ISLE OF WIGHT COUNTY

Countywide Transportation Plan

May, 2011

Prepared by

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Executive Summary

Located at the intersection of the urbanized region of Hampton Roads and rural Southampton and Surry Counties, Isle of Wight County faces a number of transportation challenges. The County must balance the transportation needs of farmers, local residents, commuters, emergency personnel and other users. At the same time there are numerous factors that contribute to the current transportation challenges within the County, including but not limited to commuting patterns, roadway and bridge conditions, and lack of alternative modes of travel. Transportation planning becomes extremely difficult as a result of the above transportation challenges, combined with the current lack of available funding sources.

Figure 1: Isle of Wight Courthouse

Completion of this plan, the 2010 Isle of Wight Countywide Transportation Plan (CTP), is a first step in improving the quality of the transportation network. The CTP is focused on identifying and addressing the challenges associated with capacity on major roadways and intersections within the County. The CTP is designed to identify transportation-related deficiencies for these facilities based on the current and future conditions of the County and identify recommendations and improvements to address these challenges. Recommendations of this plan will address only those roadways and intersections that show need based on the analysis conducted. This plan will not identify specific spot improvements for individual roadways, nor will it identify specific maintenance needs such as resurfacing, bridge improvements or railroad crossings. The key purpose of this document is to identify needed roadway and intersection improvements so the County can make informed decisions regarding the necessary improvements for future development and set-aside and/or request the necessary right of way for these improvements. The final CTP is a component of the County's Comprehensive Plan. The CTP document consists of three sections:

Section I: Background and Existing Resources

While the analysis and recommendations of this plan are focused on congestion at specific major roadways and intersections, Isle of Wight County has numerous transportation resources of varying modes that play a critical role in the existing state of transportation in the County. These modal resources are identified and summarized in this section of the Plan.

Section II: Analysis and Recommendations

Analysis of roadways and intersections for this Plan focused on 10 intersections identified at the beginning of the planning process and on primary and secondary roadways. This section includes an overview of the analysis, identification of problem areas and recommendations for addressing issues.

Section III: Funding & Implementation

This section of the CTP includes a summary of available funding resources and suggestions for implementation of the identified recommendations and furthering multimodal initiatives in the County.

Section I: Background and Existing Resources

Background

The development pattern of Isle of Wight is characteristic of a rural county on the fringe of an expanding metropolitan area. The County's 1991 Comprehensive Plan designated three areas as Development Services Districts (DSDs) strategically located along major corridors in the northern, central and southern parts of the County. Residential and commercial growth is focused to the DSDs in order to protect and preserve the rural character of the County's remaining lands.

Development within the County is concentrated within and around the incorporated towns of Smithfield and Windsor, and east of the City of Franklin in the Jamestown/Camptown community. Outside of these concentrations, development has generally occurred in a scattered fashion along highways throughout the County. The County's transportation system depends heavily on automobile use and has significant morning and afternoon traffic peaks with transit use in the County remaining lower than the national average[1].

The land use patterns and street networks that have developed within the County discourage pedestrian and bicycle transportation. Residential areas have tended to be separated completely from commercial and industrial areas. Further, residential neighborhood streets have often been developed in "pods" that are connected by only one or two street access points to other residential pods and activity areas. These development choices have created a land use pattern that requires long trips between homes and activities—a pattern that makes pedestrian and bicycle trips (as well as automobile trips) inconvenient[2] and results in congestion on the major roadways. The combination of the above factors, along with Countywide commuting patterns, discussed below, suggests a need to increase the capacity of the transportation network, while remaining sensitive to the need for non-motorized transportation and other multimodal options.

Commuting Patterns

Analysis of commuting patterns reveals how the roadways within the County are used, which are used most heavily and can be an indicator of why congestion is occurring in certain areas. Review of commuting patterns can also provide insight into potential new routes, the need for future transit and/or the need for commuter solutions such as carpooling, vanpooling and telecommuting. The following analysis of commute patterns is based on data obtained from the United States Census Bureau.

Figure 2 shows the commuter mode split for Isle of Wight County. According to the 2000 Census, 85 percent of workers in Isle of Wight drove alone to work; an additional 11 percent carpooled, and 3 percent worked at home. The 2000 Census data shows that over 50 percent of workers in Isle of Wight have a commute trip that exceeds 30 minutes, compared to the entire Hampton Roads region where slightly over 30 percent of workers have a commute trip that exceeds 30 minutes. In sum, most Isle of Wight residents are driving outside the County for employment, are driving alone to reach their destination, and have a longer commute time, on average, than the rest of the region.

[1] Isle of Wight Comprehensive Plan, 2008
[2] Isle of Wight County Pedestrian and Bicycle Facilities Master Plan Update, 2009

The 2000 Census revealed that of the 13,138 workers in Isle of Wight, approximately 28 percent of those workers are employed within the County. The remaining 72 percent of County workers commute outside the County boundaries to reach their work destination. Of the 3,655 workers that stay in Isle of Wight County, 2,486 work within 2 miles of the town center of Smithfield. Of the 9,483 workers that commute outside the County nearly 45 percent, 4,148, must cross the James River to reach their destination of Newport News, Hampton, Williamsburg, York County, James City County or the City of Poquoson. An additional 4,010 workers (over 40 percent) travel south-east to Suffolk, Portsmouth, Norfolk, Chesapeake, or Virginia Beach. Newport News is the largest employment center for Isle of Wight workers based on this analysis. Figure 3 illustrates the destination of Isle of Wight County commuters throughout the region.

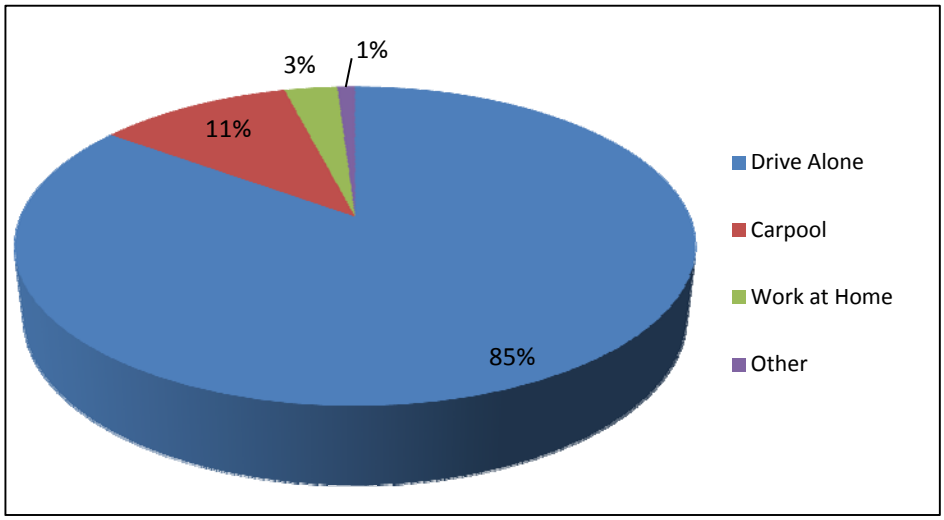


Figure 2: Commuter Mode Split for County residents

Evacuation Routes

In addition to major commuter routes, several of the major roadways in the County serve as regional evacuation routes, specifically Routes 10, 17, 58, 258, and 460. Feedback from stakeholder and public meetings focused on flooding issues with Routes 10, 17 and 460, each an identified evacuation route. Routes 10, 258 and 460 have been identified for use during large-scale evacuations; however, their reliability to accommodate traffic in certain weather-related events can be difficult due to flooding. Past experience has shown Route 460 and the southern portion of Route 258 to become impassable during periods of heavy rain.

Several entities oversee evacuation and emergency planning on a state and regional level, each preparing their own specific plans to address the topic. The Virginia Department of Emergency Management (VDEM) and Virginia Department of Transportation (VDOT) have created an evacuation plan for most communities in Hampton Roads. The plan requires that, upon notification to evacuate, residents in southern Hampton Roads are to use the designated evacuation routes, including several routes through Isle of Wight County: Routes 17, 460, 258, 58 and Route 10.

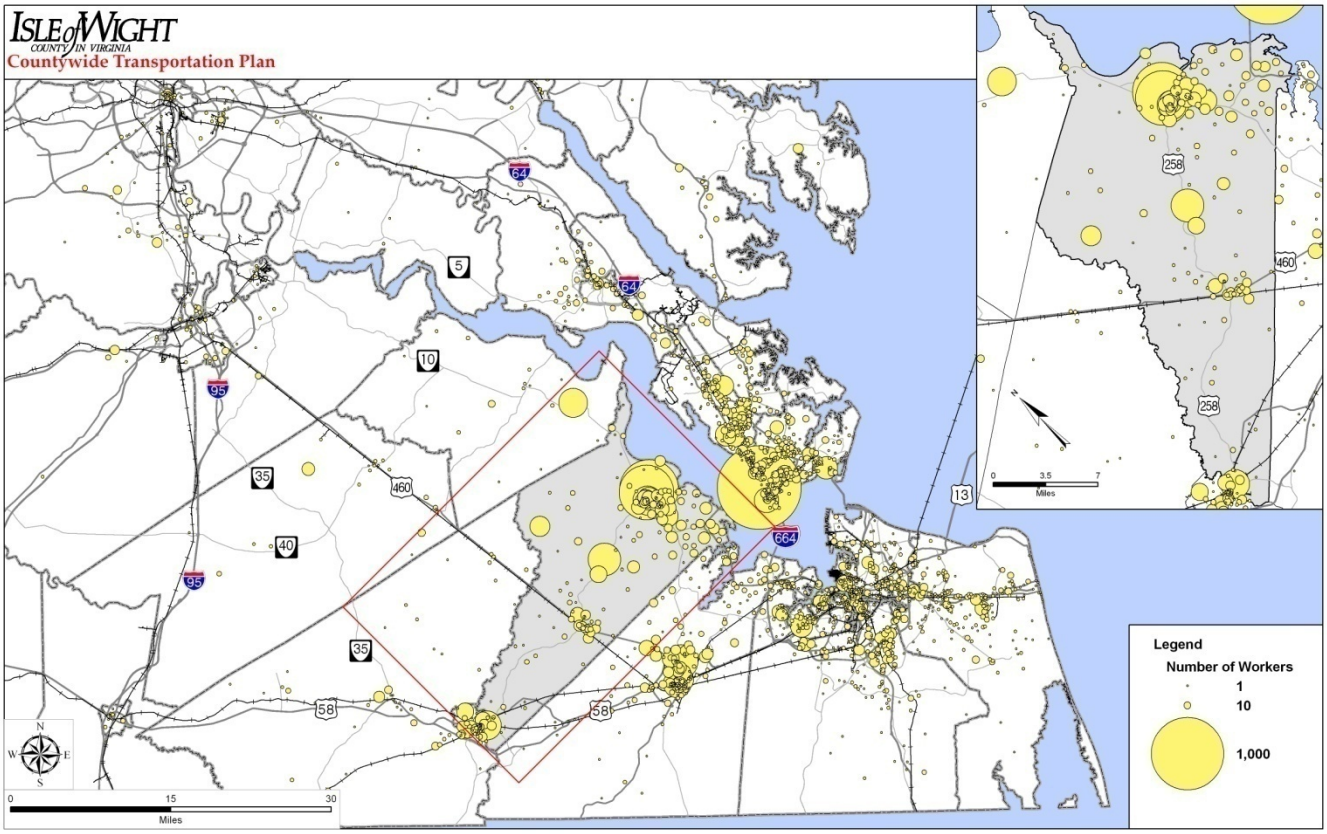


Figure 3: Destination of Isle of Wight Workers

Currently, Isle of Wight County residents are not included in the Hampton Roads Evacuation Plan because the County is not deemed to be at high risk for a direct hurricane hit. The state's evacuation plan requires that hundreds of thousands of Hampton Roads residents evacuate through Isle of Wight County. In the event of an evacuation, officials are concerned about the impact this will have on the County during a disaster and question the adequacy of the evacuation routes within Isle of Wight. Adopted in 2006, the Isle of Wight County Hazard Mitigation Plan addresses concerns regarding the identified evacuation roadways and their ability to accommodate mass evacuations[3].

The recommendations of the CTP do not specifically address evacuation. Some of the recommendations are identified for routes and areas where flooding has occurred in the past, and recommendations have been cross-referenced to available data on past events. A map of past flooding locations, County floodplains and proposed recommendations is included in the Appendix. However, this plan did not include the level of detailed analysis needed to address evacuation specific issues and recommendations.

Existing Resources & Infrastructure

Transit, commuter services and non-motorized transportation are all important components of a multimodal transportation system. Alternative modes of transportation help reduce traffic congestion and pollution and assist the region in meeting Clean Air Act requirements. When transportation costs such as fuel or tolls increase, transit, ridesharing, bicycle and pedestrian transportation alternatives provide an effective means for residents to manage

[3] Isle of Wight County Comprehensive Plan, 2008

those costs. Due to the rural landscape and the diverse destinations of Isle of Wight workers, alternative transportation infrastructure is limited. For reference, a summary of the County's transit, Park and Ride, bicycle and pedestrian, rail, airport, small bridge, and rural road resources is provided on the following pages.

Transit

Transit use in Isle of Wight County remains lower than the national average[4]. The only regional transit route that serves Isle of Wight residents is Hampton Roads Transit (HRT) Route 64, which connects from the packing plants in Smithfield to the shipyard in Newport News via the James River Bridge. Route 64 is a limited service commuter route with three trips in the morning and three in the evening. One-way trips take over an hour.

Local transit service is provided by *I-Ride,* which is run by Senior Services of Southeastern Virginia, a private, not for profit, organization. I-Ride operates along three routes: in and around Smithfield; in and around the City of Franklin; and in Southampton County between Courtland and Franklin. Although I-Ride targets its services towards seniors and the disabled, all county residents can utilize its services.

Year 2000 Census data shows that over 1,500 commuters regularly utilize carpools, compared to 13 residents that use transit service. Carpools and vanpools are coordinated by a division of HRT called TRAFFIX, a public service designed to promote transportation alternatives. For example, TRAFFIX promotes transit use by offering employers pre-tax vouchers that employees can use toward HRT bus service. TRAFFIX also provides services to encourage carpooling and vanpooling by linking interested commuters with others to form new or join existing carpools and vanpools.

If transit is to become a viable alternative travel mode in Isle of Wight County, the land use plan will need to establish areas along major transportation corridors at high enough residential and employment densities to support such service[5]. Minimum densities of 4-7 dwelling units per acre are typically needed to support bus transit service. Sufficient demand at County Park and Ride lots could also warrant the future addition of commuter bus service.

Park and Ride Lots

Park and Ride lots provide space for commuters to park their cars for the day to either join others in a carpool or to use public transportation that originates from the lot. There are two VDOT Park and Ride lots in Isle of Wight County, one located at the intersection of Smith's Neck Road (Route 669) and Carrollton Boulevard (Route 17) that includes 50 spaces. The other lot is located in the Town of Smithfield at the intersection of Routes 10 and 258 (West Main Street) and contains approximately 66 marked spaces.

According to VDOT, there are no immediate plans to expand/improve the lots or add any new facilities in the County. The 2035 Virginia Surface Transportation Plan mentions an expanded lot in Smithfield; however, VDOT will conduct a statewide Park and Ride lot study in 2010 to update the inventory and its recommendations.

Bicycle & Pedestrian

The major thoroughfares in Isle of Wight County, in particular, Routes 17, 258, 460, Route 10 Bypass, and Route 10/32 Benns Church Boulevard are barriers to both pedestrian and bicycle crossings. Many sections of these roadways have two lanes in each direction and serve high volumes of high-speed traffic. There are currently no

[4] Ibid
[5] Isle of Wight County Comprehensive Plan, 2008

pedestrian signals in Isle of Wight County. In addition, many existing intersections with traffic signals are also difficult for pedestrians to cross because there are no marked crosswalks, no median refuge areas, and are poorly lit at night. Simply providing traffic signals at complex intersections does not accommodate pedestrians safely.

In order to address many of these deficiencies, the Isle of Wight County Board of Supervisors adopted the Pedestrian and Bicycle Facilities Master Plan Update in 2009. The Plan emphasizes connectivity within the County; identifies existing opportunities for bicycle and pedestrian travel within Isle of Wight; and provides a master plan of recommended routes that will enable and encourage citizens to travel, within the County, between recreation facilities, residential areas, public areas and commercial entities, by pedestrian travel or bicycle[6].

In addition to the 2009 County Pedestrian and Bicycle Facilities Master Plan Update, the VDOT Policy for Integrating Bicycle and Pedestrian Accommodations provides that VDOT will initiate all highway construction projects with the presumption that the projects shall accommodate bicycling and walking[7].

All CTP recommendations identified in Section II have been cross-referenced with the recommendations of the 2009 Pedestrian and Bicycle Facilities Master Plan Update. Projects that include or are located in proximity to a proposed recommendation of the Bicycle Facilities Master Plan Update are indicated on Table 2: Roadway Segment Recommendations. All roadway improvements pursued by the County should conform to the VDOT policy as they move forward.

Rail

Passenger Rail

While no passenger rail stops currently exist in Isle of Wight County, study is underway for the expansion of this service along Route 460 and to improve the existing Amtrak Corridor from Richmond to Williamsburg to Newport News along I-64. Passenger rail service is currently provided to the region by Amtrak stations in Newport News and Williamsburg. Passenger travel to and from these stations is up 20 percent since 2007.

In February 2010, based on the evaluation and public comments received, the Commonwealth Transportation Board (CTB) selected an alternative for enhanced passenger rail service between Richmond and Hampton Roads that serves both the Peninsula and the Southside (traveling through Isle of Wight parallel to Route 460), with three daily round trips on the Peninsula and six daily round trips on the Southside. In the selected alternative the Peninsula service would remain the same, with three 79 mph maximum speed daily round trips between Newport News and Richmond serving the Newport News Amtrak Station, Williamsburg Station and Richmond Main Street Station. The Southside service would include six daily round trips operating at speeds of 90 mph or 110 mph between Downtown Norfolk, Chesapeake (Bower's Hill Station), Petersburg and Richmond Main Street Station.[8] The Department of Rail and Public Transit (DRPT) will complete the Tier I Final Environmental Impact Statement (FEIS) document in order to achieve a federal Record of Decision (ROD) later this year. The ROD will determine the next steps in the federal review process.[9]

As this project proceeds through the planning process, the County should coordinate closely with the DRPT and regional entities to ensure they are included in the planning process and can capitalize on expanded rail service to the greatest extent possible.

[6] Ibid
[7] Policy for Integrating Bicycle and Pedestrian Accommodations, Virginia Department of Transportation
[8] Virginia Department of Rail and Public Transportation. http://www.drpt.virginia.gov/projects/hamptonpassenger.aspx
[9] Richmond/Hampton Roads Passenger Rail Project. http://www.rich2hrrail.info/

Freight Rail

A Norfolk Southern freight line (Heartland Corridor) runs through the center of the County parallel to Route 460. In addition, a Norfolk Southern Line and CSX freight line (Coal Corridor) travel through the southern portion of the County. Both of these rail lines include a multitude of at-grade railway/roadway crossings. The CSX line crosses Route 58 and Route 258 near the City of Franklin, while the Route 460 line crosses Route 258.[10] The impact of these crossings on the County's transportation network is dependent upon the frequency of rail traffic and the time of day the crossings occur.

Intermodal developments such as the Shirley T. Holland Intermodal Park on Route 460 (Windsor Boulevard) will increase the activity of rail related freight along with increased truck traffic on major roadways such as Route 460. These increases could result in greater stacking, delays and safety issues at these crossings. A comprehensive inventory and study of all rail crossings in the County and identification of improvement alternatives should be conducted in the near future as a precautionary measure.

Airports

One municipal airport and two regional international airports serve the County. Norfolk International Airport, approximately 40 miles from the County, offers 80 daily departures via 10 airlines. Newport News/Williamsburg International Airport, located on the Peninsula and approximately 25 miles from the County, offers approximately 31 daily departures via four airlines. Both airports handle air freight traffic. The John Beverly Rose Airport, also known as Franklin Municipal Airport, is a general aviation airport located in Isle of Wight and owned by the City of Franklin. This airport has a 4,977 foot paved, lighted runway, three T-hangars that can accommodate 22 small aircraft and four large aircraft hangars with a total of 56,000 square feet of storage space.

Small Bridges

The topography and location of Isle of Wight County makes bridges, in particular small bridges, a prominent part of its transportation infrastructure. Small bridges particularly play a critical role along primary and secondary roadways. The Hampton Roads Metropolitan Planning Organization (MPO) completed the Hampton Roads Regional Bridge Study in 2008 to assess various issues regarding bridges in the Hampton Roads Region. This study identifies 84 bridges that were constructed in Isle of Wight up to the year 2007. Of the 84 bridges in use in 2007, the median age was 38 years old. Six were identified as structurally deficient, defined as "a structure with elements that need to be monitored and /or repaired," according to the Bridge Report. Structurally deficient is not necessarily unsafe. In many cases, posted weight limits ensure that the bridge can remain safely in service. Two bridges are functionally obsolete, defined as "a structure that was built to standards that are no longer used today." They are not inherently unsafe, but may lack adequate lane width, shoulder width or vertical clearances to serve current traffic volumes or to meet geometric standards, according to the Bridge Report.

Rural Roads

Isle of Wight maintains a list of unpaved state-maintained roads for which residents have requested paving. As funding permits, unpaved roads are moved from the list to the Secondary Six-Year Plan (SSYIP) for paving. There are 15 unpaved roads on the County's list, including 3 on the current SSYIP. This backlog of unpaved roadways, if paved, could complement existing secondary roadways. At the same time these roadways represent a unique characteristic

[10] Page 26, Statewide Rail Plan of Virginia, 2008

of rural counties, which is realized in VDOT's Rural Rustic Road Program. This program applies to any unpaved secondary road that carries at least 50 but no more than 1,000 vehicles per day, with minimal anticipated growth. The engineering standards in this program are designed to preserve the significant historic and environmental features of these low volume roadways, while limiting impacts to the right of way of the existing roads. The following VDOT guidelines apply to the Rural Rustic Road Program:

- Roadways must be unpaved and already within the State Secondary System.
- Roadways must be a priority (line item) in an approved Secondary Six-Year Plan, even if the funding source is not from normal, secondary construction allocations.
- The Board of Supervisors, in consultation with VDOT's Resident Engineer or designee, must designate by a specific resolution a road or road segment as a Rural Rustic Road.
- Roadway or roadway section must be predominately for local traffic use.
- The local nature of the road means that motorists using the road have traveled it before and are familiar with its features.
- The Board of Supervisors will endeavor to limit growth on roads improved under the Rural Rustic Road Program and cooperate with VDOT through its comprehensive planning process to develop lands consistent with Rural Rustic Road concepts.

The County's unpaved road candidate list is included in the Appendices.

Section II: Analysis and Recommendations

This section of the CTP focuses on analysis of the County roadways and 10 critical intersections. Analysis was conducted to determine the existing and future condition of these facilities. Analysis and identification of needs for the Countywide Transportation Plan consisted of four major components: public and stakeholder involvement; existing conditions analysis; future conditions projections and analysis; and safety analysis. The findings of these analyses resulted in the development of recommendations to address identified deficiencies. Each of these components and the corresponding findings of the analysis are discussed on the following pages.

