A TRANSPORTATION PLAN FOR CALVERT COUNTY

2010

Approved and Adopted November 1997

PERTAINING TO THE ADOPTION OF THE 2010 COUNTY TRANSPORTATION PLAN FOR CALVERT COUNTY, MARYLAND

WHEREAS, The Planning Commission of Calvert County has made a transportation plan in accordance with Article 66B of the Maryland Statutes; and

WHEREAS, The Planning Commission has carefully considered the plan over an extended period of time; and

WHEREAS, The Planning Commission and Board of County Commissioners of Calvert County have held a joint public hearing for the purpose of presenting the transportation plan in its preliminary form and ascertaining the input of the public thereon; and

WHEREAS, At a meeting subsequent to the public hearing, the Planning Commission incorporated public comment into the plan; and

WHEREAS, The Planning Commission on the 5th day of November, 1997 unanimously approved the plan set forth in a report entitled 2010 County Transportation Plan for Calvert County, Maryland; and

WHEREAS, The Board of County Commissioners of Calvert County concurs with the Planning Commission and with the recommendations set forth in the aforementioned report;

NOW, THEREFORE LET IT BE RESOLVED AND ORDAINED, that the Board of County Commissioners of Calvert County hereby adopts the 2010 County Transportation Plan attached herewith as a guide to the future development of transportation facilities and services within Calvert County.

DONE, this 10th day of March, 1998 by the Board of County Commissioners of Calvert County, Maryland, sitting in regular session.

ATTEST:

Mary S. Watson, Clerk

BOARD OF COUNTY COMMISSIONERS OF CALVERT COUNTY, MARYLAND

Hagner R. Mister, President

Mark R. Frazer, D.D.S., ~~Vice~~-President

Patrick M. Buehler

Linda L. Kelly

Mary M. Krug

Approved for legal sufficiency on 3/3/98 by

Emanuel Demedis
County Attorney

Received for Record March 11, 1998 at 10:30 o'clock A.M. Same day recorded in Liber B.J.S. No. 7 Folio 204 COUNTY COMMISSIONERS ORDINANCES AND RESOLUTION

Betty J. Smack

November 1997

BOARD OF COUNTY COMMISSIONS

Mr. Hagner R. Mister, President
Mr. Mark R. Frazer, D.D.S., Vice-President
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Prepared by:
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Special acknowledgment is due Linwood E. Beverly, Drafting/Computer Systems Technician; Nicole Ogelsby, GIS Intern; Tamara Blake-Wallace, Office Assistant II, and Sherrod A. Sturrock, Capital Project Coordinator in the Department of Administration and Finance for their contributions to this report.

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CHAPTER I

INTRODUCTION

INTRODUCTION

This report documents the first transportation plan prepared for Calvert County, Maryland. It is designed to guide the physical development of transportation services and facilities throughout the County. It provides a coherent response to anticipated transportation problems; recommending specific improvements to meet travel needs through the year 2010. Chapter I of this report describes the role of the County Transportation Plan, the study area, and the organization of this report.

ROLE OF THE COUNTY TRANSPORTATION PLAN

This transportation plan is intended to guide transportation development on a number of levels. On one level, it lists major improvements that need to be made within a given time frame. At this level, the plan becomes a vital tool in programming and budgeting capital projects by the County government.

On another level, the plan assists locally elected officials in identifying improvements to those transportation facilities and services owned and operated by other levels of government. The plan thus becomes an agreed-upon tool in establishing consensus on transportation priorities between Calvert County and the State of Maryland.

On another and more comprehensive level, the County Transportation Plan is intended to guide both private and public investment with regard to land use development. The transportation system forms the basic framework for the overall settlement pattern. At a minimum, this system determines the extent to which certain lands are accessible and are thus able to be developed. A transportation plan helps determine the type and intensity of land uses that are practical within any given area.

Because it affects the pattern of community development, a transportation plan can either support or contradict adopted land use plans or policies. The plan set forth in this report, is designed to help implement plans and policies adopted by the Calvert County Board of County Commissioners including the five separate town center master plans and the Calvert County Comprehensive Plan. The 2010 County Transportation Plan officially refines and details the transportation element of the County Comprehensive Plan.

