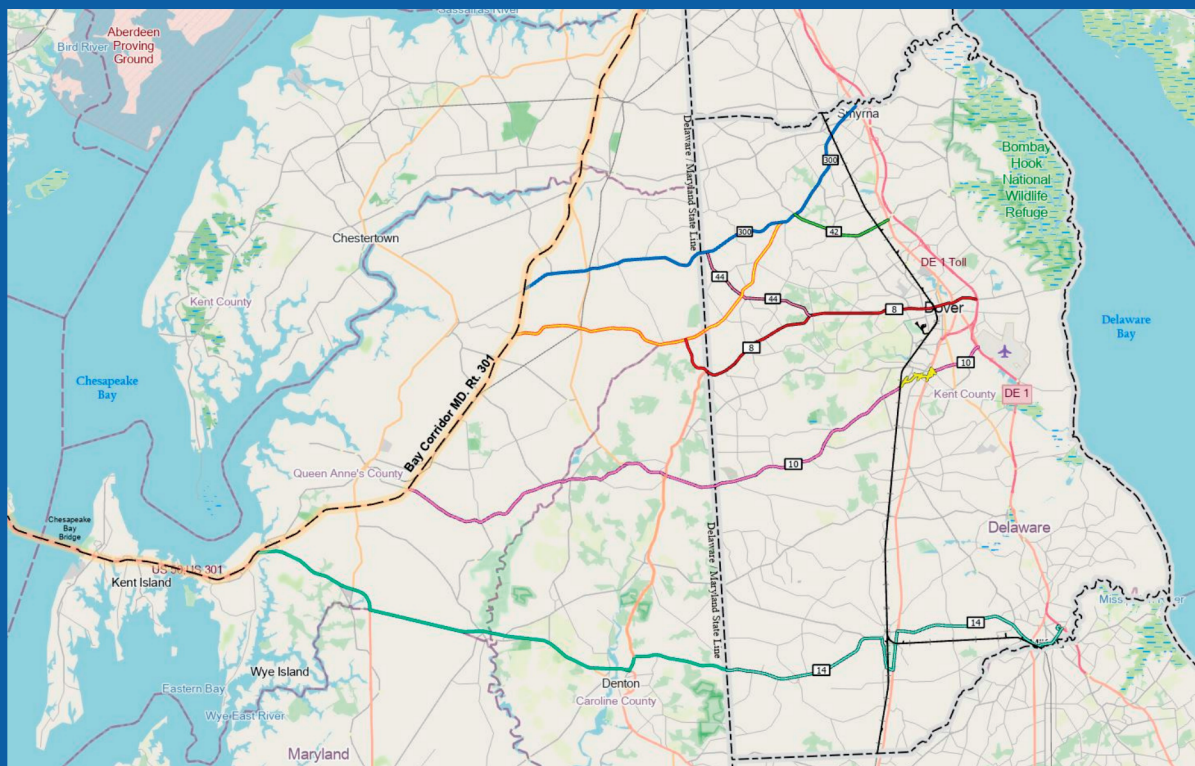


**December 2022  
Final**



# **KENT COUNTY EAST-WEST TRUCK FREIGHT ROUTE FEASIBILITY ANALYSIS PHASE I**



**DOVER/KENT COUNTY MPO**  
METROPOLITAN PLANNING ORGANIZATION



*The report reflects the views of the authors, who are responsible for the facts and accuracy of the research. The contents do not necessarily reflect the official view of FHWA, FTA, or DeIDOT.*

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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 ground 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.”*

## **Preface**

Dover Kent MPO is pleased to provide this publication, *East-West Freight Route Feasibility Analysis*. Funded by FHWA, FTA, DeIDOT and KEP, this resource is intended to examine the existing conditions of east-west routes in Kent County, Delaware, so that it may be used by those in the trucking industry to more effectively plan driving routes. The study also offers potential alternatives to the existing conditions; through these examples, municipalities may then consider changes in local infrastructure that will benefit both truck drivers and the community. Ultimately the study will determine and present the most effective east-west freight route for Kent County.

Dover Kent MPO is responsible to ensure existing and future transportation projects are continuing, cooperative, and comprehensive and as such, appreciates continued support from FHWA, FTA, DeIDOT, and our local MPO partners in order to ensure transportation policy information is shared. We are pleased to acknowledge the following collaborators on this project:

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## Table of Contents

Preface .....	ii
List of Figures .....	v
List of Tables .....	v
Introduction .....	1
Existing Conditions .....	3
Hard Stops Along East-West Routes .....	3
Traffic Volume Patterns .....	5
Five-Year Crash History .....	6
Freight Generators in Kent County .....	7
Agricultural Vehicles .....	8
Environmental Considerations .....	9
Planned Improvements to Existing Routes .....	9
Designated Truck Routes .....	11
Relevant Plans and Studies .....	12
Data Collection .....	14
Overview of Traffic Data .....	14
Physical inventory .....	14
Traffic and truck counts .....	14
Data from DelDOT .....	15
Crash data .....	15
Travel time and travel time reliability .....	15
Truck weight limits and enforcement .....	15
Route 10 Data .....	16
Outreach Activities .....	18
Municipal Interviews .....	18
East/West Truck Study Online Survey .....	18
2022 State Truck Driving Championships .....	19
Other Outreach Activities .....	21
Findings Based on Outreach Activities .....	21
Short-Term Alternatives .....	22
Delaware Route 10 and the Camden Bypass .....	22
Mid-Term Considerations .....	23
Smyrna and Clayton .....	23
Kenton .....	25
Hartly .....	26
Cheswold .....	28
Dover .....	29

Harrington .....	30
Milford .....	32
Conclusion .....	35
Appendix A – Complete Existing Conditions .....	37
Route 300 .....	37
Route 8 .....	43
Route 11 .....	51
Route 44 .....	54
Route 42 .....	59
Route 14 .....	64
Speed Limits and Travel Time Reliability .....	73
Truck Weight Limit and Enforcement .....	78
Federally Designated Truck Routes .....	79
Appendix B – Guide to Traffic-Calming Techniques .....	81
Appendix C – Other Policies and Strategies .....	84
Appendix D – Municipal Interview Data .....	86



## List of Figures

Figure 1: Map depicting the routes included in this study.....	2
Figure 2: Average daily total traffic and truck traffic for SR 8, SR 300, and SR 14.....	5
Figure 3 (l): Average daily total traffic and truck traffic, near MD state line.....	6
Figure 4 (r): Average daily total traffic and truck traffic, near US 13.....	6
Figure 5: Estimated daily truck trip generation in Kent County.....	7
Figure 6 (l): A farm vehicle on SR 14 west of Harrington.....	8
Figure 7 (r): Several farm vehicles on SR 300 south of Clayton.....	8
Figure 8: An Amish buggy on a busy road in the Dover community.....	8
Figure 9: An example of flooding that can take place along roadways.....	9
Figure 10: Planned intersection improvement at US 113 and SR 14 in Milford.....	11
Figure 11: Map of study routes, including the locations of road tubes used for this study.....	16
Figure 12: List of 13 truck classifications.....	17
Figure 13: The 2022 State Truck Driving Championships.....	20
Figure 14: Concept for Smyrna and Clayton.....	24
Figure 15: Additional concept for Smyrna and Clayton.....	24
Figure 16 (l): Intersection of SR 300 and SR 42 in Kenton, facing westward.....	25
Figure 17 (r): Intersection of SR 300 and SR 42 in Kenton, facing eastward.....	25
Figure 18: Overhead view of the intersection of SR 300 and SR 42 in Kenton.....	25
Figure 19: Concept for roundabout at the intersection of SR 300 and SR 42 in Kenton.....	26
Figure 20: SR 44 (Hartly Road) in Hartly, eastbound.....	27
Figure 21: Concept for a flashing traffic signal at SR 44 and Slaughter Station Road in Hartly.....	27
Figure 22: SR 42 (Main Street) in Cheswold, eastbound towards SR 13.....	28
Figure 23: A bypass concept for Cheswold.....	29
Figure 24 (l): SR 8 (Division Street) in Dover, westbound from Bradford Street.....	30
Figure 25 (r): A dump truck heading east on SR 8 (Division Street) from the State Street intersection.....	30
Figure 26: A depiction of some of the turns required when passing through downtown Harrington.....	31
Figure 27: Concept for improvements in Harrington, which involves adding left turn lanes to the intersection.....	31
Figure 28: Additional concept for improvements in Harrington.....	32
Figure 29 (l): The intersection of Walnut Street, NE Front Street, and NW Front Street in Milford.....	33
Figure 30 (r): A truck turning from Walnut Street onto SE Front Street in Milford.....	33
Figure 31: The northern and southern corridor in the Milford area.....	33
Figure 32: A wider view of Milford's existing conditions.....	34
Figure 33 (l): The Mispillion River bridge on Rehoboth Boulevard, southbound.....	34
Figure 34 (r): The Mispillion River bridge on Rehoboth Boulevard, northbound.....	34

## List of Tables

Table 1: Number of hard stops according to east-west route.....	5
Table 2: Total crashes along east-west routes within five years (2015-2019).....	6
Table 3: Comparison of east-west route volumes based on traffic counts.....	15
Table 4: Tabulation of responses from online survey, February 2022.....	19

## Introduction

Freight is a vital industry that connects regions to one another and fosters economic growth. A significant portion of that industry depends on the use of trucks to carry goods between locations, in addition to the necessary infrastructure such as roads and bridges. However, freight can also lead to a number of conflicts. An example of this can be seen when trucks pass through downtown areas on their typical route: this is difficult for the truck drivers, who must navigate tight corners and busy streets, and also for communities, where the safety of motorists, bicyclists and pedestrians is a high concern. In addition, trucks and other large vehicles can contribute to local noise and air pollution. With these conflicts in mind, planning solutions should consider the needs of both the communities and the truck drivers, so that all the involved stakeholders will benefit in some way.

The Kent Economic Partnership in Kent County, Delaware had an Economic Analysis completed in September 2018. The analysis recommended warehousing, distribution, and logistics as a key sector to target in the future regarding Kent County's Economic Development initiatives. As such, the Kent Economic Partnership, through Kent County Levy Court, requested a study to determine the most beneficial and effective improvements to east-west freight routes in Kent County.

The primary purpose of this study was to determine the most effective east-west freight route for Kent County. The study also analyzes existing east-west truck freight traffic patterns, identifies deficiencies that impact freight movements, and provides recommendations for a preferred set of improvements for east-west truck freight routes in Kent County. This includes exploration of future infrastructure improvements such as commercial truck bypasses, new bridges, etc., which may be required in the future as the County continues to grow. It is anticipated the truck-related road improvements identified in this study will be incorporated into the next Metropolitan Transportation Plan update for the Dover/Kent County Metropolitan Planning Organization (MPO). Note that the proposed solutions of this Phase I study serve as an overview at this time, and the additional engineering components are not a part of this phase.

The boundaries of the study area are selected east-west routes where forecasts of the 2015 Delmarva Freight Plan predict significant truck traffic in 2040. These routes were selected in consultation with MPO staff. The boundaries are as follows:

- SR 300 between the Maryland state line and Smyrna
- SR 42 between SR 300 and US 13
- SR 8, SR 11, and SR 44 between the Maryland state line and SR 1
- SR 14 between the Maryland state line and SR 1
- SR 10 between the Maryland state line and SR 1; also includes the Camden Bypass

This study is one of two phases, namely consisting of the feasibility aspects of east-west freight in Kent County. It will ultimately propose both short-term and mid-term solutions that alleviate some of the challenges associated with truck movement in Kent County. It will also propose a viable east-west route that trucks will be able to use in the coming years, and in doing so, bypass downtown areas. The body of the study will examine existing conditions and potential solutions, while the appendices will provide greater details on traffic and crash data and municipal-level responses. The second phase, which will include the required engineering analysis, will be completed at a later date.

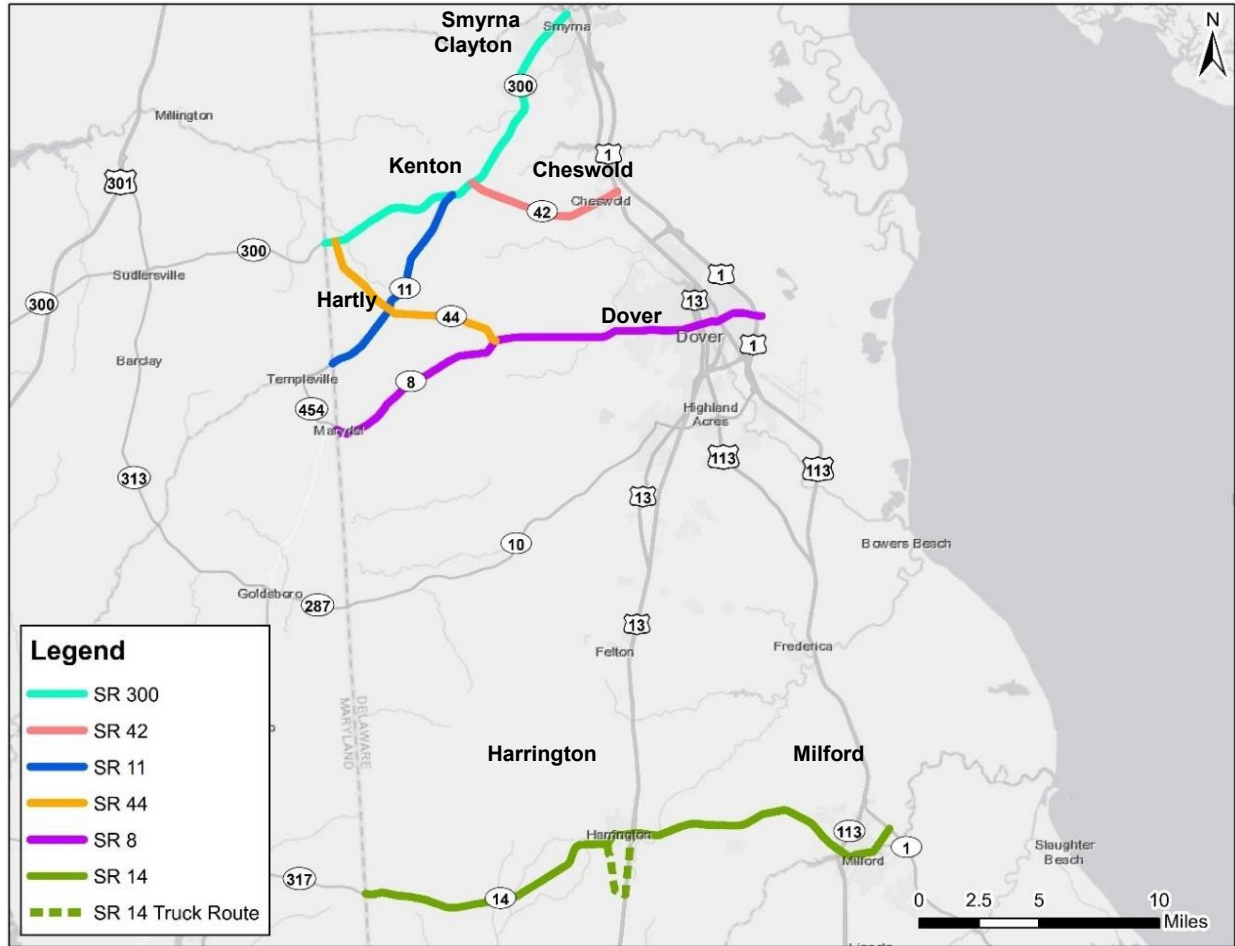


Figure 1: Map depicting the routes included in this study.

## Existing Conditions

The following section features some of the major points on the existing conditions for east-west routes within Kent County. This will include a description of hard stops along the routes, overall findings from available crash data, and several other topics. The in-depth route descriptions and crash data (separated by route number), as well as information on travel time reliability and truck weight limits, are available in Appendix A of the study.

## Hard Stops Along East-West Routes

Part of this study involves an analysis of stops that would likely be encountered by truck drivers while headed along major east-west routes. An assessment of length for a freight delivery is all relative to the starting point. A simple analysis of the routes to document a relative difference is to assess the number of stops required of trucks while making their way from DE1 to US301. An increased number of stops adds delay, uses more fuel, impacts air quality, and can lead to other negative outcomes for truck drivers and communities.

To build off the preliminary route analysis, which will be discussed in Appendix A, the next step in the study was to more closely examine the hard stops along major east-west routes. The routes range from the much shorter Route 300 from Smyrna in Delaware to beyond Sudlersville in Maryland to DE14 through Milford, Harrington, near Denton, Queen Anne, and Wye Mills before joining US301 in Queenstown. Each of the Delaware routes included in the study, 8, 11, 14, 42, 44, and 300, are assessed as to the number of stops between SR1 and US301. All descriptions of routes are from SR1 to US301, or east to west. In some cases, there may be a few additional or fewer stops coming from west to east. The stops encountered along each route are as follows:

- **DE300 and MD300:** The exit from SR1 to the Smyrna Rest Stop is 22 miles from US301 at the intersection of MD300 by way of DE300. To enter US301 South, any vehicle would enter the northbound lanes to reach the Restricted Crossing U-turn (RCUT) that eliminates crossing lanes in both directions to proceed through the intersection and left turns. The RCUT eliminates the most dangerous of collisions and accommodates the turning radii of the largest of trucks with shoulder bump-outs. This route includes 8 traffic signals in Smyrna and Clayton, one at Kenton and one at Everetts Corner in Delaware, a traffic signal in Sudlersville, and a stop sign at US301, for a total of 12 stops. There is an additional stop required for southbound traffic on US301 at the RCUT.
- **DE8 and MD302:** There are a few routes from the end of DE8 at Marydel to US301. The most common as signed on US301 is MD302. Whether using DE8 or DE44 to travel from Pearsons Corner, the traveler ultimately joins MD302 (Barclay Road) to get to US301. The DE8 route is only minimally longer than the DE44 route of 28 miles. After the 18 traffic signals from the southbound exit of SR1 through Dover, the DE44 route has a traffic signal in Hartly, a stop sign in Barclay, and another stop sign at US301. There is a total of 21 hard stops for the northern route (if the traveler catches all the lights). After the 18 traffic signals through Pearsons Corner, the DE8 route continues through Marydel without a stop onto MD454 which has a stop sign at the intersection of MD302. A left turn onto MD 302 takes the traveler on the route described above with a stop at Barclay and one at US301. The intersection of MD302 and US301 is an at-grade crossing that requires vehicles to cross several lanes of traffic before turning into the southbound lanes. Here there is a stop sign and a relatively small refuge between lanes for a southbound traveler turning left. Another alternative is for travelers to take DE44 through Hartly to continue north to intersect with DE300 and proceed through Sudlersville, MD, where a traffic signal is located. The intersection of MD300 and US301 was not constructed to accommodate turns for large vehicles; as a result, southbound trucks are required to first move north before entering the southbound lanes. There is one more stop on this route than identified for the previously described DE/MD300 route.

- **DE10 and MD304:** DE10 was not a candidate in the original list of routes chosen to study. After the original routes were considered, DE10 after the Camden Bypass improvements are made became a candidate for study. The route has an exit from SR1 northbound and southbound. With the bypass it avoids Camden Town Center and involves only two other towns in Maryland: Goldsboro and Ruthsburg. The roads are built to handle the truck traffic, though neither MD287 nor the short segment of MD312 have the 8- to 10- foot shoulders that the roads built for heavy vehicles typically do. The 35-mile route begins at the SR1 intersection with DE10 from the entrance to the Dover Air Force Base through suburban development to a proposed roundabout at Rising Sun Road. A new short segment is proposed from the roundabout through vacant land along the east side of US13 to a recently installed traffic signal between DE10 and Voshells Mill Road. There are 6 traffic signals to get past US13. The plans include a round about where the new road intersects with South Main Street and another to accommodate the connection to South Street to a direct connection with the existing DE 10 south of the Camden Industrial Park with no stops in the new segment. There are no other stops on DE10 or when it changes to MD287 until the road intersects with MD313. The route continues on MD313 to the intersection of MD312 that requires a left turn and after 2 miles on MD312 requires a right turn onto MD304 with no stops for westbound traffic. Once on MD304, there are no stops to US301, including at the interchange. Once the improvements are made, there will be a total of 6 hard stops in Delaware and one in Maryland for westbound traffic.
- **DE11 and MD302:** The route that includes DE11 begins with same route for DE300 through Kenton. DE11 diverts from DE300 toward Hartly and then the state line northeast of Templeville. In total, it is about 24 miles to US301 and follows many of the same miles as other routes described here. It includes the 9 stops through Smyrna and Clayton, a traffic signal in Kenton, one in Hartly, and then a straight run to the stop sign in Barclay and then the stop at US301. It is a longer route than the DE8 route from Dover, but there are fewer traffic signals and stop signs than most other routes.
- **DE42 and DE/MD300 or DE11:** DE42 does not intersect with an exit from SR1 and was not chosen as an original studied route to US301. Any route would add the stops on US13 from the north Dover exit or the stops on US13 from the south Smyrna exit. DE42 connects US13 through Cheswold to Kenton and is about 7 miles long from SR1. From there, travelers would be duplicating parts of the previously described routes; the DE11 to MD302 route of DE11 and DE8 description (25 miles), or the DE/MD300 route (22 miles). The only distinction between the two is the safer left turn for southbound traffic using MD300 and the additional stops on US13 to connect with SR1.
- **DE44:** This route is only a link previously described from DE8 to DE11 or DE300. There are stops at DE8, DE11, and then at DE300 that are counted for the other routes. No further analysis of DE44 is needed at this time.
- **DE14 and MD404:** The last route connecting SR1 to US301 is DE14 from SR1 in Milford, through US13 at the Harrington truck bypass, into Maryland on MD317, ultimately connecting with MD404 to US50 and connecting to US301 in Queenstown. This is the longest route included in the study at over 45 miles. There are 6 hard stops to get through Milford and one was just added between Milford and Harrington. There are two traffic signals at DE14 and US13 in Harrington and one stop sign at the end of the truck bypass at DE14. The next hard stop is at the traffic signal at MD317 and MD313. Once on MD404, there are 4 traffic signals including the stop at US50 and two traffic signals on westbound US50 (only one for eastbound) before connecting with US301. That is a total of 16 hard stops.

The following table lists the number of stops along each major east-west route within Delaware, including both eastbound and westbound directions. Note that DE10 is separated into three sections: 1) The main route east of the proposed Camden bypass; 2) The proposed location of the Camden bypass; 3) The main route west of the proposed Camden bypass. DE14 is separated into two sections: 1) The majority of Route 14 from Route 1 to the Maryland line; 2) The existing bypass that avoids downtown Harrington.

Table 1: Number of hard stops according to east-west route.

Road Name	Hard Stops (East – West)	Hard Stops (West – East)
DE Rt. 300	9	9
DE Rt. 42	2	3
DE Rt. 11	1	1
DE Rt. 44	2	2
DE Rt. 8	18	18
DE Rt. 10 (main route, east of bypass)	6	7
DE Rt. 10 (proposed bypass)	1	1
DE Rt. 10 (main route, west of bypass)	0	0
DE Rt. 14 (main route)	10	8
DE Rt. 14 (bypass)	1	1

## Traffic Volume Patterns

To gain an understanding of traffic patterns along the major east-west routes, traffic counts were conducted for one week in January of 2019. One of the key findings from these counts is that trucks made up a small percentage of total traffic volume (see Figures 3 and 4). It was also found that the more eastern sections of the routes had higher volumes of traffic, both total and truck-specific. Total vehicle counts and the corresponding proportion of truck traffic for each route may be found in Appendix A of this study.

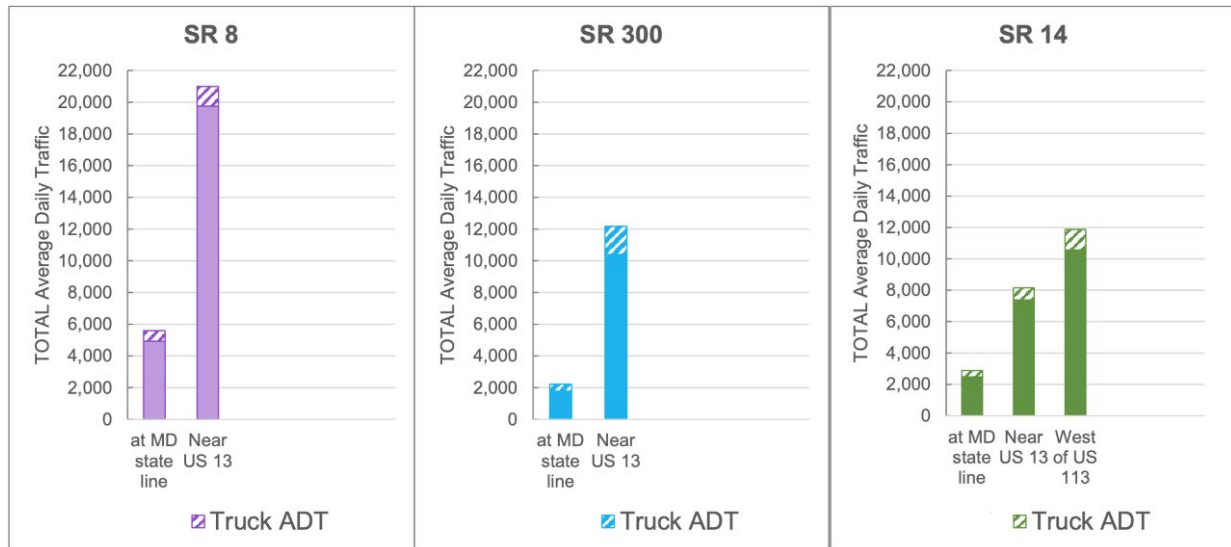


Figure 2: Average daily total traffic and truck traffic for SR 8, SR 300, and SR 14. Counts conducted for one week in January of 2019. Crosshatched areas represent the truck portion of the total average.

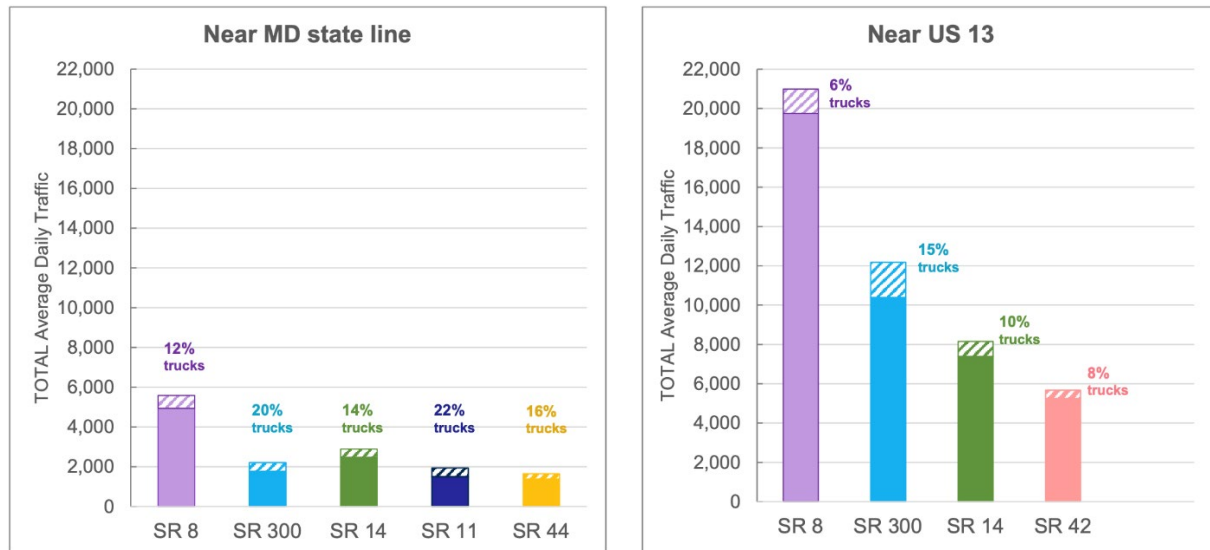


Figure 3 (l): Average daily total traffic and truck traffic, near MD state line. Crosshatched areas represent the truck portion of the total average; percentages of the total are listed above each bar.

Figure 4 (r): Average daily total traffic and truck traffic, near US 13. Crosshatched areas represent the truck portion of the total average; percentages of the total are listed above each bar.

## Five-Year Crash History

Part of the preliminary research for this study involved examining crash data from over a five-year period. Of these incidents, truck-related crashes contributed to a small percentage of the total. Ultimately, it was found that there was no pattern of crashes related specifically to the physical road conditions, except for right-turning trucks on SR 8 in Dover and SR 14 in Milford. For the most part, crashes involving trucks were related to speeding or driver inattention. For example, following the truck crash on SR 44 in Hartly (near the intersection with Slaughter Station Road), in which the truck left the roadway, the driver was cited for speeding. This is common for other truck-involved crashes.

The following table reveals the total number of crashes on each route and the proportion of crashes that involved trucks. Note that the proportion of truck-involved crashes to total crashes is a lower percentage than the proportion of truck volume to total traffic volume (as was demonstrated in the previous section of the study). For example, while trucks made up 15% of total volume on SR 300 (near US 13) during data collection in 2019, they were only involved in 2.7% of crashes on SR 300 over the course of five years.

Table 2: Total crashes along east-west routes within five years (2015-2019).

Route	Total Crashes	Truck Crashes	Percent of Total
SR 300	336	9	2.7%
SR 8	906	17	1.9%
SR 11	49	0	0.0%
SR 44	76	3	3.9%
SR 42	131	4	3.0%
SR 14	721	19	2.6%



## Freight Generators in Kent County

The distribution of industry in Kent County is an important part of understanding freight routes. This distribution is displayed in Figure 13, based on daily truck activity. Areas of the fewest daily truck trips (100-200) are highlighted in yellow, and areas of the most daily truck trips (400+) are highlighted in red. These findings only highlight one of the factors of freight movement, as the routes themselves contain their own data based on traffic volume. In other words, the route traveled is equally as relevant as a truck's starting or ending location, and both should be considered during the freight-planning process.

Of all the areas within the county, the two with the highest existing concentrations of industry are Dover (including Dover AFB) and Milford. This can be seen in the red clusters around these two municipalities. It should be noted that much of Milford's industry is located in the Sussex County part of town. (Estimations are based on household and employment types.)