Public and Stakeholder Involvement

Providing opportunity for public and stakeholder involvement is a critical component of the transportation planning process. The CTP process was designed to include three avenues for members of the public to participate and provide input: the CTP website, stakeholder interviews, and public meetings and hearings.

Countywide Transportation Plan Website

A website for the CTP was developed and hosted on the County website. The website provided general information regarding the CTP process and a frequently asked questions section. A comment form was provided on the website so members of the public could submit comments regarding the CTP online. In addition, draft documents and maps were posted to the site for review and reference. As of January 2010 the CTP website had logged 4,224 visitors. In twelve months, three public comments were received.

Figure 4: Isle of Wight CTP Website

Stakeholder Interviews

A series of stakeholder group interview sessions were held in October and November of 2008. Participating stakeholders were identified in coordination with County Staff. Ten stakeholder meetings were held over a period of two days with over 40 stakeholders participating. During the stakeholder meetings, individuals had the opportunity to identify specific issues and concerns on maps of the County and openly discuss questions and concerns. Feedback received during the stakeholder meetings was reviewed and used as a guide in identifying areas of focus for the CTP. Common themes that emerged from the meetings included:

- Infrastructure on the secondary roads cannot accommodate traffic demand;
- Several roadways throughout the region have flooding issues, such as route 10 and 258;
- Area growth has exceeded infrastructure capacity;
- Multimodal improvements are one way to combat the infrastructure problem;
- Creating a network of connectivity between local neighborhoods and commercial districts would benefit the mobility of the entire area and support businesses.

Public Meetings and Hearings

The first public meeting for the CTP was held August 12, 2009 from 6:00 to 8:00 p.m. This meeting was an open house format and provided participants an opportunity to view maps and output of the existing conditions analysis, projected future conditions, and to identify specific challenges and opportunities important to them. The meeting set-up included three stations which addressed each of these areas of information.

Figure 5: Isle of Wight CTP Public Meeting

Representatives from the County and the consultant team were available to answer questions and collect feedback from participants. Participants were asked to identify specific sites of concern and discuss needs via comment form and/or by recording their thoughts on maps and flip charts. All feedback from the public was considered when defining the multimodal transportation needs and developing the CTP recommendations. A log of all public and stakeholder feedback and a summary map of stakeholder interview feedback are included in the Appendices.

Existing & Future Conditions Analysis

Existing conditions data for roadways and intersections was collected from the VDOT, County staff, through field observation and review of recent traffic studies for proposed development. Data and information reviewed included VDOT historic Average Annual Daily Traffic (AADT) data, data and analysis of recent plans and studies[11], and crash data from VDOT's Highway Traffic Records Information System (HTRIS). Capacity analysis for roadways and intersections was conducted during this step and existing Level of Service (LOS) was determined to characterize the performance of the transportation system. Particular attention was paid to the capacities of Routes 10, 17, 58, 258 and 460 due to the importance of these facilities in providing circulation within and through the County.

The year 2035 was chosen as a target year for projections because 25 years is the standard timeframe used for transportation planning. Future conditions for the Year 2035 were developed by forecasting traffic volumes based on annual growth rates and analyzing the resulting performance of the roadways and intersections. Roadway growth rates from VDOT's Statewide Planning System (SPS) database were utilized as a baseline for County growth rates. The VDOT rates were then reviewed in relation to historic growth on each of the roadways and expected future land use. Roadways within the County's DSDs were looked at carefully to determine if VDOT growth rates needed to be adjusted based on anticipated and approved development in these areas. The identified growth rates were reviewed for appropriateness and verified by VDOT and County staff to ensure that growth rates accurately reflected anticipated future land use and development. A complete listing of the growth rates for each roadway can be found in the Appendices. The analysis assumes no new roadway improvements will be completed in the County between now and 2035 other than those already planned and programmed through VDOT's Primary Six-year Improvement Program.

[11] A complete listing of all reports and plans reviewed is included in the Appendices

Intersections

Intersections: Existing LOS

The following 10 intersections were identified for analysis based on feedback from stakeholder meetings and coordination with County and VDOT staff. (These intersections will be referred to by their number from this point forward).

1. Route 460 (Windsor Boulevard) and Route 258 (Prince Street)
2. Route 610 (Court Street)/Route 603 (South Church Street)
3. Route 460 (Windsor Boulevard) and Route 607 (Old Mill Road)
4. Route 10 Bypass and Route 666 (Berry Hill Road)
5. Route10 Bypass /258 and Route 258 (Main Street)
6. Route 10 (Benns Church Boulevard) and Route 10 Bus. (S. Church Street)
7. Route 10 (Benns Church Boulevard) and Route 258 (Brewer's Neck Boulevard)
8. Route 704 (Battery Park Rd.) and Route 669 (Nike Park Road)
9. Route 17 (Carrollton Boulevard) and Route 669 (Smiths Neck Road)
10. Route 17 (Carrollton Boulevard) and Route 258 (Brewer's Neck Boulevard)

The following data items were used to assess existing conditions for the above intersections:

- Turn movement count data for the above intersections was obtained from Isle of Wight County and VDOT. This data was collected from previous studies or where recent intersection counts have been conducted.
- Turning movement counts were conducted by VDOT for intersections where data was not available. 12-hour turning movement counts were conducted from 7:00 a.m. to 7:00 p.m. AM and PM peak hours were determined for each intersection based on this data.
- Traffic signal timings were also obtained from VDOT. This data was used in the analysis to reflect the actual signal timings that are currently running.

Using the above mentioned data, AM and PM peak hour traffic volumes were developed for the intersections. These peak hour volumes were determined by identifying the four consecutive 15-min count periods (during the time period that counts were taken) with the highest traffic volume. Capacity analysis of the existing conditions at each of the 10 intersections was then conducted using Highway Capacity Software (HCS+). The resulting key outputs are LOS and delay for each intersection.

Six of the ten analyzed intersections are currently experiencing poor levels of service (LOS E or worse) in either the AM or PM peak hour. Without improvements to these intersections, they will continue to worsen as traffic volumes increase in the future.

Intersections: Future Year Level of Service

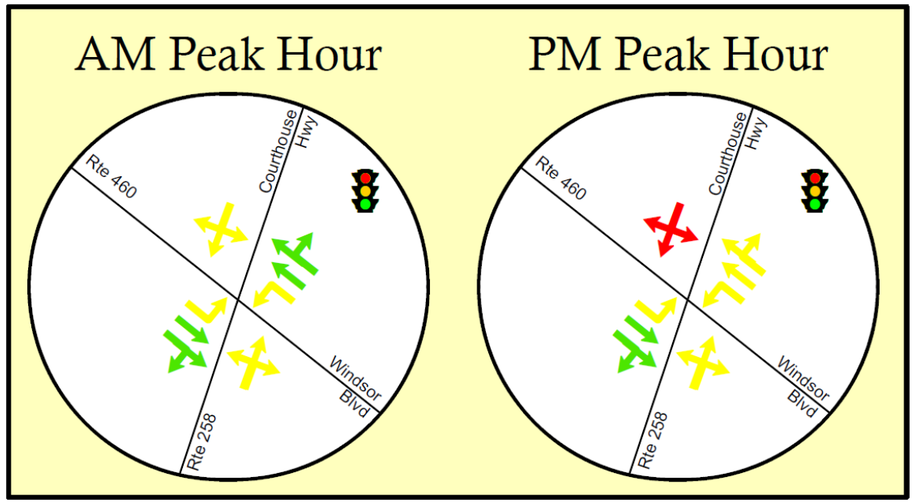
Traffic volumes were projected for Year 2035 by applying the developed growth rates to existing traffic volumes at each intersection approach. Highway Capacity Software was used to output LOS for the intersections[12]. In the future, only one of the identified intersections, Intersection #6, is expected to operate at an acceptable LOS D or better in both the AM and PM peak hour. Eight of the ten analyzed intersections are expected to operate at LOS E or LOS F in both AM and PM peak hour.

Findings of the existing and future condition analysis for each of the ten intersections analyzed are documented on the following pages. A map identifying the specific locations of the analyzed intersections is included in the Appendices.

[12] The findings and data for Intersection # 6, Route 10 – Benns Church Boulevard at Route 10 Business – (South Church Street), were taken directly from the Benn's Grant Traffic Impact Assessment (TIA). A comparison of VDOT projected data versus the findings of the TIA revealed inconsistencies between the two sources. Therefore, with approval from the County and VDOT, the TIA numbers were used.

Intersection #1 – Route 460 (Windsor Boulevard) & Route 258 (Prince Street)

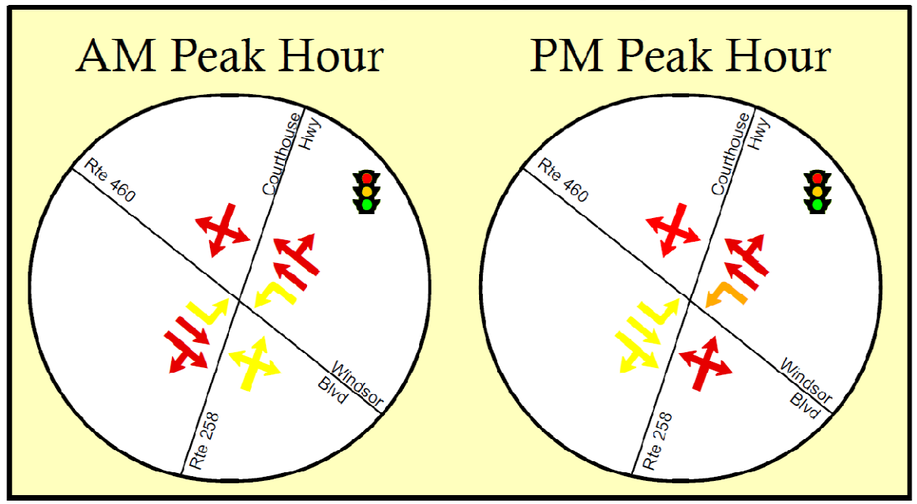
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
23.1 Seconds	C	28.4 Seconds	C

This intersection is a typical four-legged intersection in the Town of Windsor where the major routes (460 and 258) meet. During the AM peak hour, all intersection movements are currently operating at LOS A – LOS C. During the PM peak hour, the overall intersection is currently operating at LOS C. The southbound left-through-right lane group is currently operating at a poor LOS. The remaining movements are currently operating at LOS C or better.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
55.3 Seconds	E	129.4 Seconds	F

The increase in traffic volumes are expected to worsen the operations at this intersection. During the AM peak hour, the eastbound and westbound Route 460 through-right lane group approaches are both expected to operate at LOS E. The southbound left-through-right lane group is also expected to operate at LOS E in the future. These approaches contribute to the AM peak hour overall intersection LOS E. During the PM peak hour, the overall intersection is expected to operate at LOS F. The northbound and southbound left-through-right lane groups are expected to operate at LOS E and LOS F, respectively. The westbound through-right lane group is expected to operate at LOS E.

LEGEND


Arrows represent available traffic movement options per intersection approach.


LOS A / LOS B: No Delay

LOS C: Minimum Delay


LOS D: Considerable Delay

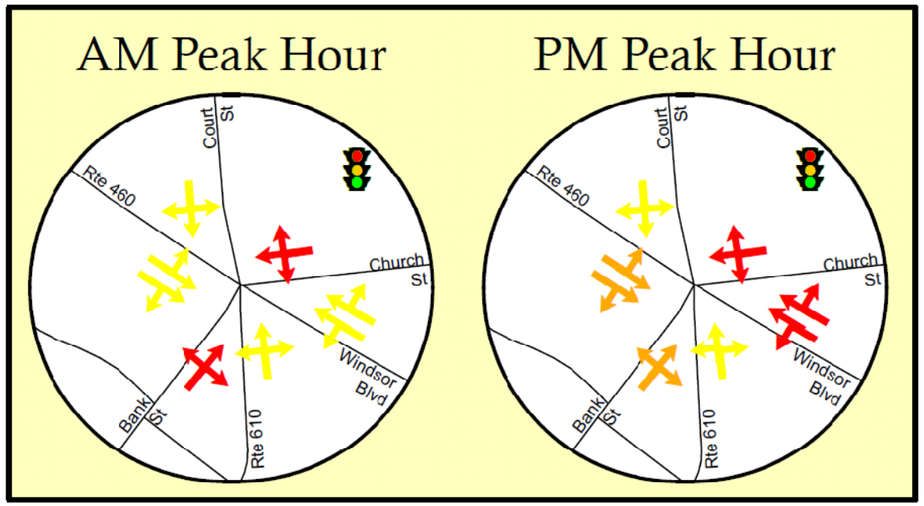

LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay.

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #2 – Route 460 & Route 610 (Court Street) / Route 630 (Church Street)

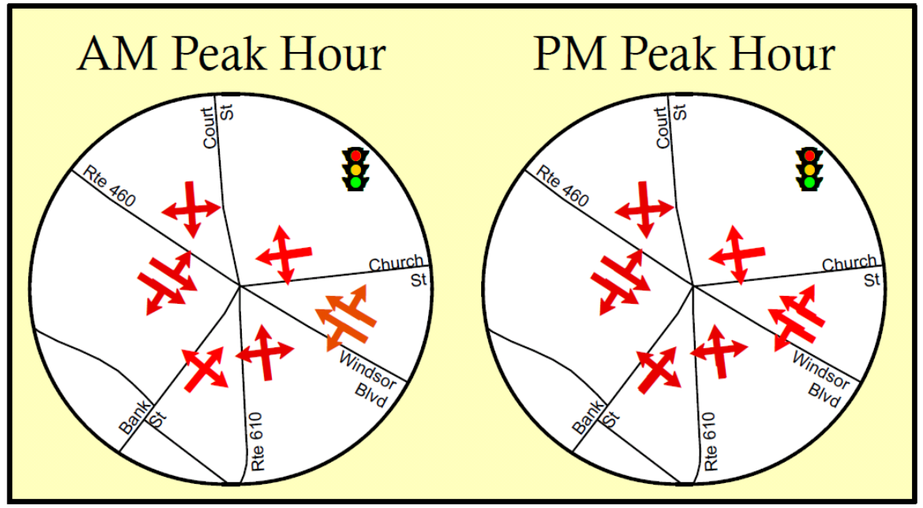
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
37.8 Seconds	D	82.1 Seconds	F

This intersection is an unusual six-legged intersection where Route 460, Route 610, and Route 603 meet. During the AM peak hour, the Bank Street and Church Street (Route 603) approaches are currently operating at LOS E and LOS F, respectively. The other approaches are all operating at LOS C, while the overall intersection is operating at LOS D. During the PM peak hour, the overall intersection is currently operating at LOS F. The Route 460 westbound approach is operating at LOS F, contributing to the failing overall intersection level of service. The Church Street approach is also operating at a poor level of service (LOS E) during the PM peak hour.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
146.8 Seconds	F	116.7 Seconds	F

At this intersection, the level of service for both the AM and PM peak hours are expected to be LOS F. During the AM peak hour, the westbound Route 460 approach is expected to operate at LOS D. All other movements and approaches are expected to operate with a poor level of service, LOS E or LOS F. During the PM peak hour, all of the approaches are expected to operate at LOS E or LOS F. The expected high volume and unusual intersection geometry contribute to the poor levels of service.

LEGEND

Arrows represent available traffic movement options per intersection approach.

LOS A / LOS B: No Delay

LOS C: Minimum Delay

LOS D: Considerable Delay

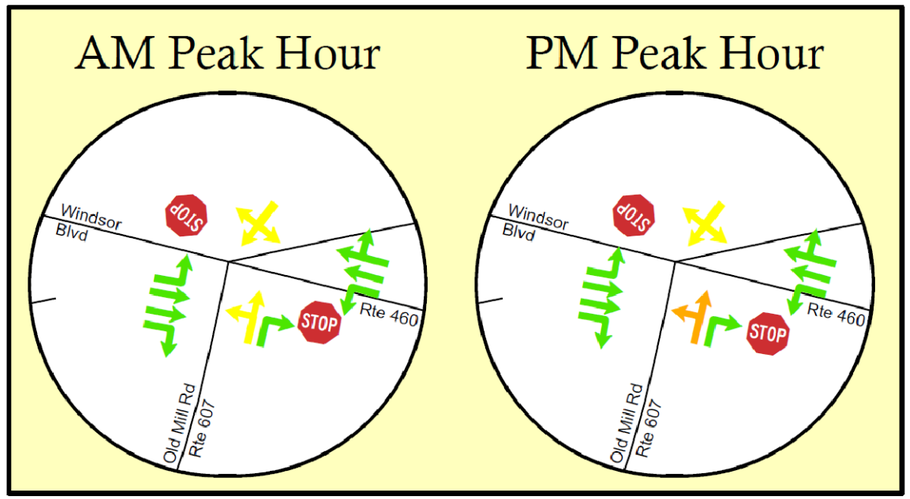
LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #3 – Route 460 (Windsor Boulevard) & Route 607 (Old Mill Road)

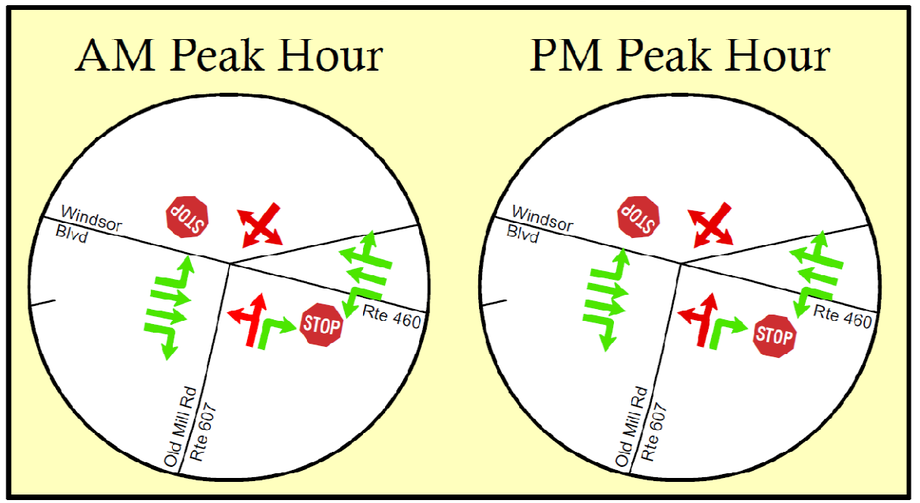
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
N/A	C	N/A	C

This four-legged stop-controlled intersection to the east of the Town of Windsor has a southbound approach that is skewed at an acute angle. During the AM and PM peak hours, this intersection is currently operating with an overall LOS C. There are no individual movements that are operating worse than LOS D.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
N/A	F	N/A	F

This intersection is a stop-controlled four-legged intersection. During both the AM and PM peak hours, the northbound left-through lane group and the southbound left-through-right lane groups are operating at LOS F. All other movements are expected to operate at LOS B or better. The high volumes along Route 460 make it difficult for the minor approach traffic to navigate through the intersection during the peak periods.

LEGEND

Arrows represent available traffic movement options per intersection approach.

LOS A / LOS B: No Delay

LOS C: Minimum Delay

LOS D: Considerable Delay

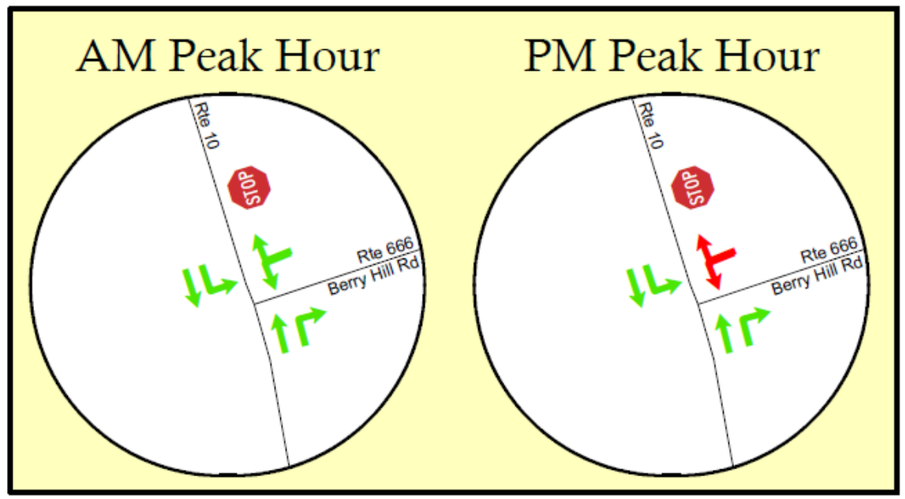
LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #4 – Route 10 Bypass & Route 666 (Berry Hill Road)

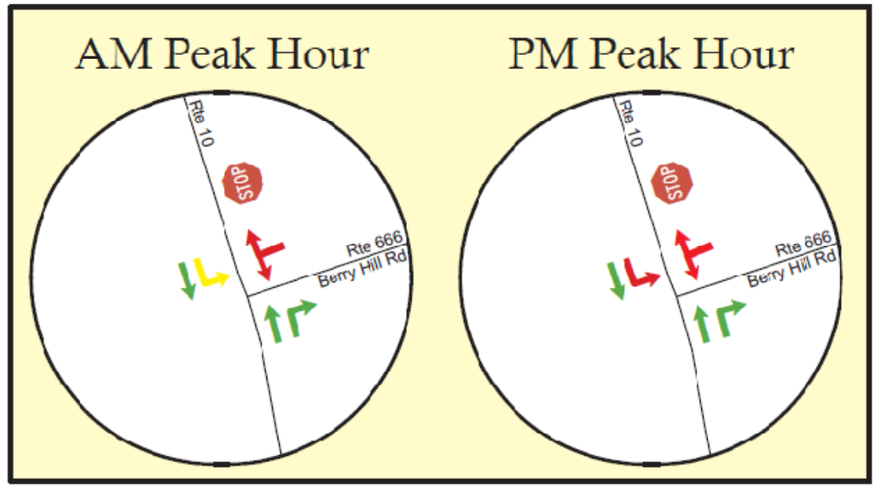
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
N/A	B	N/A	E

This intersection is a stop-controlled three-legged, T-intersection. During the AM peak hour, the intersection is operating efficiently. The southbound Route 10 left turn movement is currently operating at LOS A, while the westbound Berry Hill Road left-right shared lane group operating at LOS B. In the PM peak hour, the southbound Route 10 left turn lane is operating at LOS B, while the westbound Berry Hill Road approach is operating at a poor LOS E. The high PM peak hour volumes at this intersection, possibly due to the Smithfield Food processing plant, are contributing to the poor level of service on the Route 666 approach.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
N/A	F	N/A	F

This intersection is a stop-controlled three-legged, T-intersection. During the AM peak hour, turning movements from Route 666 on to Route 10 are projected to operate at LOS F. The southbound Route 10 left turn movement from Route 10 onto Route 666 is projected to operate at LOS C.

LEGEND


Arrows represent available traffic movement options per intersection approach.