THE STUDY AREA

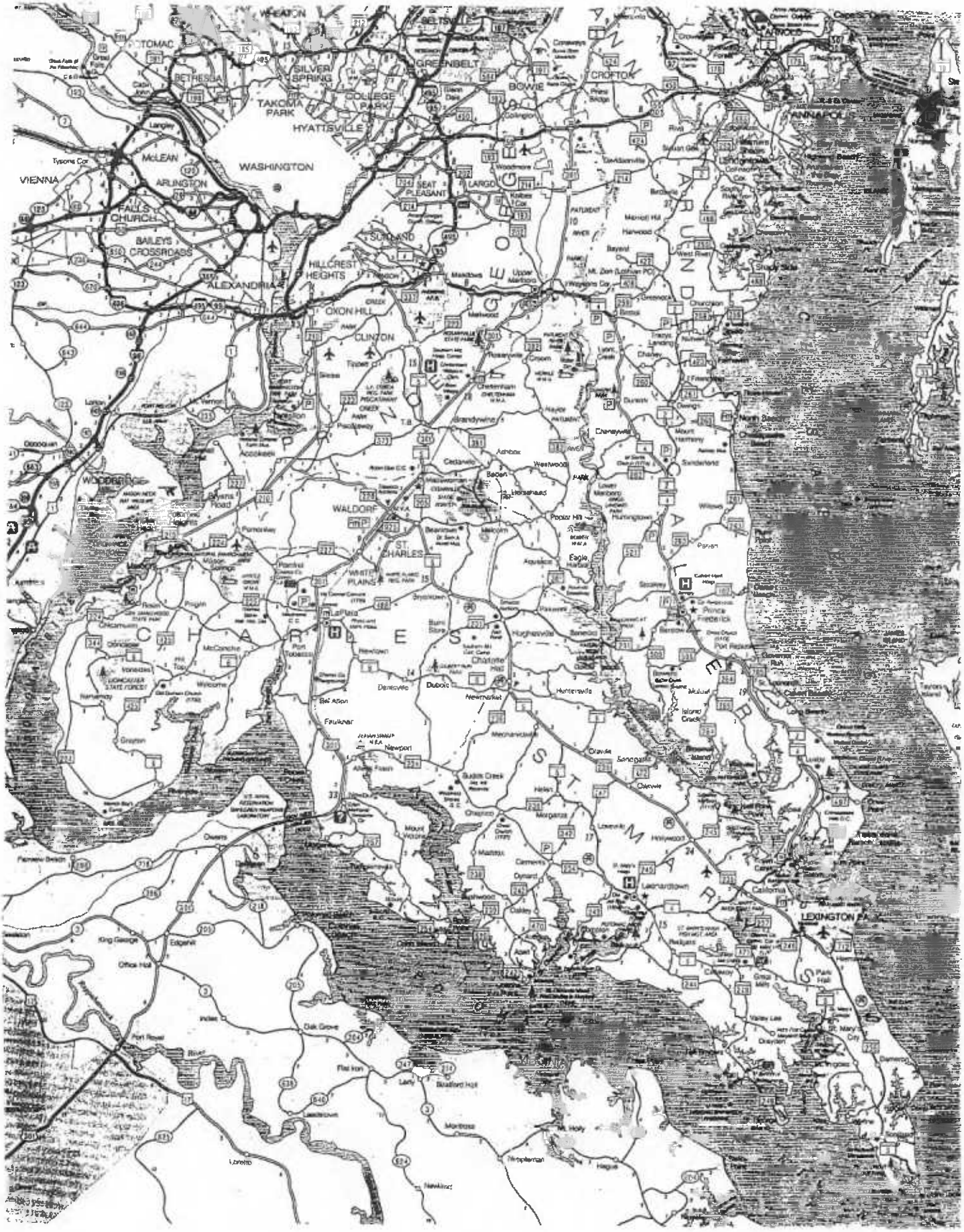
A number factors related to location and geography bear on transportation planning in Calvert County. The County is situated within the southeastern portion of the large Washington D.C. metropolitan area. As shown on Map I-1, this region encompasses the Maryland counties of Calvert, Prince George's, Anne Arundel, Charles, and St. Mary's. In 1995, these five counties, plus Washington D.C. had a population of about 2 million persons and an employment level of about 1.5 million jobs. Calvert County contains about 3 percent of this area's population and less than 2 percent of its jobs.

