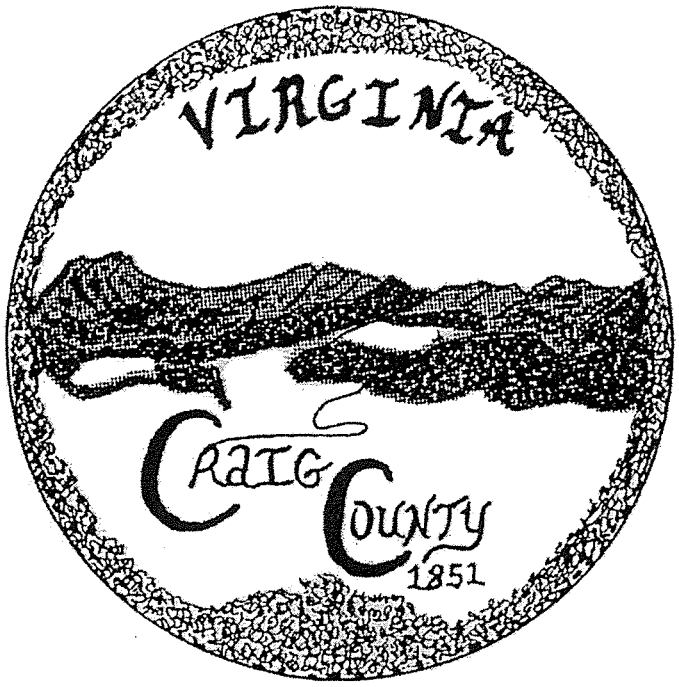
# Craig County
# Long Range Transportation Plan




Prepared by the staff of the
Fifth Planning District Commission

1998

## Acknowledgments

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Daniel E. Mckinney
Transportation Planner
Fifth Planning District Commission

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**Craig County**
**Long Range Transportation Plan**

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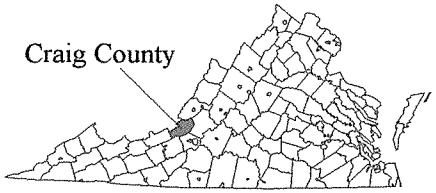



Paint Bank

Barbours Creek

New Castle

N

Prepared by the
Fifth Planning District Commission
June 1998

---------- Old Railroad Grade

1 0 1 2 3 4 5 Miles

# Introduction

## Purpose of the Study

It is essential to maintain and improve the routes commodities move along to insure that communities continue to sustain and advance themselves. Transportation planning is meant to insure that these routes are maintained and expanded when needed to make it easier for people to move from place to place. It is concerned with examining circulation systems in order to assess the need for essential improvements, giving due consideration to safety, comfort, and cost. It has been recognized that as Craig County continues to grow the transportation issue must be given careful consideration to develop in a logical fashion and accommodate the demands on the infrastructure.

The primary purpose of the Craig County Long Range Transportation Plan is to provide information and guidance on the development of accommodations and improvements to the transportation system currently installed within the County. The information provided should be used in order to increase safety, service, and efficiency of the County's transportation system as well as to increase the quality of living within Craig County.

This plan also serves another purpose. This Plan is meant to facilitate the coordination of transportation projects between the presumed needs of the County and the Six Year Improvement Program. With better coordination it is hoped that the process will be less confusing and more streamlined.

This Long Range Transportation Plan can help Craig County advance in a reasonable manner and improve the lives of County residents. The following discussion of transportation systems in Craig County gives a general summary of available transportation networks, their limitations, the transportation trends within the County, and what improvements are being or should be considered.

## General Overview Of Craig County

The following overview provides an introduction to the history of the County, its physical characteristics, and a summary of natural and economic resources. Some of the information was obtained from a report entitled Data Summary: Craig County, prepared by the State Department of Planning and Budget, January, 1977.

Craig County was formed in 1851 from Botetourt, Roanoke, Giles and Monroe Counties. There were several additional annexations from Alleghany, Giles, Monroe, and Montgomery Counties after the County's formation. The County was named for Robert Craig, delegate from Roanoke County to the General Assembly, who was instrumental in the County's formation. Exploration of this area had begun around 1751 and by 1774 there were several permanent settlements. New Castle was established as the County seat

when Craig County was formed and it remains the only incorporated town within the County. New Castle was originally known as New Fincastle, but to eliminate confusion concerning this town and the Town of Fincastle in Botetourt County, the name was changed to New Castle.

Craig County has a land area of 336 square miles (or 215,040 acres). It lies in the south central portion of the Great Valley of Virginia and borders the State of West Virginia. Several major ridges, running northeast-southwest reach altitudes of 3,000 to 3,900 feet. The highest peaks are Arnolds Knob at 3,929 and Peters Mountain at 3,866. The County claims many fertile valleys, the largest of which is along Sinking Creek. Several large streams also flow within the County, these include: Craig Creek, Johns Creek, and Sinking Creek. Craig County's climate ranges from an average temperature of 35 degrees in January to about 75 degrees in July, and the average annual precipitation is 41 inches. Approximately 75 percent of the County is forested, with the largest amount of forested land being controlled by the federal government in the George Washington / Jefferson National Forest. Natural resources such as mineral deposits of manganese, dolomite, shale, and clay are also plentiful in the County.

A few major roads bisect Craig County allowing access to the rest of the Commonwealth. State Route 311 is a primary highway and the most heavily traveled route in the County. Route 311 runs in a general north-south direction from Roanoke County, through New Castle and continuing on to the West Virginia State line. State Route 42 is another major road that runs from New Castle south west towards neighboring Giles County (See Transportation Map, page 23). It would not be an exaggeration to consider these roads the lifelines of Craig County.

Agriculture remains important to the economy of the community. Principle sources of farm income are livestock, poultry, and their products. However, County employment is heaviest in nonagricultural activities. There are a high percentage of County residents who are employed as craftsman, foreman, and clerical workers. In recent years there has also been a significant increase in the number of residents holding professional and technical positions. Many County residents commute to other cities and counties for employment, especially to the Roanoke and Blacksburg areas.