LOS A / LOS B: No Delay

LOS C: Minimum Delay


LOS D: Considerable Delay

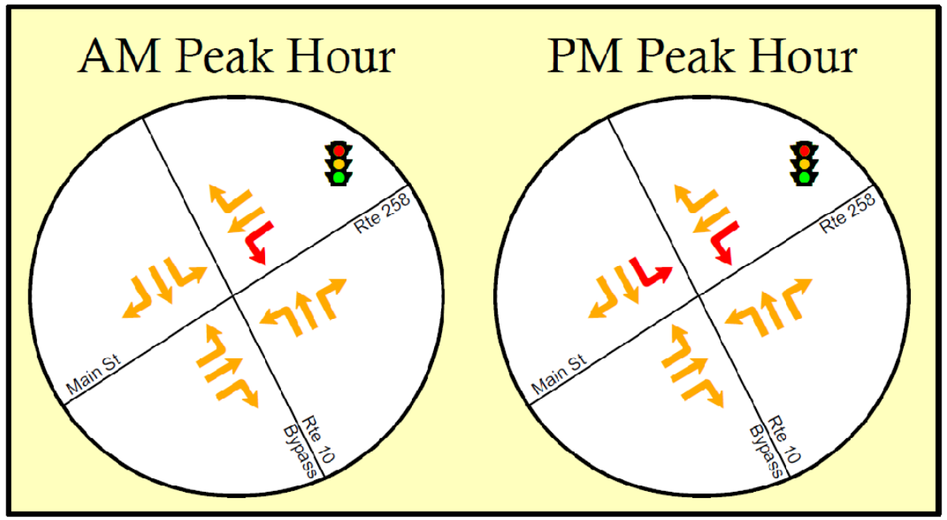

LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

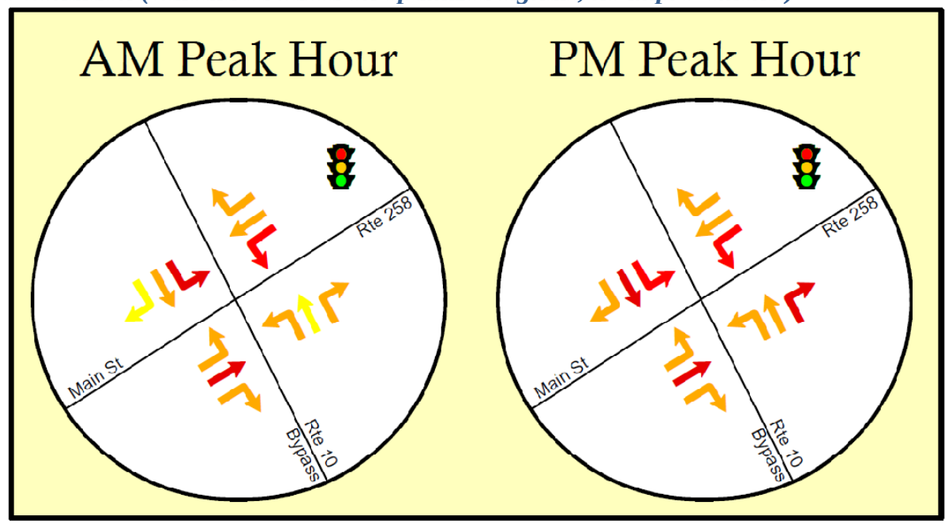
Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #5 – Route 10 Bypass & Route 258 (Main Street)

Existing Conditions



Future Condition (Calculated based on optimized signals, no improvements)



Existing Conditions				Future Condition (Calculated based on optimized signals, no improvements)			
AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
53.8 Seconds	D	68.1 Seconds	E	55.8 Seconds	E	120.2 Seconds	F
This intersection is a signalized four-legged intersection. During the AM peak hour, the overall intersection is operating efficiently at LOS D. The westbound Main Street left turn movement is operating at LOS E. All other movements are operating at LOS D. During the PM peak hour, the westbound Main Street left turn movement is operating at LOS F and the southbound Route 10 Bypass left turn movement is operating at LOS E. These two movements are contributing to the poor LOS E of the overall intersection in the PM peak hour.				During the AM and PM peak hours, the overall intersection is expected to operate at a poor level of service. In the AM peak hour, the eastbound through and westbound left turn movements of Route 258 are expected to operate at LOS E and LOS F, respectively. The left turn movement of southbound Route 10 Bypass is expected to operate at LOS E. During the PM peak hour, the eastbound through and westbound left turn movements of Route 258 are expected to operate at LOS F. The northbound right turn and southbound left and through movements are also expected to operate at a poor level of service.			

LEGEND

Arrows represent available traffic movement options per intersection approach.

LOS A / LOS B: No Delay

LOS C: Minimum Delay

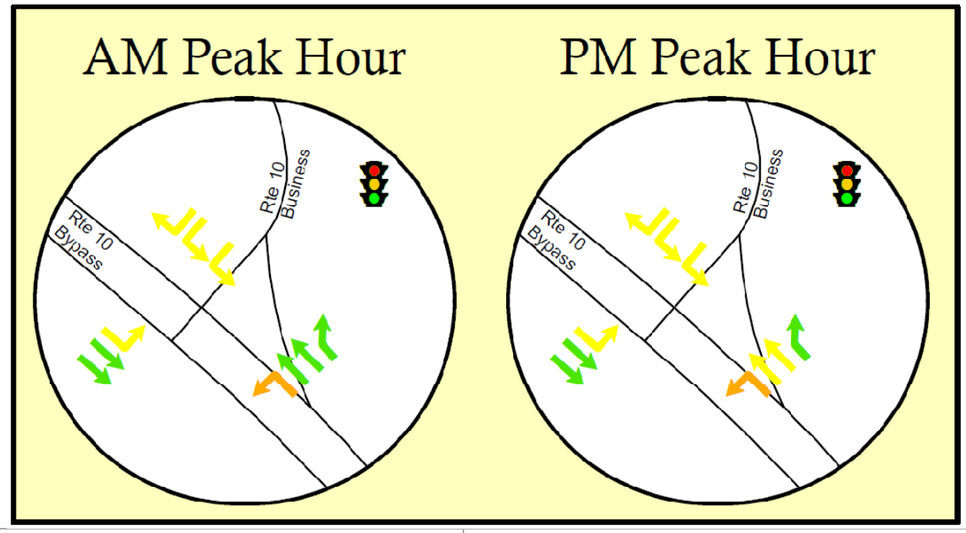
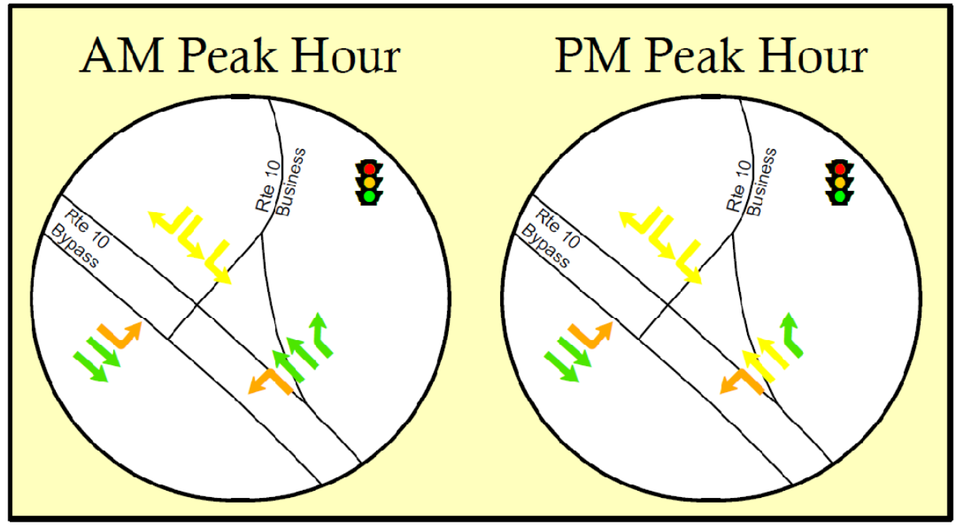
LOS D: Considerable Delay

LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #6 – Route 10 (Benns Church Boulevard) & Route 10 Business (South Church Street)

Existing Conditions				*Future Condition (Calculated based on optimized signals, no improvements)*			
							
AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
16.9 Seconds	B	18.1 Seconds	B	13.9 Seconds	B	15.9 Seconds	C
This intersection is a signalized three-legged, T-intersection in the Town of Smithfield. There are no current deficiencies in either the AM or PM peak hour. All individual movements are currently operating at LOS D or better.				There are no expected future deficiencies in either the AM or PM peak hour. All individual movements are expected to operate at LOS D or better.			

LEGEND

Arrows represent available traffic movement options per intersection approach.

LOS A / LOS B: No Delay

LOS C: Minimum Delay

LOS D: Considerable Delay

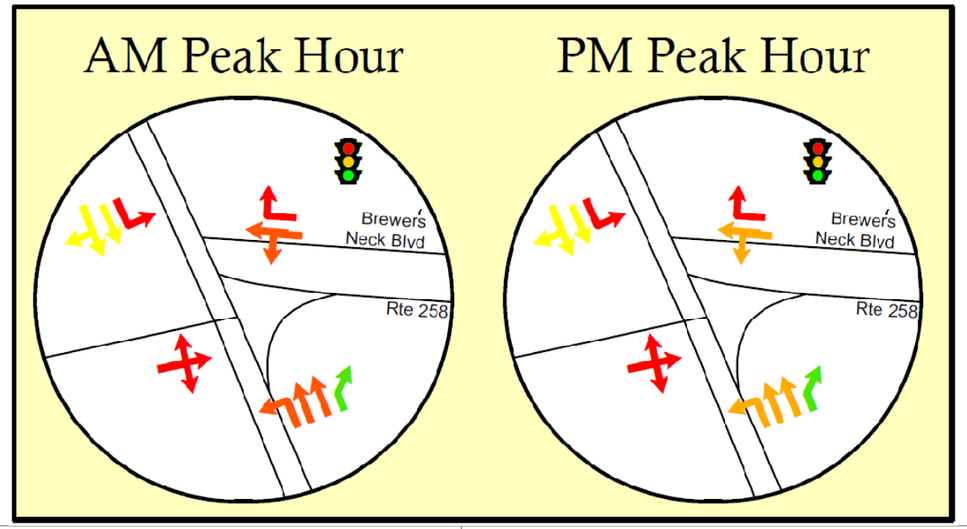
LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #7 – Route 10 (Benns Church Boulevard) & Route 258 (Brewer's Neck Boulevard)

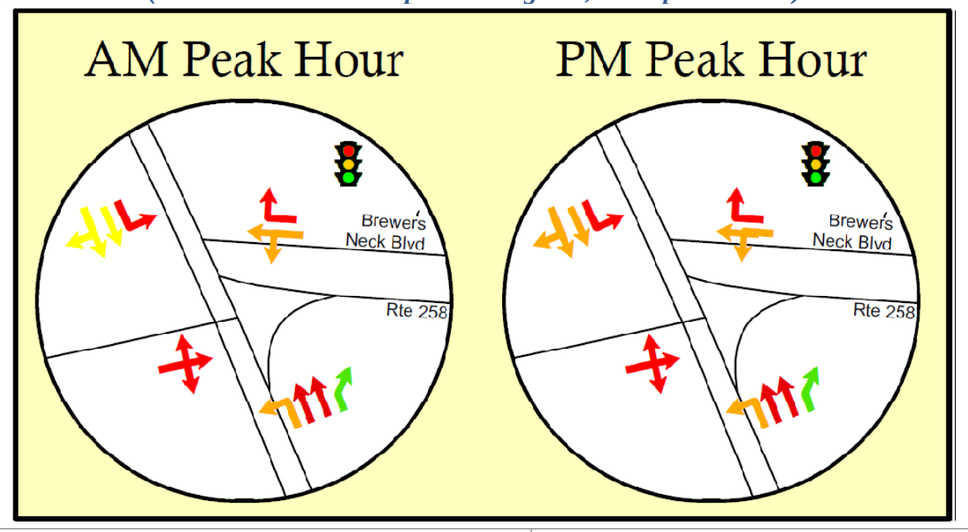
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
144.6 Seconds	F	285.6 Seconds	F

This intersection is a signalized four-legged intersection. This intersection is currently operating at LOS F in both the AM and PM peak hours. The southbound left turn movement from Route 10 and the opposing right turn movement from Brewer's Neck Boulevard are both operating at LOS F in the AM and PM peak hours. The eastbound left-thru-right lane group is operating at LOS E in the AM and PM peak hours. These three movements contribute to the poor overall intersection level of service. All other movements are operating at LOS D or better.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
263.8 Seconds	F	379.4 Seconds	F

This intersection is a signalized four-legged intersection. This intersection is currently operating at a failing LOS and expected to continue operating (in Year 2035) at LOS F in both the AM and PM peak hours. During both the AM and PM peak hours, the southbound left turn movement and northbound through movements on Route 10 are expected to operate at LOS F. The eastbound lane group (left, through, and right turn movements) and westbound right turns are contributing to the poor level of service of this intersection in both the AM and PM peak hours.

LEGEND


Arrows represent available traffic movement options per intersection approach.


LOS A / LOS B: No Delay

LOS C: Minimum Delay


LOS D: Considerable Delay

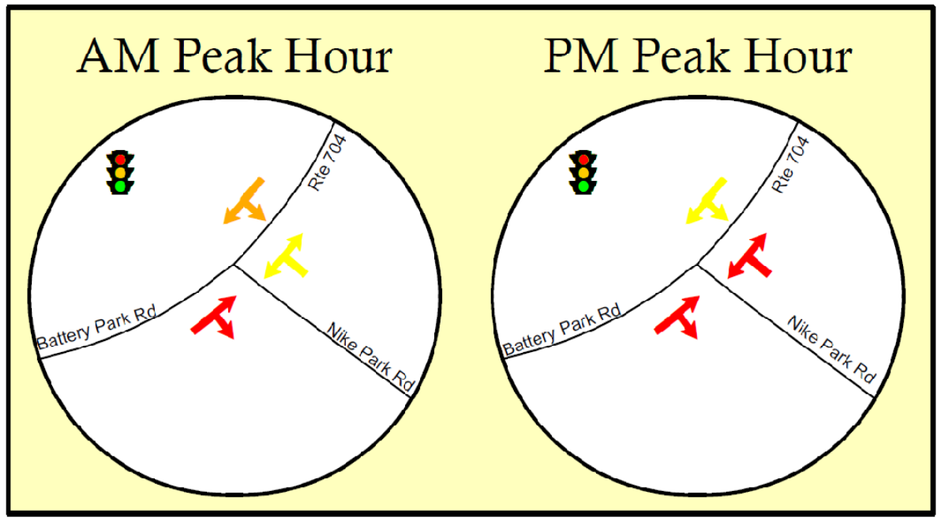

LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #8 – Route 704 (Battery Park Road) & Route 669 (Nike Park Road)

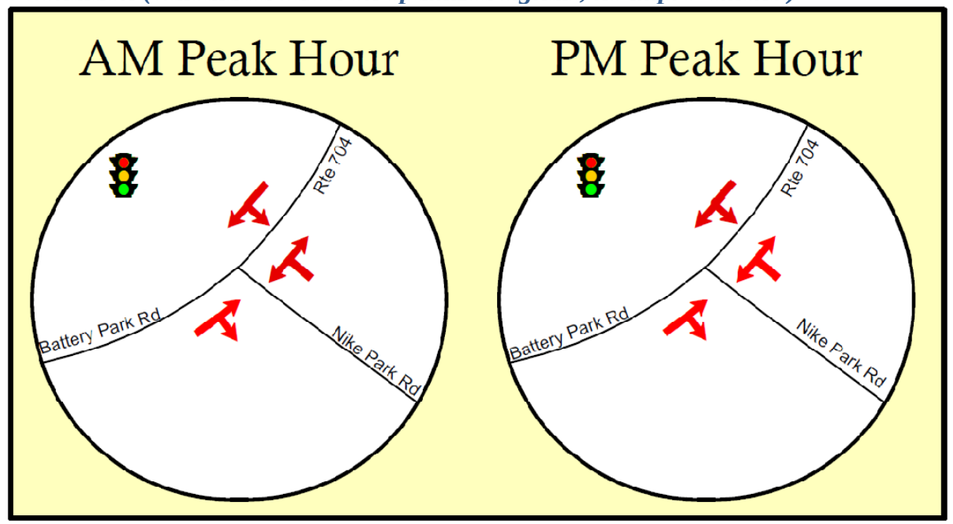
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
97.3 Seconds	F	165.8 Seconds	F

This intersection is a signalized three-legged intersection. This intersection, in both the AM and PM peak hours, is currently operating at LOS F. During the AM peak hour, the eastbound approach of Battery Park Road is failing and contributing to the poor overall level of service. During the PM peak hour, the eastbound Battery Park Road and northbound Nike Park Road approach are both operating at LOS F. The high volume and tight intersection geometry are reasons for the poor level of service.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
260.8 Seconds	F	353.1 Seconds	F

This signalized intersection, in both the AM and PM peak hours, is currently and expected to continue to operating at LOS F. All three approaches are expected to operate at LOS F in both the AM and PM peak hours.

LEGEND

Arrows represent available traffic movement options per intersection approach.

LOS A / LOS B: No Delay

LOS C: Minimum Delay

LOS D: Considerable Delay

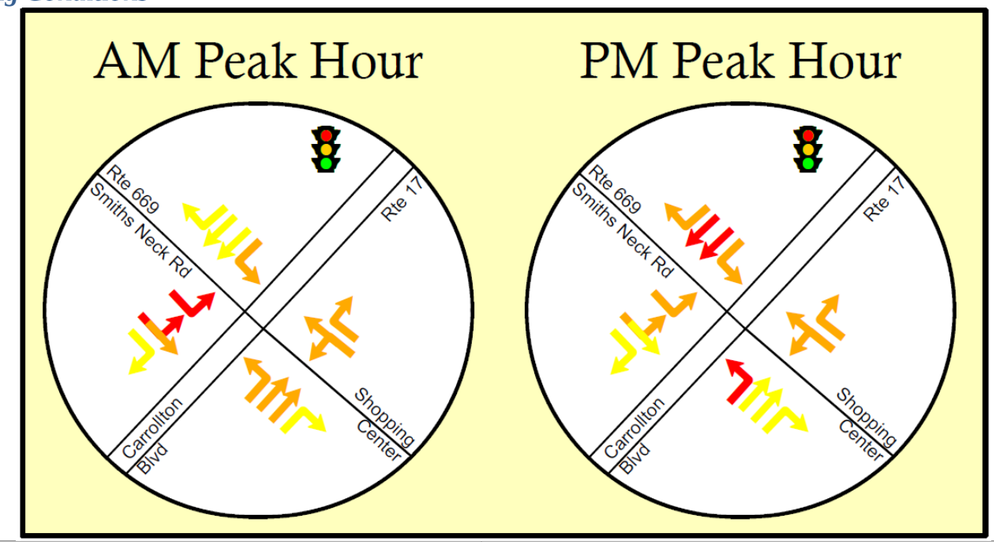
LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #9 – Route 17 (Carrollton Boulevard) & Route 669 (Smiths Neck Road)

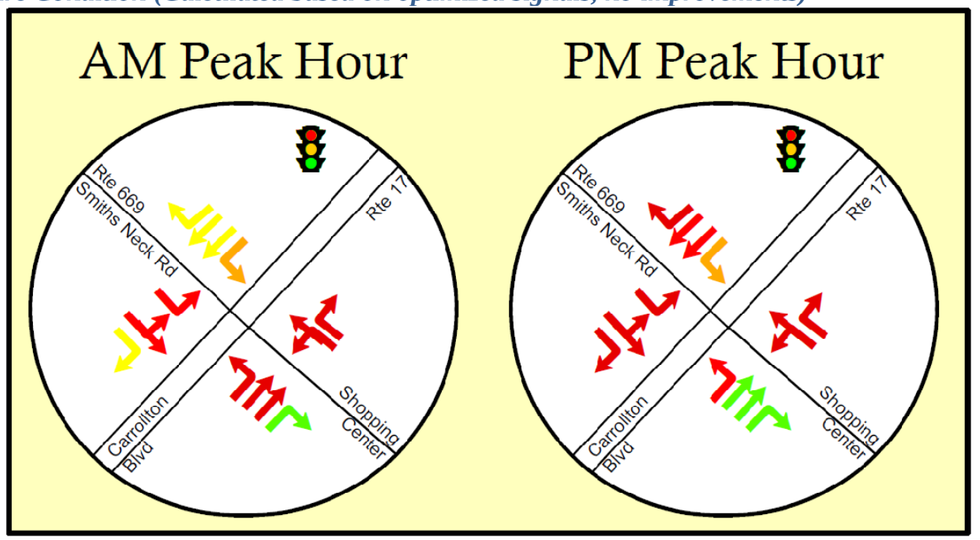
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
52.5 Seconds	D	161.7 Seconds	F

This intersection is a signalized four-legged intersection. This intersection is currently operating at LOS F during the PM peak hour. During the AM peak hour, the eastbound approach of Smiths Neck Road is failing and contributing to the poor overall level of service. During the PM peak hour, the southbound Carrollton Boulevard and northbound left turning movement from Carrollton Boulevard to Smiths Neck Road are both operating at LOS F.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
164.6 Seconds	F	296.6 Seconds	F

This signalized intersection is expected to operate at LOS F in both the AM and PM peak hours in the future year. During the AM peak hour, most of the turning movements and northbound through movements are projected to operate at a failing LOS. A major contributor to the failing LOS will be the high volume of cut-through traffic turning from Smiths Neck Road onto Route 17. During the PM peak hour, the southbound Route 17 through and northbound Route 17 left turn movements are operating at LOS F, contributing to the poor overall intersection level of service.

LEGEND

Arrows represent available traffic movement options per intersection approach.