Calvert County is a peninsula with an area of about 236 square miles. The Chesapeake Bay forms the eastern border and the Patuxent River the west. These bodies of water converge at the southern tip of the County. One major highway, MD 4-2/4, runs the length of the County, about 36 miles. The topography of the County is characterized by rolling hills and tidal and non-tidal low lands and wetlands. Important urban centers include Prince Frederick, the county-seat, Dunkirk, Solomons, and two municipalities, the Town of Chesapeake Beach and the Town of North Beach. The plan makes no specific recommendations concerning transportation development within the existing boundaries of the municipalities.

ORGANIZATION OF REPORT

Following this chapter, Chapter II presents an inventory of existing conditions in Calvert County, focusing on the existing transportation system and travel patterns. Chapter III presents nine transportation development objectives that the plan is designed to achieve. Chapter IV presents the recommended 2010 County Transportation Plan. Chapter V presents an evaluation of the recommended plan. Chapter VI addresses plan implementation.

LOCATION OF CALVERT COUNTY



CHAPTER II

CHAPTER II

EXISTING CONDITIONS

INTRODUCTION

This chapter describes the existing transportation conditions in Calvert County. It focuses on population, households, and employment, the existing transportation system, and existing travel patterns. To the greatest extent possible, 1995 was used as the base year in describing existing conditions.

EXISTING POPULATION, HOUSEHOLDS, AND EMPLOYMENT

Current and future transportation needs are directly related to the level and location of population, households, and jobs. This section of the chapter reviews existing and historic levels of growth in Calvert County, providing a basis for better understanding current transportation problems. Chapter IV summarizes, future population, household, and employment levels which are key to determining the amount and location of future travel.

Other and more specific demographic data useful in understanding travel patterns and behaviors are provided in "Calvert County 1990 Statistical Profile" and "Transportation and Demography", prepared by the Tri-County Council for Southern Maryland[1]. These include trends in age distribution, family income, and vehicle ownership.

Population

Between 1960 and 1990, the population of Calvert County more than tripled, increasing by 35,540 persons, from 15,830 to 51,370. As shown in Table II-1, during this 30-year period, the County population increased at an average annual rate of 4.0 percent. By 1995, the County was home to about 64,000 persons, having grown by about 25 percent since 1990, or at an average annual rate of about 4.5 percent. The population growth has been primarily due to a large influx of residents from more urban locations throughout the Washington metropolitan area.

Households

The number of households, or occupied housing units, has also increased significantly over the recent past. As shown in Table II-2, between 1960 and 1990, the number of households more than quadrupled, increasing by 13,210 households, from 3,780 to 16,990. During this time period, the number of households increased at an average annual rate of 5.1 percent.

[1]These documents are available upon request from the Department of Planning and Zoning.

TABLE II-1
POPULATION OF CALVERT COUNTY: 1960-1990

Year	Population	Increase From Previous Period		Average Annual Rate of Increase from Previous Period (Percent)
		Number	Percent	
1960	15,830	---	---	---
1970	20,680	4,850	30.6	2.7
1980	36,640	13,960	67.5	5.3
1990	51,370	16,730	48.3	4.0
1960-1990	---	35,540	224.5	4.0

Source: U.S. Census and Calvert County Department of Planning and Zoning.

TABLE II-2
HOUSEHOLDS IN CALVERT COUNTY: 1960-1990

Year	Households	Increase From Previous Period		Average Annual Rate of Increase from Previous Period (1960-1990)
		Number	Percent	
1960	3,780	---	---	---
1970	5,540	1,760	46.6	3.9
1980	10,730	5,200	94.0	6.9
1990	16,990	6,260	58.3	4.7
1960-1990	---	13,210	349.5	5.1

Source: U.S. Census and Calvert County Department of Planning and Zoning.

Changes in the number of households have major implications for long-range planning. The household is the basic unit of demand for various land uses and public facilities such as streets and highways. Growth in households in closely related to growth in vehicles, miles traveled, and traffic congestion.

Map II-1 shows the County divided into community planning districts. These districts allow for refined analyses of the levels and locations of growth in the County[2]. The planning districts shown on Map II-1 are identified as having growth rates either above, about equal to, or under the average annual rate of growth in new dwelling units for the County as a whole between 1980 and 1995[3]. The annual rate of growth for the County during this period was about 4.6 percent.