There is limited manufacturing activity in the County. Products of the County include lumber, wood furniture, and women's wearing appeal. Sand is also excavate in Craig County for purposes of building and road construction. Commercial activity in the County is also limited with the vast majority of it located in New Castles.

Community facilities in Craig County include waysides and national forest picnic sites as well as Craig Healing Springs, a summer training center and conference grounds owned by the Virginia Christian Church Missionary Society.

## Transportation Goals and Objectives

Society relies on the movement of goods, services, and information to sustain and advance itself. The planning, improvement, and maintenance of the infrastructure that these commodities use is of vital importance for any region's development. The Goal of the Transportation Plan is to establish a sustainable highway network that will accomplish the following:

1. Prevent negative impacts with respect to safety, the environment, and the community.

2. Preserve the viability (physical and financial) of the existing infrastructure.

3. Promote accessible and efficient mobility.

4. Improve service and quality of travel.

5. Serve the disadvantaged.

# Existing Conditions

## Highways

The transportation network in Craig County is currently limited to three primary two lane highways and approximately a hundred secondary routes, paved and unpaved. State Route 311 is the major access route into Craig County. This highway runs north-south through the County from the West Virginia line towards Roanoke in the south where it connects with U.S. Routes 11, 460 and Interstate 81, providing access to all parts of the Commonwealth. State Route 42 runs southwest from New Castle and intersects with U.S. Route 460 at Newport in Giles County supplying a route to the employment opportunities of Montgomery County and Blacksburg. State Route 18 connects the northern tip of the County with Covington and gives access to U.S. 60 and Interstate 64 in Alleghany County to the north County (See Transportation Map, page 23).

According to the Virginia Department of Transportation's 1993 Craig County General Highway Map there were 59.66 miles of primary highway and 180.44 miles of secondary roads in the county. Approximately 179 miles of the secondary roads were hard surface or all weather roads. See Table 1 for a list of Primary and Secondary road mileage by surface type. In the 1998-99 fiscal year, $437,927 were allocated to VDOT's Six Year Improvement program for the secondary system. Funds for the secondary system improvement program are projected to total $2,764,114 for the next six years. These allocations will be used for reconstruction, realignment, and other improvements scheduled for the secondary roads within Craig County (VDOT, Six Year Improvement Program).

Table 1: Mileage, Primary and Secondary Roads, by Type

Primary Road Mileage: 59.66
Secondary Routes

| Type | 12/31/60 | 12/31/70 | 12/31/80 | 12/31/84 | 12/31/88 | 12/31/92 |
|---|---|---|---|---|---|---|
| Hard Surface | 93.03 | 110.19 | 121.55 | 130.57 | 134.81 | 136.44 |
| All-weather | 49.88 | 55.01 | 55.59 | 46.75 | 44.35 | 43.08 |
| Light Surface | 32.72 | 12.45 | 1.09 | 1.01 | 0.92 | 0.92 |
| Unsurfaced | 1.1 | 0.51 | 0.84 | 0.84 | 0.00 | 0.00 |
| Total Mileage | 176.73 | 178.16 | 179.07 | 179.17 | 180.08 | 180.44 |

Source: VDOT Craig County map, 1993 edition.

The mileage's associated to the road types are subject to change as road inventories are taken and data is updated in the systems. The definitions for the road surface types include:

- Hard Surface Asphalt, Concrete, and Tar and Gravel.
- All Weather Surface: includes gravel roads
- Light Surface, Gravel but not as heavily traveled as the all weather surface.
- Unsurfaced, includes all Dirt Roads

## Projects

Following are several proposals to improve sections of the Craig County road system. These proposals come from the Craig County Administrator and the Virginia Department of Transportation. Entering and exiting the solid waste center along Route 609 has always been difficult because of the unpaved surface and narrow road width. This intersection is planned to be refined by paving and widening it, as well as providing larger right of ways to help accommodate the truck traffic. It is also planned to have the solid waste center access road incorporated into the secondary road system.

Route 611 between Route 615 and 614 is currently an all weather surface and is scheduled for reconstruction. Construction on the 2.59 section of road is scheduled to begin during the 2000 - 01 fiscal year and finish the 2002 -03 fiscal year. Other roads scheduled for reconstruction are the 0.25 mile section of Route 643, to be completed during the 2000-01 fiscal year, and a 2.0 mile portion of Route 629 near Route 630, to be completed in the 2003-04 fiscal year.

There is also a study underway on methods to improve sections of Route 311. The total cost of the study is expected to be $60,000. During fiscal year 1998-99, $60,000 was allocated in VDOT's Six Year Improvement Program for this study, but no time frame has been established for the studies completion. The Route 311 study will develop a list of improvements such as the addition of passing lanes, or pull off areas for slow moving vehicles. All of these plans will greatly increase traffic flow, safety, as well as reduce travel times.

## Transit Service

A van service is currently provided by Abbott Bus Lines every Tuesday morning. This service provides a connection between downtown Roanoke and New Castle. The van arrives at the Courthouse in New Castle at 9:00am, the fair for a one way trip is $1.65 and $3.30 for a round trip. This service is not advertised and is only spread through word of mouth. This service is not subsidized by government funds. There is currently no other bus service to Craig County. Connection for other travel may be made in the Roanoke valley. Greyhound serves nearby Roanoke, Salem, and Clifton Forge.

## Bicycle Facilities

The diversification of transportation modes is of prime importance to communities today. In October of 1997, the Craig County Board of Supervisors adopted the Rural Bikeway Plan. This plan is meant to increase the safety, the awareness of benefits, and the number of bicyclist, as well as to promote the accommodation of bicycles in the design of roadways and the utilization of design standards within each jurisdiction. Craig

County has identified several roadways that should be considered for improvements to accommodate bicycles. These include State Routes 18, 42, 311, 615. The majority of these roads are recommended for wide shoulders to serve the bicyclist. However Route T-1004 and a portion of 615 inside and near New Castle have been recommended for wide lanes to accommodate the bicyclist. The promotion of bikeways can add to the quality of living as well as diversify the limited modes of transportation within the County. Provided below are descriptions of bicycle facility improvement types as listed in the Rural Bikeway Plan.