LOS A / LOS B: No Delay

LOS C: Minimum Delay

LOS D: Considerable Delay

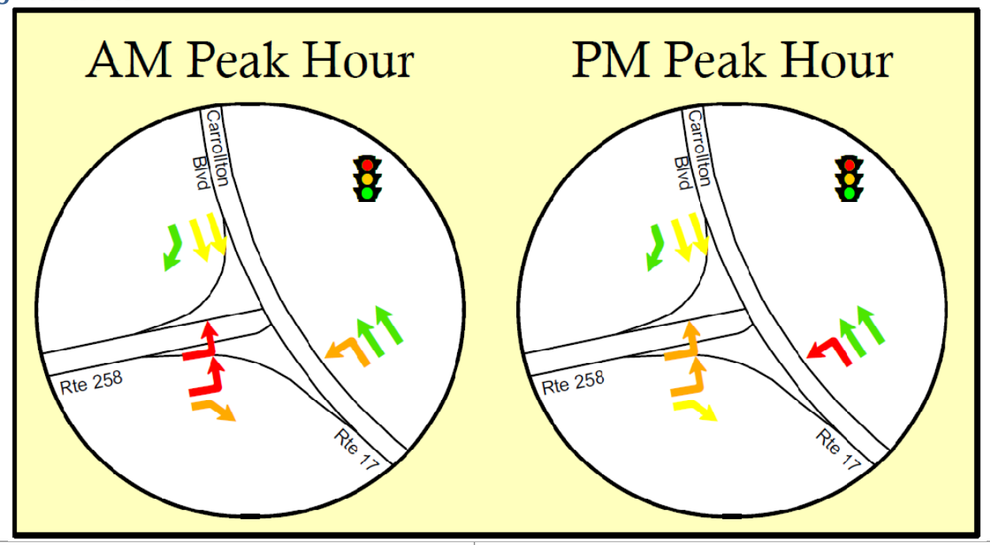
LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Intersection #10 – Route 17 (Carrollton Boulevard) & Route 258 (Brewer's Neck Boulevard)

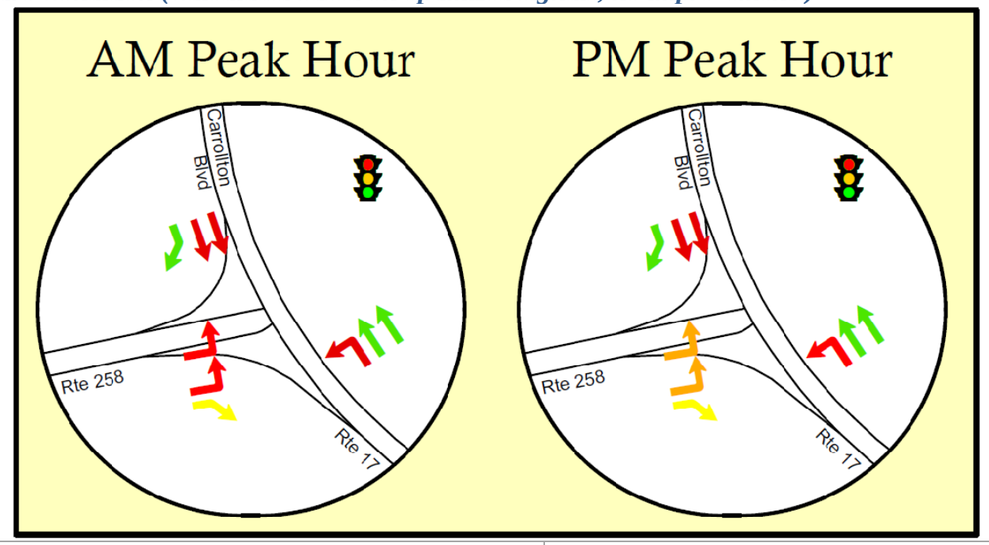
Existing Conditions



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
44 Seconds	D	52.3 Seconds	D

This intersection is a signalized three-legged intersection. This intersection, in both the AM and PM peak hours, is currently operating at LOS D. During the AM peak hour, the eastbound left turn movement is failing and contributing to the overall intersection LOS D. During the PM peak hour, the northbound left turn movements are operating poorly and contributing to the overall intersection LOS D.

Future Condition (Calculated based on optimized signals, no improvements)



AM Peak Hour		PM Peak Hour	
Intersection Delay	**Intersection LOS**	**Intersection Delay**	**Intersection LOS**
52.9 Seconds	D	164.6 Seconds	F

This signalized intersection is expected to operate at LOS D in the AM peak hour and LOS F in the PM peak hour. During the AM peak hour, the eastbound left turn movements from Route 258 are expected to operate at LOS E. The northbound left turn and southbound through movements on Route 17 are expected to operate at LOS F and LOS E, respectively. Despite the poor level of service for those movements, the overall intersection is expected to operate at LOS D. During the PM peak hour, the southbound Route 17 through and northbound Route 17 left turn movements are operating at LOS F, contributing to the poor overall intersection level of service.

LEGEND


Arrows represent available traffic movement options per intersection approach.


LOS A / LOS B: No Delay

LOS C: Minimum Delay


LOS D: Considerable Delay


LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS for signalized and unsignalized intersections is a function of the average vehicle control delay

Control Delay (Delay): Delay is measured in seconds per vehicle that results from the type of control (signal, stop sign) at the intersection. It is the difference between the travel time that would have occurred in the absence of the intersection control, and the travel time that results because of the presence of the intersection control.

Roadways

Roadways: Existing Level of Service

Roadway facility data were obtained from VDOT using the SPS roadway data. The 2008 roadway data were analyzed for all roadways in Isle of Wight County where it was available. Roadway characteristics in the SPS data including number of lanes, lane widths, shoulders, truck percentage, and peak period share of traffic were utilized in determining roadway LOS.

Level of Service analysis of existing roadways reveals that most County roadways are currently operating at an acceptable level of service (LOS D or better). However, four roadways are operating at failing levels (LOS E or F).

Roadways: Future Year Level of Service

The year 2035 roadway analysis revealed that most County roadways are expected to operate at LOS D or better by the year 2035. Those identified as operating at a failing LOS in 2007 will continue to fail in 2035. In addition, Route 258 within the Town of Windsor, Route 10 Business within the Town of Smithfield, and Route 669 between Route 17 and Reynolds Drive will experience failing LOS.

A complete listing of Roadway LOS and AADT for Isle of Wight roadways can be found in the Appendices. Findings of the existing and future condition analysis for roadways with a failing LOS are documented on the following pages.

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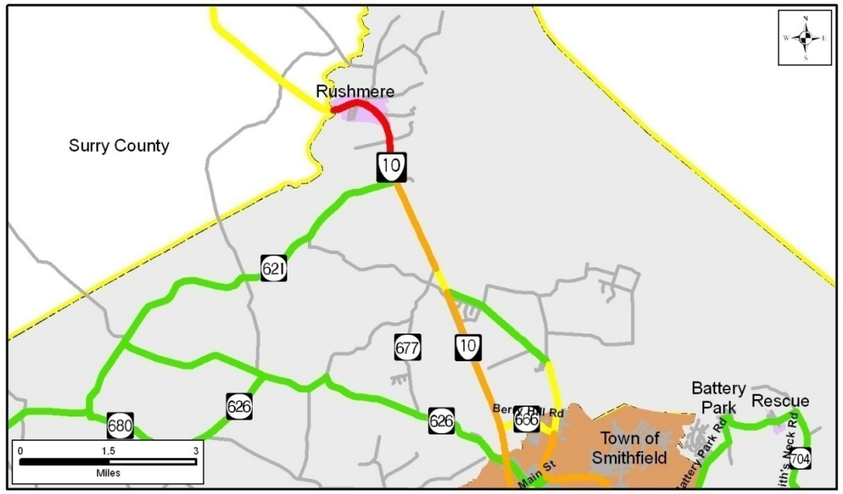
Route 10 (north of the Town of Smithfield to Surry County line)

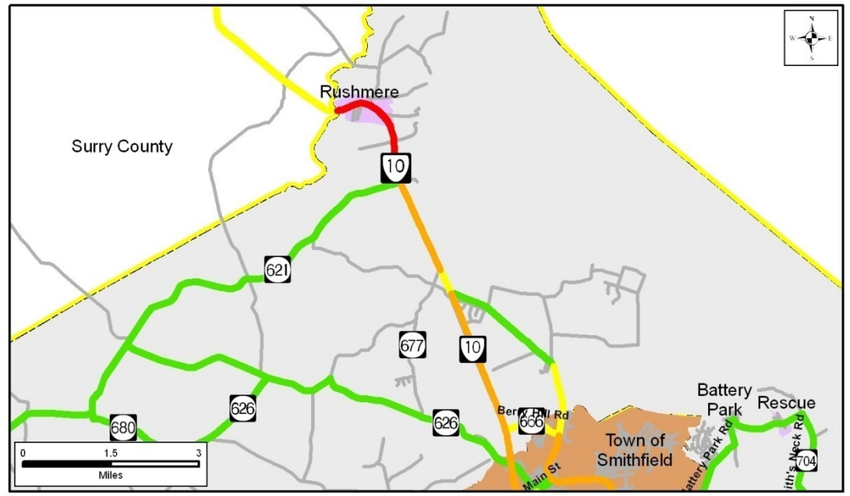
Existing Conditions



AADT Range	LOS Range
5,000 - 7,800	C - E

The failing LOS section on this 1.6-mile section of roadway is most likely caused by no-passing zones along this two-lane stretch of roadway between Route 621 and the Surry County Line. The remaining segments between Route 621 and the Town of Smithfield are operating at LOS C and LOS D. High truck volumes from Smithfield Foods further slow the flow of traffic.

Future Condition



AADT	LOS
10,000 - 13,000	D - E

This failing LOS for the northern portion of Route 10 is projected to exist for almost the entire lengths from the Surry County Line to Route 258. The failing LOS is most likely attributed to inadequate passing zones along Route 10. A small portion of Route 10, between Route 10 Business and Route 677, is expected to operate at LOS D in the future.

LEGEND

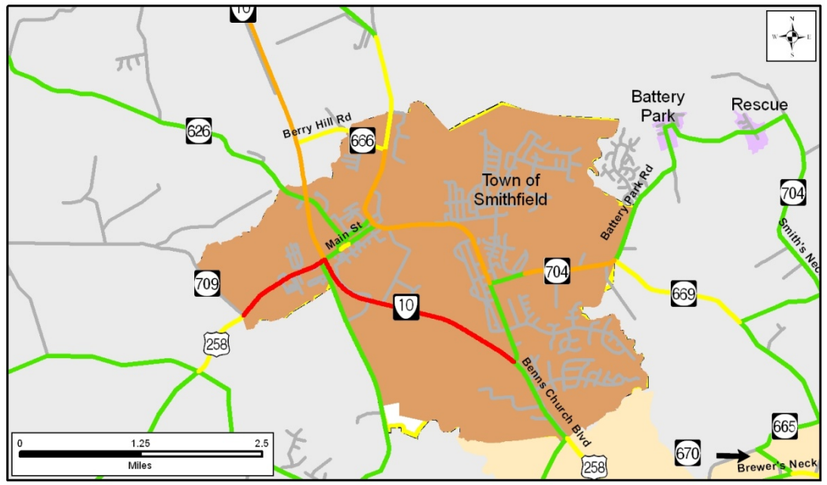
- LOS A / LOS B: No Delay
- LOS C: Minimum Delay
- LOS D: Considerable Delay
- LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

Average Annual Daily Traffic (AADT): The Highway Capacity Manual defines AADT as "The total volume of traffic passing a point of segment of a highway facility in both directions for one year divided by the number of days in the year." Used in transportation planning and engineering, it is a useful and simple measurement of how busy a roadway is.

Route 10 Bypass/258 (within the Town of Smithfield)

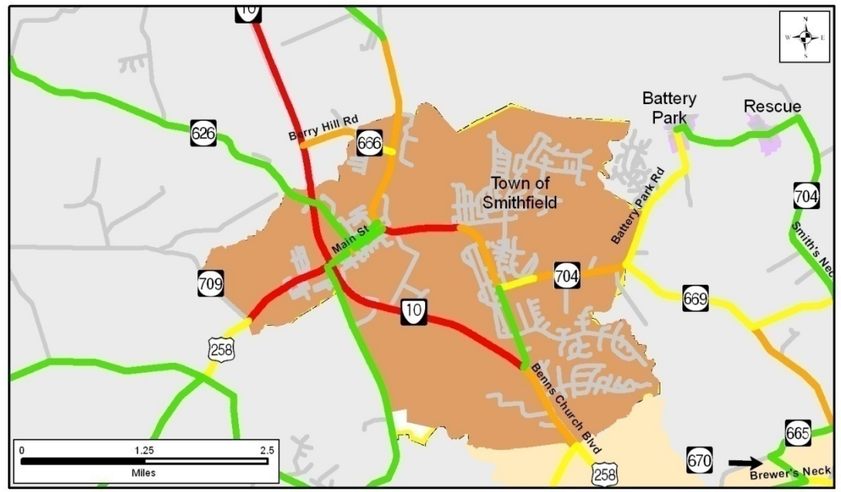
Existing Conditions



AADT Range	LOS Range
11,300 – 18,600	D - E

The failing LOS on this 2.3-mile section of roadway is directly related to congestion resulting from the intersection of Route 258 and Route 10 Bypass. This is the main route out of the County via the James River Bridge during the AM peak period for commuter traffic. During the PM peak, a majority of traffic returning to Isle of Wight County across the James River Bridge must travel this route. The segment of Route 10 Bypass, north of Route 258 (Main Street), is currently operating at LOS D.

Future Condition



AADT Range	LOS Range
20,000 – 22,000	E

In the future, this entire segment is expected to be operating with a poor LOS within the Town of Smithfield. This is due to high projected volumes along this two-lane roadway.

LEGEND

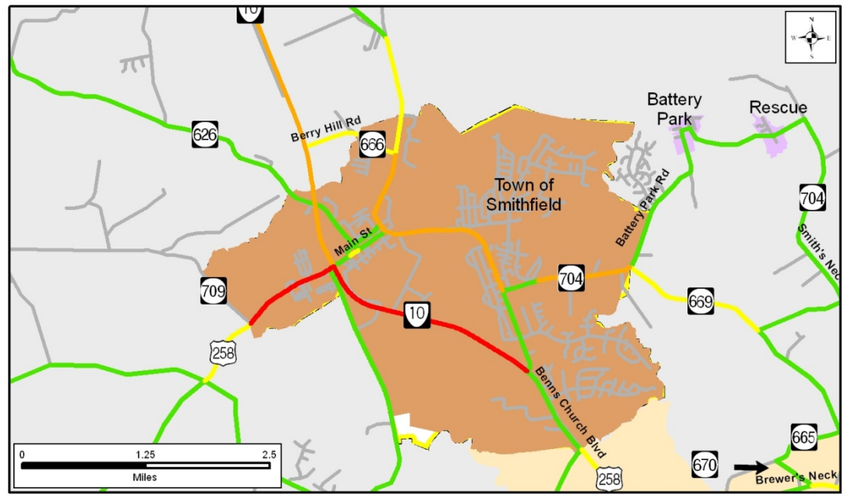
- LOS A / LOS B: No Delay
- LOS C: Minimum Delay
- LOS D: Considerable Delay
- LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

Average Annual Daily Traffic (AADT): The Highway Capacity Manual defines AADT as "The total volume of traffic passing a point of segment of a highway facility in both directions for one year divided by the number of days in the year." Used in transportation planning and engineering, it is a useful and simple measurement of how busy a roadway is.

Route 258 (Main Street) within the Town of Smithfield

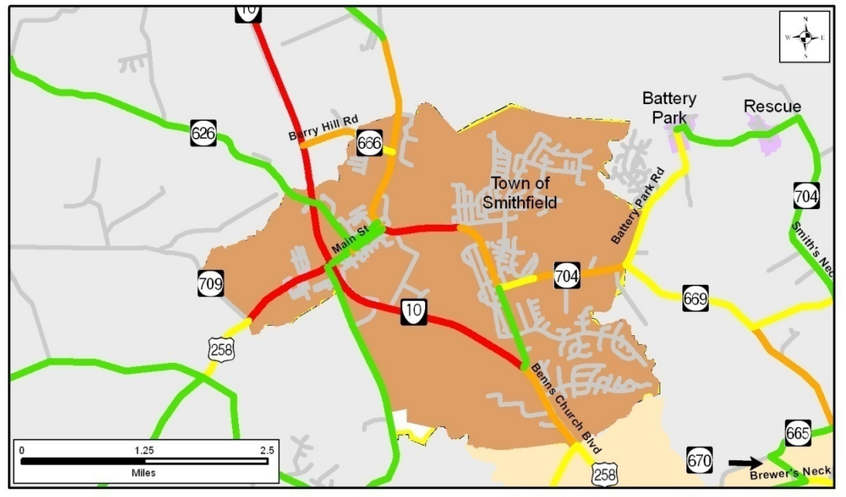
Existing Conditions



AADT Range	LOS
6,800 – 14,600	B - E

The failing LOS on this 1.7-mile section of roadway is currently located between the Town of Smithfield Corporate Limit (at Route 709/Waterworks Road) and Route 10 Bypass. High traffic volumes and limited roadway capacity contribute to the poor LOS on this segment. The other segments of Main Street to the east of Route 10 Bypass are currently operating with LOS B and LOS C.

Future Condition



AADT	LOS
10,800 – 19,500	B - E

An increase is traffic volume is expected to worsen the operating conditions of Main Street. However, the roadway LOS is not expected to change significantly.

LEGEND

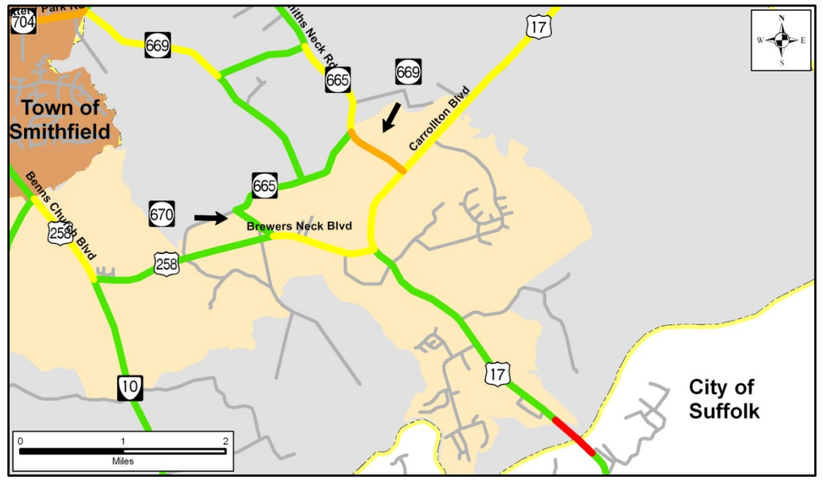
- LOS A / LOS B: No Delay
- LOS C: Minimum Delay
- LOS D: Considerable Delay
- LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

Average Annual Daily Traffic (AADT): The Highway Capacity Manual defines AADT as "The total volume of traffic passing a point of segment of a highway facility in both directions for one year divided by the number of days in the year." Used in transportation planning and engineering, it is a useful and simple measurement of how busy a roadway is.

Route 17 at Sidney Bertram Hazelwood Senior Bridge (Chuckatuck Creek Bridge)

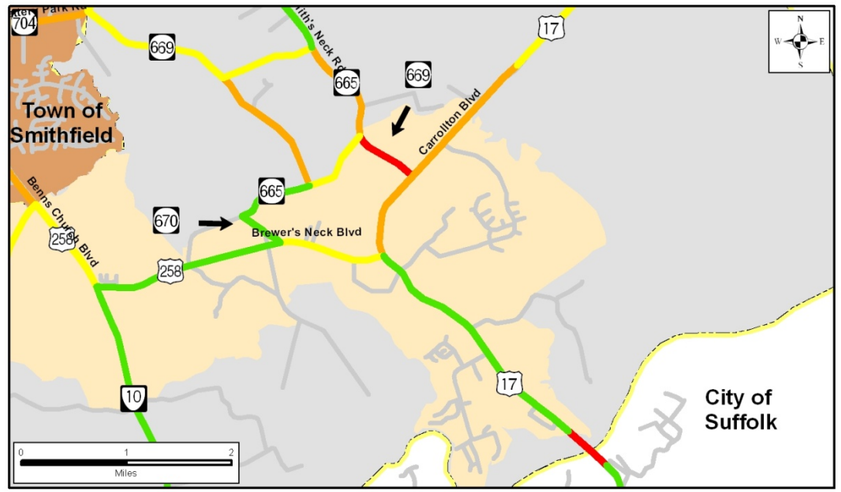
Existing Conditions



AADT	LOS
15,100	E

The failing LOS headed south on Route 17/Carrollton Boulevard toward Suffolk is a direct result of the bottleneck that is created by narrowing from a four-lane divided highway to a two-lane bridge for a half mile (0.5 mi) at the Chuckatuck Bridge.

Future Condition



AADT	LOS
27,400	E

Traffic volumes are expected to increase to over 27,000 vehicles on this bridge segment, but the overall LOS is not expected to change from LOS E.

LEGEND

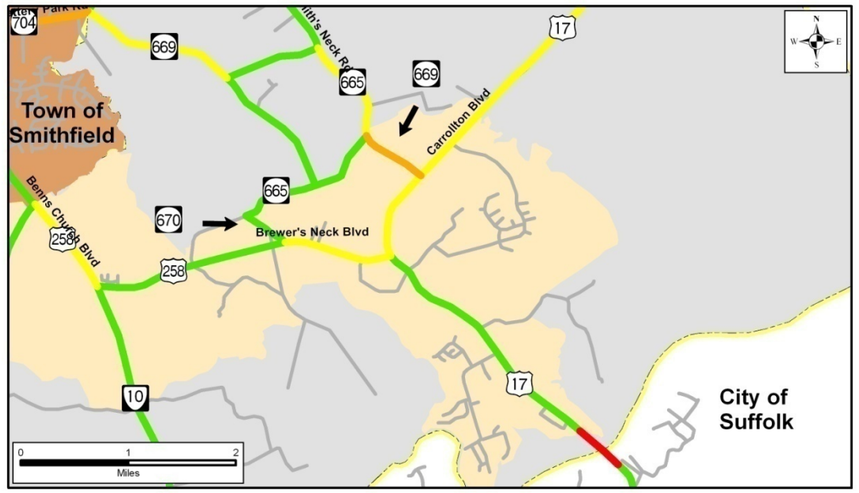
- LOS A / LOS B: No Delay
- LOS C: Minimum Delay
- LOS D: Considerable Delay
- LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

Average Annual Daily Traffic (AADT): The Highway Capacity Manual defines AADT as "The total volume of traffic passing a point of segment of a highway facility in both directions for one year divided by the number of days in the year." Used in transportation planning and engineering, it is a useful and simple measurement of how busy a roadway is.

Route 669 (between Route 17 and Reynolds Drive)

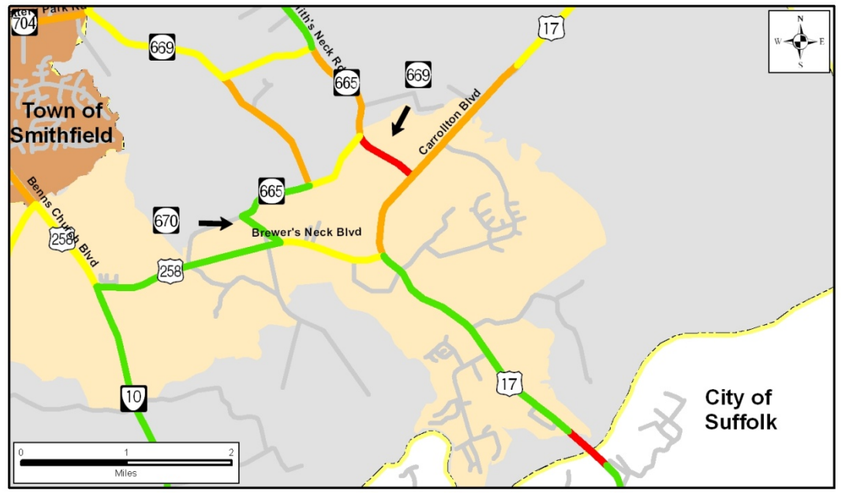
Existing Conditions



AADT	LOS
10,800	D

During peak hours, commuters traveling south along Route 17 use Route 669 as a cut-through to avoid congestion on Route 17 and 32/258/Brewer's Neck Boulevard. This cut-through traffic results in an existing LOS D for Route 669.

Future Condition



AADT	LOS
17,100	E

An increase in traffic volumes along this cut-through segment of Route 669 is expected to worsen from LOS D to LOS E in the future conditions.