As shown on Map II-1 and Table II-3, above average annual growth rates have occurred in planning districts 4 and 6 located in the northeastern section of the County surrounding the Towns of North Beach and Chesapeake Beach, and in districts 15 and 17, located in the southern section of the County. The most dramatic growth occurred in planning district 17 which encompasses the Chesapeake Ranch Estates community. This planning district added 3,540 dwelling units between 1980 and 1995, at an average annual rate of increase of over 7 percent. About three of every ten dwelling units constructed county-wide during this 15-year period were constructed within planning district 17.

Household Size

The average household size, in terms of persons per household, has decreased over time in Calvert County, as elsewhere in the State and Nation. A number of social changes have resulted in smaller families and more single occupant households. Between 1960 and 1990, the average household size in the County decreased by about 27 percent from 4.15 persons per household to 3.01 persons per household.

Employment

As with population and household levels, the number of jobs in Calvert County has also increased over recent decades. As shown in Table II-4, the employment level more than doubled between 1970 and 1990, increasing by about 11,200 jobs, from 6,200 in 1970 to 17,400 in 1990. By 1995, the number of jobs in the County totaled 20,800.

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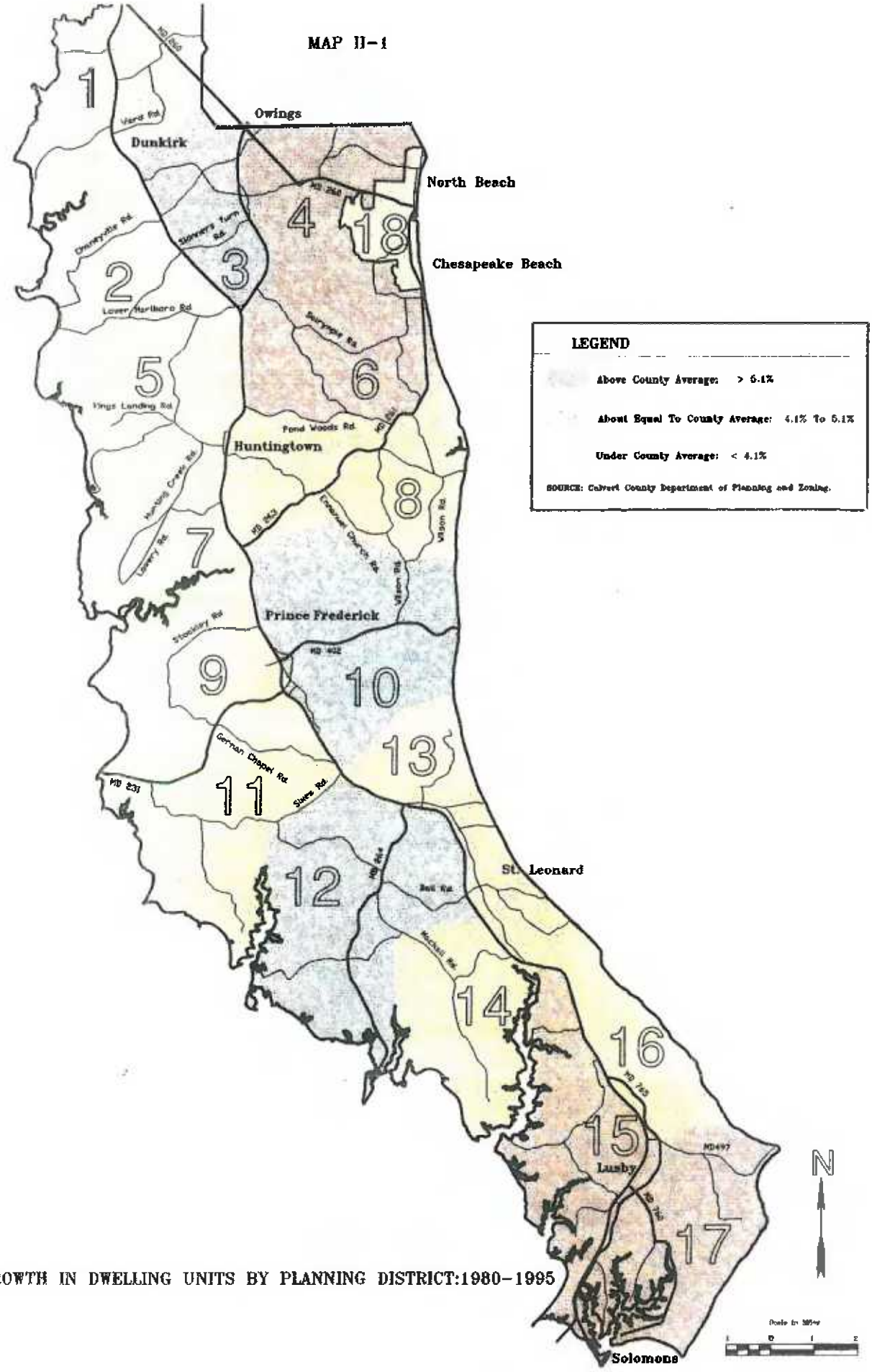
[2]Community planning districts are not to be confused with traffic analysis zones (TAZ) which provide for an even more refined level of analysis. Traffic analysis zones are the basic geographical area of measurement and analysis in the operation of travel forecasting models.