- *Shared lanes* are low volume roads with standard street widths and no shoulders, Automobiles must pass around bicyclist, for safety reasons speeds along these routes are kept low.

- *Wide lanes* are usually 2 to 3 feet wider than the average automobile lane to allow vehicles to pass bicyclist without leaving their lanes.

- *Wide shoulders* can be the most economic bikeways in rural areas. The width of these shoulders can vary according to traffic speeds and volumes, but they are usual between 4 and 6 feet wide, although they are sometimes are as narrow as 2 feet. This also allows ample emergency pull-off space for automobiles.

There is also an abandoned rail bed which could possibly be converted into an off-road trail under the "Rails-to-Trails" project. This abandoned rail bed used to be operated by the CSX railroad. It is located near State Route 615 and runs from Botetourt County towards New Castle.

## Pedestrian Facilities

The sidewalks in and around the town of New Castle are scheduled to be improved upon. This improvement is meant to encourage greater pedestrian traffic and lessen the dependence on automobiles within the town. Funds have been made available through the Enhancement Project of the Intermodel Surface Transportation Efficiency Act of 1991 (ISTEA). These funds will be used to construct concrete sidewalks along Route 311 both

inside and outside the town of New Castle. Approximately $18,000 has been allocated for this improvement. These sidewalks will not only provide safe passage for pedestrians, but will also enhance the towns vitality.

## Railroads

There are no railways operating in Craig County. However, the Norfolk and Southern Railway has extensive trackage for freight transportation in Roanoke County and Roanoke City (about 30 miles south of New Castle). Passenger rail service is provided by Amtrak and is available in nearby Clifton Forge. There is also an old rail bed which was operated by CSX railroad that runs beside Route 615 into Botetourt County.

## Airports

No commercially serviced airports are located in Craig County. Commercial air service is provided at the Roanoke Regional Airport (about 30 - 45 minutes driving time from New Castle). This airport links Roanoke and the surrounding area to many of the major eastern cities. The Roanoke Airport is also an important cargo shipping operation flying out 8,383,916 pounds of cargo in 1992. Also, within convenient distance of County residents is the Virginia Tech Airport which is located in Blacksburg and the InGalls Airport in southern Bath County. These small general aviation airports provide flight instruction, airplane maintenance, and fuel.

# Travel Patterns and Traffic Volumes

## Commuting Patterns of County Workers

The number of residence that commute to work outside the County has been increasing dramatically over the past several years. Due to the limited number of jobs available in the County, the proximity to a large metropolitan area, and the rural setting, most County residence seem to prefer living in this region and commuting elsewhere to work. Compared to 1980, when approximately 993 or 63% of workers commuted to neighboring communities for jobs, the percentage of out-commuters increased to about 1,479 or 72% by 1990. The majority of these workers went to Roanoke City, Roanoke County, Salem, and Montgomery County (more specifically the Town of Blacksburg in Montgomery County).

The number of commuters, if not the percentage of commuters, is likely to increase in the future. The 1990 census stated that the total population of Craig County was 4,372 by 2015 the Craig County population could grow to 6,200. If the percentage of out-commuters remains constant at 72% than by 2015 due to population growth some 2,097 workers could by out-commuting. If the percentage of out-commuters rises to 80% by 2015 then as many as 2,330 workers would be out-commuting.

The large percentage of residents working outside the County has translated into fairly extensive amounts of time spent traveling to work. The 1990 Census indicates that about 71% of all workers required at least 30 minutes travel time to their place of employment, and about 15% required more than 60 minutes to travel to their jobs. The average travel time to work in 1990 was 34.2 minutes for all workers. Of those commuting to their place of employment, 63% drove alone, while 37% were members of a carpool.

Limited employment opportunities in Craig County encourage significant out-commuting as well as a relatively insignificant amount of in-commuting. Monroe County, West Virginia provided the largest number of in-commuters for Craig County in 1990. Commuters from West Virginia accounted for nearly 76% of all workers coming into Craig. Tables 2 through 4 summarize these commuting patterns.

Table 2: Commuting patterns, Craig County Virginia

| | 1970 | 1980 | 1990 |
|---|---|---|---|
| Number who lived and worked inside County | 449 | 618 | 582 |

Source: US Bureau of the Census, 1990.

Table 3: Out-Commuters from Craig County, (Place of Work)

| Place of Employment | 1970 | % of Total | 1980 | % of Total | 1990 | % of Total |
|---|---|---|---|---|---|---|
| Alleghany County | 32 | 4.4% | 14 | 1.4% | 45 | 3.0% |
| Botetourt County | 35 | 4.8% | 14 | 1.4% | 21 | 1.4% |
| Giles County | 25 | 3.4% | 8 | 0.8% | 14 | 1.0% |
| Montgomery Co. | 172 | 23.6% | 208 | 20.9% | 238 | 16.1% |
| Roanoke County | 354 | 48.6% | 126 | 12.7% | 432 | 29.2% |
| Roanoke City | 25 | 3.4% | 281 | 28.3% | 371 | 25.1% |
| Salem City | 43 | 5.9% | 305 | 30.7% | 271 | 18.3% |
| Worked Elsewhere | 42 | 5.8% | 37 | 3.7% | 87 | 5.9% |
| Total | 728 | 100% | 993 | 100% | 1479 | 100% |

Source: U.S. Bureau of the Census, Census of Population: 1970, 1980 & 1990; Bureau of Transportation Statistics, U.S. Department of Transportation 1990; and Virginia Commuting Patterns 1990.