LEGEND

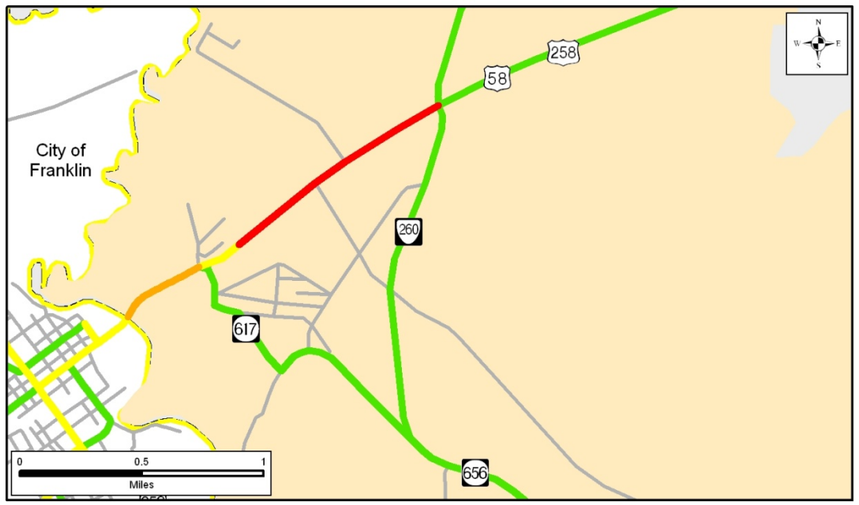
- LOS A / LOS B: No Delay
- LOS C: Minimum Delay
- LOS D: Considerable Delay
- LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

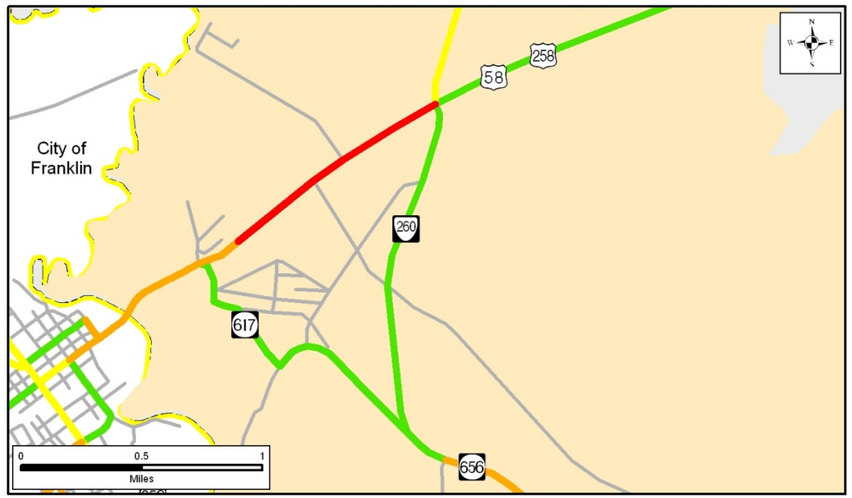
Average Annual Daily Traffic (AADT): The Highway Capacity Manual defines AADT as "The total volume of traffic passing a point of segment of a highway facility in both directions for one year divided by the number of days in the year." Used in transportation planning and engineering, it is a useful and simple measurement of how busy a roadway is.

Route 58 (between City of Franklin and Route 258)

Existing Conditions



Future Condition



AADT Range	LOS Range	AADT Range	LOS Range
9,200	C - E	18,800 – 19,500	D - E

Level of service analysis shows this section of Route 58 currently operating at a failing LOS. Further study into this section of roadway revealed no reasonable reason why this section of roadway is operating at a failing LOS. Furthermore, the possibility that traffic data may have been collected during the construction process for the Route 58 Bridge combined with the closing of the International Paper facility in Franklin results in the need for further analysis into this section of roadway using more recent traffic data. A separate count program is needed to collect the necessary data for this analysis. For purposes of this study, a recommended improvement has been included for this section of roadway. However, further analysis should be completed prior to pursuing this improvement alternative.

The future conditions show that no additional roadway segments are expected to operate worse than LOS D by Year 2035. The segment from Jamestown Lane (Route 617) is expected to worsen from LOS C to LOS D. The other segments are expected to remain operating with the same level of service as the existing conditions.

LEGEND

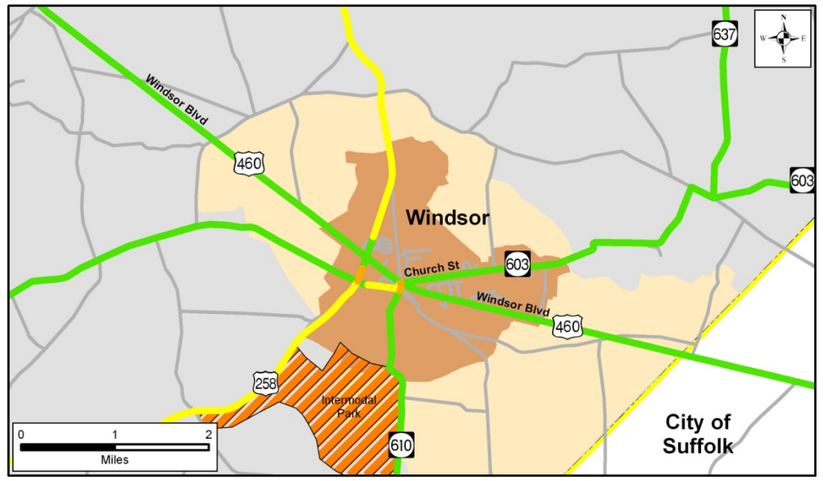
- LOS A / LOS B: No Delay
- LOS C: Minimum Delay
- LOS D: Considerable Delay
- LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

Average Annual Daily Traffic (AADT): The Highway Capacity Manual defines AADT as "The total volume of traffic passing a point of segment of a highway facility in both directions for one year divided by the number of days in the year." Used in transportation planning and engineering, it is a useful and simple measurement of how busy a roadway is.

Route 258 (within the Town of Windsor)

Existing Conditions



AADT	LOS
4,800 – 5,700	B-D

Existing conditions show that Route 258, as well as the other roads around the Town of Windsor, are currently operating with LOS D or better.

Future Condition

AADT	LOS
6,200 – 9,900	B - E

Level of Service analysis for the year 2035 reveals failing conditions on the segment of Route 258 between Route 603 and 460, south of the Norfolk Southern railroad tracks. Delays are likely to continue to be caused by the lack of left turn lanes at this four-way intersection. Train crossings are also expected to contribute to delays.

LEGEND

- LOS A / LOS B: No Delay
- LOS C: Minimum Delay
- LOS D: Considerable Delay
- LOS E / LOS F: Significant Delay

Level of Service (LOS): LOS is a qualitative measure describing roadway operating conditions. LOS is calculated using specific measures including speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

Average Annual Daily Traffic (AADT): The Highway Capacity Manual defines AADT as "The total volume of traffic passing a point of segment of a highway facility in both directions for one year divided by the number of days in the year." Used in transportation planning and engineering, it is a useful and simple measurement of how busy a roadway is.

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Safety Analysis

Crash data is used to identify problem locations and possible trends for types of collisions, such as side swipes, head-on, or deer. According to the 2010 Hampton Roads Regional Safety Study, there were 538 crashes in Isle of Wight County in 2008; this is an increase of 10 percent from 1999. The County also had one of the lowest crash rates within the Hampton Roads Region and one of the highest fatality rates. The findings of this study are not unusual in that rural localities typically have higher fatality rates due to a variety of factors including higher travel speeds, substandard roadway design and lower seat belt usage rates.[13]

Data obtained from VDOT provides annual crash counts by location in the County from 2003-2007. Crash rates (number of crashes per 100 million roadway miles traveled) were generated along each roadway and compared against state and regional crash rates for similar roadway types to identify roadway segments that have an above-average crash rate. Threshold crash rates for roadway safety improvements funded by VDOT are based on roadway crash rates compared against statewide averages.

Table 1: Statewide and Richmond Regional Average Crash Rate Summary

2006 Average Crash Rate (Number of Crashes per 100 Million Miles Traveled)		Crash Rate - Location	
		Statewide	Hampton Roads Region
Roadway Type	Primary	161	45
	Secondary	226	235

The roadways previously identified as having consistently high volumes are also those that exhibit the higher crash rates, including Route 258, Route 17, Route 10 Business, and Route 58. Any roadways identified as having an above average crash rate should continue to be monitored for safety concerns. Proposed recommendations for these roadways may alleviate some risk factors for crashes including lessening cue overflow, providing turn lanes where they currently do not exist and decreasing congestion on specific roadway sections.

Figure 6 illustrates primary and secondary roadways that have crash rates that are above the statewide average. Many of these secondary roadways have very low traffic volumes, which drives the crash rate higher. Alternatively, some of the primary roads may have a higher number of crashes, but have higher traffic volumes, driving the crash rate down.

[13] Page 16, Hampton Roads Regional Safety Study, 2010

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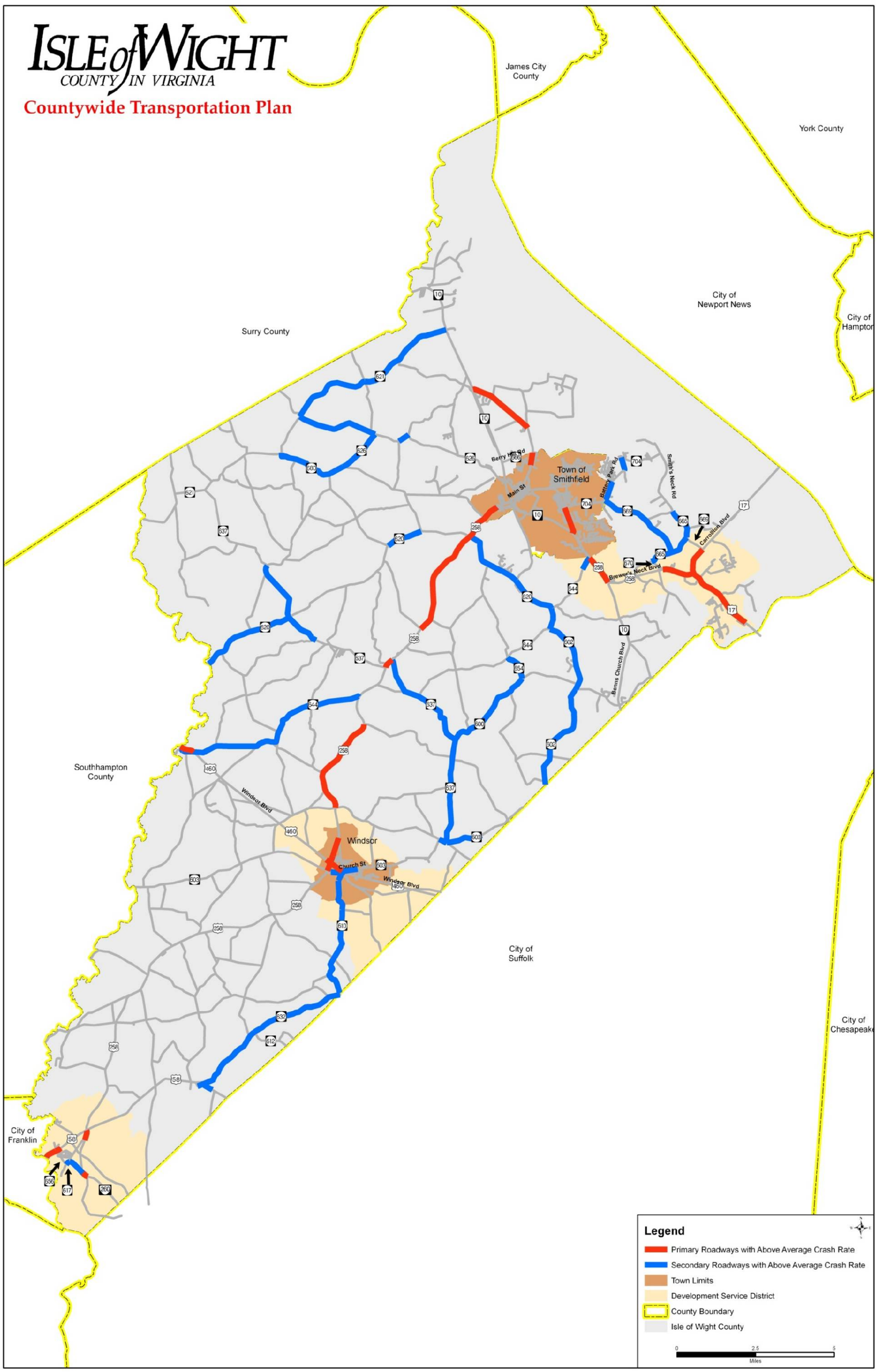
Figure 6: Roadway Crash Rates



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Recommendations

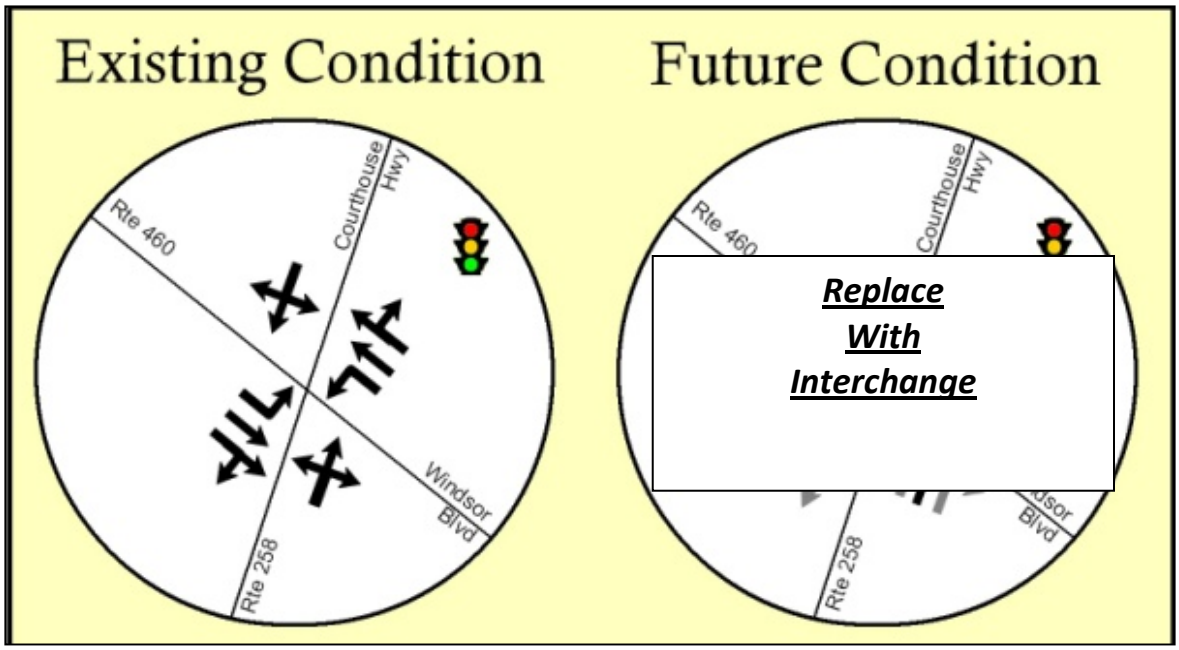
Recommendations were developed to address the deficiencies in analyzed intersections and roadway segments with failing levels of service. The recommended improvements shown on the following pages are conceptual in nature and are intended to provide guidance to Isle of Wight County on mitigation of traffic capacity issues along its intersections and roadways. VDOT's Transportation & Mobility Planning Division (TMPD) Statewide Planning Level Cost Estimates (updated January 2009) methodology was used to develop planning level cost estimates for the recommendations. Each improvement is given a range of the cost estimate using the "LOW" and "HIGH" values from the VDOT cost estimates. Right of way and utility relocations are factored in to the cost estimates, per the VDOT methodology, (additional 55% (low) or 70% (high) of construction cost) and are based on residential / suburban low density land use in the Hampton Roads region. The VDOT Cost Estimate Methodology is included in the Appendices.

Intersection Recommendations

Recommended intersection improvements were developed by determining the necessary improvements needed to achieve an overall intersection LOS D or better. The recommended improvements are conceptual improvements and were not analyzed for feasibility with respect to available right-of-way, utility relocation, and environmental or historical features. It is assumed that all recommendations of turn lanes be designed to VDOT standards (storage length and taper length) based on future year turn movement volumes. In addition to the geometric improvements, it is assumed that all traffic signals would be optimized based on new geometry and updated traffic counts. Recommendations for each of the intersections are discussed in detail on the following pages.

Intersection #1 – Route 460 (Windsor Boulevard) & Route 258 (Prince Street) – ALTERNATIVE A

Recommendation



Recommendation - Estimated Cost: $2.5 – $3.7 Million

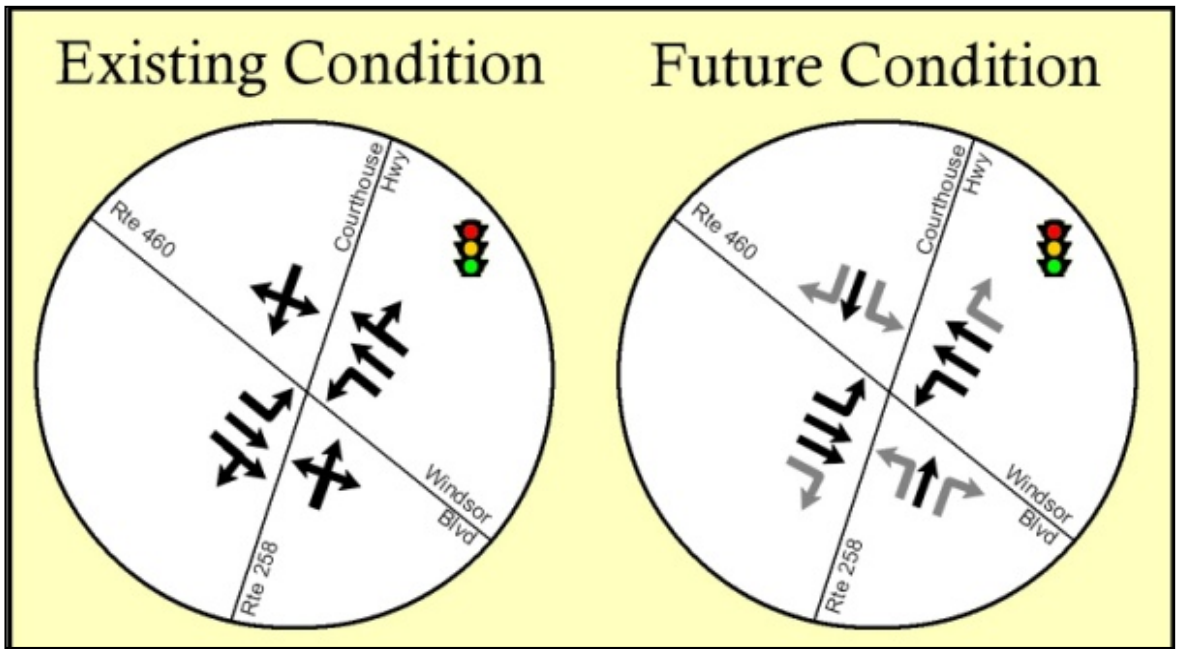
To achieve an overall intersection LOS D, exclusive left and right turn lanes should be provided at all intersection approaches. This includes additional left and right turn lanes in the northbound and southbound Route 258 approaches and additional right turn lanes in the eastbound and westbound Route 460 approaches. An interchange should include an overpass of the Railroad.

Additional Recommendation

	Existing turning movements
	Recommended turning movements

Intersection #1 – Route 460 (Windsor Boulevard) & Route 258 (Prince Street) – ALTERNATIVE B

Recommendation



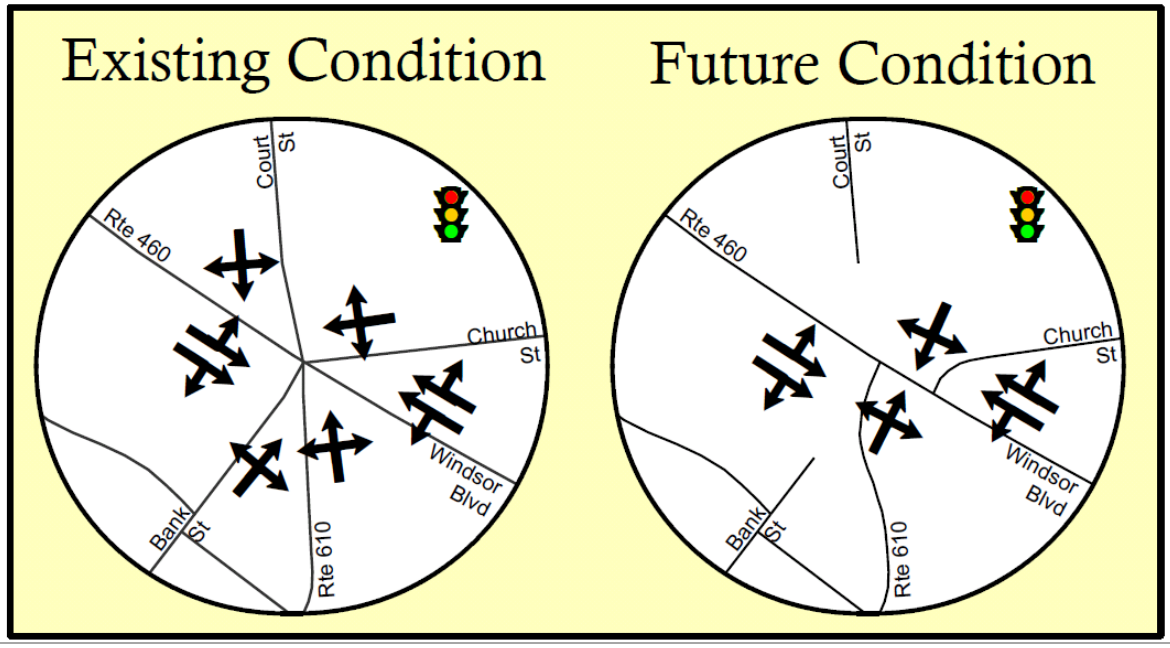
Recommendation - Estimated Cost (Route 460/258 Interchange): $60 – $130 Million
According to the Shirley T Holland Intermodal Park Traffic Impact Report, this intersection has been identified as "critical to the success of the intermodal park." Due to the close proximity of the railroad, the report states that an interchange at this location may be required if the Route 460 Bypass is not constructed.

Additional Recommendation
Due to the close proximity of the railroad, traffic at this intersection sometime experiences congestion due to passing trains. The southbound Route 258 traffic queues back during a passing train and could spillback into the intersection, only 220 feet away. Further study on the impact of stacking along roadways that cross the tracks is recommended.