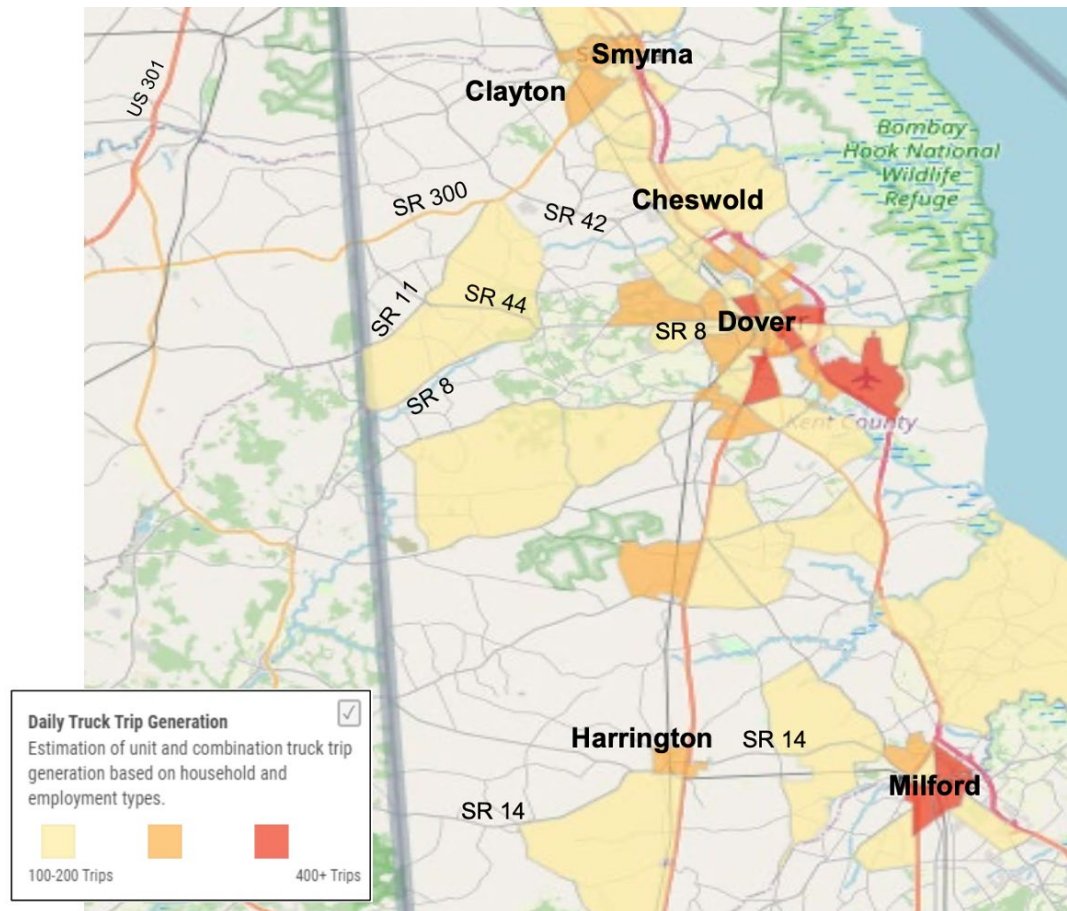


Figure 5: Estimated daily truck trip generation in Kent County.

## Agricultural Vehicles

At the time of data collection, of the more than 2,000 total crashes over a five-year period (between 2015 and 2019), only two of these crashes involved farm equipment. One of these took place on SR 8, and the other on SR 42. However, despite this low number, much of Kent County's roads pass through areas of farmland, and the roads are relied on for a variety of agricultural purposes, including use by the county's Amish community. This means truck drivers and other motorists are likely to encounter farm vehicles or some sort of agricultural activity, especially outside of built-up areas. Therefore, changes to major east-west routes should consider the benefits and drawback to agriculture as well as freight.



Figure 6 (l): A farm vehicle on SR 14 west of Harrington.



Figure 7 (r): Several farm vehicles on SR 300 south of Clayton.



Figure 8: An Amish buggy on a busy road in the Dover community. Source: Amish America.

## Environmental Considerations

One of the primary environmental factors related to freight movement is the possibility of flooding, erosion, and other natural disasters. Although most of the east-west routes of Kent County are not at immediate risk of coastal flooding, the overall risk is expected to increase in the decades to come, due to a number of climatic factors such as sea-level rise. The easternmost portions of the routes in Kent County, as well as the westernmost portions of the routes in Maryland's Eastern Shore, are at the highest risk due to their proximity to the coast and the generally low elevation. Consequences of these natural disasters could include damage to infrastructure, delayed freight movement, economic loss, and risk towards the safety of drivers. Both freight planning and municipal planning should consider this factor when establishing freight routes and designing roads and bridges; stakeholders can then be better prepared when a disaster takes place in their area.

Another relevant environmental factor is the prevalence of air pollution, which large vehicles contribute to. However, converting an entire fleet of trucks to EV would not be a short-term solution, as a great deal of infrastructure would need to be added to the routes in addition to the changing of the vehicles themselves. For further information on EV trucks, please refer to Appendix C of the study.



*Figure 9: An example of flooding that can take place along roadways. Source: DNREC.*

## Planned Improvements to Existing Routes

### **SR 8 and SR 15 Intersection Improvements**

This project will add a second through lane in each direction on SR 15 Saulsbury Road approaching SR 8, to provide capacity and safety improvements. South of SR 8, SR 15 will provide two through lanes each direction to Hazletville Road. At the time of this study's completion, construction on the intersection has begun.

### **SR 8, Connector from Commerce Way to SR 8**

This project will construct a new two-lane connector road from Route 8 south to Commerce Way, where existing Enterprise Drive will complete a north-south connection to Hazletville Road. This project will improve circulation and connectivity in the Route 8 corridor. Construction is anticipated to begin in FY 2025.

### **US13 Widening, Lochmeath Way to Puncheon Run Connector**

This project is part of DelDOT's Hazard Elimination Program, and it is included in the FY21-FY26 CTP. One of the primary changes proposed through this project is a new travel lane for both the northbound and southbound roadways between Lochmeath Way and the Puncheon Run Connector. Proposed changes also include crosswalks and pedestrian signals at several major intersections, including the intersection of US13 and Voshells Mill Road, and the intersection of US13 and Camden Wyoming Ave. Improvements will ultimately help improve conditions along the roadway and make the route safer for motorists and pedestrians. Construction is anticipated to begin in 2024.

### **East and West Camden Bypass**

The Camden Bypass project will feature an eastern and western segment, and it will provide an alternative connection between Lebanon Road and Willow Grove Road. Improvements will include new roadways, roundabouts, and additional pedestrian and bicycle access. The ultimate goal of the project is to allow vehicles to travel along an east-west route without relying on Camden's Main Street or Camden Wyoming Ave; this is expected to have a positive outcome for large vehicles that have a difficult time in Camden's downtown area.

Construction is anticipated to begin in 2023. For further information on the Camden Bypass, please refer to the "Long-Term Alternatives" section of this study.

### **NE Front St. (Milford) Streetscape Improvements**

This project will add improvements for pedestrians and bicyclists along NE Front Street from N Washington Street to NE 4th Street. In addition, the design considered improvements to create a consistent roadway section along the corridor. The project is part of DelDOT's Transportation Alternatives Program (TAP).

The proposed improvements include new sidewalks along NE Front Street from Washington Street to Bicentennial Park. Continuing along NE Front Street, a shared use path (8' to 10' wide) will be installed on the north side and a sidewalk will be installed on the south side until the east limit of the project at NE 4th Street. The roadway shoulder will be eliminated, and a new curb will be installed. ADA facilities, including curb ramps, will be rebuilt along the corridor. Additional drainage inlets and pipes will be installed to accommodate the new typical section of the roadway.

At the intersection of NE Front Street and N Washington Street, a new crosswalk will be added to the east leg of the intersection, and the brick crosswalks will be replaced with decorative thermoplastic pavement markings. At the intersection of NE Front Street and NE 4th Street, a new crossing will be added with a striped crosswalk. The project will also renew the existing road surface (mill and overlay) along NE Front Street.

At the time of this study's completion, the project is in the process of being advertised. Construction is expected to begin in the spring of 2023.

### **NE Front Street, Rehoboth Boulevard to SR 1**

The MPO 2020 TIP included a project to improve NE Front St. from Rehoboth Boulevard/1B to SR1 in Milford. The construction of the new grade separated intersection at SR 1 improved about half of that road section. SR 14 from Rehoboth Boulevard to Atlantic Concrete was outside the project limits and was not improved.

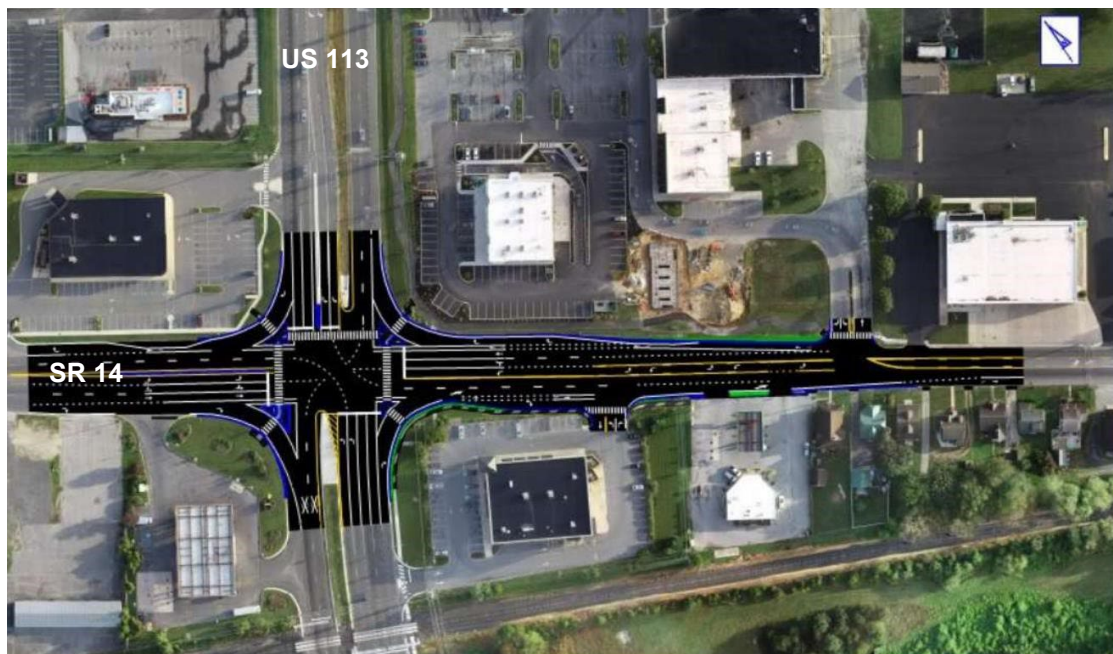


### **SR 14 and US 113 Intersection Improvement**

This planned project is part of DeIDOT's Hazard Elimination Program. The project goals are to improve safety, traffic operations, and pedestrian/bicycle access. The project will:

- Add a through lane on westbound SR 14
- Add concrete islands at all four corners of the intersection
- Add pedestrian crosswalks and a westbound bicycle lane
- Upgrade the traffic signal

A public workshop was held for this project on August 25, 2020. Construction is anticipated to begin in 2023.



*Figure 10: Planned intersection improvement at US 113 and SR 14 in Milford. Source: DeIDOT project website.*

### **Designated Truck Routes**

Certain municipalities in Kent County have local-level designated truck routes designed to limit truck traffic in downtown areas, as is the case in Dover and Harrington. However, there are currently no federally designated east-west truck routes in the county.

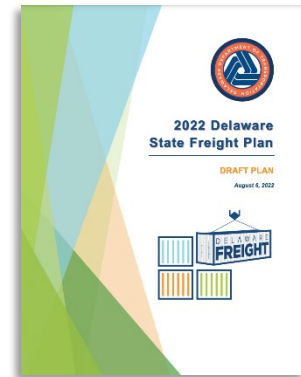
The National Highway Freight Network (NHFN) is the latest network to be utilized at the federal level; it was initiated in 2015 as part of the FAST Act, replacing the MAP-21 National Freight Network and Primary Freight Network. The four subsystems under the NHFN are explained in Appendix A of this study, and a map of the existing routes in Delaware is provided.

## Relevant Plans and Studies

### 2022 Delaware State Freight Plan Update

(<https://deldot.gov/Business/freight/pdfs/2022/Aug/Delaware-Freight%20Plan-Draft.pdf>)

The 2022 Delaware State Freight Plan is currently being completed by the Delaware Department of Transportation (DelDOT) in collaboration with the Wilmington Area Planning Council (WILMAPCO), Dover/Kent County Metropolitan Planning Organization (Dover Kent MPO), Salisbury/Wicomico Metropolitan Planning Organization (S/WMPO), and the University of Delaware's Institute for Public Administration (IPA). Its purpose is to list the existing freight conditions within the State of Delaware (including roads, bridges, railroads, ports and waterways, airports, pipelines, and other aspects of the freight network). It also lists information and resources relevant to potential freight improvement opportunities. By doing so, the plan can then be used to address areas of concern and foster multimodal freight improvement throughout the state. Appendices for the plan give information relevant to the Kent County East-West Truck Freight Route Feasibility Analysis, including a list of Delaware's Critical Urban Freight Corridor (CUFC) segments, maps depicting the routes where bottlenecks are the most common, and a list of IJIA-based freight emphasis areas. The plan update underwent a local review, and after corrections were carried out, it was submitted to the FHWA. At the time of this study's publication, the plan update is awaiting final approval. This study utilizes the latest available information from the 2022 Delaware State Freight Plan.



### 2022 Maryland State Freight Plan Update

([https://www.mdot.maryland.gov/OPCP/MD\\_Freight\\_Plan\\_Draft\\_Web.pdf](https://www.mdot.maryland.gov/OPCP/MD_Freight_Plan_Draft_Web.pdf))



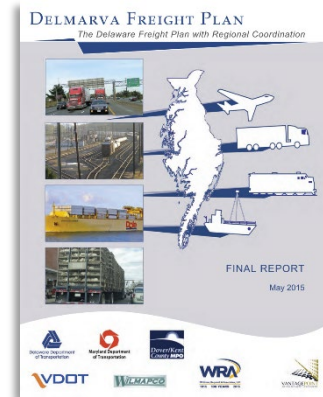
The 2022 Maryland State Freight Plan is currently being completed by the Maryland Department of Transportation (MDOT). Acting as an update to the 2017 plan, it provides valuable, current information on the movement of goods within the State of Maryland, as well as commodity flows into and out of the state. The information includes topics such as existing freight infrastructure (such as roads, bridges, railroads, ports and waterways, and airports), the economic impact of various sectors (such as agriculture, construction, and energy), and future opportunities for growth and improvement for each of the state's regions. This plan is relevant to the Kent County East-West Truck Freight Route Feasibility Analysis because it

identifies needs on the Maryland side of the Delmarva Peninsula, which is relevant to truck drivers relying on those routes. (For example, the plan identifies MD 404 in Denton, Maryland as an area of noticeable congestion.) The improvement opportunities listed in the plan are also important, as the recommended changes will have a positive outcome for drivers on both sides of the state line. The plan update is expected to be federally approved at the end of 2022.

## 2015 Delmarva Freight Plan

([https://deldot.gov/Publications/reports/freight\\_plan/pdfs/2015/Delmarva\\_Freight\\_Plan\\_Final\\_Report.pdf?cache=1661884755807](https://deldot.gov/Publications/reports/freight_plan/pdfs/2015/Delmarva_Freight_Plan_Final_Report.pdf?cache=1661884755807))

This plan was a collaboration between the Delaware Department of Transportation (DelDOT), Wilmington Area Planning Council (WILMAPCO), Dover/Kent County Metropolitan Planning Organization (Dover Kent MPO), and Salisbury/Wicomico Metropolitan Planning Organization (S/WMPO), along with the Maryland Department of Transportation (MDOT), the Virginia Department of Transportation (VDOT), and other regional partners. Unlike the state freight plans mentioned above, it encompasses the whole of the Delmarva Peninsula. It analyzes existing conditions for each mode of freight and describes ongoing freight needs in detail. It also includes maps depicting freight routes for roads, rail, marine and air, and other modes. Finally, the plan looks at future scenarios for regional freight and offers opportunities for growth and improvement for some of the key freight routes, including those in the Dover region. State-level freight plans have followed the example of the 2015 Delmarva Freight Plan since its completion.



## Delaware First/Final Mile Freight Network Development

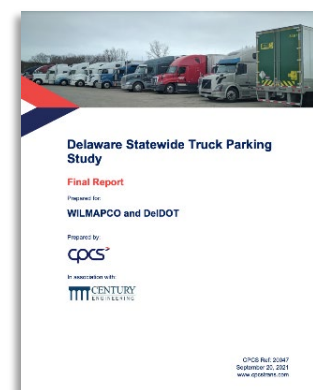
(<http://www.wilmapco.org/finalmile/>)



This study, completed in 2021, was prepared by CPCS. It provides DelDOT and local MPO's with the existing conditions of the first and final mile connections in Delaware (such as shoulder widths and crash data), as well as the needs and issues associated with these routes (such as residential and industrial development, environmental conflicts, and tourism-related traffic, and other issues). In addition, the study gives recommended solutions that would alleviate the most prominent issues surrounding first and final mile connections. This information is relevant to the Kent County East-West Truck Freight Route Feasibility Analysis because first and final miles are important parts of a truck's typical route, and because many of the safety issues and conflicting uses identified on first and final mile connections align with the existing needs of east-west routes.

## Delaware Statewide Truck Parking Study (<http://www.wilmapco.org/truckparking/>)

This study, completed in 2021, was prepared by CPCS in association with Century Engineering. It provides DelDOT and local MPO's with a detailed inventory of Delaware's existing truck parking locations, most of which consists of "undesignated truck parking clusters" such as unmarked roadside locations. The clusters are categorized based on type (rest area, last-mile, near truck stop, on/off ramp, corridor shoulder, and urban). The study also describes several ongoing problems related to truck parking in Delaware, and it offers potential remediations for these problems. This information is relevant to the Kent County East-West Truck Freight Route Feasibility Analysis because available parking is an important feature that contributes to a route's viability for truck drivers. If there is inadequate parking along a given route, a number of negative consequences may arise, including a loss of driving time, infrastructure challenges, increased air and noise pollution, and safety concerns for truck drivers as well as the community. For these reasons, parking conditions must be considered when examining truck routes.





## Data Collection

### Overview of Traffic Data

Traffic data was collected in late 2019 and early 2020. This consisted of both a physical inventory gathered through fieldwork, and traffic and truck counts gathered by automatic traffic recorders along east-west routes.

#### **Physical inventory**

To establish a more accurate understanding of the study area, WRA staff drove each of the study routes, noting roadway cross section, deficient geometry, bridge weight limits, adjacent land use, traffic controls, signs, and signalized intersections. The most significant issues were noted, such as intersections that would likely be challenging for large vehicles, or roadways through downtown areas that do not provide adequate space for trucks. Images gathered through this fieldwork aided the analysis of existing conditions, as well as the proposal of possible solutions for each municipality along the routes.

In addition to this early fieldwork, the DelDOT database was also obtained to provide physical inventory information for mapping and enhancing the geospatial understanding of the routes. Please refer to the subsection “Data from DelDOT” for further information.

#### **Traffic and truck counts**

Automatic traffic recorders were placed in 16 locations along the study routes which recorded hourly data for a one-week period starting January 21, 2020. These counts were completed before the disruption in traffic caused by the coronavirus pandemic. The recorders obtained volumes, vehicle class, and speed data. Table 3 provides daily volume comparisons at several cordons. More detail on all count locations and traffic volumes for individual routes will be provided in Appendix A of the study.

The east-west route counts classified vehicles using the FHWA 13-class system developed in the mid-1980s for monitoring traffic. This system was the result of compromises designed to meet the needs of many traffic data users. In addition to these needs was the requirement that the electronic equipment and sensors available at the time (mostly simple road tubes) be able to differentiate passing vehicles into the desired classifications. Available sensors were capable of measuring the presence of vehicles, detecting axles, and determining the distance between consecutive axles on the basis of the speed of each vehicle as it passed over the sensors. Pavement designers and the safety community have been among the key users of this classification system.

Classification based on gross vehicle weight rating (GVWR) uses the weight of the vehicle and its maximum load. GVWR classes range from 1–8. Trucks are also classified more broadly by FHWA, which groups classes 1–2 as *light duty*, 3–6 as *medium duty*, and 7–8 as *heavy duty*. Light duty trucks have a GVWR less than 10,000 lb. and are generally pickups. Some models of pickup trucks have ratings in medium duty classes 3–6. The Class 7 truck has a GVWR of 26,001–33,000 lb. The Class 8 truck has a GVWR greater than 33,000 lb. Such trucks typically have 3 or more axles. The typical 5-axle tractor-trailer combination, also called a “semi” or “18-wheeler”, is a Class 8 vehicle. Standard trailers vary in length from 8' containers to 57' van trailers, with the most common length being the 53' trailer.

FHWA research developed the 13-class vehicle system to allow use of traffic counts by vehicle class, which is measurable, to derive weight loads for purposes of pavement and bridge design.

For more information on the relationship between vehicle class and pavement performance, please refer to the following [2014 report](#) from FHWA.

## Data from DeIDOT

DeIDOT inventory was obtained for physical road width, shoulders, traffic control devices, and bridges, and checked against the field observations.

### Crash data

Crash data for the five-year period from 2015 to 2019 was obtained from DeIDOT. Data was mapped to indicate the relative density of total crashes along the corridors. Locations of individual crashes involving trucks were also mapped.

### Travel time and travel time reliability

Travel time data from 2019 collected from DeIDOT's Bluetooth readers was provided. Travel time reliability based on comparison of average travel time with longest travel time was also provided for road segments. This data is found in DeIDOT's Kent County Transportation Operations and Management Plan published in May of 2021. Travel time reliability will be discussed further in Appendix A of the study.

### Truck weight limits and enforcement

Truck weight limits were obtained in the field and checked against DeIDOT inventory data. A meeting was held with Mark Eastburn, DeIDOT's Truck Weigh Enforcement Program administrator, on January 17, 2020, to obtain information on weigh stations and enforcement practices. Truck weight limits will be discussed further in Appendix A of the study.

*Table 3: Comparison of east-west route volumes based on traffic counts. Data for SR 42 (\*) provided by DeIDOT.*

	ADT	Truck ADT	% Trucks
<b>Near MD state line</b>			
SR 300	2,210	441	20%
SR 8	5,587	649	12%
SR 11	1,931	430	22%
SR 44	1,648	271	16%
SR 14	2,884	409	14%
<b>Near US 13</b>			
SR 300	12,175	1,781	15%
SR 42 *	5,674	n/a	n/a
SR 8	20,997	1,245	6%
SR 14	8,157	775	10%
<b>West of 113</b>			
SR 14	11,878	1,316	11%

## Route 10 Data (Century Engineering)

The MPO chose to include Route 10 in the analysis of major east-west routes, though it was not a part of the initial data collection. Century Engineering provided traffic count data for this route. Although the available data offers detailed insight into total traffic volume along Route 10 and the peak travel times, it does not specify the proportion of truck traffic out of the total. As a result, the general understanding of truck traffic volumes was limited to the other major routes.

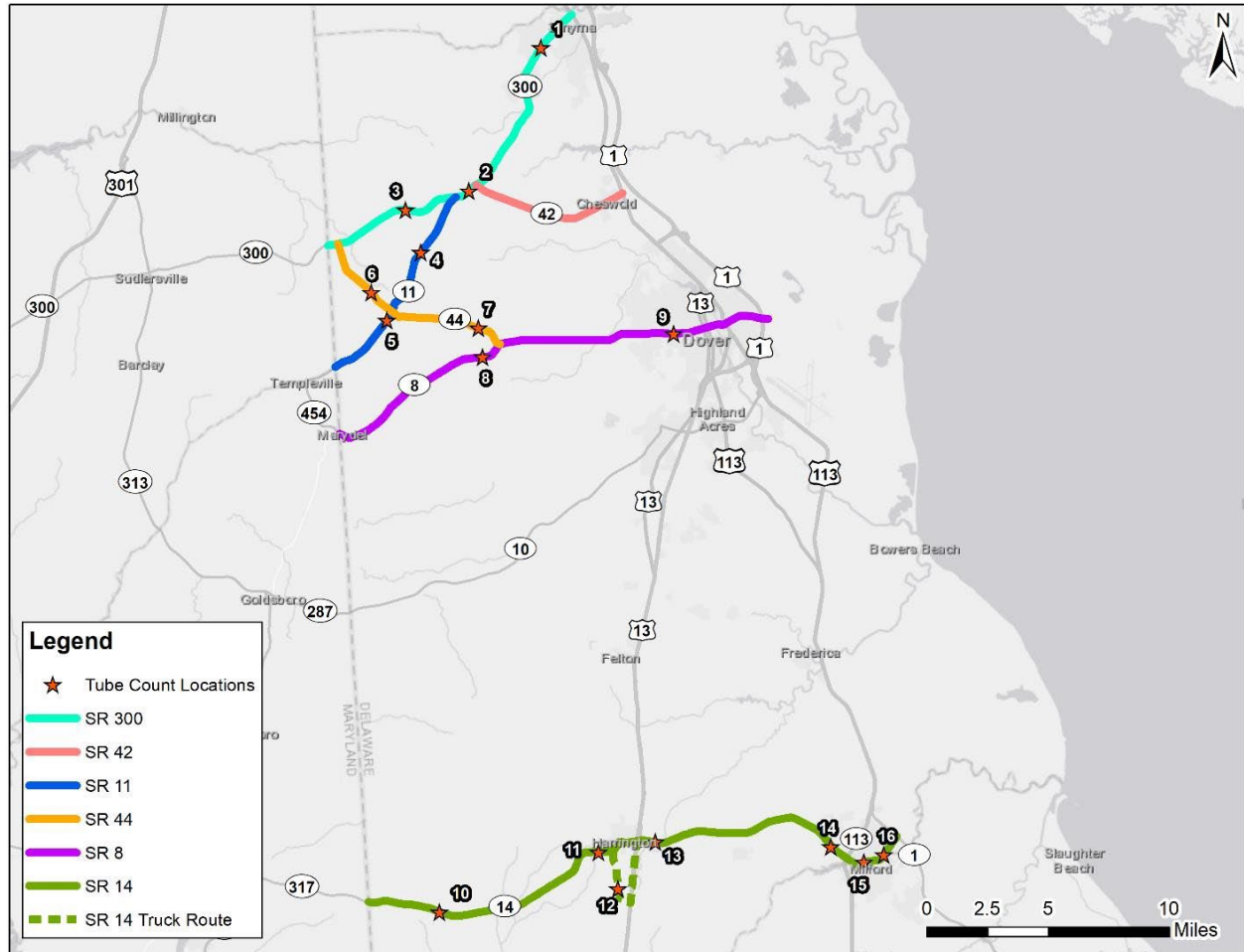


Figure 11: Map of study routes, including the locations of road tubes (traffic sensors) used for this study. Note that the initial data does not include Route 10.




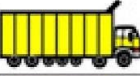



















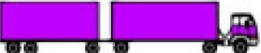






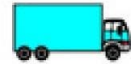



<b>Class 1</b> Motorcycles		<b>Class 7</b> Four or more axle, single unit	
<b>Class 2</b> Passenger cars			
			
		<b>Class 8</b> Four or less axle, single trailer	
			
<b>Class 3</b> Four tire, single unit			
		<b>Class 9</b> 5-Axle tractor semitrailer	
			
<b>Class 4</b> Buses		<b>Class 10</b> Six or more axle, single trailer	
			
		<b>Class 11</b> Five or less axle, multi trailer	
<b>Class 5</b> Two axle, six tire, single unit		<b>Class 12</b> Six axle, multi-trailer	
			
		<b>Class 13</b> Seven or more axle, multi-trailer	
<b>Class 6</b> Three axle, single unit			
			
			

Figure 12: List of 13 truck classifications. Source: FHWA Office of Highway Policy Information.

## Outreach Activities

### Municipal Interviews

Kent County, the Dover/Kent County Metropolitan Planning Organization (D/KC MPO) and the Delaware Department of Transportation (DelDOT) sought insight from municipalities to assist with the completion of the **Kent County East-West Truck Freight Route Feasibility Analysis**. WRA, the engineering consultant for this study, performed outreach to the following municipalities:

- Cheswold (SR 42)
- Clayton (SR 300)
- Dover (SR 8)
- Harrington (SR 14)
- Hartly (SR 11 and SR 44)
- Kenton (SR 300 and SR 42)
- Milford (SR 14)
- Smyrna (SR 300)

Due to the climate of COVID-19 at the time, all the outreach was performed via phone and video calls along with email correspondence. Initial outreach was done in the form of an email with a list of several questions that were created and slightly tailored to fit each municipality. WRA reached out to members of the steering committee from each municipality. Some of the outreach calls had multiple representatives from the municipality, such as the city/town planners, manager or mayor, public works officials, and police officers.

Questions asked of community representatives included major truck destinations, challenging locations for truck drivers, local issues caused by trucks, and any other thoughts. Ultimately these findings were taken into consideration when creating possible solutions for each of the major east-west routes. For the complete findings from these outreach efforts, please consult Appendix D of this study.

### East/West Truck Study Online Survey

In January and February of 2022, the MPO conducted online surveys in order to connect with members of the trucking community. The survey was circulated primarily with the assistance of the Delaware Motor Transport Association (DMTA) newsletter and email list. A total of 53 surveys were started, though not all of the questions were answered in full.

For the first question, respondents were asked how frequently they use major east-west routes in Kent County. The data was collected on a scale between 0 and 5, with 0 representing “never used” and 5 representing “frequently used”. The following table displays the number of responses collected for each option along the 0-to-5 scale.

Table 4: Tabulation of responses from online survey, February 2022.