Chart 1: Out-Commuter Distribution 1990

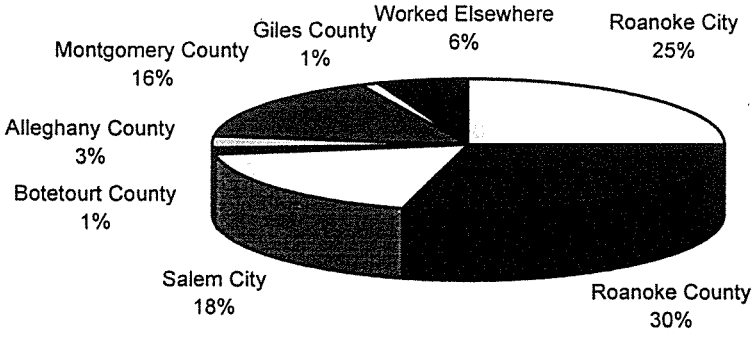
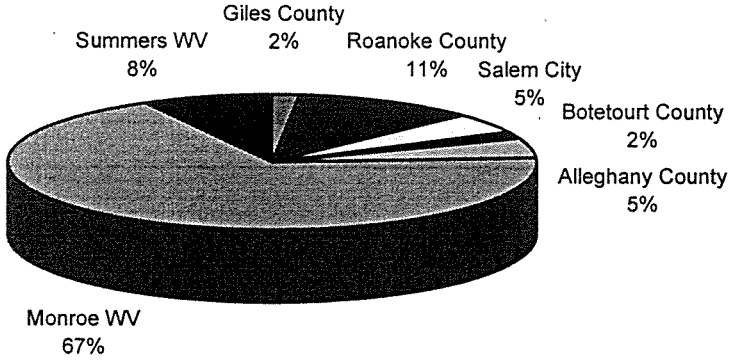


Table 4: In-Commuters to Craig County, (Place of Residence)

| Place of Residence | 1970 | % of Total | 1980 | % of Total | 1990 | % of Total |
|---|---|---|---|---|---|---|
| Alleghany County | 14 | 28.6% | 9 | 11.1% | 6 | 4.8% |
| Botetourt County | 8 | 16.3% | 12 | 14.8% | 2 | 1.6% |
| Giles County | 0 | 0.0% | 0 | 0.0% | 2 | 1.6% |
| Monroe WV | 0 | 0.0% | 11 | 13.6% | 85 | 68.0% |
| Montgomery Co. | 0 | 0.0% | 23 | 28.4% | 0 | 0.0% |
| Salem City | 7 | 14.3% | 13 | 16.0% | 6 | 4.8% |
| Summers WV | 0 | 0.0% | 0 | 0.0% | 10 | 8.0% |
| Roanoke City | 11 | 22.4% | 0 | 0.0% | 0 | 0.0% |
| Roanoke County | 9 | 18.4% | 13 | 16.0% | 14 | 11.2% |
| Total | 49 | 100% | 81 | 100% | 125 | 100% |

Source: U.S. Bureau of the Census, Census of Population: 1970, 1980 & 1990; Bureau of Transportation Statistics, U.S. Department of Transportation 1990; and Virginia Commuting Patterns 1990.

Chart 2: In-Commuter Distrubtion 1990



## Traffic Counts and Traffic Increases

Over the past several years, Craig County has experienced an increasing amount of residential growth. From the 1980 to the 1990 U.S. census population has increased from 3,948 to 4,372 and according to the 1997 provisional estimates population has risen to 5,100 people. By 2015 Craig County's population is predicted to be nearly 6,200. Because of this growth, traffic volumes on county roads have also increased and will continue to increase.

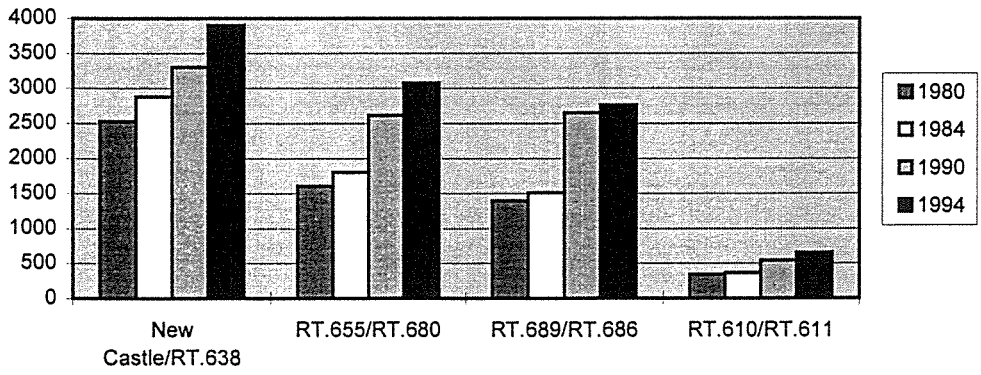
The most dramatic traffic volume increases have been on some of Craig County's secondary roads. Sections of Route 615 have experienced between a 54% and 91% increase in average daily traffic (ADT). Between New Castle and Route 638 on Route 615, traffic volumes have increased from 2,880 vehicles per day in 1984 to 3,898 in 1994. Further north, the section of 615 between Routes 610 to 611 has also experienced an increase in traffic volumes from 363 vehicles per day in 1984 to 653 in 1994. Table 5 lists the ADT data for various sections of Route 615. Although this route is not considered a primary road it is an important thoroughfare and its increases in traffic volumes are indicative of many other Routes within the County.

Table 5: State Route 615 ADT Volumes, by Location and Year

| Year | New Castle/RT.638 | RT.655/RT.680 | RT.689/RT.686 | RT.610/RT.611 |
|---|---|---|---|---|
| 1980 | 2527 | 1607 | 1394 | 342 |
| 1984 | 2880 | 1803 | 1508 | 363 |
| 1990 | 3304 | 2614 | 2651 | 543 |
| 1994 | 3898 | 3073 | 2759 | 653 |

Source: VDOT, Secondary Traffic Tabulation for Craig County.