[3]Dwelling units are counted without regard to occupancy and are therefore different from households which are defined as *occupied* dwelling units. Dwelling units are reported through the County's tracking of building permits issued. Households are reported by the decennial U.S. Census.

MAP II-1



GROWTH IN DWELLING UNITS BY PLANNING DISTRICT:1980-1995

TABLE II-3
RATE OF INCREASE IN DWELLING UNITS IN CALVERT COUNTY: 1980-1995

District	Community Planning District	1980	1995	Average Annual Rate of Increase 1980-1995 (Percent)
Third	1	1,064	1,678	3.08
	3	361	745	4.95
	4	668	1,526	5.66
	6	561	1,187	5.12
	18	1,076	1,862	3.72
subtotal	---	3,730	7,001	4.29
Second	2	350	589	3.53
	5	881	1,388	3.08
	7	268	442	3.39
	8	962	1,736	4.01
	9	376	651	3.73
	10	751	1,572	5.05
	11	751	1,027	2.11
subtotal	---	4,339	7,405	3.63
First	12	627	1,212	4.49
	13	1,056	1,522	2.47
	14	274	493	3.99
	15	524	1,267	6.06
	16	40	57	2.39
	17	1,910	5,482	7.28
subtotal	---	4,431	10.039	5.60
Total	---	12,500	24,445	4.57

Source: Calvert County Department of Planning and Zoning.

TABLE II-4

EMPLOYMENT IN CALVERT COUNTY: 1970-1990

Year	Jobs	Increase From Previous Period		Average Annual Rate of Increase from Previous Period (Percent)
		Number	Percent	
1970	6,200	---	---	---
1980	7,800	1,600	25.8	2.3
1990	17,400	9,600	123.1	8.4
1970-1990	---	11,200	180.6	5.3

Source: U.S. Bureau of Economic Analysis and Calvert County Department of Planning and Zoning.

EXISTING TRANSPORTATION SYSTEM

Highway Functional Classification

Functional classification is an important principle underlying transportation planning. It defines the type of service which any particular road should render. Functional classification also provides a means for defining direct and time savings routes through the total road network. The County transportation plan recognizes three functional classes of roads: arterial, collector, and land access. The relationship between these classes in serving traffic mobility and accessibility to land uses is shown in Figure II-1.

- Arterial highways function primarily to convey heavy volumes of traffic within and through an area, providing a high degree of mobility and limited land access. Arterials should form an integrated system and serve area-wide travel patterns. Direct access onto arterials should be restricted.

- Collector highways function to collect traffic from local roads and to convey that traffic to arterial highways. Direct access onto collectors must be balanced against the role of collectors in providing mobility.

- Land access roads, also known as local roads, function to provide access directly to abutting property. These serve residential subdivisions as well as the least densely populated areas of the County.

The functional classification of the existing highway system was accomplished through a comparative evaluation using available data and field investigation of four major factors:

1. *traffic*--traffic volume and type, operating speeds, and average trip length;