Route Name	0	1	2	3	4	5
SR300 (Smyrna/Clayton)	6	8	4	4	11	14
SR11 (Kenton)	12	10	9	6	5	3
SR44 (Hartly)	13	10	10	7	1	4
SR42 (Cheswold)	8	10	7	12	3	5
SR8 (Dover)	3	6	7	12	7	12
SR14 (Milford)	16	9	5	5	5	7

From the answers gathered in this first question, the following conclusions could be drawn:

- The most frequently used east-west routes were SR300 and SR8. The least frequently used routes were SR11, SR44, and SR14.
- Of all the routes, SR300 featured the most respondents who use the route “frequently”: 14 respondents (about 30%) gave a value of 5, and 11 (about 23%) gave a value of 4.
- SR14 featured the most respondents who “never” use the route: 16 respondents (about 34%) gave a value of 0, and 9 (about 19%) gave a value of 1.

When asked whether they are usually headed to or from US301, respondents gave the following answers:

- 18 respondents (about 39%) answered “yes”.
- 28 respondents (about 61%) answered “no”.

When asked whether their route starts or ends in Kent County, respondents gave the following answers:

- 33 respondents (about 77%) said their route starts in Kent County.
- 7 respondents (about 16%) said their route ends in Kent County.

Finally, respondents were asked which improvements should be the highest priority within Kent County. The results were as follows:

- 26 respondents (about 20%) answered “new routes (bypass small towns)”.
- 24 (about 19%) answered “road repairs (potholes, etc.)”.
- 22 (about 17%) answered “wider turn lanes”.
- 16 (about 13%) answered “traffic lights”.
- 15 (about 12%) answered “weight limits”.
- 14 (about 11%) answered “additional parking or rest areas”.
- Smaller percentages of respondents answered “other” (about 5%), “all of the above” (about 2%), and “none of the above” (about 1%).

## 2022 State Truck Driving Championships

On May 14, 2022, the MPO attended the 2022 State Truck Driving Championships in Harrington, Delaware. At this event, written and verbal feedback were provided by truck drivers who were participating in the competition. The MPO’s partnership with the DMTA in the person of Lee Derrickson, Executive Director, to accomplish some outreach to the trucking community provided MPO staff with other opportunities to discuss route attributes with DMTA members.



Three drivers completed the survey; insight passed on through conversation with the competition's participants was more readily available. However, while there is not enough survey data to determine the primary routes used by the majority of truck drivers, the few surveys that were collected reveal the routes used within a small sample size. As with the online survey, the data at the Truck Driving Championships was collected on a scale between 0 and 5, with 0 representing "never used" and 5 representing "frequently used".

- The most frequently used east-west route was SR8. The least frequently used routes were SR11 and SR44.
- Of all the routes, SR8 featured the most respondents who use the route "frequently": 1 respondent (about 33%) gave a value of 5, and 2 (about 66%) gave a value of 4.
- SR11 and SR44 featured the most respondents who "never" use the route: 3 respondents (100%) gave a value of 0 for each of these routes.

In addition to these initial questions, several other questions were asked of the respondents. When asked whether they are usually heading to/from US301, two of the respondents answered yes, and one answered no. All three respondents said their route begins and ends within Kent County. Finally, when asked which improvements should be prioritized by Kent County, two respondents listed weight limits, one listed additional parking/rest areas, and one listed all of the above. (Possible answers for this question included road repairs, weight limits, new routes, traffic signals, wider turn lanes, and additional parking/rest areas.)

The purpose for attending the 2022 State Truck Driving Championships was to discuss with drivers or logisticians the routes they take and the problems they noticed along the way. While the event was not conducive for engaging with a large number of participants, MPO staff did have the opportunity to speak with several of the drivers and one person that supervised the on-the-road personnel.

Fed-Ex and UPS have three divisions of trucks, local delivery vans, box trucks for moving goods around and tractor-trailers for long-distance, over-the-road movement. Many of the drivers that MPO staff engaged with were local delivery drivers. These drivers essentially have free rein of their routes and will travel from arterials to local roads. (Nobody mentioned only being able to make right-hand turns.) The long-distance drivers and their local training and safety coordinator spoke of routes being chosen by an off-site logistician; routes would be delivered to drivers from these locations. (The State of Arkansas, for example, seemed to be a hub of logisticians.) The long-distance drivers do not have free choice over routes. This could be due to traffic or turning radii or some other physical constraint, or it could be due to limitations related to local government ordinances.



Figure 13: The 2022 State Truck Driving Championships, held in Harrington, Delaware on May 14, 2022.



## Other Outreach Activities

Additional conversations were held with people involved in the truck-driving industry. Through these conversations, it was revealed that Walmart does not use Route 300 because it is not a designated truck route, despite the route's proximity to the Walmart Distribution Center in Smyrna. Trucks with a 53'x102' trailer are required to use designated routes, and they are not allowed on certain routes. However, these requirements can make it more challenging for truck drivers to access Maryland's Eastern Shore, especially if Route 300 is their most direct path.

GPS technology and its associated software play an important role in truck navigation. The technology provides current information on traffic conditions, weight limits, and other factors. In terms of navigation systems favored by the industry, most companies rely on technology provided by Rand McNally. Walmart, which uses Navigo, is an exception to this trend; this system gives Walmart additional flexibility in programming its own routes.

Finally, it has been noted anecdotally that Delaware State Troopers are less likely to give tickets to large trucks than Maryland State Troopers. Should truck drivers have some flexibility in choosing their routes, the likelihood of being pulled over might be one of the factors they consider; however, in the case of east-west routes on the Delmarva Peninsula, trucks cannot travel west without passing through Maryland.

For a more complete understanding of east-west connectivity, more research should be done around Maryland's designated routes. This could be included in the study's second phase.

## Findings Based on Outreach Activities

Based on the findings from municipal interviews, it is evident that many communities currently face challenges due to large vehicles moving through their downtown areas. (This is also challenging for truck drivers, as the roadways are often not built to allow wide turns.) Large vehicles lead to increased noise and air pollution, and the speed at which they pass through intersections poses a risk to motorists and pedestrians. Finding alternate routes is a common goal of municipalities that face these challenges, though a permanent new route is a long-term solution that would need to be done in tandem with other, more feasible options.

The data gathered from truck drivers was also valuable. The consensus from these outreach activities (the online survey and the State Truck Driving Championships) is that SR300 and SR8 are currently among the most frequently used east-west routes. SR11 and SR44 are currently among the least frequently used. The online survey suggested that new routes/bypasses and road repairs were the highest priorities for truck routes, whereas findings from the State Truck Driving Championships suggested weight limits and parking/rest areas were the highest priorities (though the latter responses were far fewer in number). Most of the respondents said their typical driving route begins or ends in Kent County. Conversations with drivers revealed that local delivery drivers have more control over their routes than long-distance drivers. The latter group is often given required routes from an off-site location, regardless of which east-west routes are preferred by the majority of drivers.

Though it is important to address the ongoing municipal challenges based on local-level observations, communities must also seek solutions that benefit both residents and truck drivers. In other words, a traffic light at every intersection might slow traffic speeds and improve safety, but it would ultimately have a negative impact on the efficient movement of freight. Solutions that could have a positive outcome for each of the key stakeholders will be discussed in the "Mid-Term Considerations" section and in Appendices B and C of the study.

## Short-Term Alternatives

### Delaware Route 10 and the Camden Bypass

Route 10 through Delaware and the connecting routes in Maryland were added to the study by the MPO. These were only considered after the Camden Bypass was fully designed and available for review. As with all other evaluations in this study, the analysis began in the westernmost part of the route. This is considered a short-term alternative because the analysis for the bypass has already been completed, and construction is scheduled for the coming years. Other bypass options would be long-term alternatives because their feasibility has not been analyzed yet.

Justification for the two sections of the bypass is as follows:

**East Camden Bypass:** *“This project is part of the Camden Bypass Study that was adopted into the Town of Camden’s Comprehensive Plan. The purpose of the project is to increase safety and reduce traffic congestion along SR10 through the Town of Camden and improve traffic operations at the US13/SR10 intersection. Failing intersection and roadway level of service along SR10 from US13 to the west is not solved by making improvements to US13. SR10 is used by vehicles as a through movement with no stops within Town adding to the number of vehicles using the roadway. This additional congestion adds to the crashes that occur along this roadway.”*

**West Camden Bypass:** *“This project is part of the Camden Bypass Study that was adopted into the Town of Camden’s Comprehensive Plan. The purpose of the project is to increase safety and reduce traffic congestion along SR10 through the Town of Camden and improve traffic operations at the US13/SR10 and US13/Old North Road intersections. The roadway and intersections currently have a failing level of service. These intersections are used by vehicles to access schools located on Old North Road. This additional congestion adds to the capacity issues and the higher-than-average crash rate on this section of US13.”*

Westbound from SR1, the first section of the route moves along DE10/Lebanon Road. A truck headed this way would encounter stoplights coming off the exit at the north entrance to Dover Air Force Base, at Pine Cabin Road serving General’s Green, at the Gateway South shopping center, at State Street, and at Old Mill Road. New conditions will include a roundabout at Rising Sun Road and a new connection to US13 (with a stoplight at the Wawa location). The new bypass road will continue on the north side of Camden Town Hall and MPO Offices to a new roundabout with South Main Street, and then it will reach a roundabout that provides a connection to South Street. The new road will travel adjacent to the Camden Business Park and rejoins DE10 just south of this location.

Finally, the new road follows Route 10 through the roundabout at DE15 until the border with Maryland at Sandtown. It is renamed to MD287 until it intersects with MD311 and MD313. The route continues along MD313 until the intersection with MD312 at Baltimore Corner. Once on MD312 the route turns on MD304 at Bridgetown. The route stays with MD304 all the way to the innovative interchange on US301.

The route is not ready at this time, which means trucks traveling on Camden’s South Main Street will continue to be involved in potential conflicts with homeowners and businesses. However, after the construction is completed on the Camden Bypass along with the widening of US13, this route will become the preferred route for trucks, according to the findings of this study. Note that this is the most viable solution based on available information; other conclusions may be reached during the Phase II study.

The Camden Bypass will consist primarily of two segments (one east of US13 and the other west of it), as well as additional changes to the existing road conditions. The project construction is expected to take place between 2023 and 2025. For further information on the Camden Bypass project, please refer to the following [StoryMap](#).

East Camden Bypass: <https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201709502>

West Camden Bypass: <https://deldot.gov/projects/index.shtml?dc=details&projectNumber=T201709503>

## Mid-Term Considerations

The following are mid-term recommendations for making the truck routes of Kent County safer for truck drivers and other users. These solutions, many of which are fairly easy to implement, are equally as important as a new bypass: while they will not completely remove trucks from the roadways, they could help in improving conditions until something larger in scale can be completed. However, there are other solutions that are more long-term and would potentially create a new route for freight vehicles; these will be explored in the more engineering-focused Phase II study.

Some of the images used in this section are the result of fieldwork by WRA and the Dover/Kent MPO; others were created using Google Maps or Google Street View. Image credit will be given when applicable.

### Smyrna and Clayton

The existing route through Smyrna and Clayton has several challenges. For one, while there is a left turn lane onto SR 300 from School Lane, the absence of a traffic signal makes it difficult for large vehicles to make a left turn, including any vehicles leaving the nearby Hanover Foods plant. For this reason, eastbound trucks may have an easier time traveling directly through Clayton on Route 6. The area sees a high volume of trucks, especially vehicles traveling to and from Walmart.

There are several alternatives that can be applied to this location. The first involves changing Route 6 so that it follows School Lane to SR 300. Currently, Route 6 follows SR 300 east of Smyrna Clayton Boulevard; by linking Route 6 with School Lane and SR 300 (Wheatleys Pond Road), anybody following Route 6 will no longer be required to pass through downtown Clayton. To improve traffic at the intersection of School Lane and Main Street, a roundabout at the intersection and shoulders on School Lane may be added. Similarly, at the intersection of SR 300 and School Lane, a traffic signal and railroad gates are potential solutions (see Figure 15).

Further east, there is a similar issue. School buses leaving the parking lot on S. Bassett Street must make a heavy left turn, and turning left onto SR 300 (Wheatleys Pond Road) presents the same challenges as those that are found at School Lane. It was also found that the Town of Clayton previously expressed it did not want to direct school buses to use Rodney Street and an existing Town street to get to S. Bassett Street.

One alternative to address these issues would be to construct a road connection between S. Bassett Street and Rodney Street. This, or a similar change in bus parking lot access, would change the flow of vehicle traffic and reduce the number of left turns required for buses. (At the same time, the connection between SR 300 and S. Bassett Street could be closed off.) A different alternative involves widening SR 300 at S. Bassett Street for a left turn bypass (see Figure 14).

A final area of interest is the intersection of Smyrna Clayton Boulevard and SR 300 (Wheatleys Pond Road). The existing conditions are not the most feasible for large vehicles passing through this intersection. Furthermore, there is currently an issue with GPS directions sending trucks down Commerce Street or Main Street in Smyrna instead of SR 300.

A possible alternative for this location is to extend Carter Road so that it creates a four-way intersection at Wheatleys Pond Road, and to connect Carter Road with Smyrna Clayton Boulevard. This idea was suggested by Smyrna municipal officials. The west leg of Smyrna Clayton Boulevard could also be removed to create a three-way intersection. With these changes, the intersections in Smyrna would be easier for large vehicles to navigate.



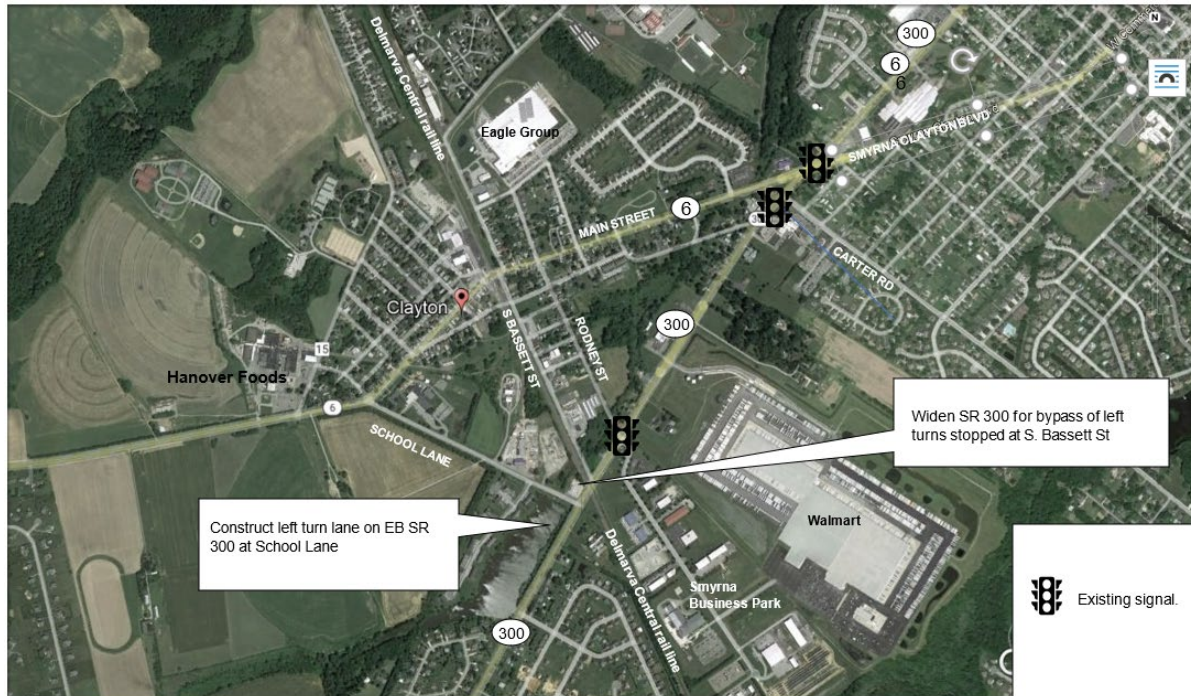


Figure 14: Concept for Smyrna and Clayton, which involves widening SR 300 to allow for a left turn bypass at the intersection with S Bassett Street.

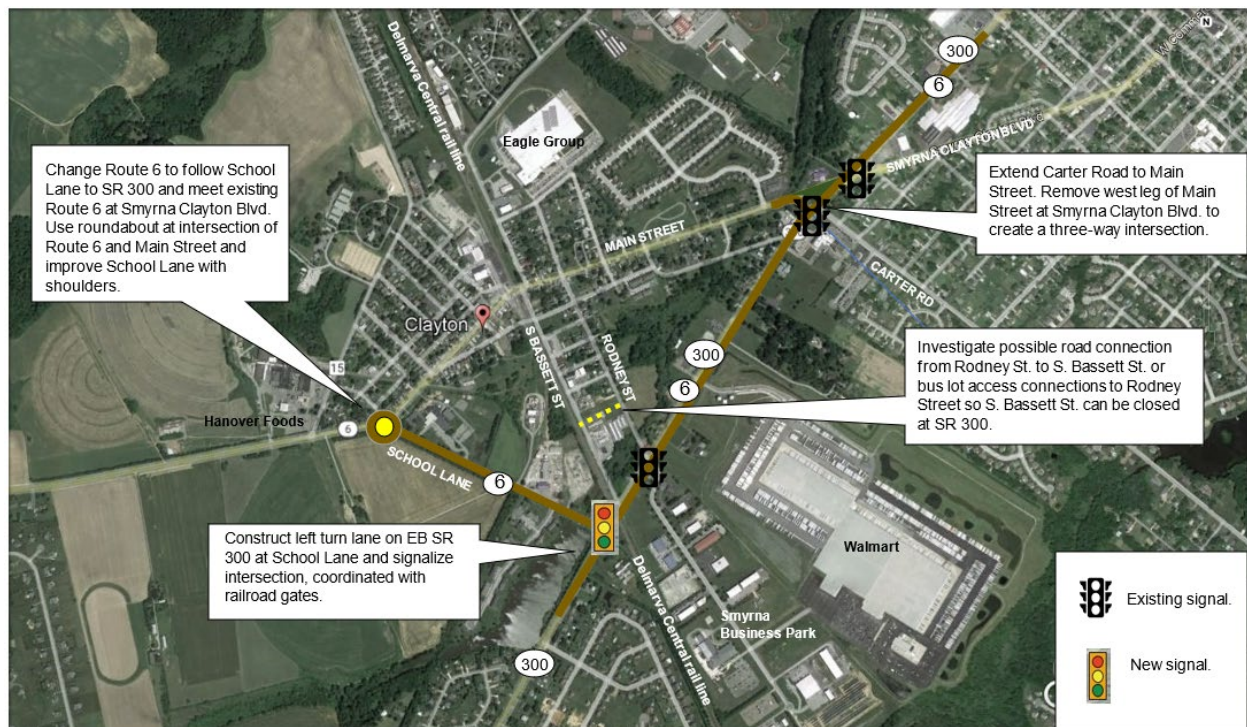


Figure 15: Additional concept for Smyrna and Clayton, which involves changing Route 6 to improve bus access to SR 300 via School Lane, extending Carter Road to create a four-way intersection at Wheatleys Pond Road, and constructing a road connection between S Bassett Street and Rodney Street.



## Kenton

The most noteworthy area in Kenton is the intersection of SR 300 (Main Street) and SR 42 (Commerce Street). There are heavy turns when moving from SR 300 onto SR 42, and there is no northbound right turn lane on SR 300, but rather an 8' shoulder. Because of these conditions, turning safely at this intersection is challenging for large vehicles, including dump trucks traveling to and from the ShureLine Construction facility on SR 42. Truck noise was another concern raised during municipal discussions.

A possible improvement for Kenton involves adding a roundabout to the intersection (see Figure 19). This would increase the turn radius available for trucks and agricultural equipment, and it would help in reducing both the frequency and severity of vehicle crashes at the intersection, as approaching vehicles would be required to slow down. A different improvement involves adding turn lanes to the intersection. However, while this would facilitate larger vehicles in turning safely, it would not address the speed at which vehicles move through the area, and it might even lead to increased speeds. It should also be noted that due to the presence of historic houses around this intersection, adding a turn lane could prove challenging.

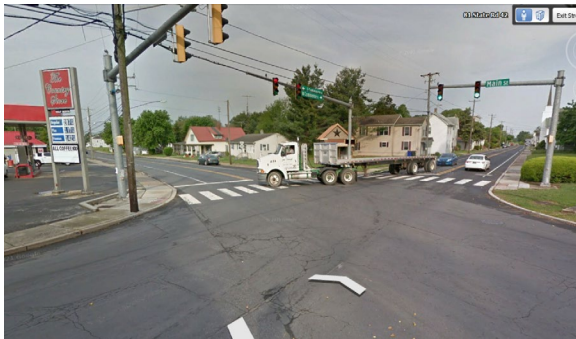


Figure 16 (l): Intersection of SR 300 and SR 42 in Kenton, facing westward. Source: Google Street View.



Figure 17 (r): Intersection of SR 300 and SR 42 in Kenton, facing eastward. Source: Google Street View.



Figure 18: Overhead view of the intersection of SR 300 and SR 42 in Kenton.

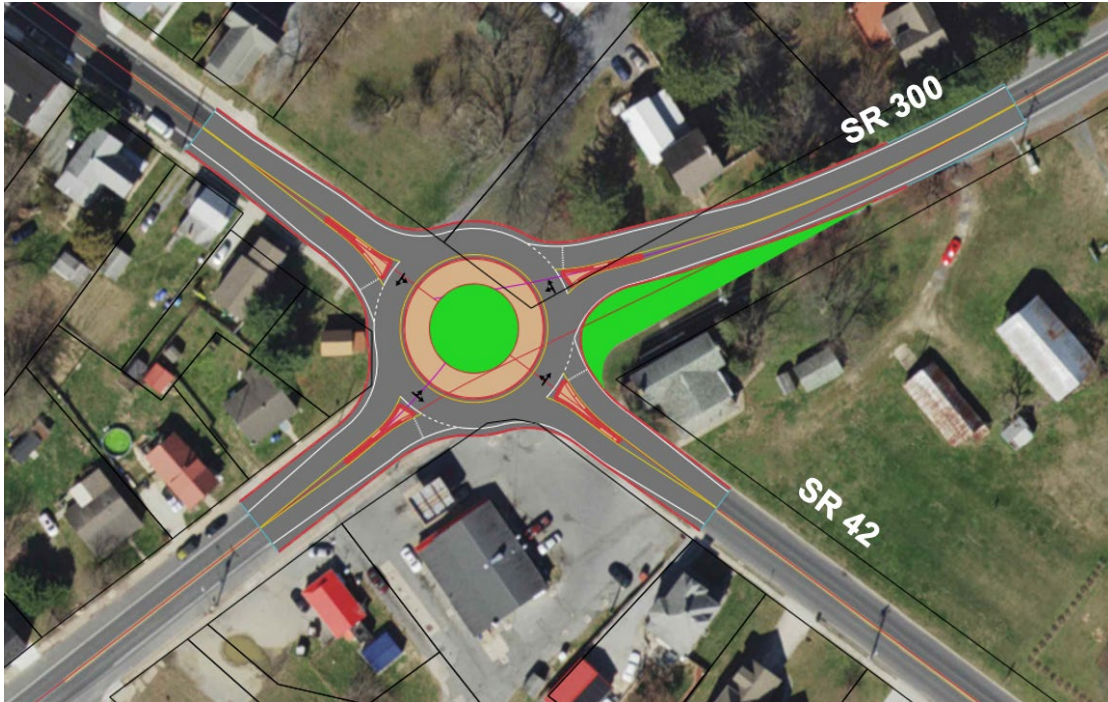


Figure 19: Concept for roundabout at the intersection of SR 300 and SR 42 in Kenton. Note that this is not a project design, and that the precise location of approach angles and circular roadway would depend on existing constraints.

## Hartly

One of the concerns within the Town of Hartly is that trucks do not abide by speed limits as they pass through town. Several truck crashes have taken place on SR 44: this has been most prominent at intersections (such as the intersection of SR 44 and Judith Road), and also along curves in the roadway (such as the intersection of SR 44 and Slaughter Station Road). Some vehicle crashes have resulted in property damage. Although restricting trucks from SR 44 has been proposed, the road is a part of the National Highway System, which means trucks cannot be restricted from this route. Along SR 11, the highest density of crashes is found at Fords Corner (at the intersection of SR 11, Fords Corner Road, and Lockwood Chapel Road).

One potential solution for SR 44 is to slow the speed of vehicle traffic around the turnoff for Slaughter Station Road, just outside of downtown Hartly. Although there are signs that give an advisory speed of 20 mph, many vehicles still move through this intersection at speeds faster than what is recommended; this sort of speeding is what resulted in a truck crash at this location. Additional measures such as rumble strips or overhead flashing traffic signals may be implemented to make the intersection safer for motorists and pedestrians. Signs might not be the most effective solution here, as there are already advisory speed signs, and too much signage could overwhelm or distract motorists.

A similar solution could be implemented at the intersection of SR 44 and Judith Road. This intersection has a crash density higher than most locations along the route, and a truck crash has taken place here. To make it a safer location, speed control measures such as rumble strips or overhead flashing traffic signals could be considered.





Figure 20: SR 44 (Hartly Road) in Hartly, eastbound towards the intersection with Slaughter Station Road.



Figure 21: Concept for a flashing traffic signal at SR 44 and Slaughter Station Road in Hartly.



## Cheswold

In the Town of Cheswold, there is currently no existing bypass for large vehicles, which means trucks are required to use SR 42 (Main Street) to reach their destination. Through discussion with the community, it was found that people would prefer trucks avoid Main Street, in part because large vehicles are a hazard to pedestrians. By giving trucks another viable route, the road would become safer for all of its users, and overall noise pollution would be decreased.

One alternative to the existing conditions is to create a bypass that would allow trucks to avoid the eastern part of Main Street. This bypass could begin on the existing Holly Oak Lane and connect with a new road that merges onto SR 13 at the existing traffic signal (see Figure 23). However, this alternative does not remove truck traffic from the western part of Main Street. To improve pedestrian safety, crosswalks could be added to frequently traveled parts of Main Street.



Figure 22: SR 42 (Main Street) in Cheswold, eastbound towards SR 13. Source: Google Street View.

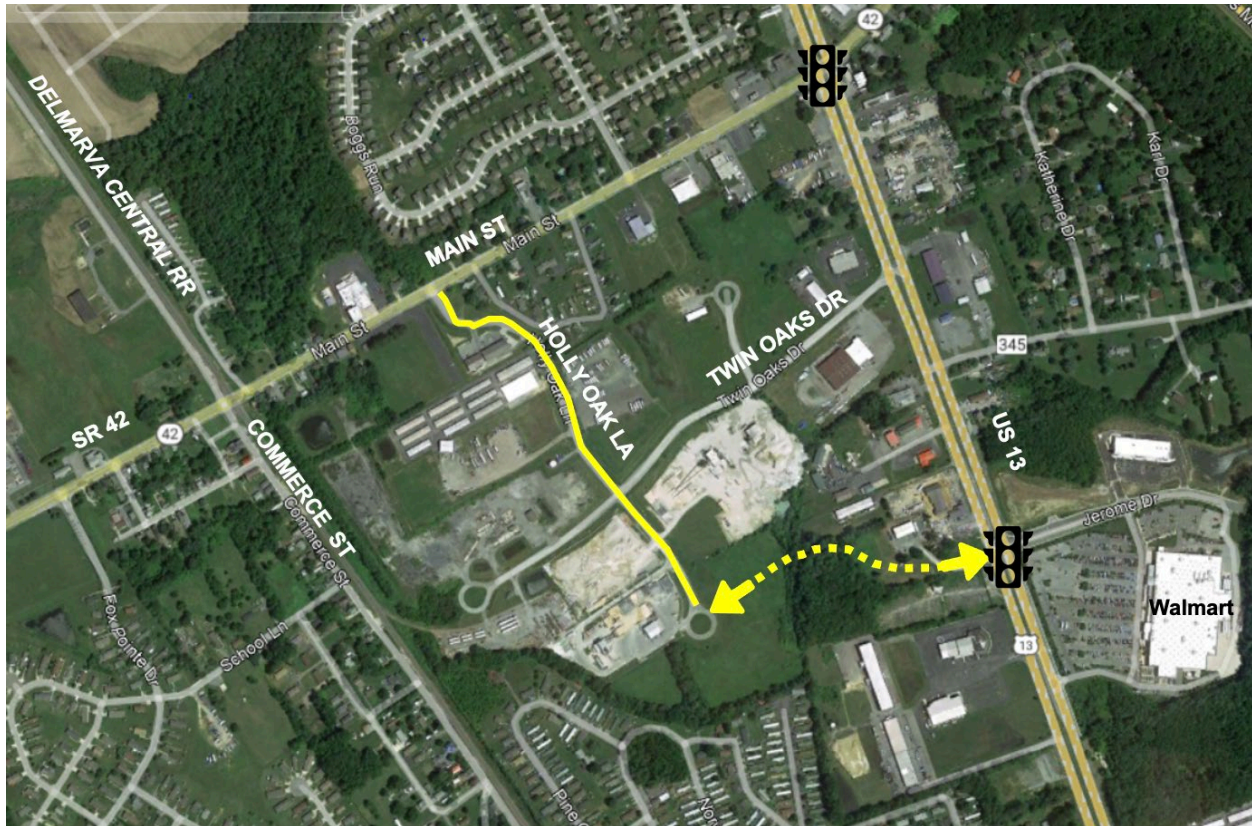


Figure 23: A bypass concept for Cheswold that moves vehicle traffic along Holly Oak Lane and onto a new road, so that larger vehicles may avoid the eastern part of Main Street.

## Dover

SR 8 passes through the downtown section of the City of Dover. This can be challenging for large vehicles such as commercial trucks, and both traffic bottlenecks and crashes have occurred on this route. The crash data suggests that the majority of crashes (60%) along SR 8 took place at intersections, such as the intersection of SR 8 and Kenton Road. The highest concentration of crashes took place on the stretch between Mifflin Road and US 13. Many of these were caused by driver error such as following too closely, running a stop sign, or improper lane change. Two areas prone to bottlenecks other than SR 8 are W North Street (due to the US Post Office location and the physical constraints that make it difficult for large vehicles to turn), and the bike path east of Saulsbury Road (due to the path's use by bicyclists and pedestrians). In general, turns in this area are difficult for large vehicles.

