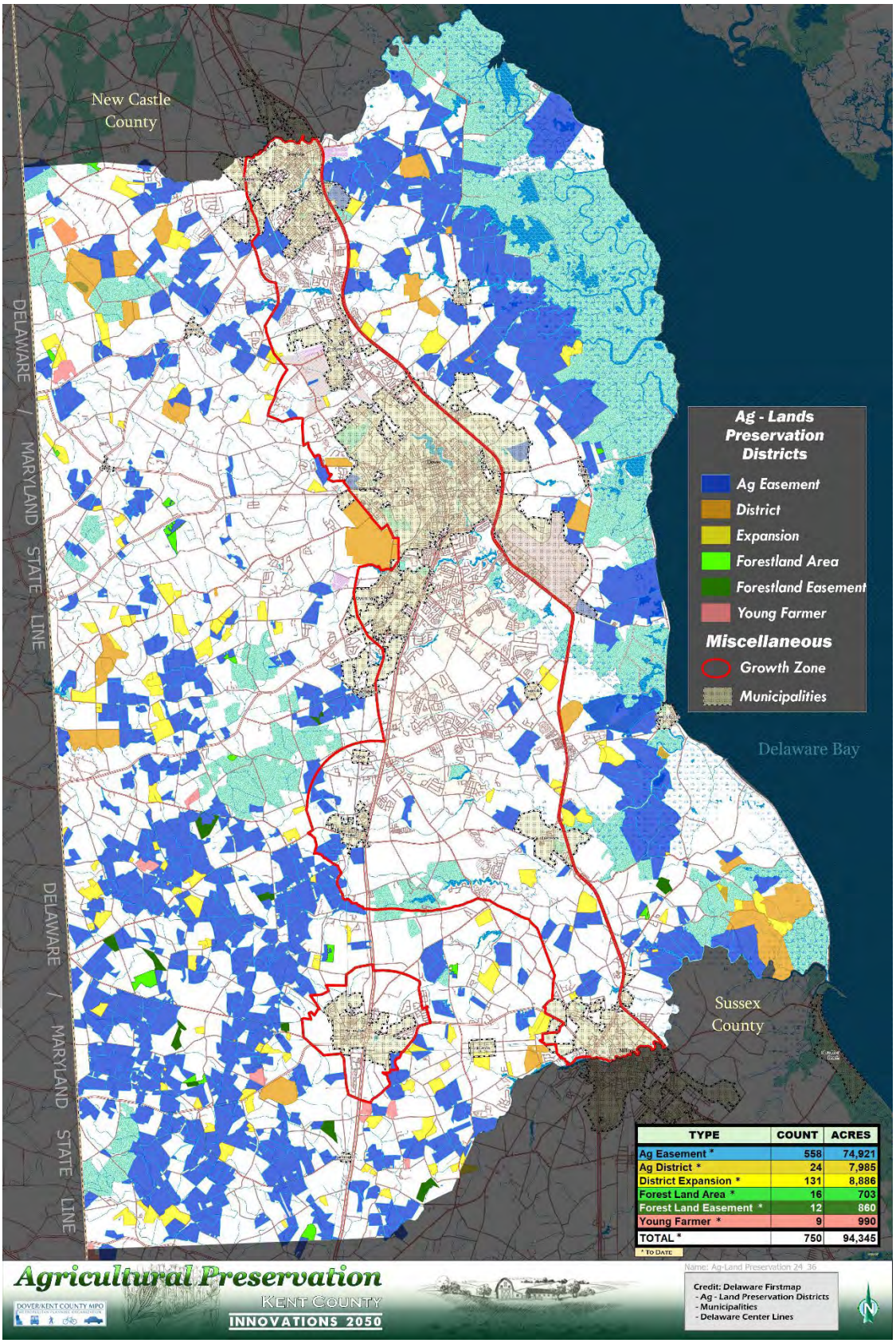
PROJECT NO.	BOWERS BEACH PROJECT(S) - 1	YEAR
22-08.05.a1	Bowers Road & Main Street Bike & Ped Improvements	2022

PROJECT NO.	HARRINGTON PROJECT(S) - 1	YEAR
20-08.05.f.2	Harrington industrial/warehouse/office park Master Plan	2020

PROJECT NO.	MILFORD PROJECT(S) - 7	YEAR
15-08.06	North East Milford Master Planning Study	2015
18-08.06	Downtown Milford Parking Study	2018
18-08.07	Milford Truck Traffic Study	2018
20-08.05.a.1	Milford Bike and Pedestrian Plan	2020
23-10.01	N. Walnut St at 10th St and Washington St (Milford) Int	2023
23-10.03	Airport Rd at Canterbury Rd (Milford) Int	2023
24-10.02	N. Rehoboth Blvd./N. Walnut Street Corridor	2024