Chart 3: Route 615 ADT Volumes, by Section and Year



The traffic volumes on Craig County's Primary roads have not increased much in the short term, but have in many cases decreased from one year to the next. Although the volume change from year to year sometimes decrease, data has shown that the traffic volumes on primary routes has steadily increased over the course of ten or fifteen years. Route 311 has experienced a 23% increase in ADT from 1980 to 1996. Most of these increases took place between 1980 and 1990. Since then traffic volumes on Route 311 have fluctuated, while maintaining around 3000 vehicles per day. Route 18 went from 210 vehicles per day in 1980 to almost doubling its volume by 1992 to 410 vehicles per day. These counts then declined after 1992, so that between 1980 and 1996 there was only a 29% overall increase in traffic volume. Route 42 experienced similar trends as the other Primary Routes in Craig County did. In 1992, the traffic volume of Route 42 had nearly double the volume it carried in 1980. Since 1992 traffic volumes have stayed steady at about 1000 vehicles per day.

Tables 6 through 8 list ADT volumes for the county primary roads. Chart 4 illustrates the traffic increases and declines from 1980 to 1996 for Routes 311, 42, and 18. In general, the highways within Craig County are experiencing gradual increases in traffic volume as residents move from the more crowded Metropolitan area and into rural areas.

Table 6: State Route 311 ADT Volumes, by Road Section

| Year | Roanoke CL / RT.42 New Castle |
|---|---|
| 1980 | 2,470 |
| 1982 | 2,435 |
| 1984 | 2,950 |
| 1986 | 2,990 |
| 1988* | 3,295 |
| 1990* | 3,345 |
| 1992* | 3,200 |
| 1994* | 2,800 |
| 1996* | 3,000 |

*All ADT after 1987-90 are estimates based on a computer model
Source: VDOT, Average Daily Traffic Volumes.

Table 7: State Route 18 ADT Volumes, by Road Section

| Year | Paint Bank / Potts Creek |
|---|---|
| 1980 | 210 |
| 1982 | 220 |
| 1984 | 170 |
| 1986 | 195 |
| 1988* | 230 |
| 1990* | 235 |
| 1992* | 410 |
| 1994* | 300 |
| 1996* | 270 |

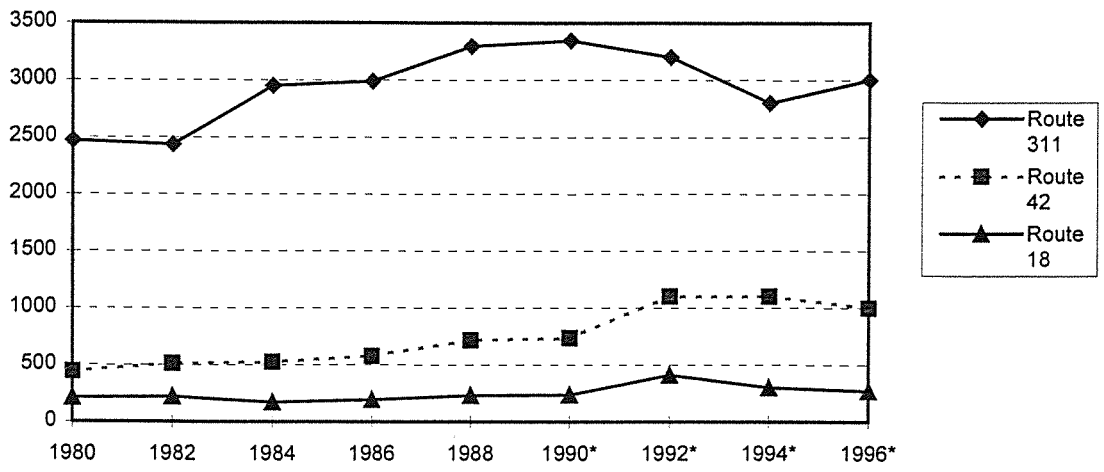
*All ADT after 1987-90 are estimates based on a computer model
Source: VDOT, Average Daily Traffic Volumes.

Table 8: State Route 42 ADT Volumes, by Road Section

| Year | New Castle / Looney Rt. 645 | Looney Rt. 645 / Giles CL |
|---|---|---|
| 1980 | 440 | 605 |
| 1982 | 510 | 685 |
| 1984 | 525 | 740 |
| 1986 | 580 | 665 |
| 1988* | 715 | 810 |
| 1990* | 735 | 830 |
| 1992* | 1100 | 1100 |
| 1994* | 1100 | 1100 |
| 1996* | 1000 | 1000 |

*All ADT after 1987-90 are estimates based on a computer model
Source: VDOT, Average Daily Traffic Volumes.

Chart 4: ADT Volumes on Craig County Primary Routes




## Level of Service

Route 311 is the most heavily traveled route in Craig County and a Level-of-service analysis was completed by the Fifth Planning District Commission for Route 311 in 1995. The *Route 311 Corridor Study* used Highway Capacity Software for its level-of-service analysis to look at sections of Route 311 from the intersection with 419 in Roanoke County to the town of New Castle. The portion of Route 311 that fell within Craig County was divided into two segments; from the County Line to State Route 621 and from Route 621 to New Castle. In regards to traffic volume, capacity, passing ability, and directional distribution these segments had a level-of service score of C and D respectively on an A-F scale.

- LOS A represents the highest quality of traffic service and would result in average speeds of 60mph. Passing demand is well below passing capacity and almost no platoons of three or more vehicles are observed. Drivers would be delayed no more than 30% of the time by slow-moving drivers.

- LOS B represents the region of traffic flow wherein speeds of 55mph are expected on level terrain. Passing demand needed to maintain desired speeds begins to equal passing capacity. Drivers delayed up to 45% of the time.

- LOS C represents conditions characterized by increases in traffic flow resulting in noticeable increases in platoon formation, platoon size and frequency of passing impediment. Average speed still exceeds 52 mph on level terrain even though

unrestricted passing demand exceeds passing capacity. While traffic flow is stable, it is becoming susceptible to congestion due to turning traffic and slow-moving vehicles. Percent time delays are up to 60 percent.