To address the dangerous conditions caused by the mixed-use transportation on SR 8, solutions for the area could involve rerouting corridor traffic that is not bound for local destinations. This would help large vehicles avoid downtown Dover, which would make it easier for them to navigate the area, while also creating safer conditions for other users (including bicyclists and pedestrians). However, because SR 8 is still the most direct route, an alternate route could not send vehicles too far from the city, or else the rerouting efforts would be ineffective. Scarborough, McKee, and Saulsbury Roads currently offer a possible alternate route, especially for trucks heading south on SR 13 that need to access SR 8. The Camden Bypass project will create a route in the near future that bypasses Dover to the south of the city, avoiding the challenging downtown areas of both Dover and Camden.

Traffic signals and speed limit signs are already in place to help reduce the speed of vehicles as they enter the city. Because vehicle speed is not as serious of a concern within Dover as it is elsewhere in Kent County, short-term solutions should focus on improving other aspects of truck safety, such as the vehicles' ability to turn down narrow streets and the use of routes that avoid serious bottlenecks.





Figure 24 (l): SR 8 (Division Street) in Dover, westbound from Bradford Street. Source: Google Street View.



Figure 25 (r): A dump truck heading east on SR 8 (Division Street) from the State Street intersection.

## Harrington

As with other locations, the two intersections of US 13 and SR 14 in Harrington offer challenges for large vehicles. Trucks turning left through these intersections are required to make a difficult wide turn; also, there is little space in between the lanes, which is dangerous for vehicles with wide storage. A high volume of trucks passes through Harrington, due in part to the vehicles traveling to and from Burris Logistics.

One alternative for this intersection is to add several full left turn lanes (see Figure 27). Through improvements such as providing two full westbound lanes on SR 14 in median area and slightly widening the south side of the SR 14 roadway east of the Hardee's building, trucks would have an easier time turning left. The downside to this option is that it does not allow for an eastbound bicycle lane. In addition, due to the location of the Hardee's building, expansion of the roadway towards the south is constrained. Therefore, another option might be more feasible.

A second alternative involves adding two full westbound lanes on SR 14 in the median area between US 13 northbound and southbound (see Figure 28). If this were the case, the eastbound left turn lane in the median could then be removed, and a new jughandle roadway (an improvement that diverts turning traffic from the main intersection) could be added to the nearby vacant commercial parcel. The results of this alternative would be a readjustment of northbound traffic, as well as a simplification of traffic signals.



Figure 26: A depiction of some of the turns required of large vehicles when passing through downtown Harrington. Turning left from SR 14 onto US 13 is among the most challenging turns.

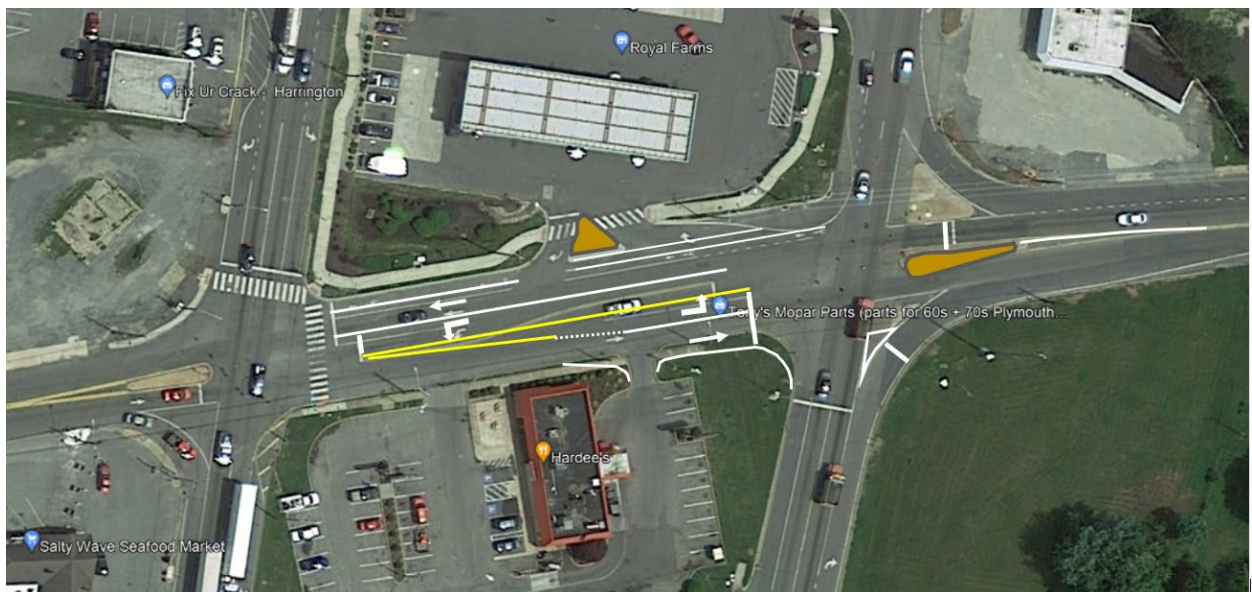


Figure 27: Concept for improvements in Harrington, which involves adding left turn lanes to the intersection.



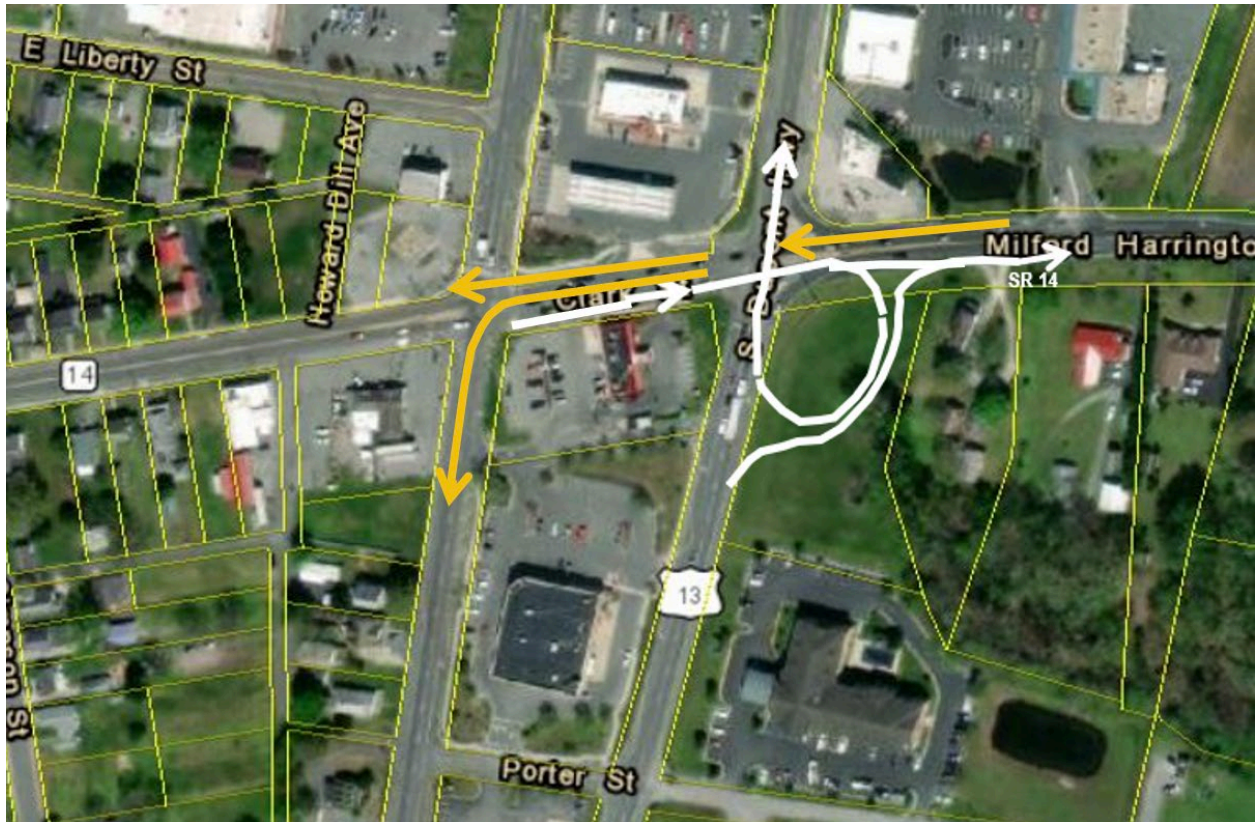


Figure 28: Additional concept for improvements in Harrington, which involves adding two full westbound lanes on SR 14, removing the eastbound left turn lane in the median, and adding a new jughandle roadway.

## Milford

One of the key problems for large vehicles in Milford is the inability to make turns in the downtown area. Trucks and other large vehicles have a difficult time turning onto and off of Walnut Street and Washington Street. As a result, damage to poles, signs, and traffic signals has taken place. Due to existing conditions, it is not possible or appropriate to enlarge downtown intersections for truck turns.

Two corridors have previously been identified for potential improvements that would allow trucks to avoid Milford's downtown. The northern corridor (within Kent County) would alleviate the bottleneck on US 113 by diverting traffic to Route 1 North. The southern corridor (within Sussex County) would serve similar purposes, but in addition to avoiding the downtown area, it would also remove trucks from residential streets in the southern part of town. While this would not be a complete bypass, it would give an east-to-west route for trucks without the challenging downtown turns.

It should be noted that the Rehoboth Boulevard drawbridge over the Mispillion River was damaged by a passing truck in December of 2021. (Over-height vehicles are an ongoing problem at this location.) Since the damage took place, the bridge has not been raised to allow boat passage, as doing so would possibly prevent the structure from being closed again. If repairs are undertaken in 2023 as expected, trucks will need to use a detour to access SR 14. On the other hand, should the bridge be repaired, an advanced over-height vehicle warning system may also be added, which would improve the conditions for large vehicles moving through the area.



Figure 29 (l): The intersection of Walnut Street, NE Front Street, and NW Front Street in Milford. Source: Google Street View.



Figure 30 (r): A truck turning from Walnut Street onto SE Front Street in Milford. Large vehicles headed through Milford's downtown are often required to make challenging turns such as this. Source: Google Street View.

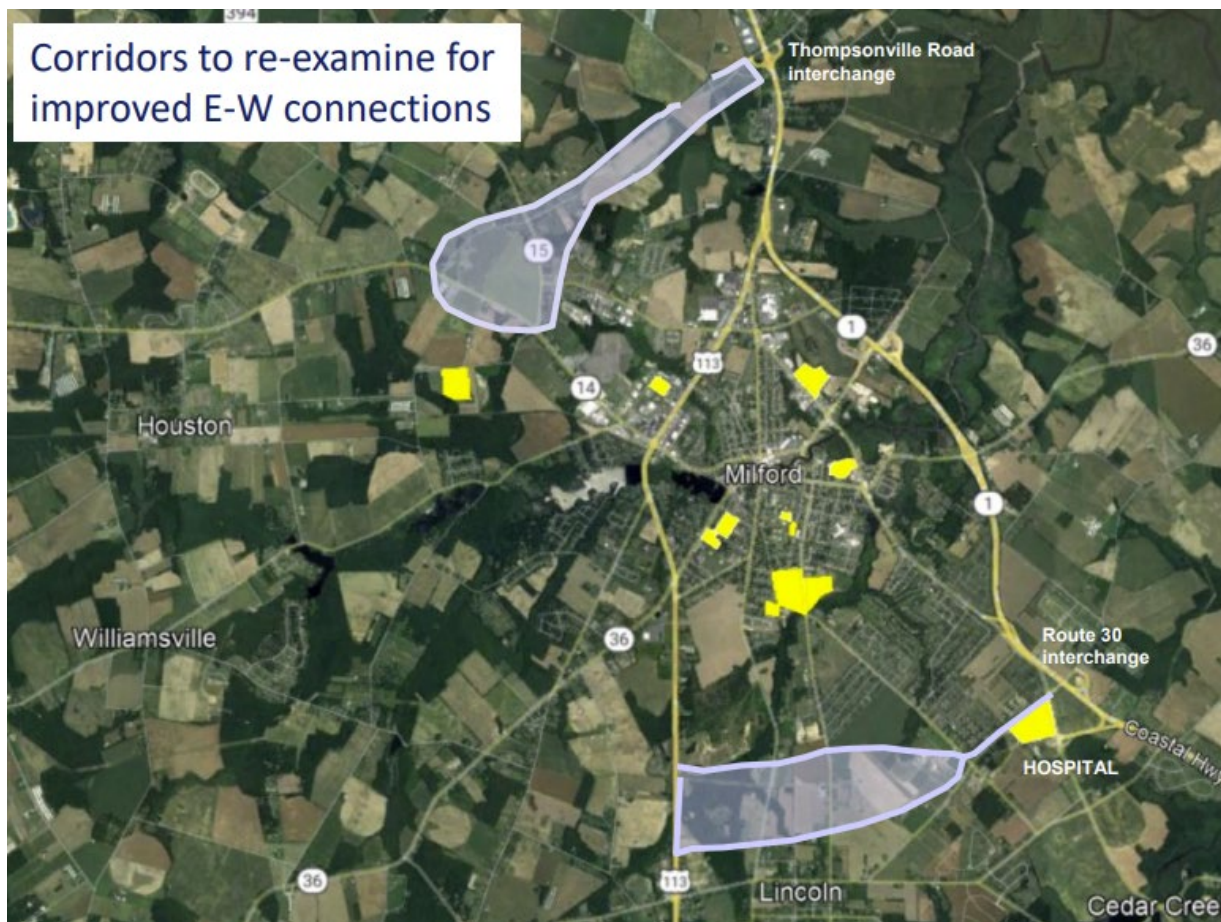


Figure 31: The northern and southern corridor that could be improved to alleviate traffic congestion in the Milford area. Yellow polygons represent industrial areas.





Figure 32: A wider view of Milford's existing conditions. SR 14 is marked in red, and the Mispillion River is marked in blue. Yellow polygons represent industrial areas.



Figure 33 (l): The Mispillion River bridge on Rehoboth Boulevard, southbound. Source: Google Street View.



Figure 34 (r): The Mispillion River bridge on Rehoboth Boulevard, northbound. Source: Google Street View.

## Conclusion

The Phase I study began as an attempt to identify a preferred route through Kent County to get to US301 and ultimately the eastern edge of Chesapeake Bay. It became a study to identify appropriate routes or the need for a new right-of-way that is designed for truck travel time, and ultimately, to prepare for an engineering analysis.

The choice of a current route that gets freight and the trucks that carry it from Delaware's SR1 to US301 in Maryland is primarily dependent on the freight's starting point. Unless otherwise restricted, freight starting at SR1 in north Smyrna will take Route 300 to get to the "safe" intersection with US 301 (where a southbound truck goes north for a short distance and works its way to the left lane to get to a turn lane in the median that allows a turn to go south; the turn cannot be accomplished by larger trucks without using the far shoulder to make the turn). A truck in Milford will use SR14 through Harrington to get to Denton and access MD404 to US50 and, ultimately, US301. Using another route that connects to SR1, by way of Route 44, Cheswold, or MD313 would only extend the trip on a non-interstate-quality road.

A universal comment from town and city police departments and residents alike is that trucks are a nuisance in town. It is the in-town routes with stops and turns that create problems for truck maneuvering, and their weight is thought to damage streets and create traffic. That is why, in this Phase I study, it is assumed that there will be a community push to create a bypass around every town eventually. Phase II will further the evaluation of potential bypasses along with the other considerations of the truck routes. Truck weight was mentioned as an issue by haulers and producers alike. The reason for weight limits is the damage overweight trucks can inflict on asphalt (or hot mix, or macadam) roads. The solution is to create a freight route, across state borders, using some form of concrete. There are many advantages associated with the use of concrete, including weight bearing and durability, though asphalt has the advantages of lower costs and relatively quick preparation.

Land use is under local government control. These local governments are the entities that allow commercial development in the town center that depends on the state route until it becomes too busy, allow a gas station and garage on a state route main street of historic homes, and site a large distribution facility in the middle of a neighborhood commercial area and adjacent to an acute angle intersection. These are problems created by the community that are left for the DOT or police department to address.

It became obvious that differences in speed limit is not a significant factor for heavy freight trucks; regular stopping and starting, by contrast, impacts truck travel time and creates the impediment to traffic. In the study routes of between 25 and 40 miles, the stops creating traffic in smaller towns contribute to conflicts, and ultimately, demands for bypass routes. As a result, the MPO chose to evaluate the various routes studied based on travel time and truck impediments for the distance between SR1 and US301 by counting full stops required and where the conflict may occur through small towns.

As previously described, in central Kent County, the route with the fewest impediments was via the revised Route 10 that included the Camden Bypass that will begin construction next fiscal year. There are only 6 stoplights between SR1 at the airbase and US13. Once past US13, a westbound truck would encounter one required full stop before reaching its destination. There are no stops on Route 10 with the improvements made by the Camden bypass. The only stop sign is when the truck reaches MD311 in Goldsboro. Trucks are able to make it through MD312 to MD304 in Bridgeton and all the way to US301, where the entrance has been reconfigured with a roundabout at each side of the highway. The truck would then be going to the interstate system and would not stop until it got off for its 'final mile'. The route essentially has a bypass around Goldsboro, MD but does go through Bridgeton, MD where a truck driver may become tired of making turns at major intersections. An eastbound truck following the same route would encounter two additional stops going from MD304 to MD312 and from MD312 to MD313. Route 10 is the only route among those chosen for the study that has funds committed for improvements in DelDOT's budget, called the Consolidated Transportation Program (CTP).

In Smyrna, coming from the north Smyrna interchange to turn onto DE300 and then to MD300 may have a shorter travel time, but the interchange to get on US301 south adds time and a bit of difficulty. The route chosen (by negotiation) to study relies on the interchanges on US301, MD300 near Sudlersville, MD302

on the way to Church Hill, and US50 by way of MD404. There are other intersections on US301, but these are the most efficient routes from Kent County.

The MPO recommends this Phase I study be followed up with a Phase II Engineering Analysis. The Engineering Analysis can then:

- Make changes to the studied routes to make more appropriate for freight;
- Assess the need for a new route with new right of way;
- Evaluate the extent of a bypass or other long-term alternatives;
- Describe the impact of using concrete as a road surface;
- Determine the cost of using concrete as a road surface;
- And other aspects that will be defined in a future scope of service.

## Appendix A – Complete Existing Conditions

The following appendix describes existing conditions on each of the study corridors, including detailed descriptions of the existing roadways, findings on traffic volumes, and available crash data with notes on the most problematic locations. The appendix will also describe travel time reliability based on route speed limits and traffic signal locations, and it will examine Delaware's enforcement of truck weight limits on roadways. Images are derived from a combination of mapping, fieldwork, and Google Street View.

### Route 300

SR 300 is a minor arterial roadway extending from the Maryland state line to US 13 in Smyrna. It continues west into Maryland as MD 300. MD 300 intersects with US 301; however, the intersection is channelized to allow only left turns in from southbound US 301, right turns in from northbound US 301, and right turns out from westbound MD 300. Left turns and cross movements from MD 300 are physically prohibited. This means that currently DE 300/MD 300 does not provide a route via US 301 to the south and the Bay Bridge. MD 300 traffic can turn north on MD 290 and access an interchange with US 301 in order to travel south. This adds about two miles to the trip.

#### Existing roadway

SR 300 is generally 40 to 42 feet wide with two travel lanes and 9-foot-wide shoulders.

Starting at the state line, SR 300 heads east through agricultural areas and woods with some homes. Just east of the state line, SR 300 intersects the western terminus of SR 44 in Everetts Corner. SR 300 continues northeast through rural areas, passing through the community of Downs Chapel and crossing Jordan Branch. Farther east, the road intersects the northern terminus of SR 11 and then enters the town of Kenton. In Kenton, the road becomes Main Street and passes homes and businesses. At the center of Kenton, SR 300 intersects SR 42 at a signalized intersection.

Past Kenton, SR 300 continues northeast on Wheatleys Pond Road, passing through more farm fields, some woodland, and residences. Three miles east of Kenton, SR 300 enters the town of Clayton and passes residential subdivisions. From this point on, separate turn lanes are provided at many intersections. The road crosses the Delmarva Central Railroad's Delmarva Subdivision line at-grade, where it becomes the border between the towns of Clayton and Smyrna. SR 300 continues past a mix of homes and businesses, heading into Smyrna and passing a large Walmart distribution center before intersecting SR 6 at a skewed signalized intersection. At this point, SR 6 turns northeast and follows SR 300 on West Glenwood Avenue. At Main Street the road becomes East Glenwood Avenue and enters a commercial retail area. The road is widened with a center left turn lane and separate right turn lanes at some driveways. SR 300 ends at a signalized "T" intersection at US 13. SR 6 turns south and follows US 13 for a quarter mile before turning east on E. Commerce Street.

SR 300 traffic destined to SR 1 north turns left on US 13 and travels 2.3 miles to Exit 119. Traffic destined to SR 1 south can either turn left on US 13 and travel 1.5 miles to exit 119B or turn right on US 13 and travel 1.8 miles to the Exit 114 South Smyrna interchange just north of Carter Road.

The speed limit on SR 300 is 50 mph west of Kenton, 25 mph in Kenton, 40 mph between Kenton and Smyrna, and 35 mph in Smyrna. The SR 300 pavement has a centerline rumble strip in the 50-mph zone between the state line and Kenton.





*300 eastbound at Downs Chapel Road.*



*300 eastbound at SR 42 in Kenton. The right turn lane width is insufficient for truck turns.*



*Harvest loading in shoulder on 300 eastbound less than a mile south of Clayton.*



*Entrance to the Walmart Distribution Center on 300 eastbound in Smyrna.*



*Adjacent to Family Dollar, eastbound in Smyrna (approaching US 13).*



*Eastbound trucks are directed to stay on eastbound SR 300 in Smyrna approaching the intersection of Smyrna Clayton Boulevard.*





*Eastbound 300 at the intersection with US 13.*

Traffic signals are located at the following intersections. All except one are located in Clayton or Smyrna:

- SR 42 in Kenton
- Artisan Drive to Smyrna Business Park
- Carter Road
- SR 6
- High Street
- Main Street
- US 13

There are overhead flashing beacons at the T intersection with SR 44 (Everetts Corner Road), which is stop controlled on SR 44.

The railroad grade crossing in Smyrna is equipped with gates and flashers.

A fire signal flasher is located at Wheatley Pond EMS in Smyrna.

A weight limit of 18T for two-axle and 28T for three-axle trucks is posted at a culvert 800 feet west of the intersection with SR 11



*Posted weight limit on SR 300 west of SR 11.*

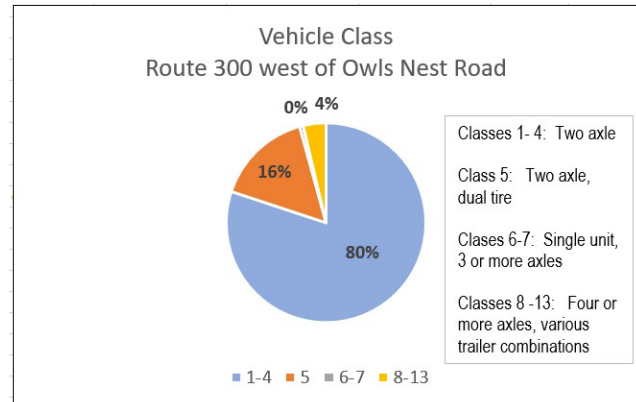
### Route 300 existing traffic/truck volumes

	Route 300 Segment		
	West of Owls Neck Road count #3	South of SR 42 in Kenton count #2	North of Walmart driveway in Smyrna count #1
ADT	2,210	5,139	12,175
Truck ADT	441	820	1,781
AWDT	2,244	5,374	12,985
Truck AWDT	487	945	1,994

More details about traffic patterns and vehicle class are provided below. Both total daily volume and truck volume as a percentage of total volume is lower on Saturday and Sunday.

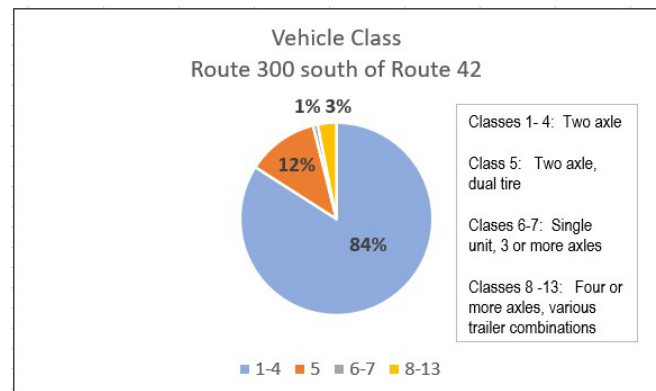
*Route 300 volumes west of Owls Neck Road.*

Day of week	Volume		
	Total	Truck	% Truck
Sunday	2,046	270	13.2%
Monday	2,166	465	21.5%
Tuesday	2,098	453	21.6%
Wednesday	2,178	486	22.3%
Thursday	2,277	479	21.0%
Friday	2,501	551	22.0%
Saturday	2,205	380	17.2%
<b>Overall</b>	<b>15,471</b>	<b>3,084</b>	<b>19.9%</b>



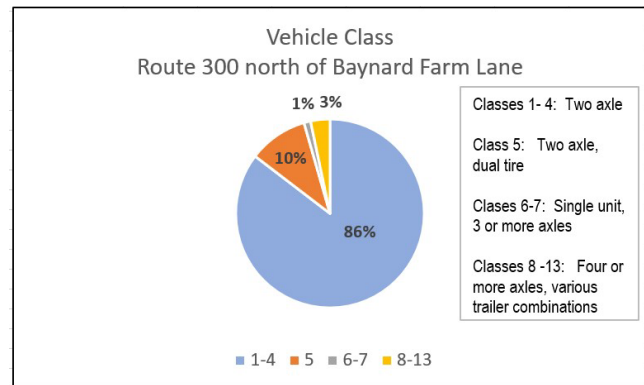
*Route 300 volumes south of Route 42 in Kenton.*

Day of week	Volume		
	Total	Truck	% Truck
Sunday	4,375	419	9.6%
Monday	5,100	814	16.0%
Tuesday	5,269	1,000	19.0%
Wednesday	5,499	989	18.0%
Thursday	5,389	980	18.2%
Friday	5,611	941	16.8%
Saturday	4,733	597	12.6%
<b>Overall</b>	<b>35,976</b>	<b>5,740</b>	<b>16.0%</b>



*Route 300 volumes north of Walmart Distribution Center in Smyrna.*

	Volume		
Day of week	Total	Truck	% Truck
Sunday	9,207	1,114	12.1%
Monday	12,340	1,831	14.8%
Tuesday	12,776	2,072	16.2%
Wednesday	12,803	2,017	15.8%
Thursday	13,199	2,128	16.1%
Friday	13,807	1,921	13.9%
Saturday	11,092	1,385	12.5%
<b>Overall</b>	<b>85,224</b>	<b>12,468</b>	<b>14.6%</b>

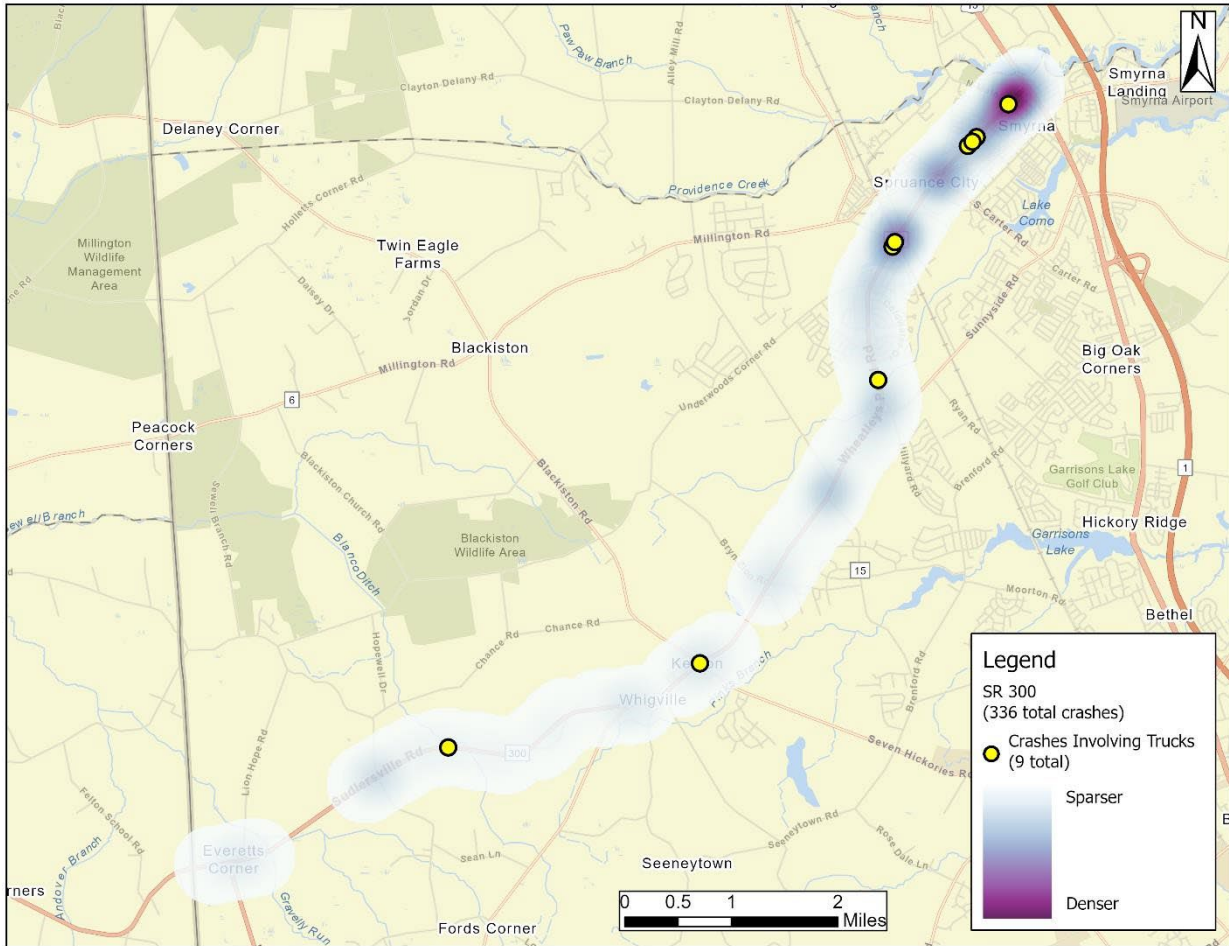


### Existing crash history on SR 300

In the five years from 2015 to 2019 there were 336 total crashes on SR 300. Of the 336 total, 68 were personal injury crashes and three were fatal crashes. The highest observed crash type was rear end (41%). Nine crashes involved trucks. Most of these were sideswipe or rear end crashes involving inattentive driving or improper turns by an automobile driver.