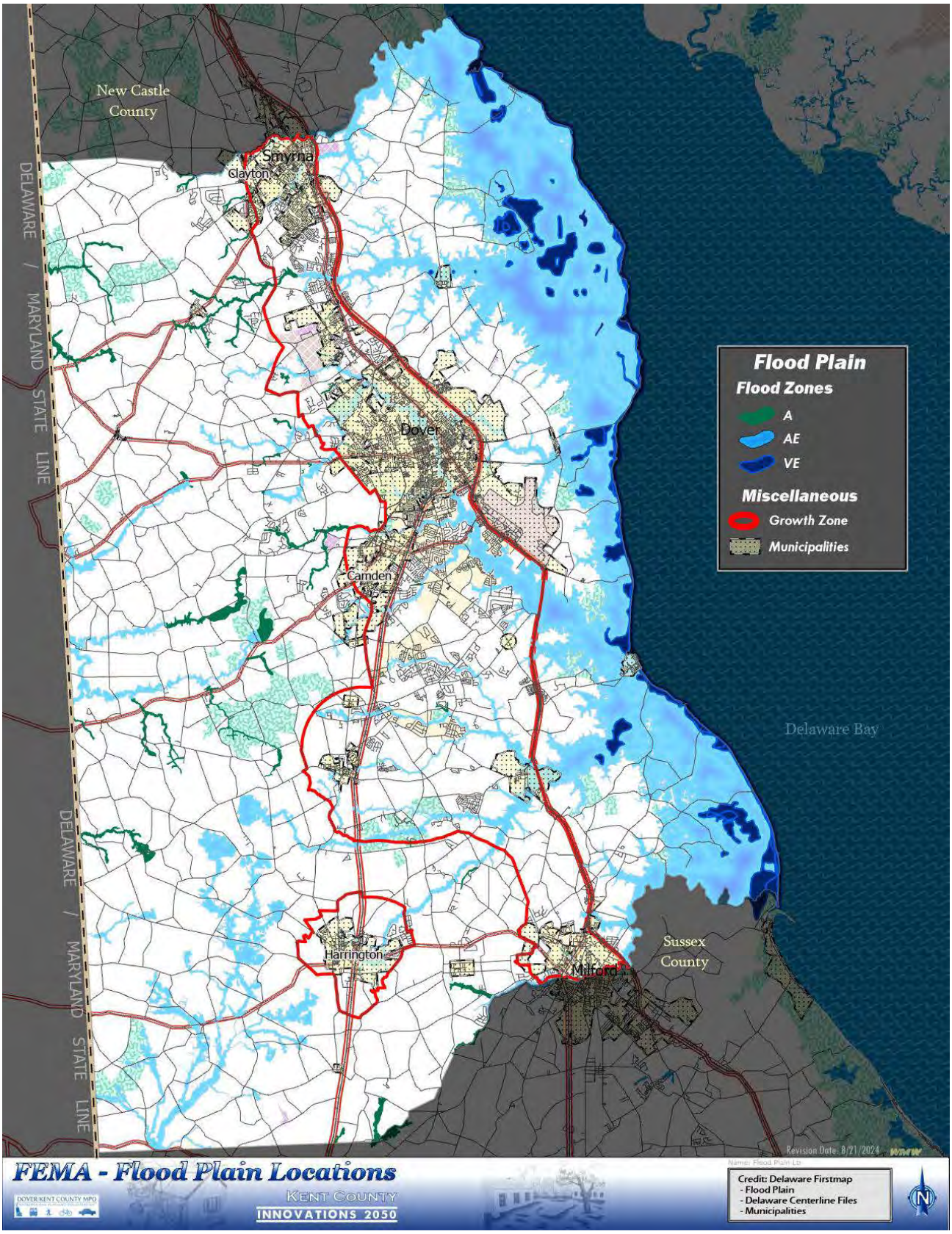
PROJECT NO.	FARMINGTON PROJECT(S) - 1	YEAR
23-10.09	Farmington Bike Route Plan	2023