- LOS D represents conditions characterized by unstable traffic flow. Passing demand is high, while passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common although speeds of 50 mph can still be maintained. Turning vehicles or roadside distractions cause major shockwaves in traffic stream. The percentage of time motorist are delayed approaches 75%.

- LOS E represents traffic flow conditions on two-lane highways having a percent time delay of greater than 75%. Even under ideal conditions speeds will drop to below 50 mph. Passing is virtually impossible and platooning becomes intense when slower vehicles or other interruptions are encountered. The highest volume attainable under LOS E defines the capacity of the highway. Under ideal conditions, capacity for a two-lane highway is 2,800 passenger car equivalents (passenger car equivalents take into account the differences between heavy vehicles and passenger cars for purposes of calculating a level-of-service) per hour. Prevailing conditions such as terrain and directional split can lower ideal capacity.

- LOS F represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are below capacity speeds.

The score that the sections of Route 311 received is mostly indicative of the amount of road that vehicles can not pass on. In the section of Route 311 from the County Line to State Route 621, which scored a LOS of C, vehicles can not pass on 70% of the road. Similarly the section of road from State Route 621 to New Castle, which scored a LOS of D, cars were unable to pass on 75% of the road. During peak travel times Route 311 also has a very directional flow of traffic which lowers the level-of-service rating. The directional distribution at peak times is 80/20, meaning that 80% of the cars are traveling the same direction and using the same lane. This is likely attributed to the high number of commuters moving between Craig County and the Roanoke area. The level-of-service analysis is discussed in more detail in the *Route 311 Corridor Study*.

A level-of-service analysis was not conducted on unsignalized intersections on Route 311 within Craig County due to the low traffic volumes present on them. The other primary routes in Craig County have not had a level-of-service analysis done for them due to the low volume of traffic that they serve as well.

## Accidents

Accidents can be the result of many factors including highway design, limited sight distance, daily traffic volumes, and driver inattention. According to data obtained from VDOT, the portion of Route 311 contained within Craig County is prone to high numbers of accidents. From 1991 to 1997 Route 311 has averaged an accident rate of 146 and a death rate of 7.00, by comparison Route 221, which runs through Floyd County and exhibits some similarities to Route 311, has an accident rate of 138 and a death rate of 3.77. These rates are determined by dividing the number of accidents or deaths by 365 (the number of days in a year), then dividing again by the ADT volume, and dividing one last time by the length of the road segment. These rates allow different routes of similar lengths to be compared to each other.

A particular 3 mile section of 311, between Routes 618 and 688, has had 21 incidents involving about 30 vehicles from 1995 to 1997. This single 3 mile section accounts for 26% of all accidents on Route 311. Most striking is that 20% of the accidents in this time period occurred in a 0.75 mile portion of 311 in or just outside the New Castle limits. More than half of these accidents occurred at intersections as vehicles pulled onto or off of Route 311. Property Damage from the 80 reported accidents in the 1995 to 1997 time period was estimated at $344,885.

Table 9: Route 311 Accident Locations, January 1995 / November 1997

| Segment Location along Route 311 | Segment Length: Miles | Number Accidents | Number of Cars Involved |
|---|---|---|---|
| Roanoke CL to Route 621 | 2.24 | 6 | 8 |
| Routes 621 / Route 619 | 1.48 | 7 | 11 |
| Routes 619 / Route 691 | 2.09 | 9 | 12 |
| Routes 691 / Route 618 | 0.12 | 2 | 4 |
| Routes 618 / Route 688 | 2.83 | 21 | 30 |
| Kanawha St. / Chilton St. | 0.07 | 3 | 6 |
| Conrad St. / New Castle Line | 0.15 | 3 | 5 |
| New Castle line / T1002 | 0.07 | 2 | 4 |
| Walnut St. / Main Street | 0.05 | 4 | 8 |
| Main Street / T-1004 | 0.06 | 3 | 6 |
| T-1004 / New Castle Line | 0.12 | 1 | 2 |
| New Castle Line / Route 611 | 4.41 | 4 | 4 |
| Routes 611 / Route 658 | 0.61 | 1 | 1 |
| Route 658 / Route 602 | 7.40 | 6 | 6 |
| Route 602 / Route 18 | 3.66 | 3 | 3 |
| Route 18 / W VA Line | 3.39 | 5 | 5 |

Source: Virginia Department of Transportation Accident Data.

Route 42 has a similar stretch of highway near Route 626 and north of Route 660 which accounts for nearly 30% of accidents on this road between 1995 and 1997. While another portion of Route 42 between Routes 631 and 624 account for 33.3% of the accidents. These incidents likely occur because of the presence of slow moving vehicles, the lack of adequate passing areas, or sharp curves which limit sight distance. Property damage for the 27 reported accidents on Route 42 is estimated to be $98,000; while for Route 615, 14 incidents caused $41,350 in damages. Tables 9 - 14 summarize the accident data for some Craig County roads.

Table 10: Route 42 Accident Location, January 1995 / November 1997

| Accident Location | Length of Segment | Number of Accidents | Number of Cars involved |
|---|---|---|---|
| Routes 631 / 629 | 1.71 | 2 | 3 |
| Routes 629 / 658 | 1.99 | 5 | 5 |
| Routes 663N / 624 | 1.60 | 2 | 2 |
| Routes 624 / 667 | 1.30 | 1 | 1 |
| Routes 667 / 641 | 0.72 | 1 | 1 |
| Routes 641 / 626 | 1.27 | 2 | 3 |
| Route 626 / Hall Road | 2.55 | 3 | 3 |
| Routes 660 / 622 W | 3.44 | 5 | 6 |
| Routes 622 W / 645 W | 1.90 | 2 | 2 |
| Routes 622E / 624 | 0.94 | 1 | 1 |
| Routes 624 / 644 | 2.56 | 2 | 2 |
| Route T-1007 / Herndon Ave. | 0.20 | 1 | 1 |

Source: Virginia Department of Transportation Accident Data.