Impact	# of Crashes	% of Crashes
Angle	70	20.83%
Front to front	14	4.17%
Front to rear	138	41.07%
Not a collision between two vehicles	54	16.07%
Other	12	3.57%
Rear to rear	3	0.89%
Rear to side	2	0.60%
Sideswipe, opposite direction	10	2.98%
Sideswipe, same direction	25	7.44%
Unknown	8	2.38%
<b>TOTAL</b>	<b>336</b>	<b>100.00%</b>

The majority of crashes occurred from the area of the Delmarva Central Railroad crossing and Smyrna Business Park to US 13. This area also has the highest traffic volume and number of traffic signals.



Route 300 Crash Density, 2015 – 2019.

### Other studies

DeIDOT is performing a study of SR 300 at the intersections with School Lane and S. Bassett Street located on opposite sides of the Delmarva Central Railroad crossing in Clayton. The study is looking to address congestion and safety issues.

The Dover/Kent County MPO will be conducting a study on the intersection of Smyrna-Clayton Boulevard and Wheatleys Pond Road. This study will analyze the conditions that make the intersection problematic, and it will propose several alternatives that would improve overall safety in the area.

### Route 8

SR 8 is a minor arterial roadway for its entire length from Marydel at the Maryland state line to Route 9 east of Dover in Little Creek. This study covers the area from the state line to the interchange with SR 1 in Dover. SR 8 continues west into Maryland as MD 454. MD 454 runs north to MD 302, which is a continuation of SR 11 west into Maryland. Turning west on MD 302 leads to an uncontrolled intersection with US 301 that allows all movements. Left turns from MD 302 to go south on US 301 have a 35' median refuge for a two-stage turn, but it is not sufficient for trucks.

### **Existing roadway**

West of Dover, SR 8 is generally 42 feet wide and carries two 12-foot travel lanes and 8-foot shoulders. Right turn lanes are commonly provided at intersections. From the state line, SR 8 heads southeast on two-lane undivided Halltown Road, passing a few homes and businesses. The road curves northeast through a mix of farmland and woodland with some homes. In Pearsons Corner, SR 8 intersects the eastern terminus of SR 44 and then Pearsons Corner Road at closely spaced signalized intersections. SR 8 continues east and the name changes to Forrest Avenue upon crossing Pearsons Corner Road. From here, SR 8 runs through more rural areas with some development. This area of Kent County is home to many Amish farms, homes, and businesses.

SR 8 crosses into Delaware's capital city of Dover, where it passes to the north of Dover High School and then widens to provide a center left turn lane. SR 8 passes through an area of homes and businesses in the western part of Dover. East of Kenton Road, SR 8 widens again to a five-lane road with a center leftturn lane, with additional right turn lanes at intersections and major driveways. At SR 15 (Saulsbury Road) the name changes to Forest Street and the route continues east as a five-lane road to the point where Forest Street splits to the southeast to lead to Loockerman Street and downtown Dover. SR 8 continues east on West Division Street and narrows to a two-lane street with on-street parking through a residential area. SR 8 crosses the Delmarva Central Railroad's Delmarva Subdivision line at-grade and continues past a mix of homes and businesses north of the downtown area. SR 8 crosses US 13 Alt. (Governors Avenue) and passes Wesley College before intersecting State Street, where the name becomes East Division Street. SR 8 crosses the St. Jones River and intersects Kings Highway NE, then widens to four lanes approaching US 13.

SR 8 intersects US 13 in a commercial area and continues through the residential eastern part of Dover as a two-lane road. At the eastern edge of the city is a partial interchange with SR 1 that provides access to and from the north on SR 1.

The portion of SR 8 between SR 44 and SR 15 is part of the National Highway System.



*West Division Street at New Street.*





*SR 300 eastbound at SR 15 Saulsbury Road.*



*SR 8 eastbound at Mifflin Road.*



*HAWK signal at Heatherfield Way for school crossing at Dover High School.*





*SR 8 eastbound approaching Artis Drive.*



*SR 8 westbound approaching SR 44.*



*SR 8 westbound entering Marydel.*

Traffic signals are located at the following intersections, all except two located in Dover:

- SR 44
- Pearsons Corner Road
- Dover High School Drive
- Heatherfield Way – a HAWK signal for school crossing at Dover High School
- Mifflin Road
- Kenton Road
- Independence Boulevard
- Modern Maturity Center entrance
- Saulsbury Road SR 15
- Gibbs Drive
- Weston Drive/Forest Street/W. Division Street
- Queen Street
- New Street
- Governors Avenue
- State Street
- Kent Avenue
- Kings Highway NE
- US 13

The speed limit on SR 8 is 30 mph in Marydel, 50 mph between Marydel and Pearsons Corner, 40 mph through Pearsons Corner, 50 mph between Pearsons Corner and Dover. The speed limit then reduces to 40 mph with a 35 mph school zone at Dover High School. Approaching Saulsbury Road the speed limit is reduced to 35 mph and then is reduced again to 25 mph on Division Street to US 13. East of US 13 to the SR 1 interchange the speed limit is 35 mph.

There is a 20 mph school speed zone at Booker T. Washington Elementary School between Bertrand Drive and the Weston Street/Forest Street/Division Street intersection. There is an overhead 20 mph speed limit sign with flashers for eastbound traffic at Bertrand Drive and for westbound traffic east of the school crossing at Gibbs Drive.

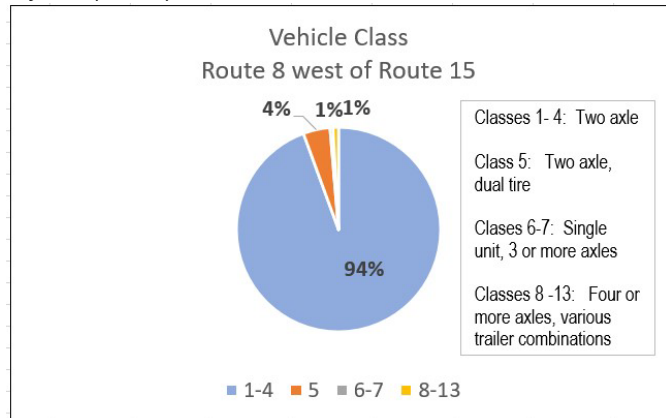
#### **Route 8 existing traffic/truck volumes**

	Route 8 Segment	
	Between Brittney Lane and SR 44 count #8	Between Independence Blvd. and Saulsbury Rd. count #9
ADT	5,587	20,997
Truck ADT	649	1,245
AWDT	5,673	23,069
Truck AWDT	692	1,467

More detail about traffic patterns and vehicle class is provided below.

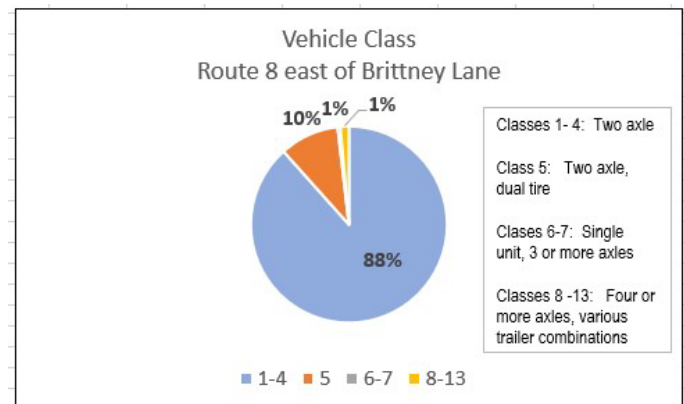
*Route 8 volumes between Independence Blvd. and Saulsbury Rd. (SR 15).*

	Volume		
Day of week	Total	Truck	% Truck
Sunday	14,890	608	4.1%
Monday	22,582	1,556	6.9%
Tuesday	23,052	1,416	6.1%
Wednesday	23,360	1,382	5.9%
Thursday	22,816	1,436	6.3%
Friday	23,534	1,546	6.6%
Saturday	16,742	772	4.6%
<b>Overall</b>	<b>146,976</b>	<b>8,716</b>	<b>5.9%</b>



*Route 8 volumes between Brittney Lane and SR 44.*

	Volume		
Day of week	Total	Truck	Truck %
Sunday	4,940	519	10.5%
Monday	5,391	687	12.7%
Tuesday	5,491	672	12.2%
Wednesday	5,619	680	12.1%
Thursday	5,846	701	12.0%
Friday	6,018	722	12.0%
Saturday	5,806	563	9.7%
<b>Overall</b>	<b>39,111</b>	<b>4,544</b>	<b>11.6%</b>



**Existing crash history on SR 8**

A five-year crash history was obtained from DeIDOT for Route 8 covering the years 2015 – 2019. The map below shows crash locations and where the number of crashes is highest. There were 906 total crashes in the five-year period. 319 crashes or 55% were personal injury crashes. Eight crashes resulted in a fatality.

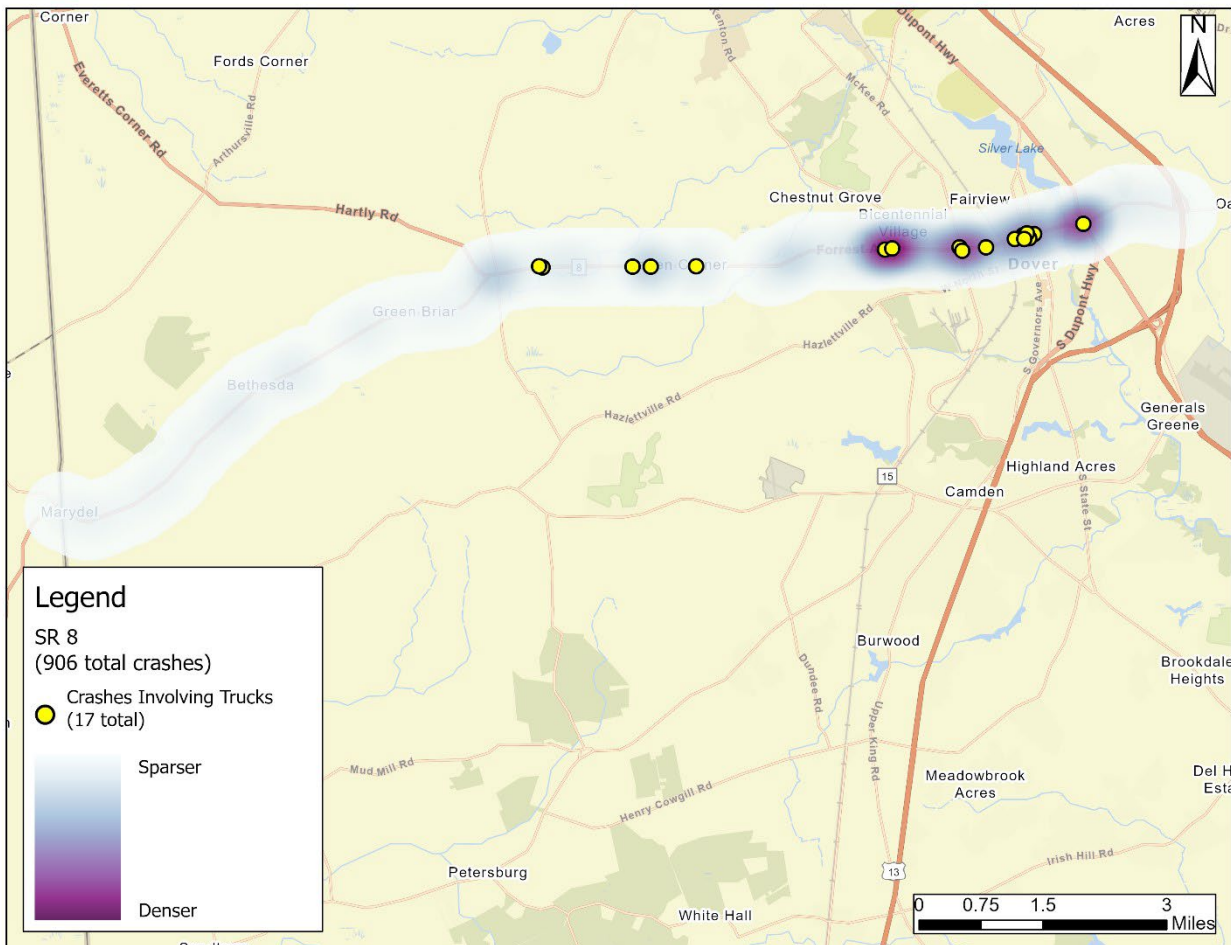
541 crashes or 60% were at or related to intersections. One-third of all crashes were rear end crashes. Angle crashes comprised 30% of all crashes. Twenty percent of crashes were single vehicle crashes such as running off the road and striking a fixed object or hitting a deer.

Impact	# of Crashes	% of Crashes
Angle	276	30.46%
Front to front	48	5.30%
Front to rear	304	33.55%
Not a collision between two vehicles	183	20.20%

Other	9	0.99%
Rear to rear	2	0.22%
Sideswipe, opposite direction	13	1.43%
Sideswipe, same direction	63	6.95%
Unknown	8	0.88%
<b>TOTAL</b>	<b>906</b>	<b>100.00%</b>

As shown in the heat map, the highest concentration of crashes occurred between Mifflin Road and US 13.

Seventeen of the 906 crashes involved a truck. All of the truck crashes occurred east of Pearsons Corner Road. The highest single pattern (six crashes) involved a right-turning truck knocking down a utility or light pole on the corner. These crashes occurred at Saulsbury Avenue, Queen Street, and Governor's Avenue in Dover. Most other crashes involved driver error such as following too closely, running a stop sign, or improper lane change.



Route 8 Crash Density, 2015 -2019.



### **Designated truck routes**

The City of Dover has designated truck routes in **Sec. 106-17** of the City Code of Ordinances. SR 8 is a truck route. No commercial vehicle having three or more axles may be operated on any street in the city except on a truck route. Exceptions are made for trucks making a local delivery to or a pickup from a place in the city that is incapable of being directly accessed from a designated "truck route", as well as for emergency response, public utility and waste hauler vehicles while engaged in operations.



*City of Dover Truck Routes and Signage.*

### **Other studies**

#### **Route 8 Corridor Study**

This study completed for Dover/Kent County MPO in 2008 covered Route 8 in Dover from Artis Drive to the DELMARVA Railroad crossing. The study identified several improvements to improve safety and reduce congestion, some of which are currently planned DelDOT projects. The City of Dover's 2019 Transportation Project Prioritization list placed improvements to the Route 8 corridor in second place to the Garrison Oak Connector Road. An update to the study is proposed in the MPO's 2021 Metropolitan Transportation Plan (MTP).

#### **Saulsbury Road Corridor Study**

In 2022 Dover/Kent County MPO is initiating a study of the Saulsbury Road Corridor north of SR 8.

#### **SR 8 and Kings Highway NE**

The intersection of SR 8/ Kings Highway NE was added to DelDOT's Hazard Elimination Program in 2021. The intersection will be studied to determine improvements to mitigate crashes.

#### **Dover Air Cargo Terminal Freight Study**

This study by the Dover/Kent County MPO was meant to determine how freight moves from the proposed Air Cargo Facility north of the Air Base to State Route 1. It resulted in a look at Route 8 between US 13 and Route 9 and is focused on the area east of US 13 between Dover Air Force Base and White Oak Road. The study purpose is to improve truck access to industrial development areas east of Route 1 and reduce truck impacts on local roads. Recommendations include improvements to some existing roads and new road extensions.

## Route 11

SR 11 is a two-lane major collector roadway that runs from the Maryland state line northeast to SR 300 south of Kenton. SR 11 extends west into Maryland as MD Route 302 near Templeville, Maryland. MD 302 connects with US 301 at an uncontrolled intersection that allows all movements. Left turns from MD 302 to go south on US 301 have a 35' median refuge for a two-stage turn, but it is not sufficient for trucks.

### Existing roadway

SR 11 is generally 38 feet wide with 11-foot travel lanes and 8-foot shoulders. Known as Arthursville Road for its entire length, SR 11 passes through the farmland of western Kent County and through the town of Hartly, where it intersects SR 44.

The speed limit on SR 11 is 50 mph except in the town of Hartly, where it is reduced to 25 mph. There is a 20 mph school zone at Hartly Elementary School just south of the intersection with SR 44.

The intersection of SR 11 and SR 44 is controlled with All-Way Stop signs with overhead flashing beacons.

There is an emergency signal 450 feet north of the intersection with SR 44 with a sign message for southbound SR 11 to "Stop Here on Red." This is for the Hartly Volunteer Fire Company.



*SR 11 is stop sign controlled at the intersection with SR 300.*



Route 11 is posted with a 25-ton weight limit just south of its intersection with SR 300.

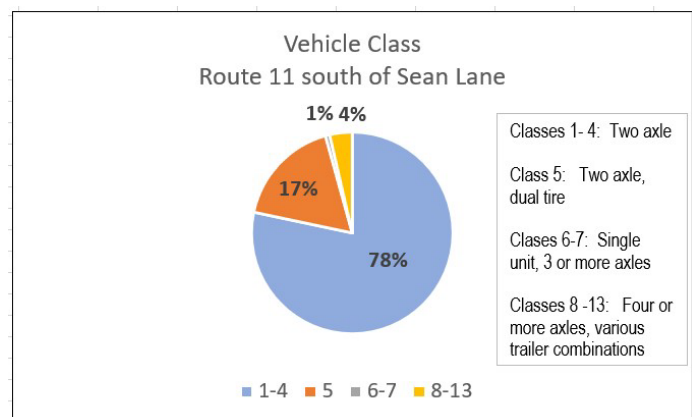
### **Route 11 existing traffic/truck volumes**

	Route 11 Segment	
	South of Route 44 count #5	South of Sean Lane count #4
ADT	1,931	1,946
Truck ADT	430	422
AWDT	9,844	2,098
Truck AWDT	488	480

More detail about traffic patterns and vehicle class is provided below.

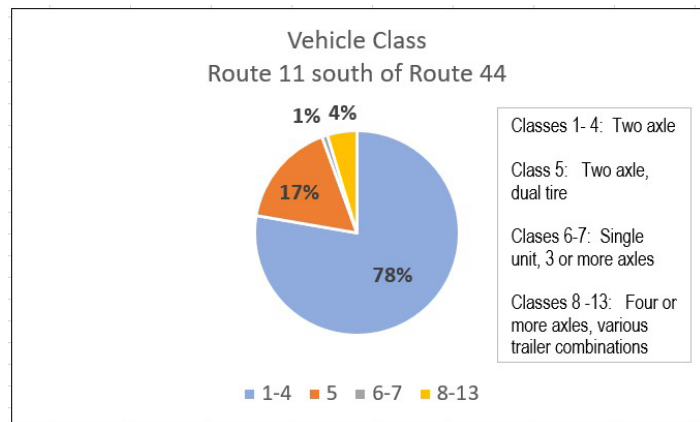
Route 11 volumes south of Sean Lane.

Day of week	Volume		
	Total	Truck	Truck %
Sunday	1,493	246	16.5%
Monday	1,948	432	22.2%
Tuesday	2,183	558	25.6%
Wednesday	2,185	474	21.7%
Thursday	2,097	483	23.0%
Friday	2,080	451	21.7%
Saturday	1,637	311	19.0%
<b>Overall</b>	<b>13,623</b>	<b>2,955</b>	<b>21.7%</b>



Route 11 volumes west of Route 44.

	Volume		
Day of Week	Total	Truck	Truck %
Sunday	1,757	254	14.5%
Monday	1,919	445	23.2%
Tuesday	1,984	539	27.2%
Wednesday	1,971	492	25.0%
Thursday	1,905	480	25.2%
Friday	2,065	482	23.3%
Saturday	1,917	319	16.6%
<b>Overall</b>	<b>13,518</b>	<b>3,011</b>	<b>22.3%</b>



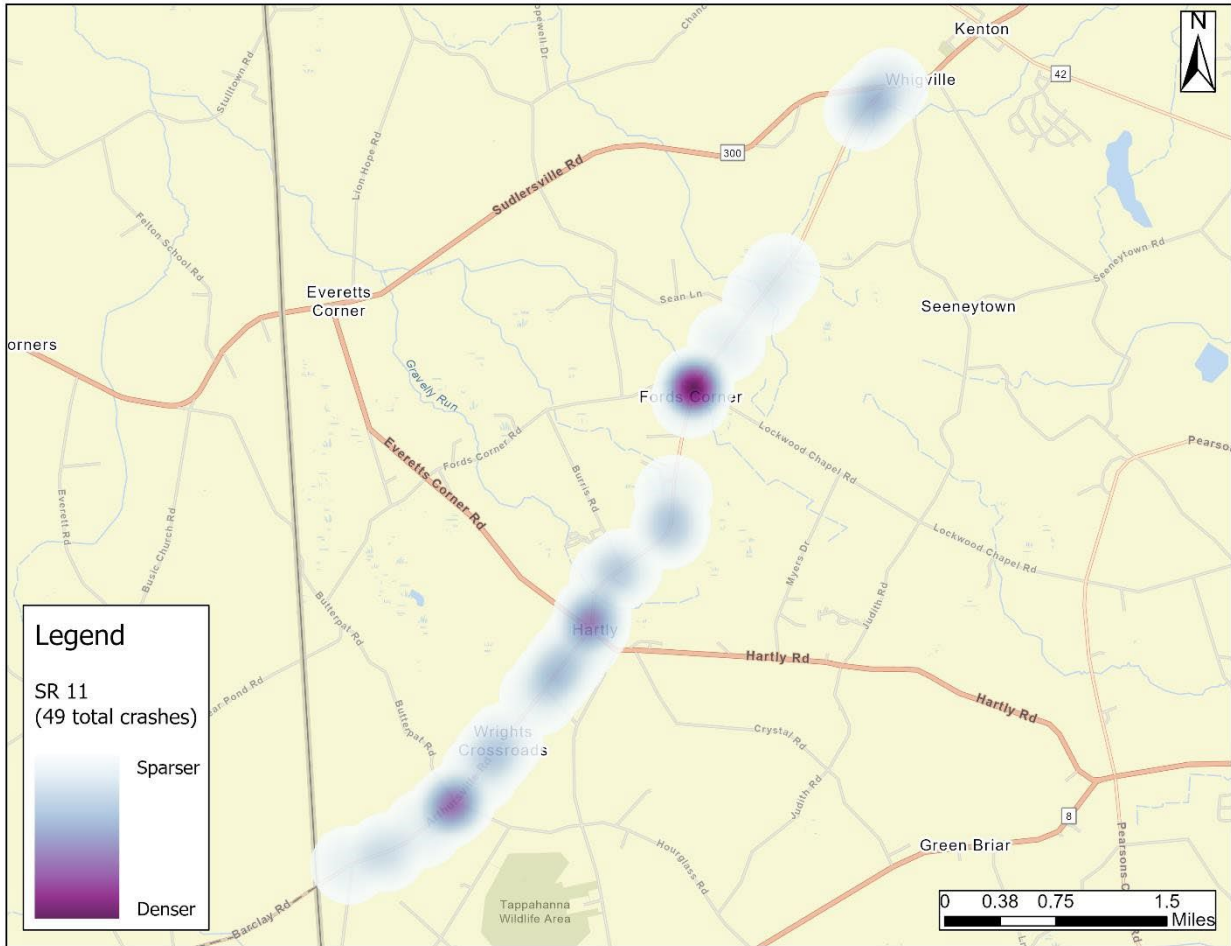
**Existing crash history on SR 11**

There were 49 total crashes on SR 11 in the five-year period from 2015 - 2019. The maps below show crash locations and where the number of crashes is highest. There were 49 total crashes in the five-year period. 11 crashes or 22% were personal injury crashes. There were no fatalities. None of the crashes involved trucks.

32 crashes or 65% were single vehicle crashes. 15 of those involved hitting an animal. There were seven crashes at the intersection of Fords Corner Road.

Impact	# of Crashes	% of Crashes
Angle	11	22.45%
Front to rear	3	6.12%
Not a collision between two vehicles	32	65.31%
Other	1	2.04%
Sideswipe, opposite direction	1	2.04%
Sideswipe, same direction	1	2.04%
<b>TOTAL</b>	<b>49</b>	<b>100.00%</b>





Route 11 Crash Density, 2015 – 2019.

## Route 44

SR 44 is a minor arterial roadway that runs from SR 300 in Everetts Corner southeast to SR 8 in Pearsons Corner.

### Existing roadway

SR 44 is generally 40 feet wide with 12-foot travel lanes and 8-foot shoulders.

The route passes through rural areas of western Kent County as well as the town of Hartly, where it is called Main Street. In the town of Hartly between SR 11 and Slaughter Station Road, SR 44 is 30 feet wide with curb and sidewalks and there is no shoulder in the eastbound direction. Parking for the post office occurs in the westbound shoulder. The eastbound shoulder resumes east of Slaughter Station Road and the curb and sidewalks end at Crystal Road.

There is an emergency signal 200 feet west of the intersection of SR 44 and SR 11 with sign message “Stop Here on Red.” This is to allow fire trucks from the Hartly fire station on SR 11 to make turns through the intersection onto SR 44 west.

SR 44 is stop sign controlled at SR 300 and all-way stop controlled at SR 11 with overhead flashing beacons. The only traffic signal on SR 44 is at the intersection with SR 8.

The speed limit on SR 44 is 50 mph except in the town of Hartly where it is reduced to 25 mph. Speed reduction pavement markings have been placed on SR 44 for westbound traffic approaching the 25 mph

zone. At Slaughter Station Road in Hartly there is a horizontal curve with a posted advisory speed of 20 mph.

SR 44 is part of the National Highway System.



*SR 44 eastbound at intersection with SR 8 Halltown Road. A Royal Farms driveway is located opposite SR 44. The Royal Farms provides parking for trucks.*



*SR 44 midway between SR 8 and SR 300.*



*SR 44 eastbound approaching curve at Slaughter Station Road in Hartly.*



*SR 44 eastbound at SR 11 intersection in Hartly.*



SR 44 eastbound east of SR 11.

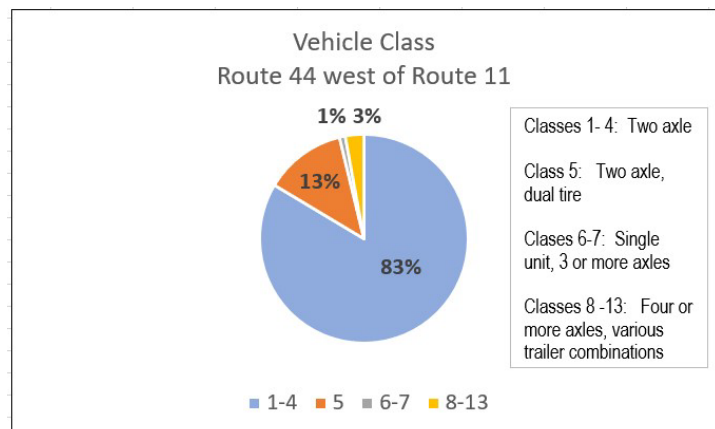
### Route 44 existing traffic/truck volumes

	Route 44 Segment	
	West of Route 11 count #6	Between Judith Lane and SR 8 count #7
ADT	1,648	3,340
Truck ADT	271	446
AWDT	1,753	3,582
Truck AWDT	305	501

More detail about traffic patterns and vehicle class is provided below.