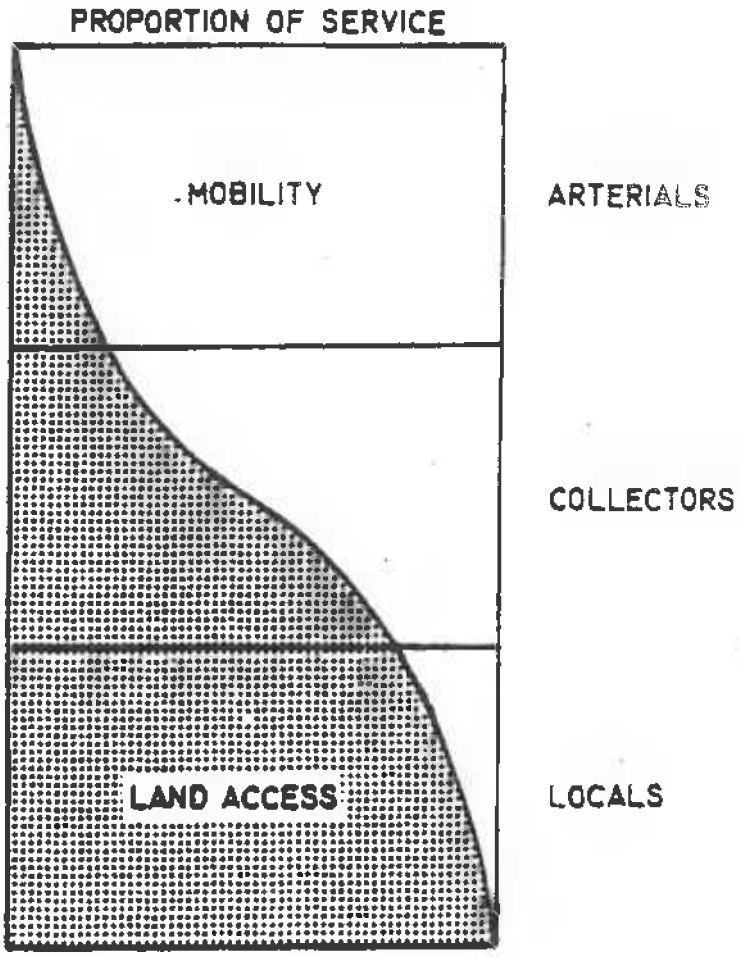
2. *physical characteristics*--horizontal and vertical alignment, pavement width and pavement type;

3. *system integration*--system continuity and facility spacing; and

4. *land use service*--the area-wide significance of the land use activities served.

Figure II - 1

RELATIONSHIP OF FUNCTIONALLY CLASSIFIED SYSTEMS IN SERVING TRAFFIC MOBILITY AND LAND ACCESS



Source: U.S. Department of Transportation, Federal Highway Administration and Calvert County Department of Planning and Zoning.

Highways carrying the heaviest volumes of traffic, and serving inter-county travel were classified as arterial. Highways and roads serving trips of shorter length, linking residential and agricultural areas to the arterial network were classified as collector. All other roads were classified as land access or local roads. The existing functional highway system is shown on Map II-2.[4] Land access roads are not shown.