	Existing turning movements
	Recommended turning movements

Intersection #2 – Route 460 (Windsor Boulevard) & Route 610 (Court Street) / Route 603 (Church Street)

Recommendation



Recommendation - Estimated Cost: $900K - $1.6 Million

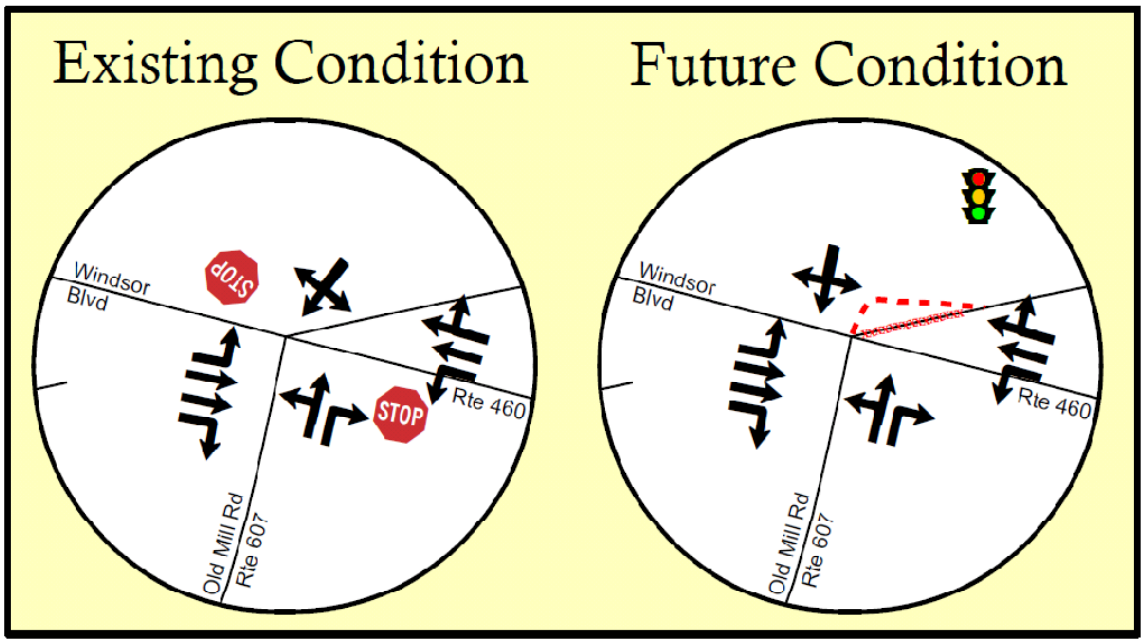
Capacity analysis of this intersection showed a need to convert this six-legged intersection into a typical four-legged intersection. It was determined after discussions with VDOT and with Town of Windsor staff that this intersection should be redesigned to reroute the traffic from Bank Street (Route 603) and N Court Street (Route 610) to the approaches of S Court Street (Route 610) and Church Street (Route 603). These approaches have been identified as the highest volume minor approaches and that have special needs, including truck turning radii and school bus routes. Currently skewed, it is recommended that these two approaches be realigned to form 90-degree angles with Route 460. These approaches could be offset from one another, as shown in the figure, without significant impacts to local businesses.

This conversion would maximize traffic flow and give more green time to the Route 460 approaches. This design is also preferred in a safety standpoint due to the lower number of vehicle conflict points. In addition to this conversion, it is anticipated that no additional turn lanes would be required. This signal should be coordinated with Intersection #1.

	Existing turning movements
	Recommended turning movements

Intersection #3 – Route 460 (Windsor Boulevard) & Route 607 (Old Mill Road) – ALTERNATIVE A

Recommendation



Recommendation - Estimated Cost: $2.4 - $3.8 Million

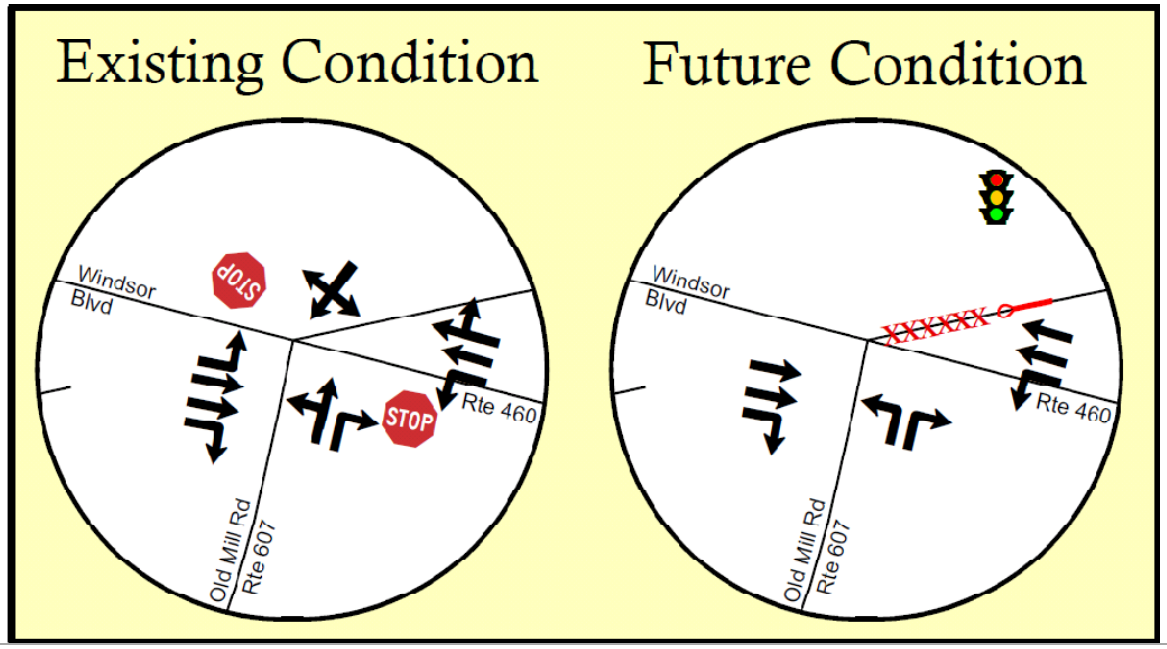
Future year (2035) traffic signal warrants were analyzed for this stop-controlled intersection. The PM peak hour signal warrant is expected to be met for this intersection. The minor approach volumes exceeded the peak hour volume threshold. While this intersection did meet the peak hour traffic signal warrant, this intersection should continue to be monitored for traffic signal warrant criteria. The southbound approach of Old Suffolk Road currently intersects Route 460 at a severely skewed angle. Two options are presented to address this situation.

The southbound approach of Old Suffolk Road should be realigned to intersect Route 460 at a 90-degree angle.

	Existing turning movements
	Recommended turning movements

Intersection #3 – Route 460 (Windsor Boulevard) & Route 607 (Old Mill Road) – ALTERNATIVE B

Recommendation



Recommendation - Estimated Cost: $1.1 – $1.8 Million

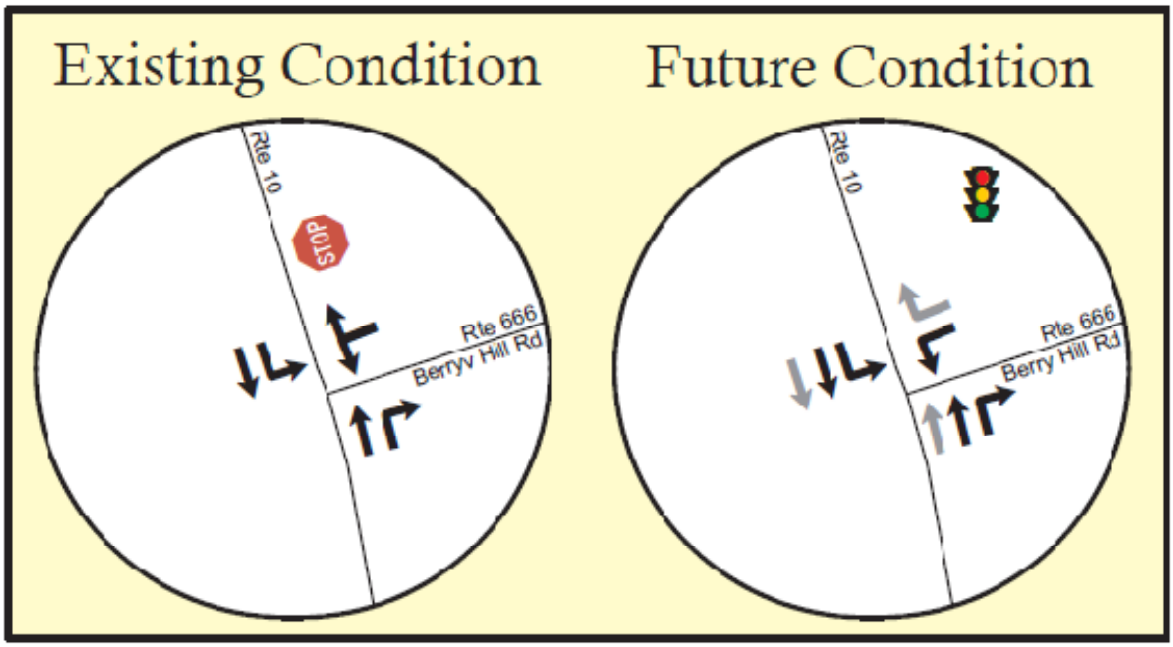
Future year (2035) traffic signal warrants were analyzed for this stop-controlled intersection. The PM peak hour signal warrant is expected to be met for this intersection. The minor approach volumes exceeded the peak hour volume threshold. While this intersection did meet the peak hour traffic signal warrants, this intersection should continue to be monitored for traffic signal warrant criteria. The southbound approach of Old Suffolk Road currently intersects Route 460 at a severely skewed angle.

The access of Old Suffolk Road via Route 460 would be eliminated. Alternative access would be available at Ennis Mill Road, less than one-mile to the east of this intersection. This option, resulting in a three-legged "T" intersection, would result in a safer and more efficient intersection at Route 460 / Route 607.

	Existing turning movements
	Recommended turning movements

Intersection #4 – Route 10 Bypass & Route 666 (Berry Hill Road)

Recommendation



Recommendation - $800K – $1.2 Million (does not include northbound and southbound through lanes, addressed in Roadway Improvements)

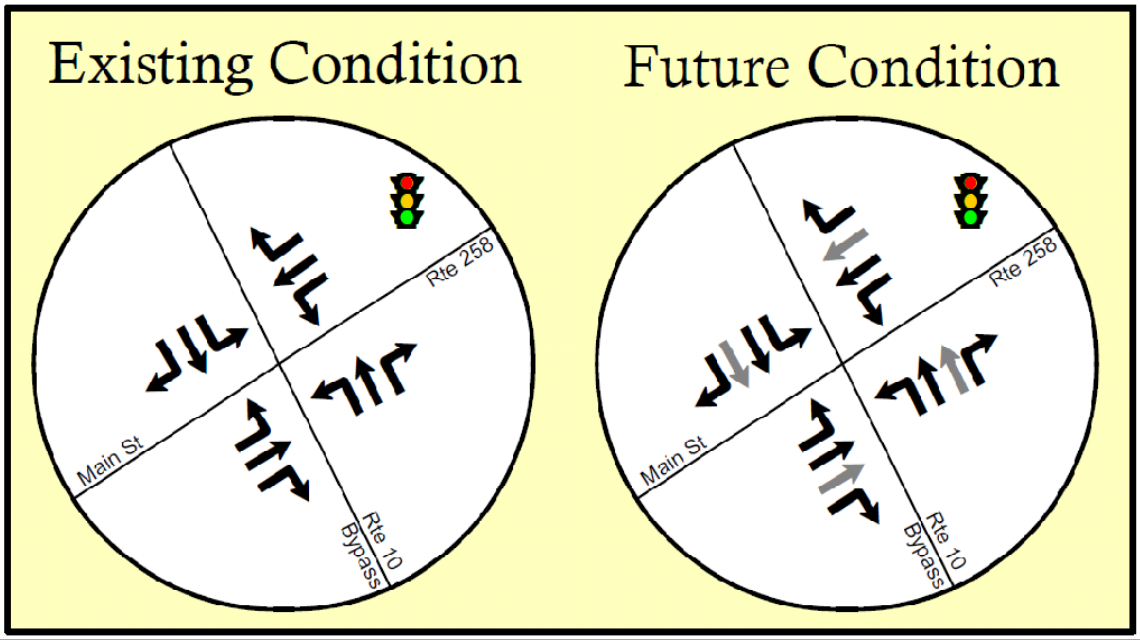
Future year (2035) traffic signal warrants were analyzed for this stop-controlled intersection. The AM and PM peak hour signal warrants are expected to be met for this intersection. The minor approach volumes, on Route 666, in both peak hours are expected to exceed the peak hour volume threshold. While this intersection did meet the peak hour traffic signal warrant, it is important to note that when assessing traffic signal needs, VDOT does not install a traffic signal until it meets 8- or 12-hour warrants. This intersection should continue to be monitored for traffic signal warrant criteria. Recent cuts in the workforce of Smithfield Foods could result in decreased congestion at this location.

In addition to meeting the peak hour signal warrants, an exclusive 200-foot right turn lane for westbound Route 666 (Berry Hill Road) should be provided. As discussed in the roadway recommendations section, the widening of Route 10 to four-lanes is recommended (Segment A – Segment D) and therefore is included in the recommendation of this intersection.

	Existing turning movements
	Recommended turning movements

Intersection #5 – Route 10 Bypass & Route 258 (Main Street)

Recommendation



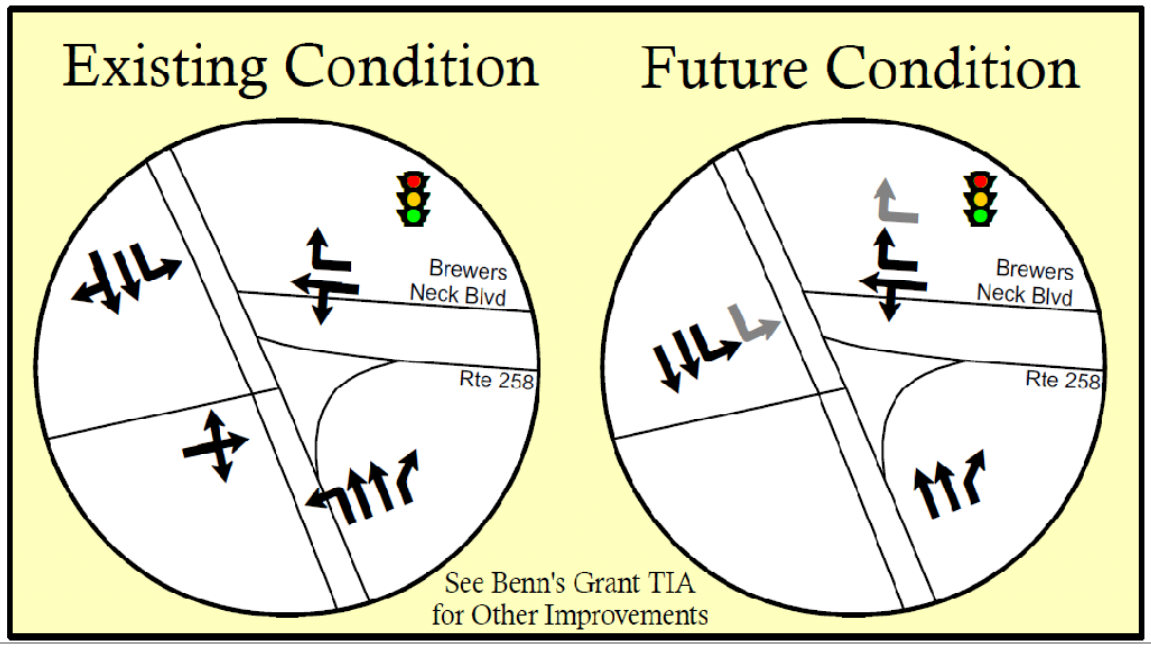
Recommendation - Estimated Cost: $170K - $270K
Additional through lanes are required for all approaches at this intersection. These additional through lanes at this intersection are also covered in the roadway recommendations section. While the roadway recommendation includes the widening of Route 258 from Waterworks Road to Route 10 Bypass, it is recommended to extend the widening of Route 258 through this intersection. This intersection already has exclusive turn lanes at all four approaches. It is also recommended to upgrade the existing traffic signal to accommodate pedestrian crossing.

Additional Recommendation
Great Spring Road intersects Route 258 only 230 feet to the west of Intersection #5. As access management guidelines are developed along this corridor, consideration should be paid to this intersection and improvements that will improve access and minimize potential conflicts, such as realignment of the access point for Great Spring Road.

	Existing turning movements
	Recommended turning movements

Intersection #7 – Route 10 (Benn's Church Boulevard) & Route 258 (Brewer's Neck Boulevard) – ALTERNATIVE A

Recommendation

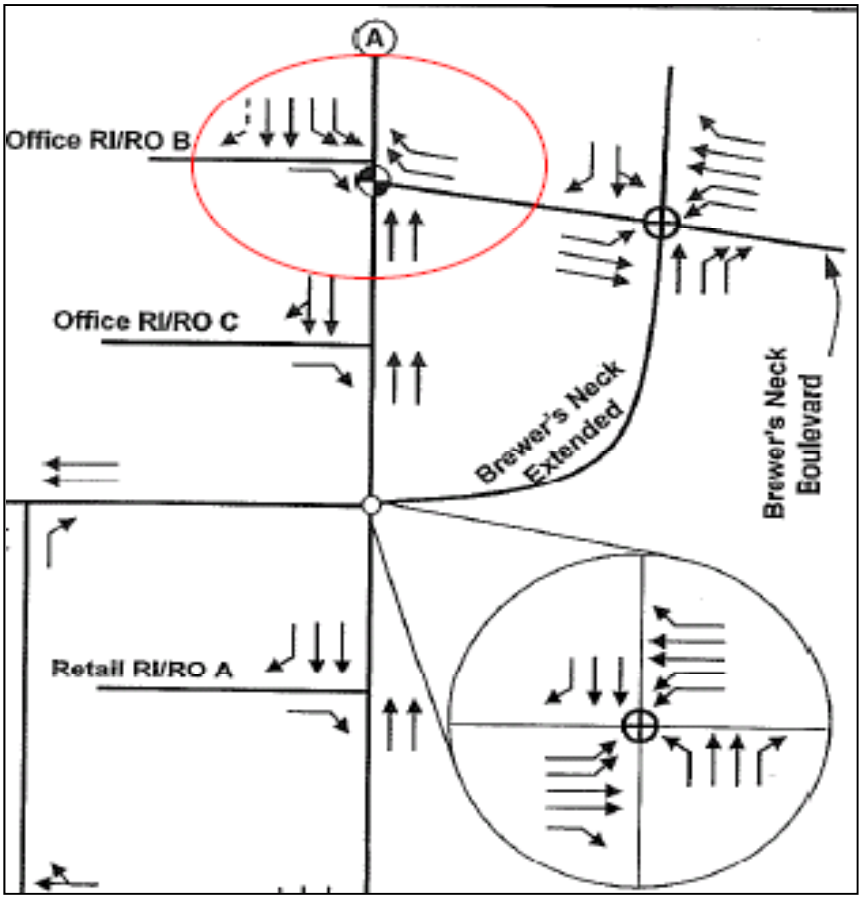


Recommendation - Estimated Cost: $900K - $1.2 Million
This intersection is expected to operate at LOS F in the future year conditions. An additional southbound left turn lane from Route 10 and additional right turn lane from westbound Route 258 are required to improve this intersection to an acceptable level of service. These improvements were developed based on the assumption that the Benn's Grant Development documented in the August 2007 Traffic Impact Analysis (TIA) is not developed.

	Existing turning movements
	Recommended turning movements

Intersection #7 – Route 10 (Benns Church Boulevard) & Route 258 (Brewer's Neck Boulevard) – ALTERNATIVE B

Recommendation



Proposed Lane Configuration from Benn's Grant Development TIA

Recommendation

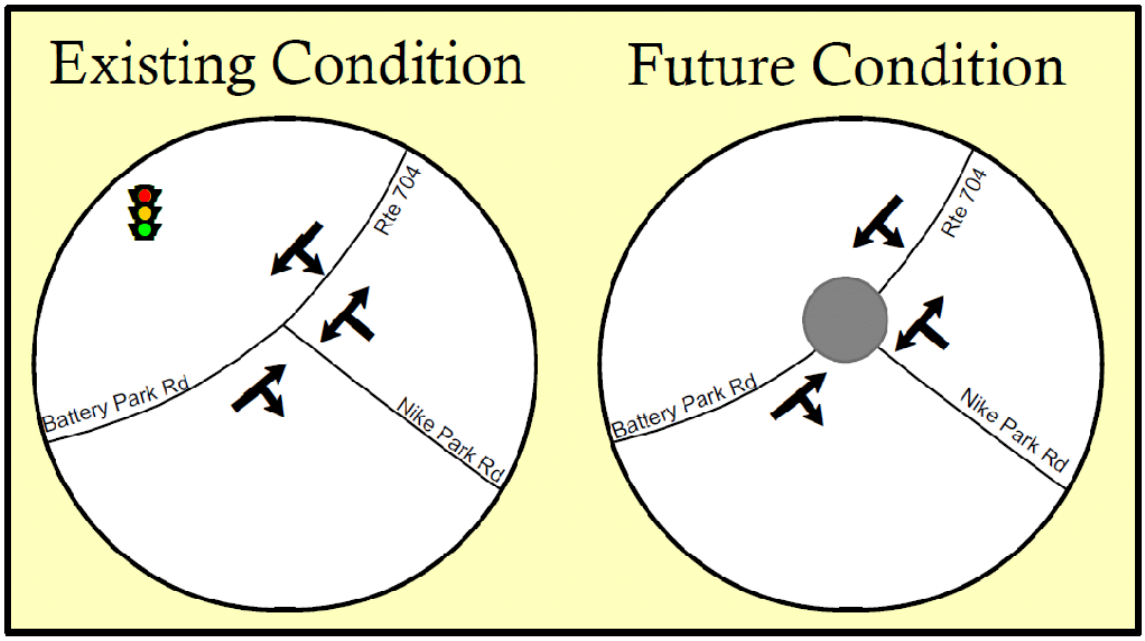
If the Benn's Grant Development does occur as planned, it is recommended that the improvements stated in the TIA are implemented to mitigate any traffic deficinecies associated with the development. Intersection improvements for Phase I (2010) from the TIA including the following:

- *Realign northbound approach to provide two exclusive through lanes and prohibit all other movements*
- *Construct additional southbound through lane, and reconfigure to provide dual lefts, dual through, exclusive right turn lane.*
- *Re-stripe existing westbound approach to provide two exclusive right turn lanes and realign so that all other westbound movements are prohibited.*

Intersection improvements from the TIA Build-Out Conditions (2027) include the realignment and split of this intersection. The proposed improvements to Intersection #7 and the surrounding area would result in less traffic at the intersection by providing the Brewer's Neck Extended roadway. Traffic operations at Intersection #7 would be expected to improve from these improvements.