### *Route 44 volumes west of Route 11.*

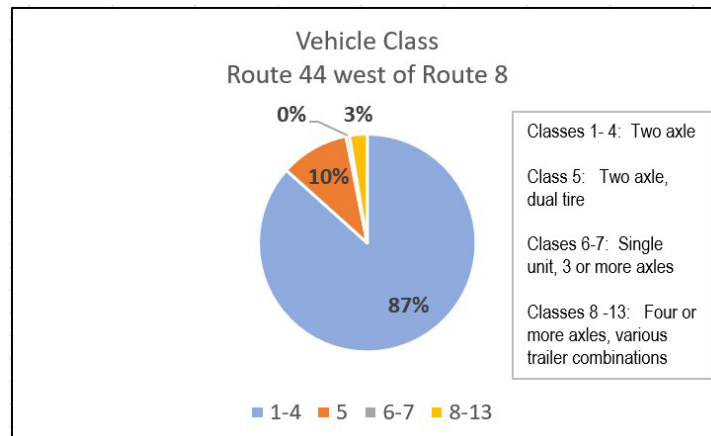
Day of week	Volume		
	Total	Truck	Truck %
Sunday	1,166	148	12.7%
Monday	1,682	263	15.6%
Tuesday	1,705	277	16.2%
Wednesday	1,778	325	18.3%
Thursday	1,710	330	19.3%
Friday	1,889	332	17.6%
Saturday	1,606	219	13.6%
<b>Overall</b>	<b>11,536</b>	<b>1,894</b>	<b>16.4%</b>





*Route 44 volumes between Judith Lane and Route 8.*

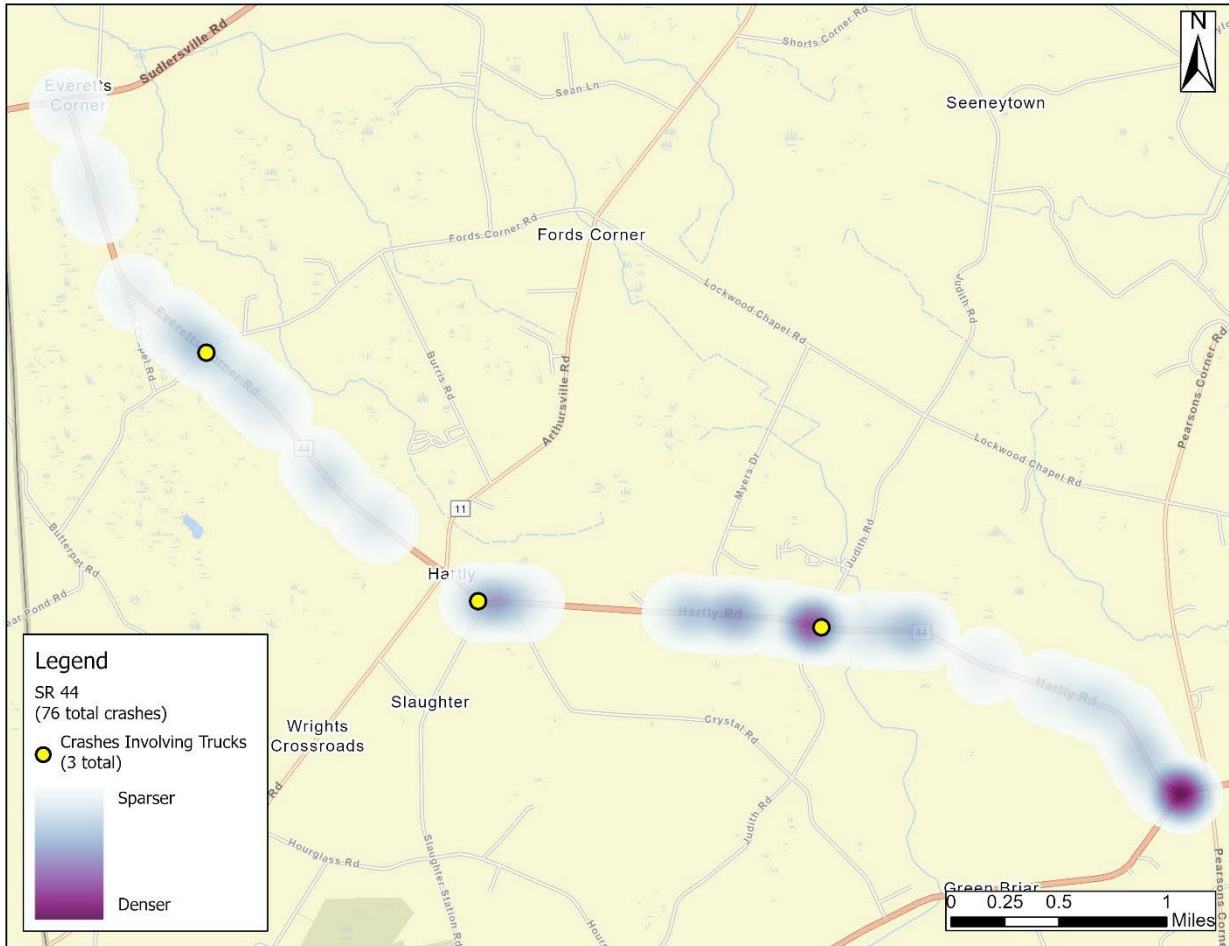
Day of week	Volume		
	Total	Truck	Truck %
Sunday	2,478	247	10.0%
Monday	3,512	520	14.8%
Tuesday	3,448	484	14.0%
Wednesday	3,554	462	13.0%
Thursday	3,529	517	14.7%
Friday	3,869	522	13.5%
Saturday	2,993	370	12.4%
<b>Overall</b>	<b>23,383</b>	<b>3,122</b>	<b>13.4%</b>



**Existing crash history on SR 44**

A total of 76 crashes occurred on SR 44 from 2015 – 2019. 27 crashes or 26% were personal injury crashes. There was one fatal crash. 26 of the crashes (one third) were at intersections or intersection related. 59% of crashes were single vehicle crashes. Three crashes involved trucks. One involved an auto driver who ran a stop sign. The other two truck crashes were single vehicle. One of these single vehicle truck crashes occurred westbound on the curve at Slaughter Station Road in Hartly, where the truck left the road, overturned, and hit a pole. The driver was cited for speeding.

Impact	# of Crashes	% of Crashes
Angle	16	21.05%
Front to front	2	2.63%
Front to rear	9	11.84%
Not a collision between two vehicles	45	59.21%
Other	1	1.32%
Sideswipe, opposite direction	2	2.63%
Sideswipe, same direction	1	1.32%
<b>TOTAL</b>	<b>76</b>	<b>100.00%</b>



*Route 44 Crash Density, 2015 -2019.*

## Route 42

SR 42 is a major collector roadway extending from SR 6 in Blackiston to Route 9 in Leipsic. This study covers the segment from SR 300 in Kenton to US 13 in Cheswold.

### Existing roadway

SR 42 is generally a 40-foot-wide two-lane roadway with 12' travel lanes and 8' shoulders.

In the town of Kenton, SR 42 is called Commerce Street. SR 42 intersects SR 300 at a signalized intersection in the center of town. In Kenton west of SR 11, SR 42 is 32 feet wide and curbed with 11-foot travel lanes, an 8-foot parking lane on the south side, and a 2-foot shoulder on the north side. In Kenton east of SR 300, SR 42 is 32 feet wide and curbed with no painted shoulder. The 40-foot width and shoulders resume 600 feet east of SR 300.

East of Kenton, SR 42 is called Seven Hickories Road and passes through farmland with woods and residences. SR 42 is signalized at the intersection of Brenford Road (SR 15)/Seeneytown Road. SR 15 follows SR 42 between Brenford Road and Kenton Road, where SR 15 branches off to the south on Kenton Road. SR 42 continues east, passes south of Delaware Airpark, and enters the town of Cheswold, where it becomes Main Street. SR 42 crosses the Delmarva Central Railroad's Delmarva Subdivision line at-grade. Between the railroad and the entrance to the Central Delaware Business Park, SR 42 is 32 feet wide and curbed with sidewalks and no painted shoulder. The 40-foot width and shoulders resume east of the Business Park driveway. The westbound shoulder includes a painted bike

lane. A bike lane in the eastbound shoulder begins at Parker Drive. SR 42 reaches an intersection with US 13 at the eastern edge of Cheswold.

Traffic destined to SR 1 north turns left on US 13 and travels 4.2 miles to Exit 114, the S. Smyrna interchange just north of S. Carters Road. Traffic destined to SR 1 south turns right on US 13 and travels two miles to Exit 104 Scarborough Road interchange.

SR 42 is signalized at the following intersections:

- SR 300 in Kenton
- Benford Road/Seeneytown Road
- US 13

There is a fire signal at the Cheswold Fire Station east of the railroad.



*SR 42 in Kenton looking west toward SR 300.*



*Turn lanes at Whitetail Run residential subdivision.*





*Looking east toward SR 15 south Kenton Road.*



*Eastbound SR 42 at entrance to Delaware Airpark.*





*Eastbound SR 42 - Main Street in Cheswold.*

### **Existing traffic/truck volumes**

Automatic traffic recorder counts were not conducted since SR 42 was not part of the original study scope. The Technical Advisory Committee suggested looking at SR 42 because of trucks travelling from SR 300 toward Cheswold and Dover. The ADT on SR 42 obtained from DelDOT sources is 5,674 vehicles.

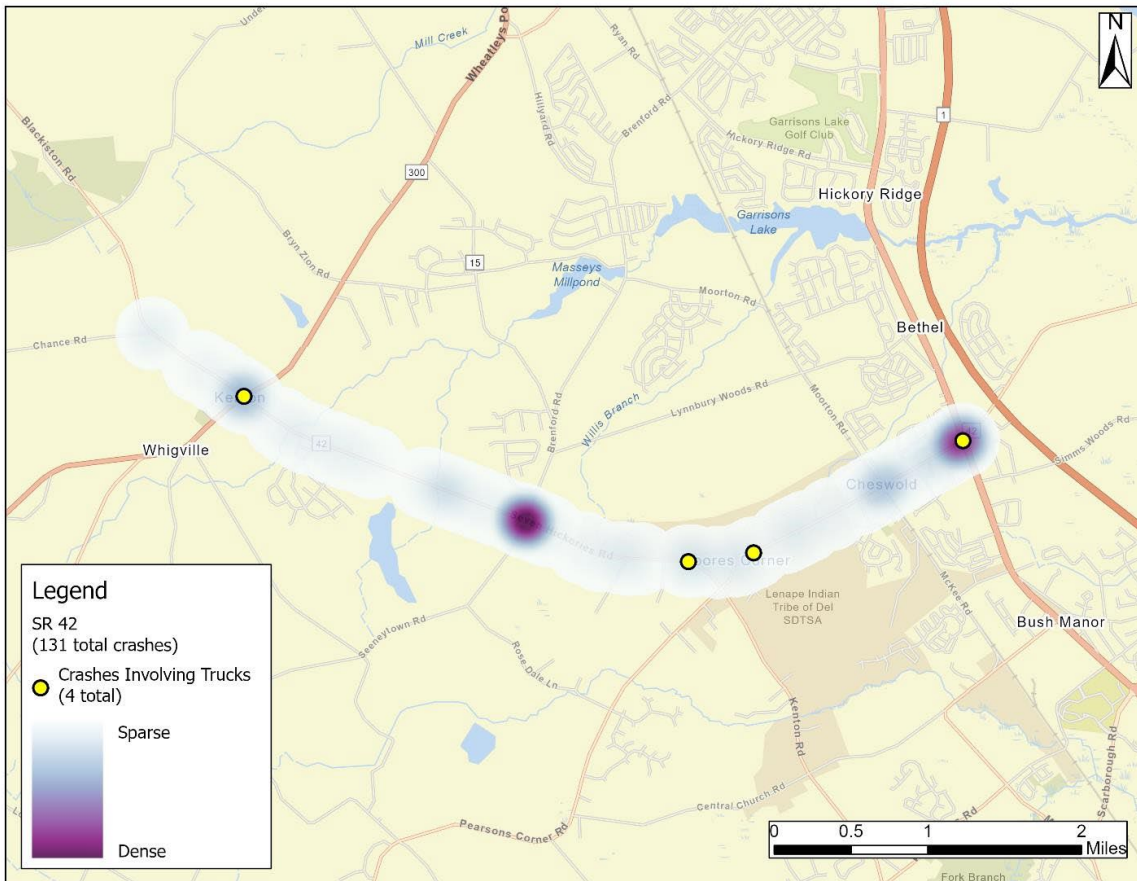
### **Existing crash history on SR 42**

A total of 131 crashes occurred on SR 42 from 2015 – 2019. 36 crashes or 27% were personal injury crashes. There were no fatalities. Four crashes involved collision between a passenger car and a truck. In three of those crashes, the truck driver was at fault for careless or inattentive driving. Roadway, lighting, and weather conditions were not factors in truck crashes. 70 of the crashes (53%) were at intersections or intersection related.

<b>Impact</b>	<b># of Crashes</b>	<b>% of Crashes</b>
Angle	32	24%
Front to front	12	9%
Front to rear	43	33%
Not a collision between two vehicles	27	21%
Other	6	5%
Rear to rear	1	1%
Sideswipe, opposite direction	4	3%
Sideswipe, same direction	5	4%
Unknown	1	1%
<b>TOTAL</b>	<b>131</b>	<b>100%</b>

The map below shows crash locations and where the number of crashes is highest.

The highest number of crashes was associated with the intersection of SR 42 and SR 15, Seeneytown Road. This was identified by DelDOT as an HSIP location. The intersection has been signalized.



Route 42 Crash Density, 2015 -2019.

### **Other studies**

#### **Cheswold TID**

A Transportation Improvement District (TID) study is currently underway in a defined area around the Town of Cheswold on behalf of the Town and Kent County. The study will identify the amount of future anticipated development within the TID area. DeIDOT will conduct traffic analysis of intersections on state roads to identify future deficiencies, and improvements to correct those deficiencies will be determined.

#### **SR 15 and SR 42 Intersection Improvement**

This Highway Safety Improvement Project is in DeIDOT's FY 21-26 CTP, with construction anticipated in 2026. The project would improve the intersection of SR 42 (Seven Hickories Road) and SR 15 (Seeneytown Road). Based on a 2013 traffic study, all-way stop control was considered, but freight traffic on SR 42 would be better facilitated with a roundabout. A traffic signal was installed at this intersection in late 2019.

#### **2016 HEP Site F**

SR 42 (Main Street) in Cheswold from US 13 to 0.29 miles west of US 13 was studied under the Hazard Elimination Program in 2016.

## Route 14

DE 14 is a major collector roadway west of US 13 in Harrington and east of Rehoboth Boulevard (Business Route 1) in Milford. Between US 13 and Rehoboth Boulevard, SR 14 is a minor arterial. Truck Route 14 in Harrington is a major collector.

Route 14 continues west into Maryland as MD 317. MD 317 intersects with MD 313 in Oil City. Turning south on MD 313 leads to the MD 404 Denton Bypass which leads to US 50 and the Chesapeake Bay Bridge. The “T” intersection of MD 317 and MD 313 in Oil City is not signalized and does not have turn lanes, but otherwise this route provides a good connection from Kent County to the Bay Bridge.

### **Existing roadway**

DE 14 generally provides two 12-foot travel lanes and 8-foot shoulders. Right turn lanes have been added at several intersecting roadways between the state line and Harrington. Turn lanes have been added at major intersections east of Harrington.

Traffic signals are located at the following intersections:

- US 13 in Harrington
- SR 15 (Canterbury Road)
- US 113 in Milford
- N. Church Street in downtown Milford
- N. Walnut Street in downtown Milford
- N. Washington Street in downtown Milford
- Rehoboth Boulevard in Milford

There is a Fire Signal on SR 14 at Broad Street for the Houston Fire Company.

DE 14 begins at the Maryland border. The road continues west into Maryland as MD 317. From the state line, DE 14 heads east on two-lane undivided Vernon Road, passing through a mix of farmland and woodland with occasional homes and crossing Marshyhope Creek in the community of Vernon. The road curves to the northeast before bending east at the Whiteleysburg Road intersection. The route becomes Walt Messick Road and enters the city of Harrington. DE 14 runs past homes and some businesses before intersecting Truck Route DE 14, which bypasses Harrington to the south. DE 14 intersects US 13 in a commercial area, at which point Truck Route DE 14 returns to the route. US 13 is divided into two one-way roadways at DE 14, with commercial development in the center area between the roadways.

East of US 13, the route leaves Harrington and becomes Milford Harrington Highway, heading through a mix of farms and woods with some residential development and crossing Browns Branch. The road continues east through more rural areas. Farther east, DE 14 bends southeast and intersects DE 15 (Canterbury Road), crossing into the city of Milford. The road enters commercial areas, passing the Milford Solar Farm, a large freezer warehouse, and an industrial park. Left and right turn lanes are provided at Williamsville Road and at the main entrance to the industrial park. At the intersection with US 113, DE 14 is further widened to provide additional turn lanes and receiving lanes. US 113 has double left turn lanes both northbound and southbound at this intersection. East of US 113, DE 14 returns to a two-lane roadway and becomes Northwest Front Street through the downtown of Milford, becoming Northeast Front Street at the intersection with North Walnut Street. DE 14 passes through a commercial retail area with two shopping centers and then comes to an intersection with Rehoboth Boulevard, Business DE 1. East of Rehoboth Boulevard, DE 14 runs through areas of farmland with some commercial development, ending at an interchange with DE 1. At this interchange, access to and from southbound DE 1 is provided by South Silicato Parkway. The DE 14/SR 1 interchange project improved DE 14 with shoulders as far west as Atlantic Concrete. Between Atlantic Concrete and Rehoboth Avenue DE 14 has no shoulders.

The section of the route between Maple Avenue and DE 1 in Milford is designated as part of Delaware’s Bayshore Byway.





*Eastbound SR 14 - NW Front Street in downtown Milford.*



*US Cold Storage entrance on SR 14 west of US 113 in Milford.*





SR 14 eastbound at Canterbury Road.



Westbound SR 14 at US 13 in Harrington. Through trucks must use Truck Route 14 to avoid downtown.

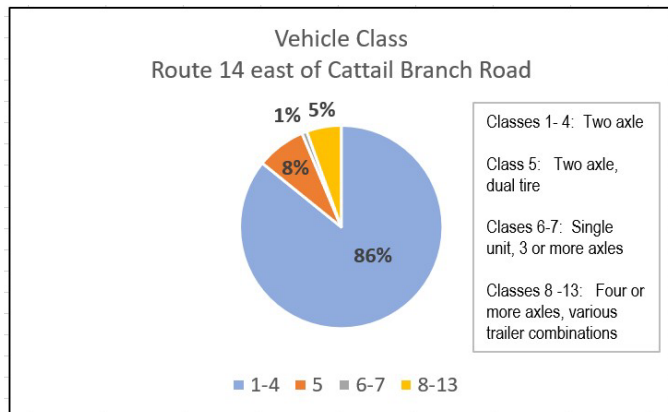
### Route 14 existing traffic/truck volumes

	Route 14 Segment						TRUCK Route 14
	West of Cattail Branch Road count # 10	East of Whiteleysburg Rd, Harrington count #11	East of Route 13, Harrington count #13	West of Route 113 count #14	East of Maple Ave., Milford count #15	West of Rehoboth Blvd. (Bus.1), Milford count #16	Farmington Rd. North of Tower Hill Road, Harrington count #12
ADT	2,884	5,045	8,157	11,878	9,450	6,821	1,485
Truck ADT	409	662	775	1,316	639	674	368
AWDT	2,910	5,217	8,558	12,898	9,976	7,355	1,677
Truck AWDT	477	775	905	1,550	737	789	452

More detail about traffic patterns and vehicle class is provided below.

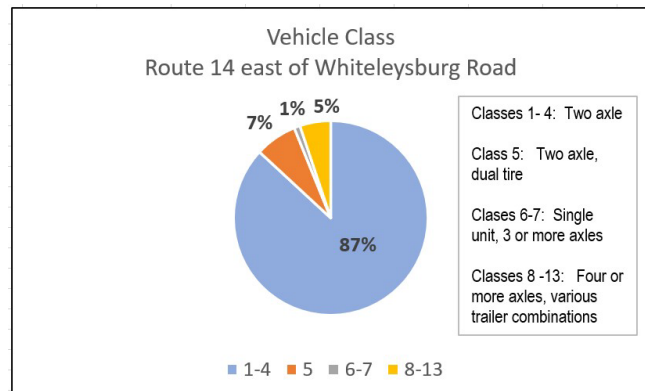
Route 14 volumes east of Cattail Branch Road.

	Volume		
Day of week	Total	Truck	Truck %
Sunday	2,542	185	7.3%
Monday	2,655	430	16.2%
Tuesday	2,674	476	17.8%
Wednesday	2,818	467	16.6%
Thursday	3,005	478	15.9%
Friday	3,400	532	15.6%
Saturday	3,096	295	9.5%
<b>Overall</b>	<b>20,190</b>	<b>2,863</b>	<b>14.2%</b>



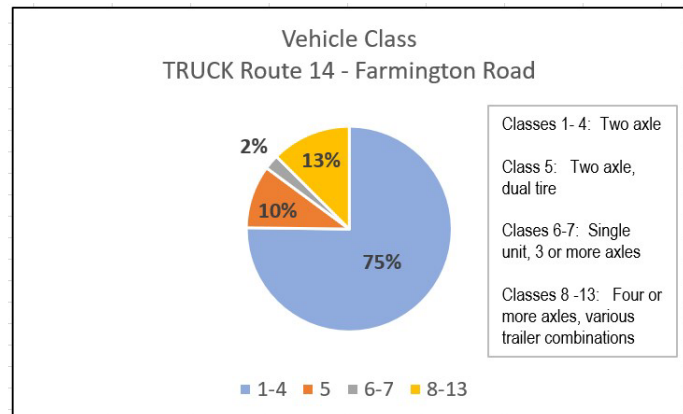
Route 14 volumes east of Whiteleysburg Road.

	Volume		
Day of week	Total	Truck	Truck %
Sunday	4,272	311	7.3%
Monday	4,879	715	14.7%
Tuesday	4,955	810	16.3%
Wednesday	5,030	727	14.5%
Thursday	5,273	776	14.7%
Friday	5,948	846	14.2%
Saturday	4,956	446	9.0%
<b>Overall</b>	<b>35,313</b>	<b>4,631</b>	<b>13.1%</b>



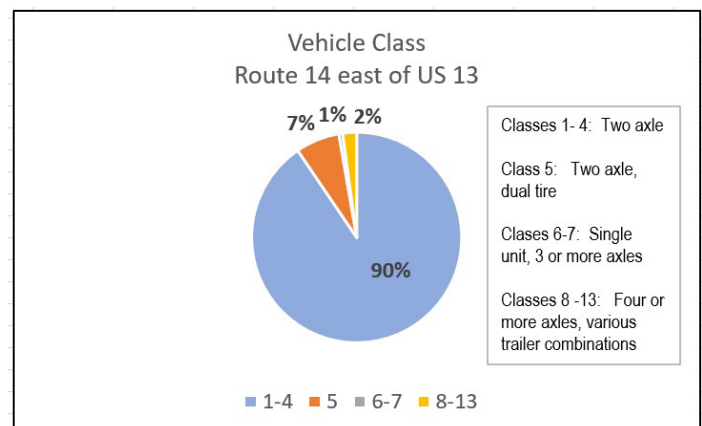
Truck Route 14 Farmington Road volumes.

	Volume		
Day of week	Total	Truck	Truck %
Sunday	924	116	12.6%
Monday	1,586	428	27.0%
Tuesday	1,644	467	28.4%
Wednesday	1,642	445	27.1%
Thursday	1,690	453	26.8%
Friday	1,824	469	25.7%
Saturday	1,082	199	18.4%
<b>Overall</b>	<b>10,392</b>	<b>2,577</b>	<b>24.8%</b>



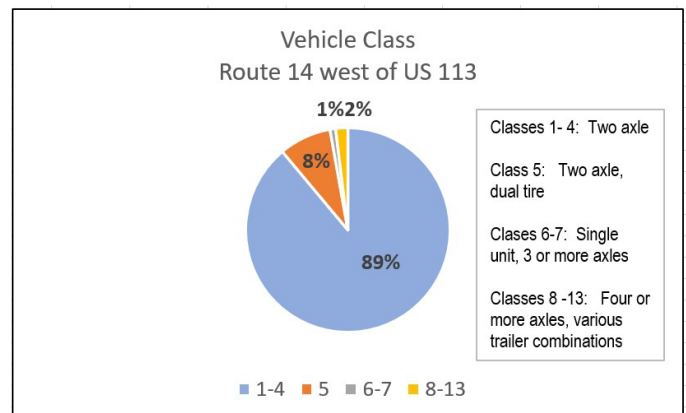
Route 14 volumes east of US 13.

	Volume		
Day of week	Total	Truck	Truck %
Sunday	6,649	372	5.6%
Monday	8,279	890	10.8%
Tuesday	8,041	886	11.0%
Wednesday	8,451	873	10.3%
Thursday	8,654	913	10.6%
Friday	9,365	965	10.3%
Saturday	7,660	524	6.8%
<b>Overall</b>	<b>57,099</b>	<b>5,423</b>	<b>9.5%</b>



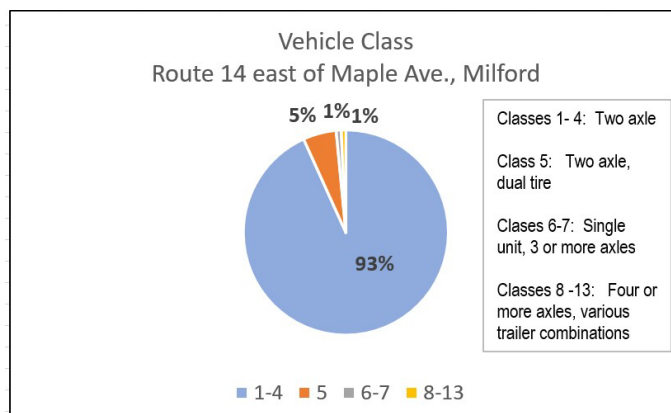
Route 14 volumes west of US 113.

	Volume		
Day of week	Total	Truck	Truck %
Sunday	8,415	592	7.0%
Monday	12,391	1,472	11.9%
Tuesday	12,510	1,543	12.3%
Wednesday	12,824	1,605	12.5%
Thursday	13,231	1,499	11.3%
Friday	13,533	1,629	12.0%
Saturday	10,241	873	8.5%
<b>Overall</b>	<b>83,145</b>	<b>9,213</b>	<b>11.1%</b>



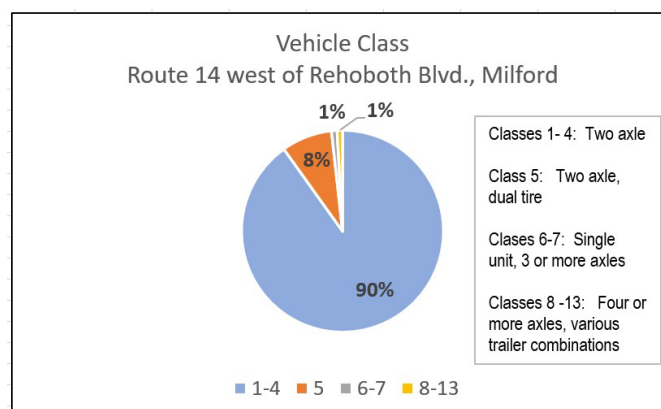
*Route 14 volumes east of Maple Ave., Milford.*

	Volume		
Day of week	Total	Truck	Truck %
Sunday	7,407	357	4.8%
Monday	9,544	727	7.6%
Tuesday	9,629	731	7.6%
Wednesday	9,946	689	6.9%
Thursday	9,931	778	7.8%
Friday	10,831	762	7.0%
Saturday	8,865	429	4.8%
<b>Overall</b>	<b>66,153</b>	<b>4,473</b>	<b>6.8%</b>



*Route 14 volumes west of Rehoboth Blvd., Milford.*

	Volume		
Day of week	Total	Truck	Truck %
Sunday	5,056	353	7.0%
Monday	6,887	776	11.3%
Tuesday	7,022	769	11.0%
Wednesday	7,279	725	10.0%
Thursday	7,523	820	10.9%
Friday	8,066	857	10.6%
Saturday	5,917	415	7.0%
<b>Overall</b>	<b>47,750</b>	<b>4,715</b>	<b>9.9%</b>



**Existing crash history on SR 14**

A five-year crash history was obtained from DelDOT for Route 14 and Truck Route 14 covering the years 2015 – 2019. The area near SR 1 was not included because the grade separated interchange was under construction during this period. The maps below show crash locations and where the number of crashes is highest. There were 729 total crashes in the five-year period on SR 14.

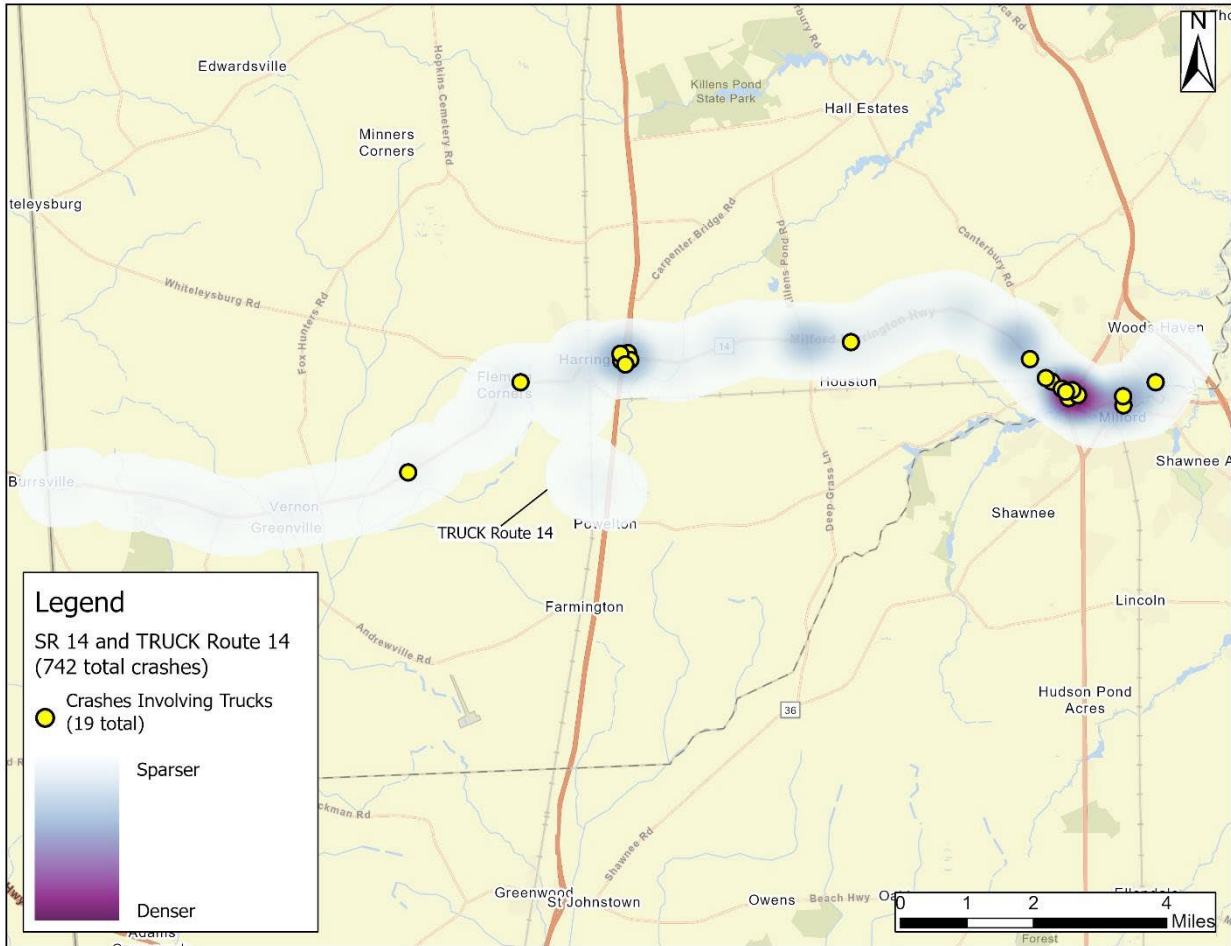
Nineteen of those crashes involved a truck. Fourteen of the 19 truck crashes involved negligent driving by the car or truck operator. Six truck crashes were located west of US 113 in the vicinity of the industrial park and freezer warehouse. Two of those crashes involved a truck needing to stay left to execute a right turn, and during the turn hitting a car travelling on its right. Five truck crashes occurred at the intersection of US 13 and Route 14 in Harrington. One crash in downtown Milford involved a right turning truck taking down a traffic signal pole.