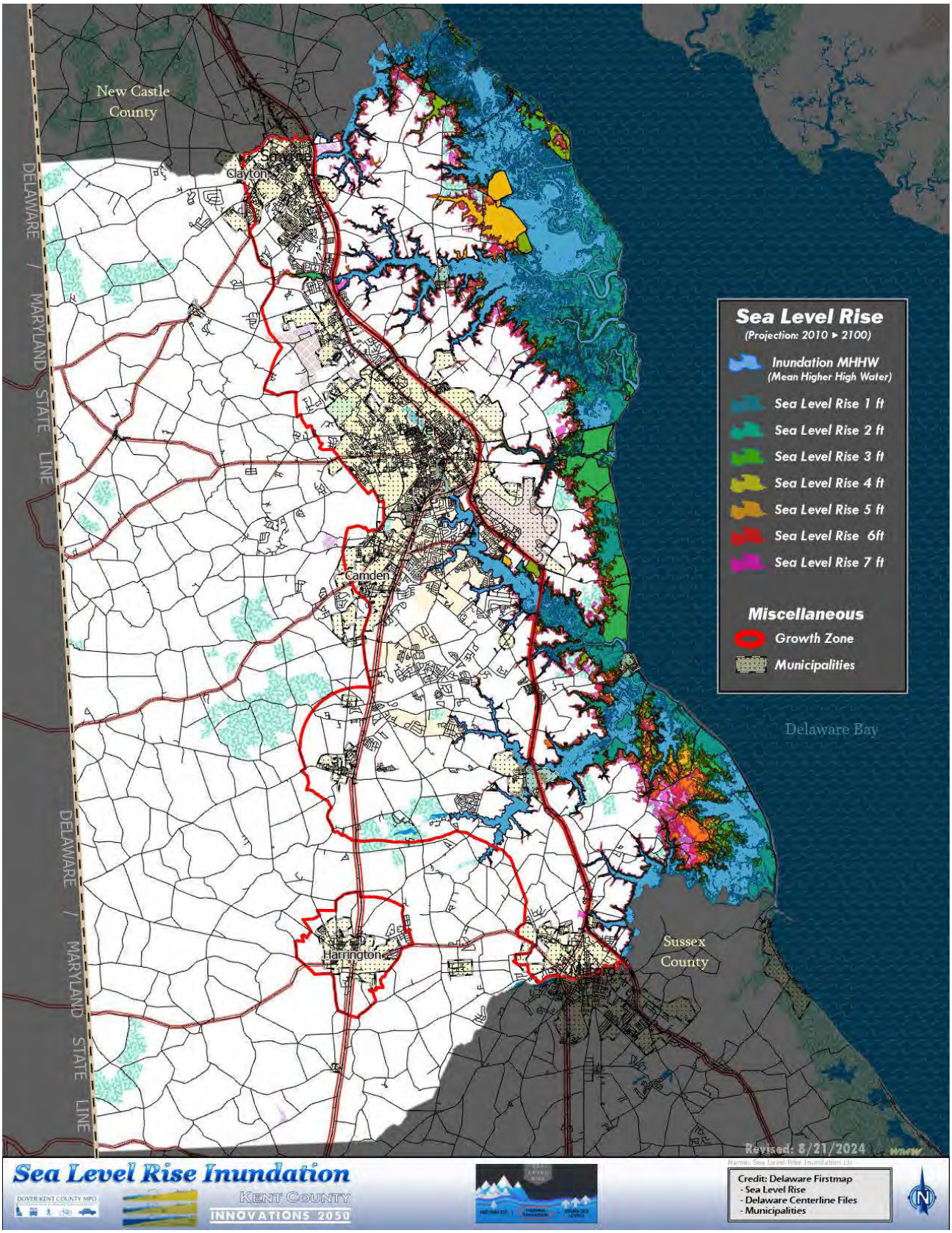
PROJECT NO.	KENT COUNTY PROJECT(S) - 6	YEAR
15-08.07	U.S. Route 13 Transit Study	2015
20-08.05.f.1	East-West Freight Route Feasibility Analysis	2020
20-08.05.c.1	SR1/Trap Shooters Road Intersection Study	2021
22-08.05.f1	East-West Freight Route Feasibility Analysis	2022
22-08.05.f2	Rail Corridor Industrial Land Use	2022
23-11.02	TID Support	2023



TYPE	COUNT	ACRES
Ag Easement *	558	74,921
Ag District *	24	7,985
District Expansion *	131	8,886
Forest Land Area *	16	703
Forest Land Easement *	12	860
Young Farmer *	9	990
TOTAL *	750	94,345

* To Date


New Castle County
Smyrna
Clayton
Dover
Camden
Harrington
Milford
Sussex County
Delaware Bay
DELAWARE / MARYLAND STATE LINE
DELAWARE / MARYLAND STATE LINE
Flood Plain
Flood Zones
A
AE
VE
Miscellaneous
Growth Zone
Municipalities
Revision Date: 8/21/2024
FEMA - Flood Plain Locations
DOVER KENT COUNTY MPO
KENT COUNTY
INNOVATIONS 2050
Credit: Delaware Firstmap
- Flood Plain
- Delaware Centerline Files
- Municipalities


New Castle County
Smyrna
Clayton
Dover
Camden
Harrington
Sussex County
Delaware Bay
DELAWARE / MARYLAND STATE LINE
DELAWARE / MARYLAND STATE LINE
Sea Level Rise
(Projection: 2010 ▸ 2100)
Inundation MHHW
(Mean Higher High Water)
Sea Level Rise 1 ft
Sea Level Rise 2 ft
Sea Level Rise 3 ft
Sea Level Rise 4 ft
Sea Level Rise 5 ft
Sea Level Rise 6ft
Sea Level Rise 7 ft
Miscellaneous
Growth Zone
Municipalities
Revised: 8/21/2024
Sea Level Rise Inundation
DOVER KENT COUNTY MPO
KENT COUNTY
INNOVATIONS 2050
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FINAL DRAFT

DOVER/KENT COUNTY MPO

METROPOLITAN PLANNING ORGANIZATION