Intersection #8 – Route 704 (Battery Park Road) & Route 669 (Nike Park Road) – ALTERNATIVE A

Recommendation

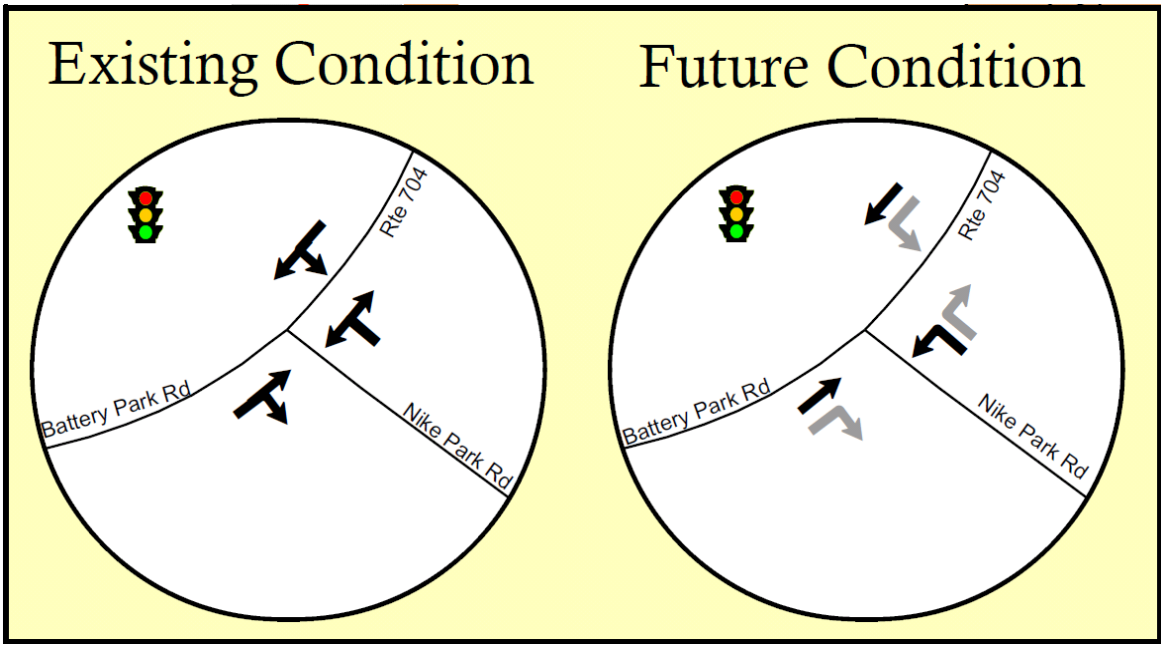


Recommendation - Estimated Cost: $1.6 – $2.7 Million
This intersection is an existing signalized intersection. The Town currently has plans to convert this signalized intersection into a roundabout. While level of service is not an output for roundabout analysis, it is expected to operate below capacity (Volume/Capcity ratio < 1.0). Future County plans also call for a residential development called Mallory Point to tie into the forth leg of this intersection (across from Nike Park Road). Excess capacity is available to handle the potential impacts and future demand from the proposed development.

	Existing turning movements
	Recommended turning movements

Intersection #8 – Route 704 (Battery Park Road) & Route 669 (Nike Park Road) – ALTERNATIVE B

Recommendation

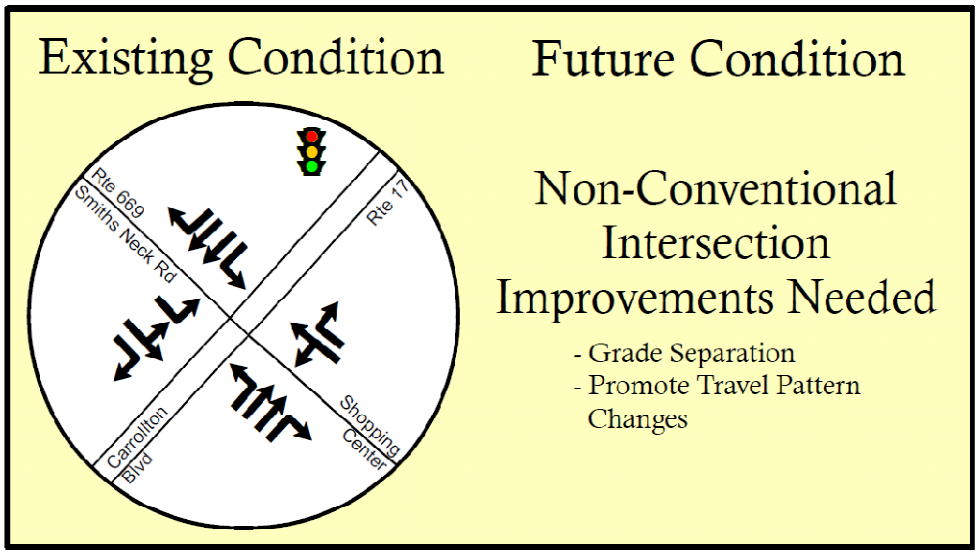


Recommendation - Estimated Cost: $1.2 - $2.0 Million
If a roundabout is not constructed at this intersection, it is recommended that each of the three approaches are provided with exclusive turn lanes to accommodate the expected future traffic and operate at an acceptable LOS D.

	Existing turning movements
	Recommended turning movements

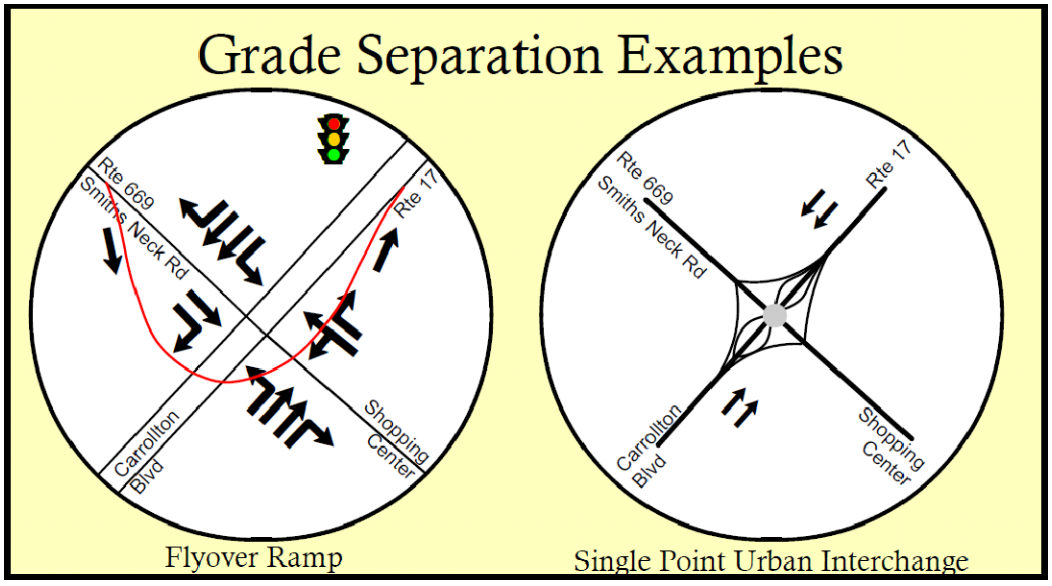
Intersection #9 – Route 17 (Carrollton Boulevard) & Route 669 (Smiths Neck Road)

Recommendation



Recommendation - Estimated Cost: $30 - $70 Million

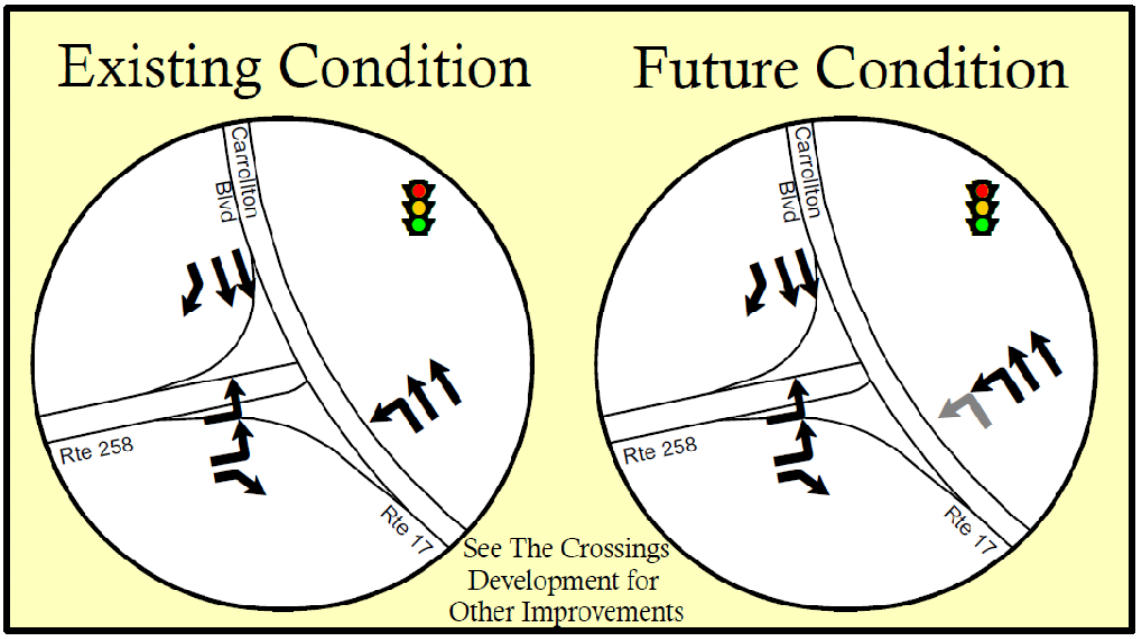
This intersection is expected to operate at LOS F in the future conditions for both the AM and PM peak hours. The expected high traffic volumes on Route 17 and Route 669 cause this intersection to fail. Capacity analysis showed that without reduction in traffic volume conventional intersection improvements did not significantly improve the level of service to an acceptable level. Tested improvements included triple left turns from Route 669, and three through lanes in each direction on Route 17. Although traditional intersection improvements may not improve the intersection enough, more non-traditional improvement would, such as grade separation.



Alternative Recommendation: Due to constraints, impacts, and cost, these options are not realistic at this intersection and other options should be investigated before consideration is given to grade separation. Promoting travel pattern changes may improve traffic flow at this intersection. Improvements made to Route 17, Route 258, and Route 10 could possibly promote travel via these roadways instead of cut-through traffic on Route 669 to the Town of Smithfield. An origin-destination (O-D) study would provide an insight into the high traffic volume along Route 17 and Route 669 in this area.

Intersection #10 – Route 17 (Carrollton Boulevard) & Route 258 (Brewer's Neck Road) – ALTERNATIVE A

Recommendation



Short – Term Recommendation - Estimated Cost: $30K - $70K

This intersection is expected to operate at LOS F in the PM peak hour in the future year conditions. The northbound Route 17 left turn movement is contributing to the poor level of service of the intersection as a whole. The storage bay of this left turn movement is not adequate and often causes the queue of vehicles to spillback into Route 17 through lanes. It is recommended as a short term improvement to lengthen the storage of this left-turn bay from roughly 150 feet to 300 feet.

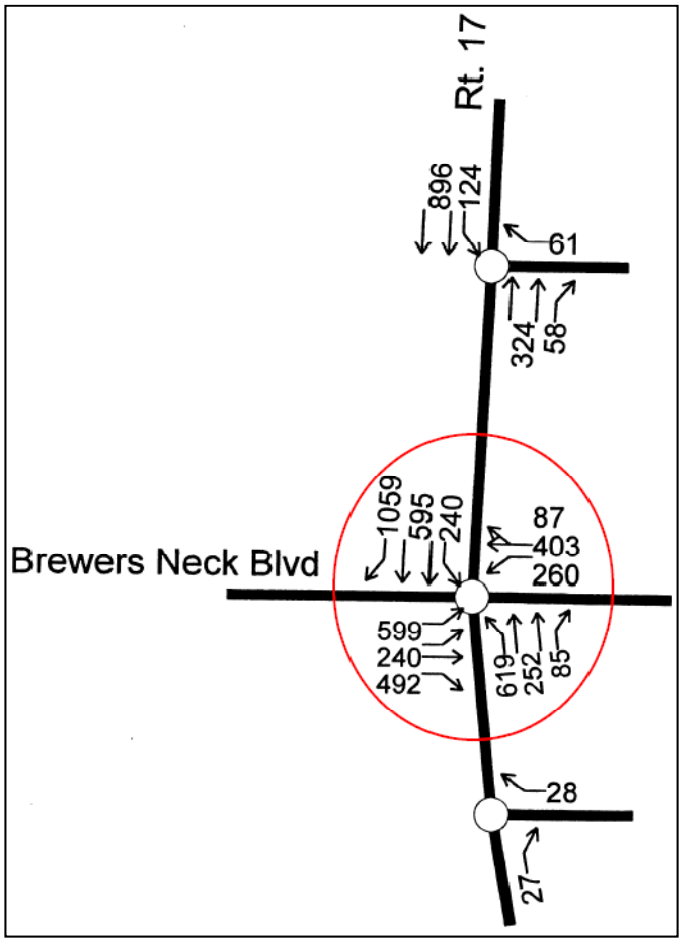
Long – Term Recommendation - Estimated Cost: $600K – $1.0 Million

Lengthening the northbound left turn storage bay, while providing additional storage, does not improve the capacity and level of service of the intersection. As a future year recommendation, it is suggested that an additional left turn lane be provided for the northbound Route 17 approach. Adding this turn lane will reduce green time needed for the left-turn movement vehicles and provide the other approaches with additional green time.

	Existing turning movements
	Recommended turning movements

Intersection #10 – Route 17 (Carrollton Boulevard) & Route 258 (Brewer's Neck Road) – ALTERNATIVE B

Recommendation



The Crossings Development - 2016 Future Volume and Lane Configuration

Recommendation

These improvements were developed based on the assumption that the The Crossings Development would be completed as documented in the August 2001 Traffic Impact Study (TIS).

The proposed Crossings Development would utilize the fourth leg (westbound leg) of this intersection. If the development does occur as planned, it is recommended that the improvements stated in the TIS are implemented to mitigate any traffic deficiencies associated with the development. Intersection improvements from the TIS include the following:

- *Provide exclusive northbound Route 17 right turn lane*
- *Provide exclusive southbound Route 17 left turn lane*
- *Provide exclusive eastbound Route 258 through lane*
- *Construct new westbound approach with, at least, an exclusive left turn lane and shared through-right lane*

Intersection improvements from the TIA Build-Out Conditions (2027) include the realignment and split of this intersection.

Table 2: Intersection Recommendations

	Intersection			Recommendation	Cost Estimate (in 2010 $million)	Improvement Schedule		
						Short-Term 0-5 Years	Mid-Term 5-15 Years	Long-Term 15+ years
1	Rte 460 (Windsor Blvd)	@	Rte 258 (Prince St)	a) Dedicated Turn Lanes	1.5-3.7		X	
				b) Overapass including RR Grade Separation	60 - 130			X*
2	Rte 460 (Windsor Blvd)	@	Rte 610 (Court St) / Rte 603 (Church St)	Realign cross-streets to form 4-way crossing	0.9 -1.6	X		
3	Rte 460 (Windsor Blvd)	@	Rte 607 (Old Mill Rd)	Realign and add signal OR eliminate skewed leg of intersection	1.1 - 3.8	X		
4	Rte 10	@	Rte 666 (Berryhill Rd)	Add turn lanes when roadway widened, monitor for traffic signal warrants	0.8 - 1.2	X		
5	Rte 10 / Rte 258 (Main St)	@	Rte 258 (Main St)	Add through lanes when Route 258 is widened and make signal improvements	0.17 - 0.27	X	X	
6	Rte 10 (Benn's Church Blvd)	@	Rte 10 Bus (S Church St)	No future deficiencies anticipated				
7	Rte 10 (Benn's Church)	@	Rte 258 (Brewers Neck)	Without Benn's Grant Dev. - add turn lanes	0.9 - 1.2	X		
				With Benn's Grant Dev. - reconstruct and realign as shown in TIA	To be completed by developer		X	
8	Rte 704 (Battery Park Rd)	@	Rte 669 (Nike Park Rd)	a) Roundabout	1.6 - 2.7	X		
				b) Dedicated turn lanes	1.2 - 2.0	X		
9	Rte 17 (Carrollton Blvd)	@	Rte 669 (Smiths Neck Rd)	Further study of potential travel pattern changes needed; ultimately a grade separation could be needed	30 - 70		X	X*
10	Rte 17 (Carrollton Blvd)	@	Rte 258 (Brewers Neck)	Without Brewer's Neck Dev. - increase turn lane storage; ultimately add turn lane	0.03 - 0.07 short term; 0.6 - 1 long term	X	X	
				With Brewer's Neck Dev. - reconstruct and add turn lanes as shown in TIA	To be completed by developer	X		

* Need would be more acute if new location Route 460 Bypass is not constructed.
TIA = Traffic Impact Analysis

Roadway Recommendations

Recommended roadway improvements were developed by identifying the roadways that are currently operating or expected to operate at a poor level of service (LOS E or LOS F). Recommended improvements are intended to mitigate the poor level of service caused by high traffic volumes and poor roadway conditions. The recommended improvements are conceptual improvements and were not analyzed for feasibility with respect to available right-of-way, utility relocation and environmental or historical features.

Table 3 lists the roadway segments and respective recommended improvements. The July 2009 Isle of Wight County Pedestrian and Bicycle Facilities Master Plan Update was cross-referenced with these recommendations to determine which roadway segment have plans for multi-use trails, bike lanes, sidewalks, or pedestrian crossings.

The improvement schedule identifies short-, mid-, or long-term recommendations. Those recommendations that are proposed to address a current roadway deficiency were identified as short- or mid-term projects. Those recommendations that address a future-year deficiency were assessed in terms of estimated cost and planning-level feasibility and identified as mid- or long-term projects.

Figure 7 identifies the location of all proposed roadway recommendations. This map also identifies the location of the 100 and 500 year floodplain and the location of past flooding events. The proposed recommendations were developed to address highway operational deficiencies only and were not developed to address flooding. Additional water specific engineering is warranted to adequately address existing and future flooding concerns along county roadways.

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Figure 7: Map of Roadway Recommendations

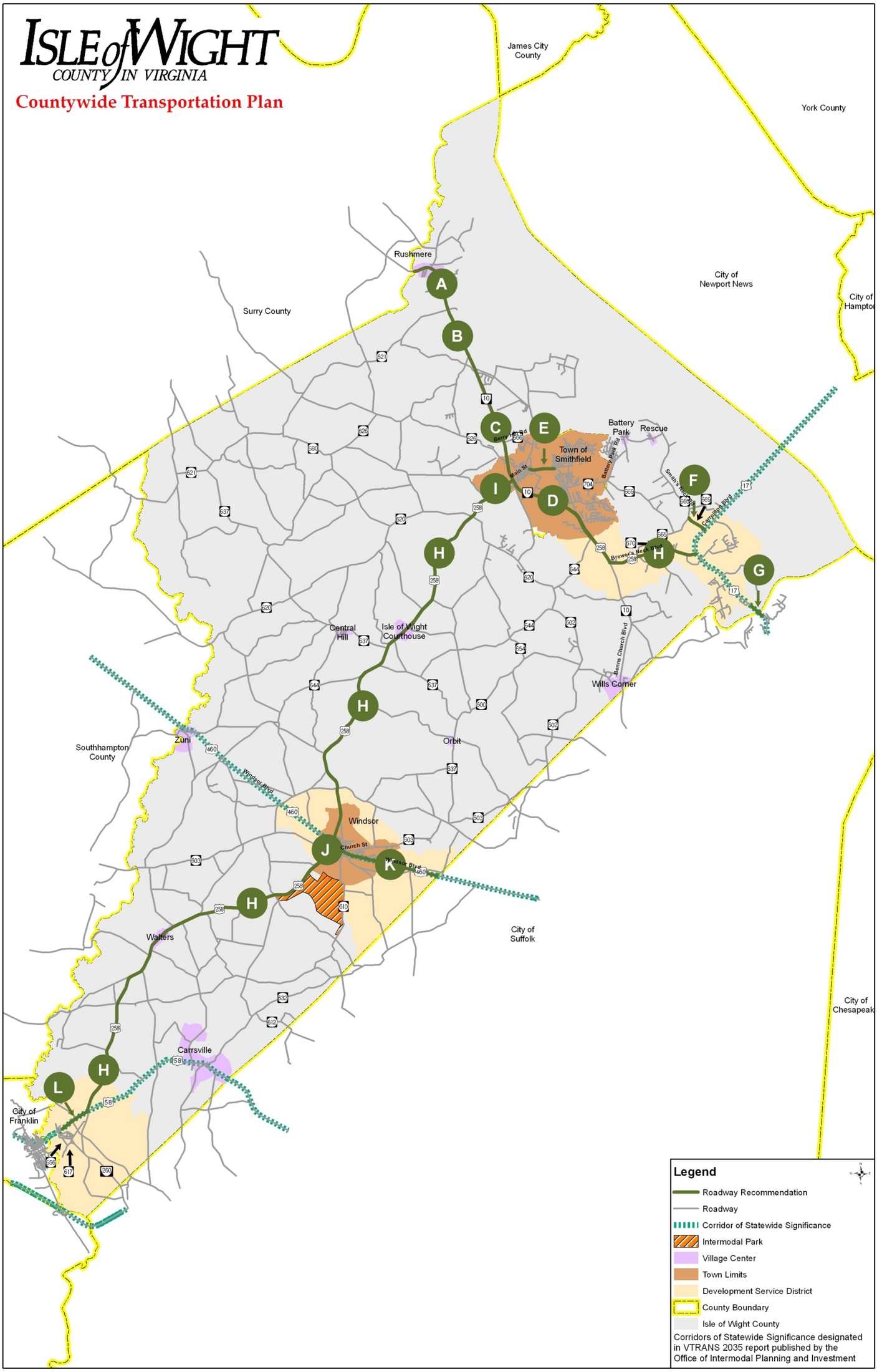

Table 3: Roadway Segment Recommendations[14]

Roadway	Segment ID	Segment From	Segment To	Segment Length (miles)	Recommendation	Cost Estimate (in 2010 Dollars)	Improvement Schedule			Part of Pedestrian and Bicycle Facilities Master Plan			
							Short-Term 0-5 years	Mid-Term 5-15 years	Long-Term 15 + years	Multi-Use Trail	Bike Lane	Sidewalk	Pedestrian Crossing
Route 10 / Route 10 Bypass	A	Surry County Line	Route 621	2.0	Reconstruct as an improved two-lane facility on right-of-way needed to accommodate a four-lane divided facility. Construct 12' lanes with 8' shoulders to better accommodate bicycle travel.	$21.4 - $29.4 Million	✓						
	B	Route 621	Route 10 Business (north)	2.1	Provide left and right turn lanes where warranted at all major routes. At a minimum, spacing of access points should comply with VDOT's Access Management Guidelines[15].	$1.8 - $4.4 Million per occurrence	✓				✓		✓
	C	Route 10 Business (north)	Route 258	3.7	Reconstruct as an improved four-lane divided facility to VDOT standards. Construct 12' lanes with 8' shoulders to better accommodate bicycle travel.	$41.3 - $64.8 Million		✓			✓	✓	✓
	D	Route 258	Route 10 Business	2.3	Provide left and right turn lanes where warranted at all major routes. At a minimum, spacing of access points should comply with VDOT's Access Management Guidelines.	$1.8 - $4.4 Million per occurrence		✓		✓		✓	✓
Route 10 Business (South Church Street)	E	Main Street	Red Point Drive	0.8	Consider adding center turn lane and pedestrian facilities. Look for access management/consolidation opportunities. Improved Route 10 Bypass should alleviate some congestion.	$6.0 - $14.6 Million		✓				✓	
Route 669	F	Route 17	Route 665	0.3	Extend four-lane segment from existing four-lane section to Route 665 (Reynolds Dr). Improving Route 17/258/10 should help alleviate traffic from secondary roads used now as a cut through.	$3.3 - $5.3 Million	✓			✓			✓
Route 17 Bridge	G	Isle of Wight County	City of Suffolk	0.7	Widen 2-lane section of Route 17 to 4-lanes, Reconstruct Bridge to accommodate four-lane with bicycle lanes	$61.8 - $94.0 Million		✓		✓			

[14] Recommendations do not include projects that are included in VDOT's Six-Year Improvement Program.