<b>Impact</b>	<b># of Crashes</b>	<b>% of Crashes</b>
Angle	161	22.09%
Front to front	49	6.72%
Front to rear	249	34.16%
Not a collision between two vehicles	157	21.54%
Other	32	4.39%
Rear to side	6	0.82%
Sideswipe, opposite direction	22	3.02%
Sideswipe, same direction	40	5.49%
Unknown	13	1.78%
<b>TOTAL</b>	<b>729</b>	<b>100.00%</b>

On Farmington Road and Tower Road (TRUCK Route 14), there were 13 crashes in the five-year period, of which six were personal injury crashes. There were no fatalities. Seven of the crashes were single vehicle crashes. None of the crashes involved a truck.

As shown in the heat map, the highest concentration of crashes was at US 113, followed by US 13, Milford downtown near N. Walnut Street, Canterbury Road (SR 15), and Killens Pond Road.



Route 14 Crash Density, 2015 -2019.

### **Designated truck routes**

The City of Harrington has a signed TRUCK Route 14 that bypasses the center of town. West of the downtown, TRUCK Route 14 turns south on Farmington Road and passes west of the Delaware State Fairgrounds, then turns east on Tower Hill Road to a “T” intersection with US 13. This intersection is located approximately two miles south of the US 13 intersection with SR 14. The intersection of TRUCK Route 14 and US 13 is improved with left and right turn lanes on Tower Hill Road, a left turn lane on northbound US 13, a right turn lane on southbound US 13, and a channelized median acceleration lane for left turns exiting Tower Hill Road to US 13 north. TRUCK Route 14 ends at the intersection of US 13 and SR 14; trucks east of US 13 follow SR 14. Westbound trucks approaching US 13 on SR 14 are directed to turn south on US 13 to follow the truck route.



*Truck Route 14 intersection improved for truck turns.*

In the City of Milford, there is Truck Route signing for TRUCK EAST DE 14 on eastbound Route 14 approaching US 113. The sign directs trucks to turn north on US 113. However, there is no other truck route signing on US 113 to direct trucks back to DE 14. Many trucks are heading to SR 1, and if the trucks are heading to the north on SR 1, they can reach SR 1 north via a grade separated ramp. If the destination is south on SR 1 however, there is no connection between US 113 north and SR 1 south.



*Truck Route 14 sign on eastbound SR 14 directing trucks to turn north on US 113.*

### **Other studies**

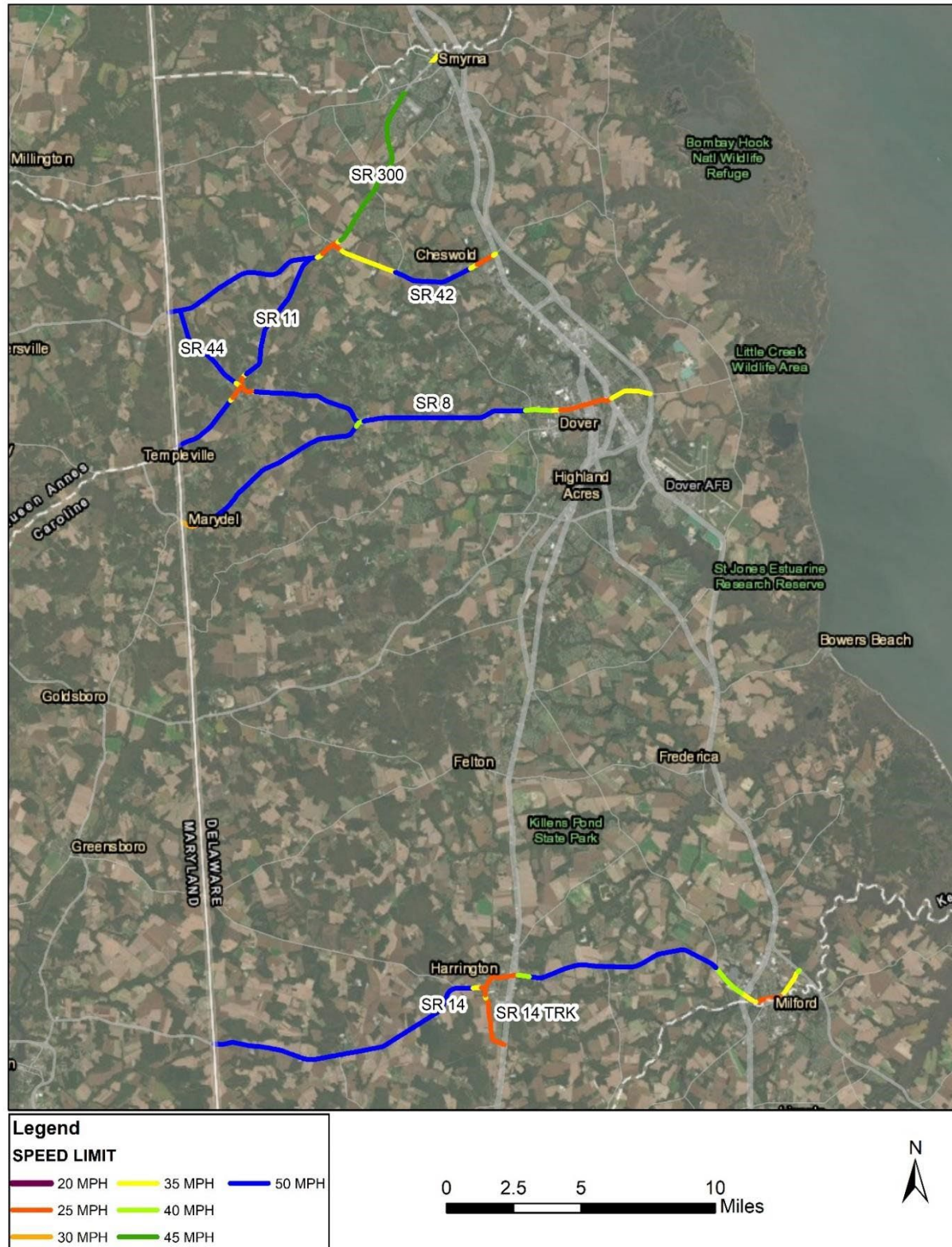
The US 113 North-South Study in the Milford area was aimed at planning for improvements to preserve mobility and access for local residents and businesses and to accommodate economic growth in the Milford area, while also providing improvements to accommodate the anticipated growth in US 113 traffic volumes. Some of the alternatives would provide access between SR 14 and SR 1 South and between SR 14 and industrial areas in southern Milford without trucks going through the downtown (although the improvements would have been in Sussex County). No local consensus was achieved, and DelDOT discontinued the study in 2007.

The City of Harrington Intermodal Freight Terminal Study completed in 2021 provided a plan for an industrial park and a terminal for rail-to-truck freight transfer on 131 acres located south of SR 14 and east of US 13. Development of the site will result in some increase in traffic volume on SR 14 and the site could have an access on SR 14 in the future.

### **Speed Limits and Travel Time Reliability**

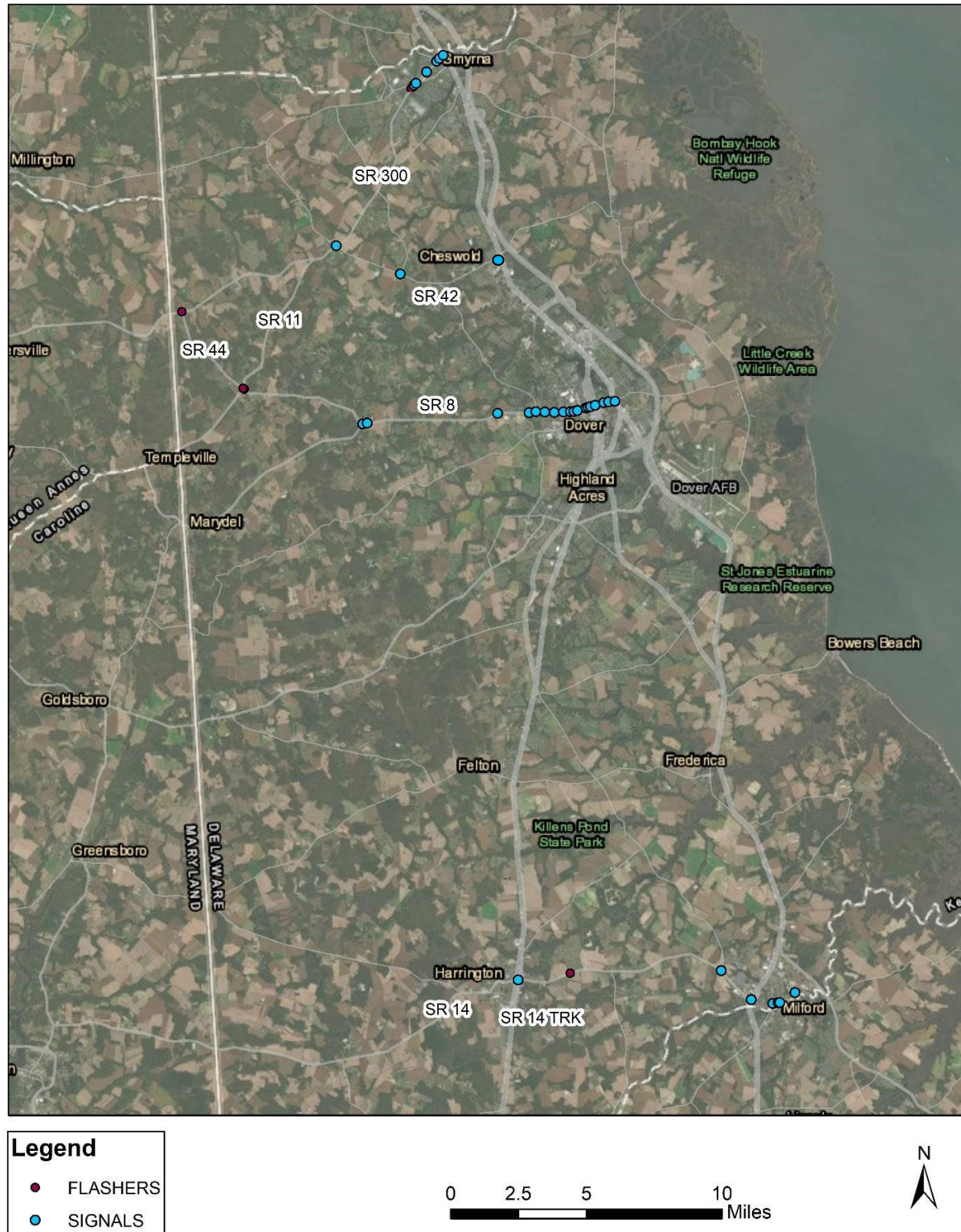
Travel time during uncongested conditions will depend on the speed limit and to some extent the number of traffic signals along the route. The following figures illustrate speed limits and traffic signal locations on the east-west routes. Speed limits west of US 13 are generally 50 mph except within the towns and cities, where speed is reduced to 25 mph. Most of the traffic signals are located at the eastern end of the study area, in Smyrna, Dover, and Milford.





Map depicting speed limits on major east-west routes in Kent County.





Map depicting traffic signal locations in Kent County.

Drivers want to be able to predict how long a trip will take and what time they will arrive at their destination. The notion of “how long does it take me to get there compared to what I expect” is analyzed using the concept of Travel Time Reliability.

The reliability measurement requires large samples of data over extended periods of time. DelDOT’s Integrated Transportation Management System collects this data on an ongoing basis using Bluetooth detectors stationed at strategic points in the roadway network to measure travel times of road segments. Data for 2019 was recently analyzed for the 2020 Kent County Transportation Operations and Management Plan dated April 2021. DelDOT provided the analysis that applies to the east-west routes in this study.

**Travel Time Reliability** relates the worst measured peak travel time to uncongested travel time. The uncongested travel time is the 15<sup>th</sup> percentile travel time, meaning 85% of all measurements were longer. The uncongested travel time measures how quickly a driver could reasonably expect to travel through an area during uncongested conditions. The worst measured travel time was defined as the 95<sup>th</sup> percentile travel time, or the time exceeded by only 5% of measurements. If the 95<sup>th</sup> percentile travel time is less than 50% longer than the uncongested travel time, (or less than 1.5 times the uncongested travel time), the roadway segment is considered to be reliable. If the 95<sup>th</sup> percentile travel time is greater than 1.5 times the uncongested travel time, the roadway segment is considered to be unreliable.

**Travel Time Index** is another measure that gives an idea of typical conditions. Travel Time Index is the ratio between the average travel time and the uncongested travel time.

In the maps there are three segments without measurements:

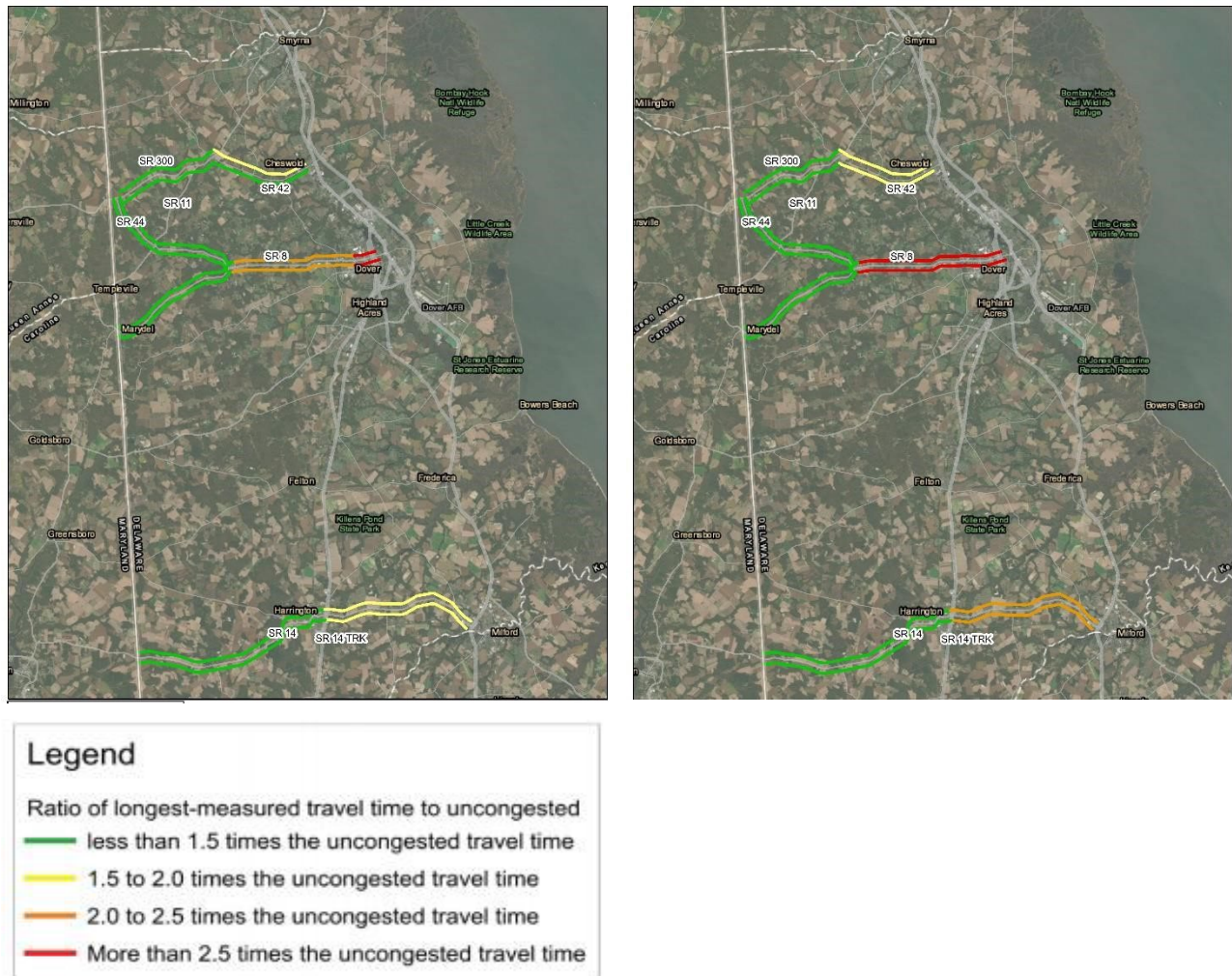
- SR 14 between US 13 and US 113 had several construction projects underway that reduced travel time; therefore, those measurements were not used.
- SR 14 between US 113 and SR 1 in Milford does not have travel time data because the grade separated interchange was under construction in 2019.
- SR 300 between SR 42 and US 13 does not have travel times because in 2019 DelDOT did not have a travel time link configured between the detectors at those locations.

For the segments that were able to obtain data, all had a “typical condition” or Travel Time Index of less than 1.5 in all periods that were examined -- the AM peak period, the PM peak period, and the summer weekend peak period.

The Travel Time Reliability was also less than 1.5 in both directions of all segments except three:

- SR 8 between Saulsbury Road and US 13 had a TTR of more than 2.5 times the uncongested travel time in both directions in all three peak periods. In the PM and Summer weekend peak periods, the TTR was about five times the uncongested travel time.
- SR 8 between SR 44 and Saulsbury Road had a TTR of between 2.0 and 2.5 times the uncongested travel time in both directions in the AM peak, and a TTR of over 2.5 in the PM and Summer weekend peaks.
- SR 42 had a TTR of between 1.5 and 2.0 times the uncongested travel time in the PM peak period only.





Peak hour travel time reliability in Kent County for AM peak hour (l) and PM peak hour (r).

The 2020 Kent County Transportation Operations and Management Plan determined congestion frequency by using both Travel Time Reliability and Travel Time Index.

- If the longest measured **and** average travel times are **both less** than 1.5 times the uncongested travel time, the segment is generally **uncongested**.
- If the longest measured travel time is greater than 1.5 times the uncongested travel time, but the average travel time is less than 1.5 times the uncongested travel time, the segment is considered **occasionally congested**. Average traffic demand is below the roadway capacity, but when congestion occurs it tends to be severe.
- If the longest measured travel time **and** the average travel time are **both greater** than 1.5 times the uncongested travel time, the segment is **frequently congested** and there is severe congestion during peak periods.

Looking at the Travel Time Reliability and Travel Time Index together, most segments of the east-west routes are considered rarely congested. SR 42 is occasionally congested in both directions in the PM peak. SR 8 between SR 44 and US 13 is occasionally congested in both directions in the AM, PM, and summer weekend peak periods.



## Truck Weight Limit and Enforcement

Title 21, section 4502 of the Delaware Code specifies the weight restrictions applicable to all roads in Delaware except the interstate highways. In general, the maximum weight allowed is 80,000 lb. and applies to a combination tractor and semi-trailer having five or more axles. There is an exception that allows 90,000 lb. if the tractor trailer is carrying live poultry less than 150 miles from the plant. Smaller trucks have lower weight limits that depend on the type of truck and number and spacing of axles.

DelDOT has two permanent weigh stations: US 13 at Blackbird in Townsend and on US 301 near the Maryland state line. DelDOT also has four “Virtual” weigh stations which weigh trucks in motion. Virtual enforcement consists of sensors in pavement that obtain vehicle weight and cameras that obtain height, license plate number, and DOT sticker and number. The DOT sticker must be placed at a certain location on the cab. The DOT number is specific to that truck and DelDOT can check the database to see if credentials are valid and check the driver log for that truck.

A virtual station is located on Warwick Road near 301 to catch trucks bypassing tolls. An officer must sit by the side of the road and pursue the truck if the sensors indicate a violation. Other virtual stations are located at the SR 1 North ramp at Smyrna, US 301, and US 13 in Townsend. Virtual weigh stations are calibrated twice a year.

Current permanent and virtual stations are located in New Castle County, and all on north-south routes. DelDOT would like to add another virtual station in Kent County and one in Sussex County.

DelDOT will be adding a thermal brake sensor to US 301. If the sensor reads red, brakes are hot. Trailers have brakes; truck drivers often don’t know the condition of tires and brakes on trailers they are hauling. (A related measure is a tire abnormality sensor, which is done by photo, and can detect if tires are underinflated.)

DelDOT also has portable Weigh in Motion (WIM) scales that State Police can transport and place. The truck driver drives slowly over the scale, stopping to weigh each axle on the scale. All east-west routes in the study are enforced using portable WIM.

There is a special unit of the State Police dedicated to truck weight enforcement. They do Level 1 through Level 4 inspection (physical inspection for tires, brakes, etc.) and driver logs. The State Police provide DelDOT with monthly reports that include WIM totals by month, vehicles weighed, size and weight activity, inspection activity, and DMV contacts and E-tickets.

The most frequently reported violation is 5-axle trucks exceeding 80,000 lb. gross weight. Other frequent violations are axle weight exceeding 22,400 lb. (which is determined by dividing gross weight by number of axles) and trailer combination exceeding 65’ length.

Delaware Regulations most subject to violation on east-west routes are:

- Disregard posted restriction 21-4505
- Gross weight 21-4502c1-6
- Axle weight 21-4502c7
- Bridge weight 21-4503c on the interstate.
- *Note: Police do not enforce bridge weights on east-west routes unless the weight limit is posted on a sign and the truck is observed crossing illegally.*

In Delaware, live haul can be 90,000 lb. gross weight year-round. State Police do enforce all the east-west routes, but there is no way to search violations. They would need to pull all the individual tickets to see if there are any prevalent locations or types of violations. Cell phone use in trucks is restricted, so technically drivers cannot use phone apps that provide routing information. Many companies with their own fleets have navigation software and screens in the truck.



Route 11, posted with a 25-ton weight limit just south of its intersection with SR 300 (l).

SR 300 has a weight limit of 18 tons for two-axle trucks and 28 tons for three-axle trucks. This limit is located at a culvert 800 feet west of the intersection with SR 11 (r).

## Federally Designated Truck Routes

The following language comes from the 2022 Delaware State Freight Plan:

### 3.1.2 National Highway Freight Network (NHFN)

Focusing on the highway system, the FAST Act repealed the former MAP-21 based Primary Freight Network and National Freight Network, replacing it with the NHFN, which has been carried forward for ongoing refinements under the 2021 enactment of the IIJA.<sup>36</sup> The NHFN consists of four subsystems of roadways (detailed in Chapter 3.2) that in Delaware collectively include all of I-95, I-495, and I-295 within state limits; an Intermodal Connector along Terminal Avenue between I-495 and the Port of Wilmington; and a set of Critical Rural Freight Corridor (CRFC) / Critical Urban Freight Corridor (CUFC) routes (initially designated under the 2017 addendum to the 2015 Delaware Freight Plan) that encompass portions of US 9, US 13, US 40, US 113, and US 202, as well as various Delaware State Route (SR) segments along SR 1 and SR 896.

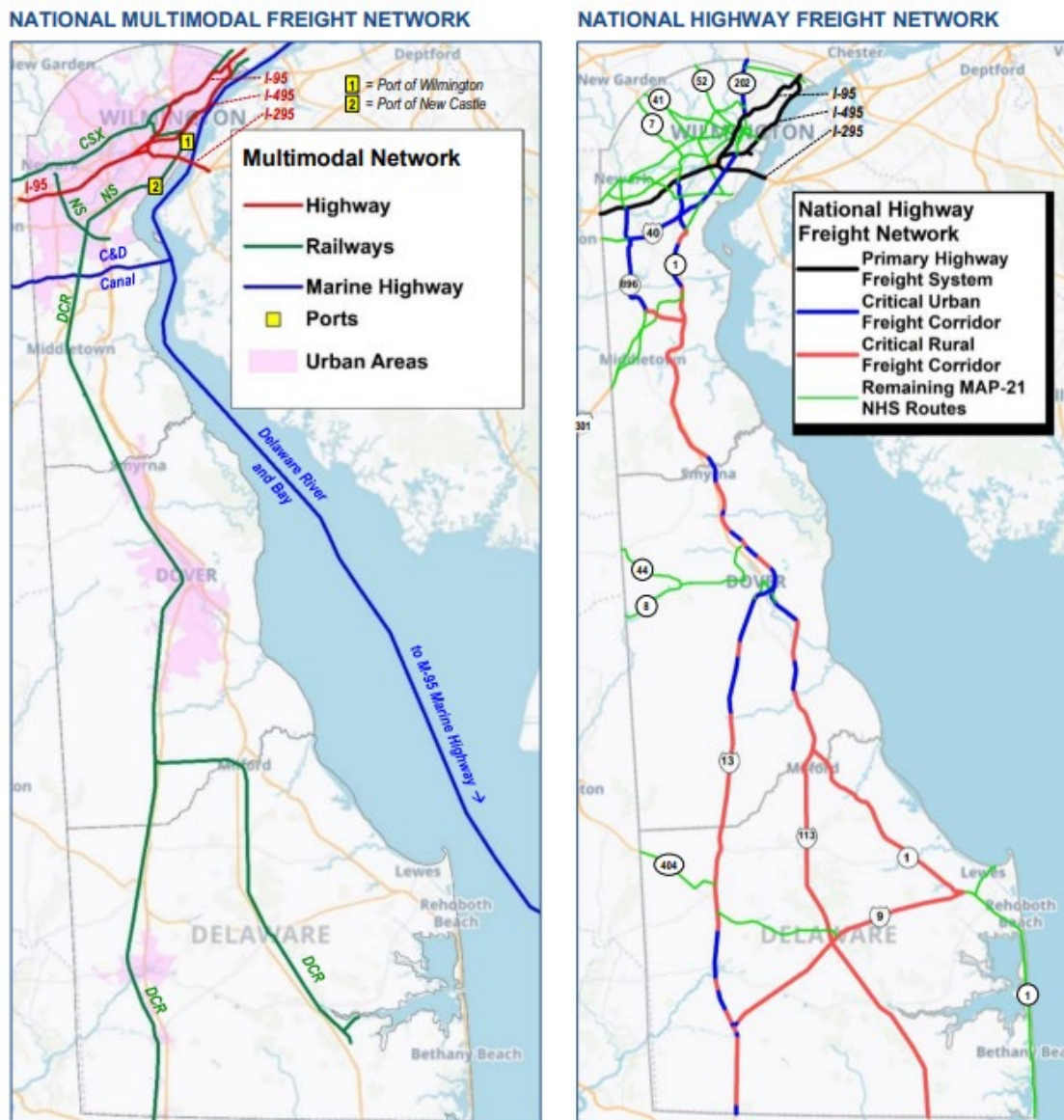
#### 3.2.1 National Highway Freight Network (NHFN) Subsystems

As introduced in Section 3.1, the federally designated NHFN (previous Exhibit 3-1) reflects a portion of the overall highway transportation system that consists of the most significant roadways that freight travels on throughout the state. Route and segment limits for the four subsystems of the NHFN in Delaware are detailed in Appendix C and generally include the following:

- Primary Highway Freight System (PHFS) – is a network of roadways identified by USDOT as the most critical highway portions of the U.S. freight transportation system determined by measurable and objective national data. The PHFS in Delaware includes 41.34 total miles along I-95, I-495, I-295, and the Port of Wilmington/Terminal Avenue intermodal connector (DE2P).
- Non-Interstate PHFS Routes – include, at the national level, any interstate not otherwise captured by way of PHFS designation for inclusion on the NHFN. However, this tier does not apply in Delaware, as all of Delaware's interstate mileage is directly included on the PHFS.
- Critical Urban Freight Corridors (CUFC) – typically include MPO or state designated public roads in urbanized areas that provide connections between the PHFS and the Interstate System, or freight access to intermodal facilities, logistics centers, manufacturing sites, warehouse industrial land, major freight generators, or other important freight needs. Initial designations in 2017 were limited by FAST Act to a mileage cap of 75 total miles, allocated to US 9, US 13, US 40, US 202, SR 1, and SR 896 (per segment details in Appendix C).

- Critical Rural Freight Corridors (CRFC) – typically include state designated public roads in rural areas that carry at least 25% trucks or provide access to significant multimodal freight facilities or production areas, including activities related to agriculture, energy, mining, or other important freight needs. Initial designations in 2017 were limited by FAST Act to a mileage cap of 150 total miles, allocated to US 9, US 13, US 113, SR 1, and SR 896 (per segment details in Appendix C).

Exhibit 3-1: Delaware's Federally Designated Freight Networks <sup>37</sup>











Maps depicting the National Multimodal Freight Network and National Highway Freight Network. Derived from the 2022 Delaware State Freight Plan, pp. 3-1 – 3-3.

## Appendix B – Guide to Traffic-Calming Techniques

The ideal way to remove trucks from downtown areas is to create a full bypass. This benefits the community through a reduction in traffic and pollution, and it benefits the truck drivers through a more feasible route (with fewer obstacles such as stops or narrow turns). However, it is often many years before a long-term solution such as a new bypass can be implemented.

In order to provide mid-term strategies for addressing truck safety, this appendix will include descriptions of some of the available alternatives, as well as an analysis of the pros and cons of each. Note that many of these techniques will not be applicable in every situation, as each has its own advantages and disadvantages. In some instances, a technique will hinder the progress of truck drivers rather than help, or it will negatively impact driving in the community. Therefore, the benefits and drawbacks should be considered extensively before enacting any changes along major routes.

### Quick Guide to Traffic-Calming Techniques

	Traffic-Calming Techniques:
	<b>Stop sign:</b> stops vehicles before passing through busy intersections, which can improve safety conditions; also slows progress of trucks.
	<b>Signage:</b> many different uses, can indicate changes in roadway; too many signs can be a distraction to drivers, or the signs will be ignored.
	<b>Traffic signal:</b> several kinds of lights depending on the need; intersection stoplights will slow the progress of trucks.
	<b>Speed bumps, speed humps, and rumble strips:</b> can slow traffic in areas of overly high speeds; wear down vehicles and can increase noise pollution.
	<b>Closed or partially closed road:</b> can reduce traffic volume in downtown areas; could lead to longer truck routes and increase volume elsewhere.
	<b>Reroute:</b> can reduce traffic volume in downtown areas; could lead to longer truck routes and increase volume elsewhere.
	<b>Median:</b> effective at slowing traffic on certain roads; more of a longer-term solution, not always applicable.
	<b>Roundabout:</b> does not require full stop, shown to reduce accidents; more of a longer-term solution, must be designed to accommodate larger vehicles.