Table 11: Route 615 Accident Locations, January 1995 / November 1997

| Accident Location | Length of Segment | Number of Accidents | Number of Cars involved |
|---|---|---|---|
| Routes 638 / 617 | 0.06 | 1 | 2 |
| Routes 617 / 653 | 0.10 | 1 | 2 |
| Routes 689/ 686 | 0.94 | 1 | 1 |
| Routes 696 / 609 | 0.41 | 3 | 4 |
| Routes 676 / 614 | 0.65 | 1 | 1 |
| Routes 614 / 610 | 1.10 | 2 | 2 |
| Routes 610 / 611 | 0.23 | 1 | 1 |
| Routes 611 / 608 | 0.49 | 1 | 1 |
| Routes 606 / 643 | 0.80 | 2 | 3 |
| Routes 612 / Botetourt Line | 0.80 | 1 | 1 |

Source: Virginia Department of Transportation Accident Data.

Tables 12 - 14 and chart 5 divide the accident data by year, day, and hour of occurrence as well as by the type of collision. This has shown over the past three years the number of accidents has remained fairly stable although 1995 did have a high number of accidents compared to the other years. As table 13 shows the weekends have historically had high numbers of accidents as compared to the other days of the week. Friday has about 50% more accidents than most of the other days in the week. Friday, Saturday, and Sunday account for almost as many accidents as the rest of the week, 59 report accidents as compared to 62 on Monday - Thursday. This is likely attributed to people staying out later at night and drinking.

Table 12: Number of Accidents on Selected Routes by Year

| | 1995 | 1996 | 1997 |
|---|---|---|---|
| Route 311 | 29 | 22 | 29 |
| Route 42 | 15 | 6 | 6 |
| Route 615 | 4 | 5 | 5 |
| Total | 48 | 33 | 40 |

Source: Virginia Department of Transportation Accident Data.

Table 13: Number Of Accidents on Selected Routes by Day

| | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|
| Route 311 | 9 | 8 | 12 | 10 | 19 | 9 | 13 |
| Route 42 | 4 | 6 | 4 | 3 | 4 | 4 | 2 |
| Route 615 | 2 | 2 | 0 | 2 | 1 | 4 | 3 |
| Total | 15 | 16 | 16 | 15 | 24 | 17 | 18 |

Source: Virginia Department of Transportation Accident Data

Chart 5 shows the accidents by time of day. The two largest peaks occur from 3:00 - 6:30 which is at the traditional afternoon peak traffic volume period, and the other peak is from 7:30 - 9:30, this peak coincidentally occurs after most dinner times. Strangely a peak also occurs from 5:30 - 7:00, this is not during the traditional morning peak traffic volumes which are normally found around 7:30 and 9:00. This early accident peak may be the result of the people leaving earlier fir a longer commute they have to their work and also the agricultural nature of some employment within Craig County.

Chart 5: Number of Accidents on County Primaries, by Time of Day

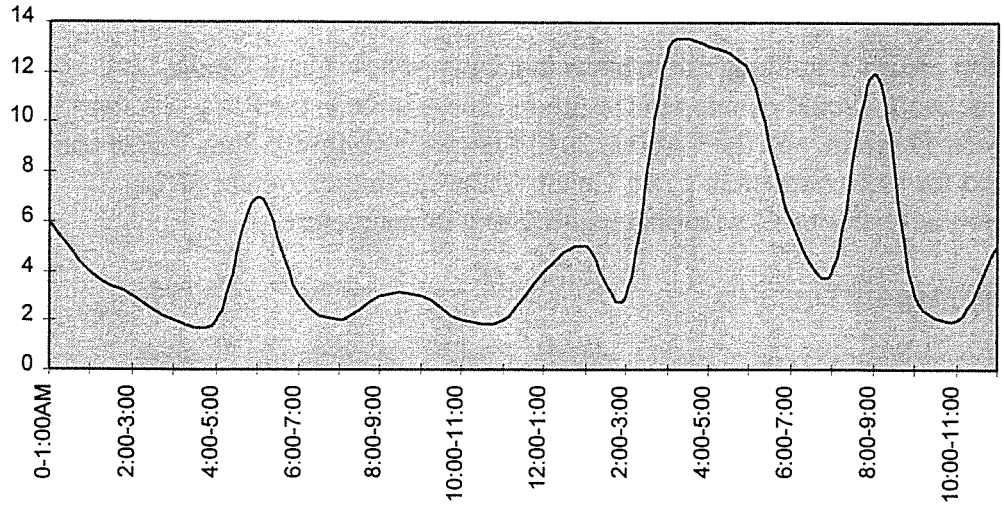



Table 14: Accidents By Type and Road, January 1995 / November 1997

| Type of Collision | Route 311 | Route 42 | Route 615 |
|---|---|---|---|
| Rear End | 16 | 2 | 1 |
| Angle | 9 | 0 | 1 |
| Head On | 0 | 0 | 0 |
| Sideswipe | 6 | 1 | 1 |
| Fixed Object | 40 | 21 | 9 |
| Pedestrian | 0 | 0 | 0 |
| Deer /Animal | 3 | 0 | 0 |
| Non-Collision | 6 | 3 | 1 |
| Backed Into | 0 | 0 | 1 |
| Total | 80 | 27 | 14 |

Source: Virginia Department of Transportation Accident Data.

# Overall Transportation Plan

There are several medium and long range plans that suggest how Craig County's transportation network should develop in the future. These include the Rural Bikeway Plan, the Six-year Program, and the Virginia 2010 Statewide Highway Plan. These plans address the need for improvement to Craig County's transportation system giving consideration to the limitations on funding and existing infrastructure.

## Rural Bikeway Plan

The Rural Bikeway Plan was developed under the Rural Transportation Planning Program of the Fifth Planning District Commission. It was adopted by Craig County in 1997, and will provide a major step for the County's quest to encourage and diversify modes of transportation. By adopting this plan the County government has shown a desire to make the roads safer for bicyclist, pedestrians, and motorist. This will be accomplished through a combination of lane widening and increased shoulder widths. It is hoped that by adding the accommodations listed in the Rural Bikeway Plan and as they become more available that bicycle ridership will increase. If this plan is fully implemented all the County primary roads and many of the secondary routes will be capable of handling bicycles safely.