Highway Jurisdictional Classification

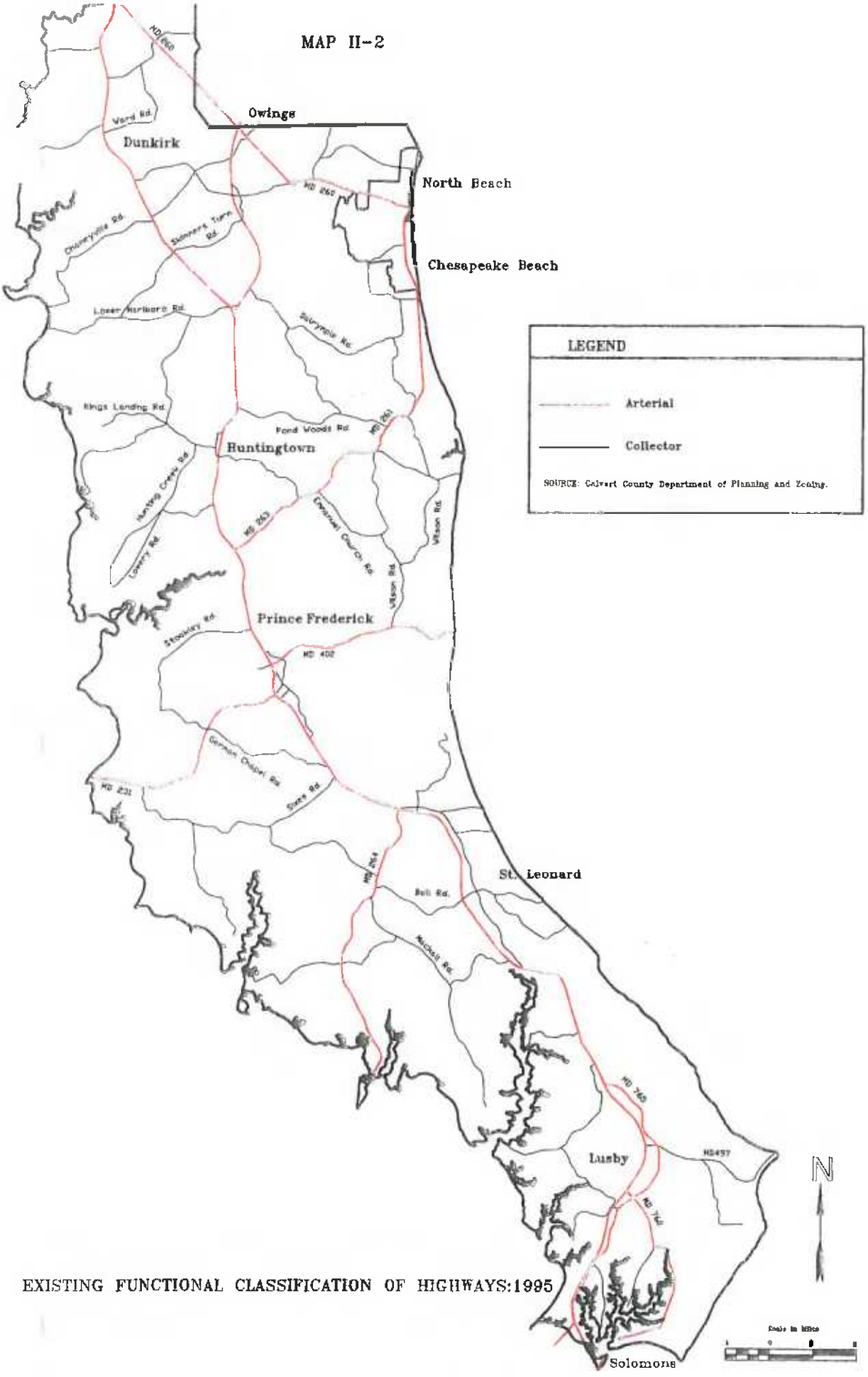
Roads and highways can also be classified according to jurisdiction. Jurisdictional classification is important to plan implementation. It establishes which level of government, be it state or county has or should have the responsibility for designing, constructing, maintaining, and operating each segment of the highway system.

The existing jurisdictional classification of collector and arterial highways in Calvert County is shown on Map II-3. Generally, arterial highways should be the responsibility of the State as these roads serve trips that extend beyond the borders of the County. All of the arterial mileage in the County is under State jurisdiction.

In 1995, the total street and highway system approximated 628 miles. About 62 percent of this mileage or 387 miles were operated and maintained by the County and about 20 percent or 125 miles were operated and maintained by the State. The remaining 18 percent, or 116 miles, were privately owned. This mileage is located primarily within communities such as White Sands, Chesapeake Ranch Estates, and Scientists Cliffs. Calvert County does not provide nor maintain roads in these communities, except in a limited number of cases where County road maintenance agreements have been established.