## Detailed Guide to Traffic-Calming Techniques

The following is a description of some of the most common traffic-calming options available for municipalities. Other options have been used effectively in different locations, though not all of them will be discussed here. For more information on traffic-calming techniques, please refer to the [FHWA Course on Bicycle and Pedestrian Transportation](#) (Federal Highway Administration), and [When Main Street is a Highway](#) (Maryland State Highway Administration).

- **Stop sign:** While not a true traffic-calming technique, stop signs are easy to implement and can be effective in the right locations. For example, at a busy intersection that only uses two stop signs, creating a four-way stop would discourage motorists from speeding through the intersection, which could reduce the number of accidents. The major disadvantage to truck drivers is that they are forced to stop, which slows their progress. The effectiveness of stop signs also depends on the obedience of motorists, which means accidents can still take place if somebody is not paying attention or not following the rules of the road. Roundabouts are often shown to reduce crashes more effectively than a four-way stop.
- **Signage:** A wide variety of signs exist to warn motorists of changing roadway conditions. These could include a change in speed limit, an upcoming stop, a dangerous curve, crosswalks, or railroad tracks. Dynamic signs can warn motorists of adverse weather conditions, or a sign equipped with radar technology can tell fast-moving vehicles to slow down. The main drawback of signage is that it can be overwhelming for motorists if too many signs are used. This could either cause drivers to become distracted, or even lead them to ignore the signs completely. While signage is inexpensive and easy to implement, it is not considered a major improvement, and it is no substitute for more “insistent” traffic-calming techniques that cannot be ignored by motorists.
- **Traffic signal:** There are several kinds of traffic signals (also called traffic lights) that may be used depending on the situation. For example, at an intersection where a full stop is desired, a stoplight with rotating signals may be used. At an intersection where vehicles should slow down but not come to a full stop, a flashing yellow light would be more effective. Stoplights in particular would slow the progress of truck drivers, so their impacts should be considered before implementing them on major east-west routes.
- **Speed bumps, speed humps, and rumble strips:** These techniques are slightly different from one another but have similar outcomes. Speed bumps are raised areas in the roadway that are typically three to six inches in height; several of these could be placed in a series. Speed humps are larger, usually being a minimum of four inches in height and extending across the roadway. Rumble strips are grooves in the road that alert drivers of approaching conditions. Each technique will be most effective in slowing driving speeds in specific circumstances. It should be noted that speed bumps and similar techniques can increase the wear on passing vehicles, and the sounds created when passing over them can increase local noise pollution. Other things that must be considered include the proper lighting and marking of speed bumps, as well as the impact on trucks and emergency response vehicles.
- **Closed or partially closed road:** Road closures, either complete or partial, may be used to prevent “cut-through” traffic on a given street or road. This creates safer conditions for pedestrians and bicyclists, and if used effectively, it can reduce unnecessary traffic in downtown areas. However, without proper planning, it could result in longer routes for truck drivers or an increase in traffic elsewhere. Instead of simply closing a road to vehicle traffic, it should first be determined where vehicles will go instead, and if problems will then arise along this new route.
- **Reroute:** Similar to a road closure, a reroute will change the flow of traffic on a given street or road and move vehicles to an already-existing road. This can be done even without a full road closure. Municipalities can work with commercial trucking companies to find the most viable route

for trucks, so that downtown areas are not overcrowded with large vehicles, and truck drivers can avoid challenging turns and narrow streets. The key to this alternative is to ensure truck drivers are not rerouted so far from their destination that it becomes inconvenient for them.

- **Median:** Medians are islands positioned in the center of a roadway, acting as a divider between lanes. By using this technique to narrow the roadway, vehicles are forced to reduce their speed, which makes the overall conditions safer. They can also act as a refuge for pedestrians and bicyclists, especially at crosswalks on busy roads. Medians are not a quick solution, which means they will require planning and consideration of the outcomes before implementation. They can also reduce the space available for street parking or other amenities. Not every road will benefit from a median; its usefulness depends on the road width, number of lanes, average vehicle speed, and other factors. Multi-lane roads will typically benefit the most from the addition of a median. (Reducing the curb radius is a similar strategy that improves pedestrian safety, though it may be more challenging for large trucks to turn successfully.)
- **Roundabout:** A roundabout is a raised island in the center of an intersection that changes traffic flow. Vehicles are no longer required to stop, but instead, they yield to vehicles already in the circle. There are many benefits to adding a roundabout or traffic circle to a busy intersection. If designed properly, the roundabout will improve the movement of traffic and create a more seamless transition through the intersection. It can also be visually appealing if it doubles as landscaping space where trees and other plants can grow. Most importantly, studies have shown that roundabouts can significantly reduce the frequency of accidents. It should be noted that roundabouts are among the more expensive alternatives, and they require more planning than other options. Finally, the needs of the community, truck drivers, emergency responders, and other stakeholders would need to be considered before implementing a roundabout or similar major changes. Factoring in the turn radii of large trucks and emergency response vehicles is important before adding a roundabout to an intersection.



## Appendix C – Other Policies and Strategies

This appendix will describe several steps outside of major road improvements that municipalities, trucking companies, and other stakeholders can take in response to the challenges posed by freight movement. These steps can be planning-oriented (such as by determining municipal truck routes or coordinating with emergency responders), or they can be a physical change (such as speed control measures or an increased use in EV trucks). Many of these measures require coordination between stakeholders, but once established, they would facilitate cooperation and increase the overall preparedness of truck drivers.

### Statewide Database of Truck Restrictions

DelDOT's inventory of statewide truck restrictions is currently underway. From this, a statewide database could be created where all of the information may be accessed. Using this database, DelDOT could then provide the acquired data to companies that offer navigation technology. The ultimate goal of this strategy would be a more thorough navigation system for truck drivers to follow; by doing so, they could avoid streets where large vehicles are restricted, and their journey would have fewer interruptions and safety concerns.

### Speed Control

Speeding is a concentration area for Delaware's Strategic Highway Safety Plan. Within this plan, one of the strategies reads as follows: "Support the enactment of legislation permitting the use of automated speed enforcement in Delaware." A recent example of state legislation addressing vehicle speed is the implementation of speed cameras on I-95 in construction areas; however, this only applies to these specific areas, and they will remain only as long as the construction persists. Otherwise, speed control is largely dependent on police enforcement.

Several measures can be taken at the municipal level to reduce the speed of vehicles temporarily or in the short-term, which will allow for safer passage of trucks at intersections and over railroad crossings. These include radar speed signs, speed bumps, rumble strips, four-way stops, overhead flashing traffic signals, and increased police enforcement. Roundabouts and traffic circles are more long-term solutions, though they would need to be built with the accommodation of large vehicles in mind. Finally, warning gates and lights at railroad crossings can increase the awareness of truck drivers and other motorists when trains are approaching. These measures will not always be applicable to every situation; therefore, it is up to the municipality to decide when they should be used. Some of these "traffic-calming" measures (including speed bumps, road closures, and roundabouts, as well as others) are discussed in detail in Appendix B.

### Information Systems

Crashes and other incidents on roadways can lead to lengthy delays for trucks. To address this problem, DelDOT has investigated the possibility of creating its own system for communicating incidents to drivers. It was determined that the best method would be for DelDOT to be the source of data and transmit it to the numerous navigation system providers. A system such as this could alert truck drivers of crashes or incidents along their route, which would allow them to find alternate routes. This would ultimately reduce travel time and improve overall safety.

### EV Trucks

As of 2022, there is a growing federal and state interest in electric vehicle (EV) use. At the federal level, the Infrastructure Investment and Jobs Act (IIJA), often referred to as the Bipartisan Infrastructure Law, includes funding to improve the nation's EV charging network. This has the potential to make EV more viable in parts of the country that were previously disconnected from the network of charging stations. At the state level, a number of states (including Delaware) are following California's example of reducing emission standards through a focus on EV and other measures. Some of these states, such as New York

and New Jersey, are even requiring that all truck sales become EV by 2045. As a whole, manufacturers are making more EV trucks, and customers are showing interest. Due to the increasing prevalence of EV in all of these sectors, it is likely that EV trucks will become more common in the coming years.

Currently EV trucks are beneficial for day trips, or trips of roughly 150 miles; however, further distances offer challenges when it comes to charging the vehicles. In order to increase the use of EV trucks, charging stations would be needed at easy-to-access locations along major truck routes. In addition, when creating strategies for EV charging, coordination with existing truck parking and permanent weigh stations should be considered for more convenient stops along the route. The increased use of EV trucks would have several long-term local benefits, such as reduced noise and air pollution in communities (especially in areas with a high volume of truck activity), as well as reduced contributions to global greenhouse gas emissions. However, the proper infrastructure must first be built for the trucks to be effective.

## **Municipal Truck Route Planning**

DelDOT is beginning a planning effort in FY 23 to assist municipalities that are updating their comprehensive plan with truck route planning. This effort could be beneficial in several ways. First, it could help in determining preferred routes for trucks. It could determine where it is appropriate to restrict trucks and provide alternate routes to local destinations. The effort could also show where action is needed to mitigate impacts (e.g., speed control, turn restriction, etc.). Finally, it could help in reviewing codes for possible changes to zoning or subdivision/land development regarding planning for trucks. This could have a key role in future development.

The comprehensive plans that come out of this strategy could assist in local freight needs, concerns, and opportunities considering related federal, state, or MPO freight planning trends, strategies, or programs. Freight issues included in the plans could include the following:

- Localized truck routing and guidance.
- Final-mile freight access or freight-intensive development issues.
- Land use planning to manage freight impacts or opportunities.
- E-commerce deliveries and warehouse, distribution center, or fulfillment center planning.
- Localized truck parking, loading, or curb space management.
- Freight influences on incident/emergency service planning.
- Freight environmental impacts and related community or quality of life issues.

## **Coordination with Fire, EMS, and Law Enforcement**

Multiple locations within Kent County include emergency signals, such as the warning lights near the intersection of SR 44 and SR 11 in Hartly. These are used to warn motorists of approaching fire trucks and to allow fire trucks to safely turn through the intersection. However, commercial truck drivers will probably not know of the approaching emergency vehicles until they arrive at the emergency signal. To improve safety conditions, communication between public safety officials and commercial trucking companies could be initiated whenever there is an emergency. This way, truck drivers will know ahead of time whether there are warning lights or approaching emergency responders along their route. The same communication could be used in helping trucks find detours around vehicle accidents on the east-west corridors.



## Appendix D – Municipal Interview Data

The following appendix includes the complete findings from the study's municipal interviews. Findings are separated by municipality, and they include the questions posed to community representatives and the answers they provided. Questions asked included major truck destinations, challenging locations for truck drivers, local issues caused by trucks, and any other thoughts. These findings, in conjunction with other outreach efforts, were used to shape the proposed short-term and long-term alternatives for each major east-west route in Kent County.

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### Cheswold – SR 42

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Sam Callender – Town Administrator

**What are the main destinations for trucks in Cheswold? (Shopping centers, industrial parks, manufacturers, warehouses, food processing etc.)**

- For the most part, SR 42 is used as a through-way for trucks.
- The only destinations would be Family Dollar and Valero gas station.
- There is also a small distribution center on Main St. - Canteen Vending & Coffee Services - trucks can get access no problem.
- Walmart close by has lots of truck traffic, but they all stick to US 13.
  - Most truck traffic coming off US 13 onto SR 42, not so much coming EB into Cheswold.

**Do trucks have difficulty travelling between SR 42 and any of the main destinations? e.g. do they travel on local streets they aren't supposed to, do they have trouble making turn movements at intersections, etc.**

- Not much of a problem.
- There were major intersection improvements at SR 42 and Main St. 5 years ago.
  - Sam thinks it helped a little.
  - Still seeing trucks roll over the curb from time to time when making turns, but that isn't necessarily due to the intersection, probably driver error.

**Are there any particular streets or intersections where trucks are causing a problem? What is the nature of the problem?**

- Cheswold has one main road (SR 42), and when trucks do drive on SR 42, they only have a few destinations that they don't have issues with accessing (Family Dollar, Valero gas station, Canteen Vending & Coffee Services).
- If they have gone down any smaller local roads (Parkers Dr and Strimmel Dr) it's very rare, but still happens.

**Have residents of Cheswold had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

- Residents have complaints about heavy truck traffic causing lots of noise due to concrete plants – Atlantic and Heritage Concrete - at 1AM to 2AM (accessed by Holly Oak Ln off SR 42 and Twin Oaks Rd off US 13).
- Speeding is not a huge issue with trucks, but there have been a few trucks over the years that have been caught speeding.

**Any other comments or issues related to truck traffic from SR 42?**

- More residential communities are being developed along SR 42.
  - No crosswalk striping at intersections, and with kids waiting for school buses and crossing the road can be dangerous with trucks.
  - Cheswold is really trying to develop a safe residential community.
    - SR 42 is counterproductive to developing a more residential community with

the truck traffic from concrete plants close by and operating at early morning hours.

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## Clayton – SR 300

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Alexander Dias – Vice Mayor of Clayton

Chief Carl Hutson – Clayton Police Department

### **What are the main destinations for trucks in Clayton? (Shopping centers, industrial parks, manufacturers, warehouses, food processing etc.)**

- Biggest truck traffic in Clayton is generated by the Walmart distribution center
- Hanover Foods Corporation creates a lot of truck traffic in the summer months due to seasonal produce
- Metal Masters / Eagle Group

### **Do trucks have difficulty travelling between SR 300 and any of the main destinations? e.g. do they travel on local streets they aren't supposed to, do they have trouble making turn movements at intersections, etc.**

- Issues with trucks going to Metal Masters / Eagle Group
  - Coming down Main St and turning down Reed St and Rodney St
- Cable wires are low hanging and have been taken out before by trucks
- Older bridges that are not equipped for truck weights
- Still truckers are going down wrong streets
- Contractor trucks going into Walmart Distribution Center not abiding by rules
  - Waiting to offload at distribution center because Walmart apparently has very small windows when each truck is supposed to arrive
  - These trucks will park overnight at shopping center in Smyrna, which is not allowed, and truckers can be fined for it

### **Are there any particular streets or intersections where trucks are causing a problem? What is the nature of the problem?**

- Main St gets way more truck traffic than it should, mainly due to Metal Masters / Eagle Group
  - Lots of trucks going to Metal Masters / Eagle Group will go on Reed St and Rodney St, which are residential

### **Have residents of Clayton had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

- Lots of complaints about trucks coming down Main St
  - Metal Masters / Eagle Group must be accessed this way
- Lots of noise from trucks in residential areas
- Older houses – residents have complained about foundations being shaken due to trucks travelling on streets
- Speeding is rarely an issue with trucks in Clayton, mostly due to length of streets
- Trucks going down wrong street is main issue

### **Any other comments or issues related to truck traffic from SR 300?**

- Study done by DelDOT last year (RK&K)
  - Unique situation in town with SR 300 and intersection of School Ln and S. Bassett St
    - Trucks must stop at two roadways and railroad crossing, which if there are multiple trucks at once can cause a lot of congestion
    - Also a major accident area
      - 50 accidents within 2 years
        - 33 accidents at School Lane and SR 300
        - 5 at S. Bassett St and SR 300

- 5 at entrance to municipal park
- 43 accidents within less than 2 years
  - These numbers do not include Smyrna's numbers
- Study warrants putting in a travel / bypass lane
- Rail line is Delmarva Central Railroad

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## Dover – SR 8

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Donna Mitchell – City Manager  
Matthew Harline – Assistant City Manager  
Dave Hugg – Economic Development  
Sharon Duca – Public Works Director  
Thomas Johnson – Dover Police Chief

### **What are the main destinations for trucks in Dover? (Shopping centers, industrial parks, manufacturers, warehouses, food processing etc.)**

- West side from Scarborough Rd gets lots of traffic to industrial plants
- Trying to develop east side – New Burton Rd – Future development
- Dave Hugg – 3 levels of truck traffic – Rt 8 – Kraft area gets lots of traffic
  - Not as much on E side – Garrison Oak Park will hopefully be developed for more
  - Rt 1 by DelTech
  - 2nd Level – grocery stores, shops
  - 3rd level – Scarborough Rd connection – potential for truck traffic to move east to west
- Industrial prospect being developed behind Kraft – Cardboard/paper plant
- Lafferty Lane / Garrison Oak Rd second most traffic
- Bike path along 300 has now created a bit of a bottle neck for traffic
- Bottle neck at north st into Dover – ability for trucks to make left- and right-hand turns
- New post office location – North St – has difficulty for trucks making turns – narrowness
- Tom Johnson – Downtown area and oversized vehicles causing issues
- Rt 8 corridor truck traffic could be rerouted – lots of mixed use of transportation that can be dangerous
- Dave to sketch out locations on a map for us
  - Low level of service areas – good starting point to show how congested Rt 8 is over the years

### **Do trucks have difficulty travelling between SR 8 and any of the main destinations? e.g. do they travel on local streets they aren't supposed to, do they have trouble making turn movements at intersections, etc.**

- Street width is an issue – trucks making turns into more downtown
- Older streets are where vehicles are having issues making turns
- Bottle neck in central area
  - Rt 8 corridor study – recommending median barriers – possibly done by MPO
- Trucks in downtown area – North St and Division St are in the code, but not appropriately signed

### **Are there any particular streets or intersections where trucks are causing a problem? What is the nature of the problem?**

- North St
- Any downtown area street

### **Are truck routes clearly signed? Are trucks complying with the designated truck routes?**

- Businesses within city that are off truck routes are still getting trucks to deliver
- Trying to get designated truck traffic to follow truck routes
- Navigation systems factoring in
- Loockerman St and Forest St are not truck routes

- Local deliveries still using these streets
    - Still some truck traffic
- Tom Johnson – Networking to shipping and receiving companies in Dover to address problem of truckers and possibly give them some education / guidance on which routes to use and recommendations
  - Could be a study that comes out of the MPO? – Dave Hugg
  - Dynamic process, things will change, the right person and right contacts – multiple purchasers – used to have open houses with businesses – could work on signage and navigation systems

**Have residents of Dover had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

- Donna – don't experience a lot of problem with truck traffic
  - Temporary events can cause traffic, but nothing lasts
- West side of Dover gets some traffic
- Saulsbury Rd connector by Kraft handles truck traffic well
- 13 corridor has the most truck traffic
  - Signals in succession causes aggressive driving
- Air Force base relies more on Rt 10 connection
- 13 major truck corridor, but North to South
- Not much truck traffic generators outside of town
- Most truck traffic from 8 goes to Scarborough rd, but doesn't cause noticeable problems

**Any other comments or issues related to truck traffic from SR 8?**

- Economic partnership not so much interested in downtown area, but Rt 8 to 301 outside of town. Making sure these connections are properly established
- South Little Creek Rd on Rt 8 – Industrial center
- Should there be some improved connection between rt 8 and hazettville road?
  - Getting to Proctor Gamble / Kraft Heinz
  - Traffic problem at Mifflin Rd?
  - Tom Johnson might be able to get some staff to collect data on truck traffic around this area
- Issue with trucks getting to hospital

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## **Harrington – SR 14**

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Karen Brittingham – Planning Director  
Daniel Tarrt – City Manager  
Norman Barlow – Police Chief

**What are the main destinations for trucks in Harrington? (Shopping centers, industrial parks, manufacturers, warehouses, food processing etc.)**

- One shopping center corner of SR 14 and US 13
  - Focal retail area – strip mall
- In the process of constructing the Harrington Intermodal Facility
  - Will create lots of truck traffic
- Burris/Sysco Logistics causes a lot of truck traffic
- Hudson Farms
- Warehouses on US 13 are now leasing buildings
  - There was a refit for Sharp Energy
    - Creating more truck traffic
- The Delaware State fair creates lots of truck traffic when it is going on
- Casino creates a decent amount of truck traffic
- Local Schools



**Do trucks have difficulty travelling between SR 14 and any of the main destinations? e.g. do they travel on local streets they aren't supposed to, do they have trouble making turn movements at intersections, etc.**

- Yes
  - Making the turn movements at US 13 from SR 14
    - Trucks trying to make left – cannot make turn if someone is at the line in the opposite lane
    - Challenge is making left turn, southbound on US 13 onto SR 14 eastbound
- Trucks are frequently traveling in Harrington where they are not supposed to
- Trucks have trouble making turns at area of Brown St and Reese Ave, both off of SR 14
  - Major problems caused if they miss a turn, as current GPS (which apparently most of the “new” drivers rely on) create more of a problem when it “recalculates.”

**Are there any particular streets or intersections where trucks are causing a problem? What is the nature of the problem?**

- Historical section of downtown has complaints about noise and vibrations from trucks – foundations of old buildings

**Is the desired truck route clearly signed, and do trucks adhere to the SR 14 Truck Route that sends truck traffic south of downtown Harrington?**

- Karen wasn't sure, will follow up with Police Chief

**Have residents of Harrington had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

- Not a lot of room for trucks to speed due to length of streets
- As mentioned above, trucks driving through historical section of Harrington
  - Trucks creating noise and vibrations that shake the foundations of older homes

**Any other comments or issues related to truck traffic from SR 14?**

- How do we plan for more truck traffic? (with completion of Intermodal Facility)
  - Rail spur + industrial park
- How to control weight of trucks through Harrington?
  - Not creating more damage on local streets
    - Possibly a weigh station directly at intermodal facility?
  - How to enforce weight restrictions?
- Rail lines having direct roads off
  - Schiff Farms should be included in conversations
    - Schiff Farms is their own manufacturer
      - Would benefit from having them involved in intermodal study
- SR 14 is limited by right-of-way

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## Hartly – SR 11 and SR 44

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Robert Graves – Public Works Commissioner

**Is any of the truck traffic in Hartly generated by business or industry in the local area? What are those businesses?**

- Always been bad, with no real reason
- Family Dollar is the only local delivery
  - 98% of truck traffic is blowing through the town

- Plenty of truck routes in the area

**Do trucks have difficulty travelling along SR 44 and SR 11 through Hartly? e.g. do they have trouble making turn movements at the intersection of SR 44 and SR 11, do they ever end up using smaller local roads to make turn movements, etc.**

- Small roads with bad shoulders
- Trucks have a hard time on 11 and 44 using this to get to 301

**Have residents of Hartly had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

- Trucks don't abide by speed limits
- 45-50 mph in a 25 zone
- Zero brake down lane in
- No weight limits signs
- One trucks a few years ago was heading WB on 44 and went through a residential

**Any other comments or issues related to truck traffic from SR 44 and SR 11?**

- Hartly should be local deliveries only
- In process of getting their own police force

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## **Kenton – SR 300 and SR 42**

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Paul Cable – Mayor

**Is any of the truck traffic in Kenton generated by business or industry in the local area? What are those businesses?**

- Shureline Industrial Construction
- Neighboring towns Smyrna and Clayton – independent truckers going to Walmart Distribution Center
- Country store gets a lot of truck traffic
  - Truckers mainly driving through and stopping at Country Store

**Do trucks have difficulty travelling along SR 300 and SR 42 through Kenton? e.g. do they have trouble making turn movements at the intersection of SR 300 and SR 42, do they ever end up using smaller local roads to make turn movements, etc.**

- Trouble turning onto SR 42 – coming off SR 300
- Frazier St – limiting trucks – local delivery only

**Are trucks are causing a problem at the intersection of SR 300 and SR 42? What is the nature of the problem?**

- As mentioned above, mostly turning onto SR 42 from SR 300

**Have residents of Kenton had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

- Dump trucks that travel to and from Shureline will line up on Frazier St to use The County Store
- Dump trucks speeding through town
  - One Kenton resident claims roof fell due to volume of dump trucks driving through town
    - Very old home
- Independent truckers driving to Walmart Distribution Center not abiding by weight restrictions through town, but Walmart official trucks will not drive through Kenton
- Noise is biggest issue

- Speed of trucks is a big problem
  - 25 mph is limit – trucks do about 50 mph
  - Police department is part time in Kenton
    - No radar enforcement
      - 6,000 vehicles a day!
      - No support from state police

**Any other comments or issues related to truck traffic from SR 300 and SR 42?**

- Police enforcement could really make a difference with speed and weight enforcement

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**Milford – SR 14**

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Rob Pierce – Planning Director

**What are the main destinations for trucks in Milford? (Shopping centers, industrial parks, manufacturers, warehouses, food processing etc.)**

- Trucks travelling
- MPO has cut Sussex County portion off of study
- Regional truck traffic is a problem because they are just following their GPS
  - Trying to get truck traffic off of SR 14
- Holly Hill Rd on western limits of town
- Baltimore air cooling
  - Coming from port of Baltimore
    - Lots of oversize loads
- Perdue on Rehoboth Blvd
  - Overpass has definitely helped with truck traffic through town
- Seawatch on Rehoboth Blvd (Seafood processor)
  - Mispillion Drawbridge on Rehoboth
    - Just south of 14
      - Doesn't raise very often
- New hospital is a point for trucks
  - Nursing facility
- 84 Lumber
- First State Manufacturers
- Burris Logistics
- Potential Marijuana facility
- Commercial along 113, SR 1 and downtown, but not as much as industrial
- Dentsply

**Do trucks have difficulty travelling between SR 14 and any of the main destinations? e.g. do they travel on local streets they aren't supposed to, do they have trouble making turn movements at intersections, etc.**

- Trucks trying to make maneuvers downtown that they can't do
- Not really ever issues with trucks speeding, but if it does happen it would be on SR 14
- You can't make a left turn at any intersection (whether it's signaled or not)

**Are there any future development areas for which truck access from SR 14 will need to be provided?**

- No – Land use plan is set

- Farm on the west side of town – potential business park
  - If revisited, may need to improve Thompsonville Rd
- One partial east of SR 1 where the new hospital was supposed to go
  - Cedar Neck Rd – not a major road. But if anything developed, roads would need to be updated to accommodate

**Are there any particular streets or intersections where trucks are causing a problem? What is the nature of the problem?**

- Weight limit sign by high school – western part of town
  - Milford put it up
    - Legal?
- Marshall St and McColley Rd outside of town
  - Really wide, but don't have the geometry to handle trucks leaving
- Marshall St up to Lincoln St
- Perdue traffic heads northbound on Rehoboth
  - Lots of bad traffic
- Truck entrance would be located on SR 14 for Perdue
  - Talks with DelDOT
    - Intent would be to line up with Atlantic Concrete
- Rehoboth to 113 is on DelDOT's CTP
  - Road diet and putting in some bike lanes
- Final design – section of Front St – done through DelDOT – did not include the MPO
  - Todd Pryor from DelDOT
  - McCormick & Taylor is consultant
    - Funding comes from TAP (80%) and City (20%)
- Church Hill Rd – potential new industry
- SR 1 south from 113 – there is no way without it being difficult and making lots of turns
  - Or driving right through Milford
- Driving through downtown isn't too bad as long as they aren't trying to make a turn at downtown intersections, except Rehoboth and SR 1

**Is the desired truck route for SR 14 clearly signed?**

- Not aware

**Have residents of Milford had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

**Any other comments or issues related to truck traffic from SR 14?**

- Cold Storage and Perdue depend on each other
- Truck was trying to make a turn – downtown, made a wrong turn, took out traffic signal
- New city manager

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## **Smyrna – SR 300**

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Jeremy Rothwell – Senior Planner

**What are the main destinations for trucks in Smyrna? (Shopping centers, industrial parks, manufacturers, warehouses, food processing etc.)**

- Walmart distribution center, overwhelmingly



- Roughly 1.1 million square footage
- Well over a thousand employees
  - Hundreds of truck drivers working for Walmart
- Smyrna has found they haven't been the easiest group to deal with
  - Mitigating truck/traffic issues has proven difficult with local police
- Duck Creek Business Campus - Not operational yet (located on the north side of town between US 13 and SR 1, roughly 206 acres)
  - Water/sewer and roadway infrastructure was put in last year
  - Will most likely have 4,000 employees with all the different jobs
    - Will generate lots of truck traffic
  - Will have direct access onto US 13 and is roughly ¼ mile from SR 1 interchange
  - Most truck traffic will be going north from DCBC
- 3 shopping centers
- 2 full-service grocery stores
- Metal Masters / Eagle Group – large industrial facility
  - They manufacture restaurant equipment

**Do trucks have difficulty travelling between SR 300 and any of the main destinations? e.g. do they travel on local streets they aren't supposed to, do they have trouble making turn movements at intersections, etc.**

- Yes
  - GPS devices will send trucks down Commerce St or Main St instead of SR 300
  - Making a left onto Carter Rd off US 13
    - There is no signage for trucks down these streets
- Truckers who live in town, have their own trucks parked on side streets
  - Starting and stopping at any time of the night
  - Creating a lot of noise and disrupting residents

**Are there any particular streets or intersections where trucks are causing a problem? What is the nature of the problem?**

- Keeping trucks off Commerce St – Signage would help
- Trucks at SR 300 and Smyrna/Clayton Blvd left hand turns are really tight

**Have residents of Smyrna had issues with truck traffic? e.g. volume of trucks, noise created by trucks, congestion related to truck traffic, trucks following speed limits, etc.**

- Truckers occasionally getting lost and going down side streets
- Trucks getting stuck trying to make turns on small local streets

**Any other comments or issues related to truck traffic from SR 300?**

- Would be interested in knowing volume of trucks going to and from Walmart
  - What their loads are
  - What their issues are
- Signage could be a huge improvement
  - Carter Rd and Commerce St
  - Walmart Distribution Center Signage
    - Walmart demands trucks arrive exactly at assigned time, to the minute
    - Trucks will idle their trucks until their time around town –
      - Owner of Smyrna Mart shopping center
        - 5K fine!
    - Smyrna rest area could be a good truck stop area
      - Again, signage (SR 1)
- Burris Logistics – supplies all of the ACMEs and several other

- Extend Carter Rd to connect to Smyrna Clayton Blvd
- Talk to the Police Chief – Tory
- Meeting with Walmart/Smyrna/Linda Parkowski

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# DOVER/KENT COUNTY MPO

METROPOLITAN PLANNING ORGANIZATION