## Six Year Improvement Program

The Six Year Improvement Program is a document which coordinates state funding with a list of projects scheduled to be completed. The program is developed and maintained by the Virginia Department of Transportation. Projects identified in local transportation plans are selected to be implemented and put into the Six Year Improvement Program. Only those projects listed in the Six Year Improvement Program can be financed for construction. In early 1998 the County applied for and received funding under ISTEA's Enhancement Program. This project, and its funding level is listed in the Fiscal Year 1998-1999 Six Year Improvement Program. This project will include the development of bicycle facilities along portions of Routes 311, 42 and 615, the creation of Park and Ride facilities, and improvements in landscaping and the general appearance of the town and County. These improvements will increase Craig County's vitality as well as diversify the means of travel available to it's residence.

The secondary road system also has a Six Year Construction Program. The majority of the road construction projects within Craig County will come from this improvement program. These projects include improvements to the approaches to several bridges and the replacement of some structures on Routes 632, 630, 629, and 620. There are also some reconstruction road projects scheduled for Routes 612, 629, 611, 643, and 690.

## Virginia 2010 Statewide Highway Plan

The Virginia 2010 Statewide Highway Plan was created by the Virginia Department of Transportation in 1989 to provide a general guide to what projects may occur for the localities infrastructure over the short and long term. It is meant to provide a mechanism for officials to foresee highway needs in the future and make appropriate funding decisions to meet these needs. This plan looks at projects on both primary and secondary routes and ranks projects as to the need and perceived importance at that time. This Plan is not fiscally restrained. The 2010 Plan does not list every proposed or completed project, but it does give an idea of how localities should expect their infrastructure to grow.

The Virginia Statewide Highway Plan has all of Craig County's major highways identified for improvement by 2010. According to this document, Route 311 would need the bulk of the funds and improvements, chiefly in the road section between the Roanoke County Line and New Castle. The majority of the improvements listed in the 2010 plan are for road reconstruction projects; this includes road widening, road rehabilitation, and resurfacing.

# Conclusion and Recommendations

## Issues

The major transportation issues and problems associated with Craig County have been identified in several documents, including the Route 311 Corridor Study, the Craig County Comprehensive Plan, and the Rural Bikeway Plan. They are:

- Maintenance of existing infrastructure.
- Lack of options, in respect to modes of transportation.
- Insufficient and dangerous passing areas on Route 311.
- Dangerous road geometry on sections of Route 311 between Routes 619 and 618.

The last issue is whether to adopt this Long Range Transportation Plan as part of Craig County's Comprehensive Plan. The 1989 Comprehensive Plan is being updated for Craig County to insure that it reflects current conditions and remains useful. The Comprehensive Plan will address future needs for transportation, housing, public facilities, and economic development. During the process of reviewing the 1989 Comprehensive Plan, it was decided to expand the scope of the update to include a more detailed examination of the transportation aspect of Craig County. The transportation section is a basic long range plan meant to encourage coordinated and planned development within the County. It is also meant to provide a vision of what the County's infrastructure should look like in the future and the projects which should be undertaken. The Craig County Long Range Transportation Planning document should fulfill the needs indicated for the Comprehensive Plan.

## Recommendations

The highest priority that Craig County should have is to maintain the current infrastructure it has. This is to insure that highway conditions within the County do not degrade to inappropriate levels and that safety is not compromised.

To improve some of the other issues, the County is already heading in the proper direction. Constructing bikeways and sidewalks to offer residents more options for travel is of prime importance. Shoulder and lane widths should be increased in accordance with the Rural Bikeways Plan to accommodate bicycle travel. The more heavily traveled routes in Craig County such as the Primaries and Route 615 need these improvements the earliest. The abandoned CSX rail bed should also be considered for improvement to an off-road Bikeway using the "Rails-to-Trails" Program.

For other transit needs it is recommended to research possibilities of ways to increase ridership and extend the van service provided by Abbot Bus Lines. Advertisement should be pursued as a method to increase ridership. Flyers posted in or around public gathering areas are perhaps the easiest and least expensive method to advertise this service. Also, according to Abbott Bus lines, the majority of riders are senior citizens. Therefore, any education or advertising about this service should target senior citizens. Meetings at local retirement centers to educate and encourage bus riding should be pursued as well. Coordination between New Castle and Catawba should also be pursued as another means to increase ridership between these communities and Roanoke .

If there is an apparent need to increase service, or ridership increases, Abbot Bus Lines should be approached about extending it's service to twice a week or more. This would provide greater access to the markets in Roanoke without the need of a car and would greatly help in getting a more diverse set of options to Craig County residence for transportation purposes.

For Route 311, it is recommended to make improvements to the road to increase the safety and traffic flow. This could include pull off areas for slow moving vehicles or adding additional lanes for passing vehicles. Other improvements which should be considered are the straightening of the road to remove the sharp curves and steep banks on the inside of sharp curves which could not be straightened. These improvements would help to enhance the line of sight at selected locations. The Route 311 Corridor Study and the Route 311 study being completed under VDOT's Six Year Improvement Plan should be consulted in regards to these recommendations.

## Conclusion

Planned and proposed transportation improvements will provide greater access and safety within Craig County. The existing transportation system can be considered adequate, and assuming the implementation of the programmed improvements, will adequately serve this region well into the future. However, it is important that proper maintenance be continued, that improvements be made when needed, and that new construction be initiated where necessary if the transportation system is to remain effective.

Fifth Planning District Commission
313 Luck Avenue, SW
P.O Box 2569
Roanoke, Virginia 24010

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|---|---|
| Phone : | 540-343-4417 |
| Facsimile: | 540-343-4416 |
| E-Mail: | planfive@roanoke.infi.net |
| Home Page: | http://www.roanoke.infi.net?~planfive |