[15] Access Management is the systematic control of the location, spacing, design, and the operation of entrances, median openings, traffic signals, and interchanges for the purpose of providing vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system. VDOT's Access Management Regulations are provided in three parts: Access Management Regulations for Principal Arterials (24 VAC 30 – 72), Access Management Regulations for Minor Arterials, Collectors, and Local Streets (24 VAC 30-73) and Appendix F, Access Management Design Standards for Entrances and Intersections. VDOT implemented statewide access management guidelines in 2008 to improve the flow of traffic on principal arterials and to specify design standards for entrances and intersections. The guidelines apply to new roads and improvements to existing roads.

Table 3: **Roadway Segment Recommendations (Continued)**

Roadway	Segment ID	Segment From	Segment To	Segment Length (miles)	Recommendation	Cost Estimate (in 2010 Dollars)	Improvement Schedule			Part of Pedestrian and Bicycle Facilities Master Plan			
							Short-Term	Mid-Term	Long-Term	Multi-Use Trail	Bike Lane	Sidewalk	Pedestrian Crossing
Route 258	H	Corridor Wide*		~ 37 mi	Enhanced two-lane roadway with 12' lanes and 8' shoulders (where needed) on right-of-way needed to accommodate a four-lane divided facility. Provide left and right turn lanes where warranted at all major routes. Spacing of access points should comply with VDOT's Access Management Guidelines.	Enhanced Roadway (Cost Per Mile): $7.8 - $12.7 Million Turn Lanes: $1.8 - $4.4 Million per occurrence	✓	✓	✓	✓	✓	✓	✓
	I	Waterworks Road	Route 10 Bypass	1.0	Phase I: Reconstruct as an improved four-lane divided facility with flush center turn lane. Existing access points would remain. Construct 12' lanes with possible bicycle lanes.	$19.2 - $32 Million	✓	✓			✓		
					Phase II: As access management of Route 258 progresses, spacing of access points should comply with VDOT's Access Management Guidelines. A full median should be provided with crossovers and turn lanes at standard distances.	$16.9 - $28.0 Million (from existing configuration)		✓	✓				
	J	Proposed entrance(s) of Intermodal Park (South of Windsor)	Route 610 (North of Windsor)	1.0	Consider improvements as recommended in the Intermodal Park Traffic Impact Report (July 2009), such as widening Rte 258 to a divided 4-lane road with wide median able to support dual southbound left-turn lanes. Recommended improvements also call for a grade-separated interchange eliminating the railroad grade crossing.	Widening: $15.5 - $22.6 Million Grade Separation: $55.9 - $113.8			✓	✓		✓	✓
Route 460	K	Town of Windsor	City of Suffolk	1.5	As recommended in the Intermodal Park Traffic Impact Report (July 2009), provide turn lanes to all cross streets.	$1.8 - $4.4 Million per occurrence			✓	✓		✓	✓
Route 58	L	Route 258	Existing four-lane segment (@ Jamestown Lane)	1.2	Reconstruct as an improved four-lane divided urban facility to VDOT standards. Construct 12' lanes and provide left and right turn lanes where warranted at all major routes. Further study needed to determine if widening is warranted.	$13.4 - $21.0 Million		✓		✓			

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Secondary Roadways

The secondary roadway system in Isle of Wight County is extensive and consists of both paved and unpaved roadways. Certain secondary roadways are being used as cut-through routes and are in sub-standard safety and operational condition. Narrow lane widths, lack of shoulders, and poor connectivity are some of the typical secondary roadway characteristics throughout the County. The County's Comprehensive Plan briefly discusses the increase of traffic on the secondary road system that "raises concerns for LOS and safety on these roadways".

The current lack of funding for roadway improvements makes it difficult to address the secondary roadway system, but it should not be overlooked. As funding opportunities arise, needed improvements to the secondary roadways in the County could be identified and given priority for lane and shoulder widening, horizontal and vertical curve reduction, roadway connectivity and other safety and operational improvements. Those secondary roads highlighted as having above-average accident rates in Figure 5, Roadway Crash Rates, should be given priority for these improvements.

New Alignments

Projections for Year 2035 reveal failing LOS on several major County roadways. In addition, planned higher-density development along Brewer's Neck Boulevard and Benns Church Boulevard warrant close attention and potential further study of the development of new secondary roadways that could serve to remove local traffic movements from the major thoroughfares, utilizing existing roadways as a starting point. New connections could be possible between:

- Brewer's Neck Boulevard and Benns Church Boulevard;
- Carrollton Boulevard and New Town Haven Lane; and
- Carrollton Boulevard and the intersection of Reynolds Drive and Nike Park Road.

The location of complementary connections such as these and other parallel roadways would increase capacity and could ease congestion on the main arterials by providing reasonable alternatives for local commuters to complete their trips efficiently. Further study is needed to determine the feasibility of these alternatives, and to determine their actual impact in alleviating congestion.

Additional Considerations

Route 460 & the Shirley T. Holland Intermodal Park

Route 460 is a four-lane undivided highway (principal arterial) that passes through a number of towns and rural communities including Windsor and Zuni. A recently completed VDOT study analyzed the possibility for an alternate Route 460 location. The final EIS and ROD for the alternate location have been approved by the Federal Highway Administration. The project will extend from the existing U.S. Route 460 near its interchange with Interstate 295 (I-295) in Prince George County to the Route 58 bypass just south of the existing Route 460 in the City of Suffolk. The corridor alignment for this project runs south of the existing U.S. Route 460 for its entirety and has been approved by the CTB.

Because of a lack of interest from private partners, VDOT has delayed plans to construct the 55-mile bypass that would run parallel to the existing heavily traveled roadway[16]. As of March 2010, the Hampton Roads Planning District

[16] http://www.allbusiness.com/print/13011096-1-7w7of.html

Commission Long Range Transportation Plan (LRTP) included $13 Million for preliminary engineering related to the Route 460 bypass from Bowers Hill to Southampton County. Current information on the status of the Route 460 bypass project can be obtained at http://www.route460ppta.org/

The future construction of this bypass has been cited as a critical component to the future development and success of the proposed Shirley T. Holland Intermodal Park. The primary industry and major economic engine for the Hampton Roads area is freight movement at the many ports within the region. In order to capitalize on this industry, Isle of Wight County contracted Moffatt & Nichol in July 2007 to explore the development of an intermodal facility within the County, which has the potential to accommodate over 20 million square feet of distribution center space with direct access to Norfolk Southern rail lines and major highways. According to the Traffic Impact Report, the status of the proposed Route 460 bypass will significantly influence access to the Intermodal Park, specifically, the proposed interchange with Route 258. Without the 460 Bypass, heavy traffic volumes will be forced through Windsor on Routes 258 and 460 where the 35 mph speed limit and five traffic signals on Route 460 (two emergency signals) will affect truck movements and local traffic circulation[17].

The timeframe for completing the design and development of this scale of roadway development exceeds the horizon year of this CTP. Therefore, focus must be paid to the existing Route 460 corridor and its ability to accommodate the current and future traffic demands of the County. The recommendations outlined earlier in this chapter should be addressed in order for the existing roadway to function as needed.

If the Route 460 project does not move forward, the County should consider the completion of an updated County/regional study of the existing Route 460 corridor. This recommendation is consistent with a recent VDOT request that the County and Town of Windsor coordinate to complete an access management study of the existing Route 460.

Route 258

In 1994, VDOT studied proposed improvements and alignment changes for Route 258. Route 258 is a minor arterial and undivided two lane highway that is the County's major north-south roadway connecting Smithfield, Isle of Wight, Windsor and Franklin. The improvements identified in this study included expanding the roadway to two lanes in each direction separated by a median. The changes in alignment are to improve safety and line of sight at suitable speeds for future volumes while ensuring a context sensitive design. Implementation of the proposed improvements would help alleviate the traffic utilizing secondary roads as through ways[18].

Analysis conducted for the CTP reveals that there is no immediate need for widening Route 258. The roadway currently operates at an acceptable LOS and is projected to continue operating at that level through the Year 2035. Therefore, the recommendation for this roadway includes constructing an enhanced two-lane roadway with 12' lanes and 8' shoulders (where needed), retaining the existing alignment, on right-of-way needed to accommodate a four-lane divided facility if needed.

The County should continue to monitor Route 258 as development is proposed and occurs, specifically, development of the Shirley T. Holland Intermodal Park. If significant increases in traffic (both freight and commuter) result from this development, widening of the roadway may become necessary.

[17] Shirley T. Holland Intermodal Park Traffic Impact Report, July 2009
[18] Isle of Wight County Comprehensive Plan, 2008

Section III: Funding & Implementation

The current economic environment makes it very difficult for any jurisdiction to address many of their critical transportation needs. This section identifies local, state and federal funding sources that traditionally have been used for transportation. While the resources available for many of these funding streams have decreased significantly over the past several years, funding will eventually improve. The County needs to be aware of what's available and how to access these resources so they can move quickly once the funding environment improves.

Funding

In the current economic environment, identifying additional funding for transportation proves quite challenging. In the past, a number of state and federal funding sources were the main mechanism for completing transportation enhancements and improvements. These funding sources still exist, however, are less reliable than in the recent past. Nevertheless, as we look toward the future these funding sources should recover and continue to be an invaluable resource for funding transportation. In addition to the funding sources identified below, the County should continue to be on the lookout for new funding mechanisms that are proposed and implemented at the regional, state and federal level. A summary of the available federal, state and local funding sources is also provided.

Local Funding Sources

Proffer

Proffers are voluntary commitments made by a land-owner at the time that an application for a zoning map amendment is approved. Proffers are enforceable agreements that run with the land and are intended to offset the impacts of a proposed development. Proffers are reviewed for implementation during the site plan and subdivision processes that come after a rezoning process. Proffers, in the form of physical improvements or cash contributions, assist in improving the public infrastructure needed to serve new residents and users of new developments.

Dependence on proffers as a key instrument for the financing of transportation improvements can be problematic. When proffers for different components of a local system (for example, different segments of the same road) are offered by different developers, there can be no assurance that all of the segments will be built in a timely way so that the system will be fully functional when it is needed.

Impact Fees

An impact fee is an assessment or payable amount imposed on new development in order to generate revenue to fund or to recover reasonable costs of public facility improvements, the need for which are generated by new development. Section 15.2-2317 -2327 of the *Code of Virginia* authorizes counties to enact an impact fee program for roads. The fee must be based on a formula for road improvements with a specified service area or "traffic shed". A deterrent to using the impact fee enabling law is a prohibition in the law from assessing an impact fee on any development that is covered by proffered conditions for any off-site road improvements.

Local Tax Options for Transportation Financing

Two local taxing mechanisms are available to provide dedicated funding for transportation projects under current state law. One is Tax Increment Financing, which links the anticipated revenue increases of a growth area with the infrastructure improvements needed to support growth. Specifically, the County would dedicate towards transportation funding the tax revenues from a certain area over and above an established base level of revenue for

a specified period of time. The locality typically uses revenue generated in this manner to pay for debt-financed improvements, and the locality must provide good-faith backing of the bonds in the event the incremental tax revenues do not meet the financial projections. This approach therefore competes with other financial initiatives for the debt capacity of the jurisdiction, even though the intention is to pay for the improvements with the "extra" revenues generated by growth.

The second approach is a Transportation Improvement District. This approach identifies an incremental tax level to be applied within a defined geographic area. More than 50% of the property owners (weighted by value) in the district must approve the tax in order to implement this strategy. Typically, this type of approach is most successful when specific improvements shown to benefit the taxation district are linked to the incremental tax, such as an interchange or a new transit service.

State Funding Sources

Six-Year Improvement Program (SYIP)
Eligible Funding Activities: Roadway construction on interstate, primary and urban highway systems, secondary roadways; ports; airports; rail and public transportation

Each year the CTB updates the Six-Year Improvement Program. After meetings at the District level, VDOT staff prepares a working draft of the Six-Year Improvement Program complying with the policy goals of the CTB that include paying off deficits on completed projects and not creating new deficits, fully funding construction projects by the time they are complete, bringing phased projects or programs to a reasonable stage of completion, and requiring that new projects added to the program be eligible for federal funds.

The plan divides projects into two distinct phases, the Feasibility Phase and the Six-Year Capital Improvement Program Phase. Projects in the Feasibility Phase are those under study, such as a federally mandated environmental assessment, feasibility study, or a location study. The Six-Year Capital Improvement Program Phase includes projects that have met the regulatory and public participation requirements, and includes final design, right-of-way acquisition, and construction.

Due to the lack of a dedicated, sustainable funding source for transportation, the Commonwealth has not been able to provide adequate funding to meet the County's transportation needs. Furthermore, the program is highly competitive. Isle of Wight County must compete with the more populous jurisdictions throughout the Commonwealth. It is difficult to place new major primary road projects on the program and once projects are on the list, the wait is long before advancing to construction.

The Secondary Road Improvement Program (SRIP)
Eligible Funding Activities: Construction of secondary roadway improvements

The Secondary Road Improvement Program (SRIP) is updated every year by the County in cooperation with VDOT. The funds are distributed to counties through a series of formulas. Secondary road funds are 30 percent of the state's construction funds available each year. Due to declining revenues for transportation overall, secondary road funds have significantly decreased in the past several years. Each county receives its share of secondary road funds

determined by a formula based on 80 percent for population and 20 percent for land areas. Unpaved road funds are allocated to the County based on its share of the total unpaved miles eligible for funding in the state.

State Revenue-Sharing Program

Eligible Funding Activities: Provides additional funding for use by a county, city, or town to construct or improve the highway systems within such county, city, or town, with statutory limitations on the amount of state funds authorized per locality. Funds can also be requested for eligible additions

The Virginia Department of Transportation administers this program, in cooperation with participating localities, under the authority of Section 33.1-23.05 of the *Code of Virginia*. The "Revenue Sharing Program" in certain counties of the Commonwealth. Locality funds are matched with state funds for qualifying projects. An annual allocation of funds for this program is designated by the CTB.[19]

State Recreational Access Funds

Eligible Funding Activities: Assists localities in providing access to public recreational or historic areas owned by the Commonwealth of Virginia or a local government. Both roads and bikeways are eligible for program funding. The program is administered by VDOT under the authority of §33.1-223 of the *Code of Virginia* with the concurrence of the Director of the Department of Conservation and Recreation. Funding for these projects is provided through VDOT's Recreational Access Fund and approved by the CTB.

The purpose of the Recreational Access Program is to provide adequate access to recreational areas or historic sites operated by the Commonwealth of Virginia, a local government, or authority.

Economic Development Access Program

Eligible Funding Activities: Financing for the construction or improvement of roads, with the exception of primary roads, to new or expanding qualifying economic development sites.

The Economic Development Access Program is administered by the CTB, which allocates funds, as provided under the authority of Section 33.1-221 of the *Code of Virginia*, for eligible projects from the Industrial, Airport and Rail Access Fund. The purpose of the program is to finance the construction or improvement of roads, with the exception of primary roads, to new or expanding qualifying economic development sites. These roads will provide access from the nearest adequate publicly maintained road to the property line of the qualifying site. Adequate access may require construction of a new roadway or improvement of an existing road. Qualifying sites are determined by the CTB in consultation with the Virginia Economic Development Partnership and the Virginia Department of Business Assistance.

[19] Application for program funding must be made by resolution of the governing body with appropriate forms as outlined in the Revenue Sharing Guide. Towns not maintaining their own streets must have their requests included in the application of the county in which they are located. Project administration may be accomplished by the Department of Transportation or by the locality under an agreement with the Department.

Federal Funding Sources

Regional Surface Transportation Program (STP) Funds
Eligible Funding Activities: Funds may go to primary or secondary road projects and transit projects.

The Safe, Efficient, Accountable, Flexible, Efficient, Transportation Act: A Legacy for Users (SAFETEA-LU) established several categories of STP funding. Regional STP funds, thirty percent of the overall program, flow through the state formulas for primary, secondary, and urban road programs and are distributed through a regional allocation process.

The application of Regional STP funds is extremely flexible. Funds may be used to accelerate projects that have difficulty in advancing through other funding programs. However, the state is required to pay a 20 percent local match of federal funds and STP funds may only be applied to projects that are ready to be engineered or constructed. The process to obtain funding is both competitive and complex.

Transportation Enhancement Program

Eligible Funding Activities: Pedestrian and bicycle facilities, pedestrian and bicycle safety education, transportation museums, and projects to reduce vehicle induced wildlife mortality.

Ten percent of the state's yearly STP funding allocation is set aside for enhancement projects. These projects help improve quality of life by providing environmental amenities to the transportation system. Jurisdictions and private groups are eligible to apply to the state for enhancement funding through a competitive grant application process.

Congestion Mitigation and Air Quality Improvement Program
Eligible Funding Activities: Local transit projects such as transit service start-up costs, the purchase of vehicles, or bus shelters, traffic-signal coordination, ridesharing programs, as well as certain bicycle and pedestrian facility projects

The CMAQ Program is another SAFETEA-LU funding category. In order to receive CMAQ funding, a project must demonstrate a positive impact on reducing vehicle emissions and improving air quality. Most past and proposed CMAQ projects are transit or ridesharing oriented. CMAQ funds for traffic-signal coordination or ridesharing programs require no local match. However, CMAQ transit project funds require a 20-percent local match that the state currently does not pay.

Safe Routes to School (SRTS)
Eligible Funding Activities: Planning and construction projects for improving bicycle and pedestrian access, safety and connectivity within a 2-mile radius of elementary and middle schools.

Safe Routes to School Program is a federally-funded program created under Section 1404 of SAFETEA-LU. As written in SAFETEA-LU, the purpose of the SRTS program is to Enable and encourage children, including those with disabilities, to walk and bicycle to school; Make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age, and facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

Additional Bicycle and Pedestrian Funding Sources

The federal government offers a number of programs that are dedicated to providing funding for most bicycle and pedestrian projects. The programs are diverse and are made available for eligible projects according to their own sets of criteria. Each is listed below. Additional information is available at www.fhwa.dot.gov.

- Hazard Elimination Program
- Recreational Trails Program
- Federal Lands Highway Program
- National Scenic Byways Program
- Job Access and Reverse Commutes Grants
- High Priority Projects and Designated Transportation Enhancement Activities
- Capital Investment Grants and Loans
- State and Community Highway Safety Grants

Implementation

The Isle of Wight Countywide Transportation Plan is a component of the County's Comprehensive Plan. The recommendations of this plan will serve as the basis for future transportation planning efforts. The implementation matrix below provides an outline of additional measures that the County can take to complement the recommendations of the CTP. This matrix provides objectives and tasks for the County to focus on to further their multimodal transportation goals.

The CTP does not provide the detailed engineering, funding mechanisms and specific planning and analysis ultimately required for its full implementation. Necessary implementation actions include corridor and project-specific environmental impact studies, modifications to land use plans and ordinances, and inter-jurisdictional cooperation and program development.

Table 4: Implementation Matrix

Implementation Topic	Objectives	Implementation Task
A. OVERALL		
Roadway Safety and Capacity Improvements	1. Schedule and fund recommended roadway improvements identified in the CTP.	1. Work closely with Regional entities and VDOT to schedule recommended improvements in regional funding plans and VDOT's Six Year Improvement Program.
CTP Performance	1. Track implementation of CTP recommendations to monitor the impact of transportation improvements. 2. Keep CTP current with respect to state of the transportation practice and policies.	1. Develop and implement measures (e.g. collection and analysis of supplemental traffic and environmenta data including volumes, delay, observed speeds, etc) that can be used to track performance and success of improvements.
Periodic update of Recommendations	1. Keep list of recommendations current with respect to changes in countywide priorities, development patterns, land use and completion of projects.	1. Develop a schedule for updating the CTP on a 5 year basis. 2. Pursue traditional and innovative funding mechanisms for identified recommendations.
B. REGIONAL/STATE/LOCAL COORDINATION		
Town Coordination	1. Coordinate with the Towns of Smithfield and Windsor as necessary for planned multimodal roadway improvements	1. Work with the Towns and VDOT to prepare preliminary engineering studies to provide sufficient information for planned roads to estimate costs, negotiate development proffers, and for other purposes.
Regional Coordination	1. Ensure the County's interests are addressed in regional and statewide plans and facilitate cooperation between jurisdictions.	1. Coordinate between the County's transportation and planning staff to identify priority objectives and strategies to focus County efforts in working with regional agencies. 2. Coordinate with state plans for regional facilities.

Table : Implementation Matrix (Continued)

Implementation Topic	Objectives	Implementation Task
C. NEIGHBORHOOD ISSUES		
Neighborhood "Cut Through" Traffic	1. Coordinate the implementation of traffic-control measures (e.g. stop signs) to discourage "cut-through" traffic. Develop appropriate traffic-calming techniques.	1. Complete a broad analysis of "cut-through" traffic problems and identify how such problems can be addressed through appropriate techniques for calming traffic.
Traffic Calming	1. Increase safety for drivers and pedestrians.	1. Promote and evaluate traffic calming techniques along highly travelled local roads and pedestrian areas and develop implementation program.
D. TRANSIT		
Transit Routes	1. Expand transit / commuter service to the County	1. Work with the Towns, regional organizations and transit providers to identify thresholds for expanding service to the County and identifying a plan for achieving that goal.
Passenger Rail	1. Capitalize on expanded passenger rail to Hampton Roads	1. Coordinate closely with DRPT and regional entities to ensure the County has a seat at the table during the planning process for expanding passenger rail services.
E. BICYCLE AND PEDESTRIAN ACCOMMODATIONS		
Implement 2009 Bicycle and Pedestrian Master Plan Update	1. Ensure bicycle and pedestrian accommodations are integrated into the road network.	1. Use the CTP and the County's 2009 Bicycle and Pedestrian Master Plan Update in the review of all development applications and ensure that these facilities are included in all plans.
F. RAIL CROSSINGS		
Address Safety and Congestion Issues Associated with Rail Crossings	1. Ensure the safe efficient crossing of the rail network with the County's roadway network.	1. Complete comprehensive study of rail crossings that identifies resulting delay, safety issues and improvement alternatives. 2. Coordinate with Norfolk Southern and CSX on future roadway improvement plans to identify reasonable alternatives for improving rail crossings.

Table : Implementation Matrix (Continued)

Implementation Topic	Objectives	Implementation Task
G. BRIDGES		
Deficient Bridges	1. Improve/replace existing deficient bridge structures.	1. Work with regional entities and VDOT to schedule and fund the replacement of deficient bridges, with priority to those having the lowest sufficiency rating in the 2008 Hampton Roads Regional Bridge Study. Structurally deficient bridges are "a structure with elements that need to be monitored and /or repaired," according to the Bridge Report. Functionally obsolete bridges are defined as "a structure that was built to standards that are no longer used today."
H. EVACUATION ROUTES		
Adequacy of Identified Evacuation Routes	1. Ensure Adequacy of Evacuation Routes	1. Study further the anticipated traffic levels in the case of Hampton Roads Emergency Evacuation and assess the adequacy of these routes with and without proposed Route 460 improvements. 2. Where flooding has occurred on identified evacuation routes, study whether alternative routes exist and whether adjustments to the evacuation plan or improvements to correct flooding should be recommended.