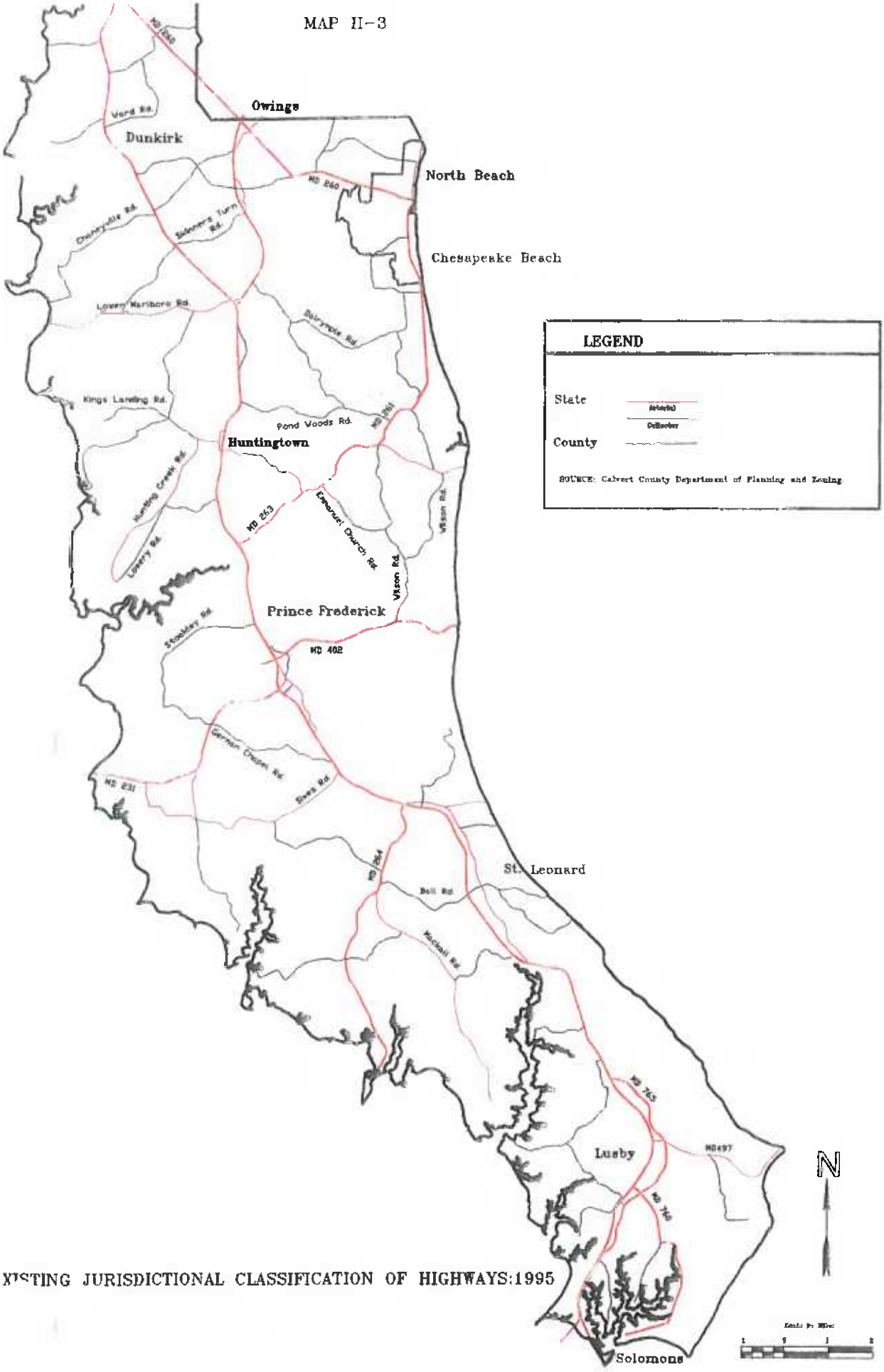
[4]The arterial highway system can be further classified in terms of eligibility for federal funding for highway improvements. This classification was prepared by the Maryland Department of Transportation, State Highway Administration in cooperation with the U.S. Department of Transportation, Federal Highway Administration, as required by the federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Highway facilities classified under the federal scheme as rural principal arterials, rural minor arterials, rural major collectors, and urban minor arterials are reflected as arterial highways under the County's functional classification. As shown in Chapter IV, the plan recommends that classification in Calvert County, the federal classification be made to conform with the County classification.

MAP II-2



EXISTING FUNCTIONAL CLASSIFICATION OF HIGHWAYS:1995

MAP II-3



EXISTING JURISDICTIONAL CLASSIFICATION OF HIGHWAYS:1995

Supply and Use of Arterial Highways

Arterials should be designed and located so as to provide fast and convenient travel, to support necessary economic development, and to provide a framework for planned land use development. To ensure that the arterial system functions properly, its physical and operational characteristics must be understood. An inventory of the arterial system must be compiled and updated regularly.

Map II-4 provides information crucial to determining and monitoring the capacity of the arterial system. It identifies the number of traffic lanes and the posted speed limit on each arterial segment and the traffic control devices affecting arterial traffic.

Traffic Volume: Map II-5 shows existing average weekday traffic volumes on selected links of the arterial system. The highest traffic volumes were carried on MD 4-2/4, particularly through Prince Frederick. As shown on Map II-5, about 35,000 vehicles per day traveled on MD 2/4 between MD 402 and MD 231 in Prince Frederick.

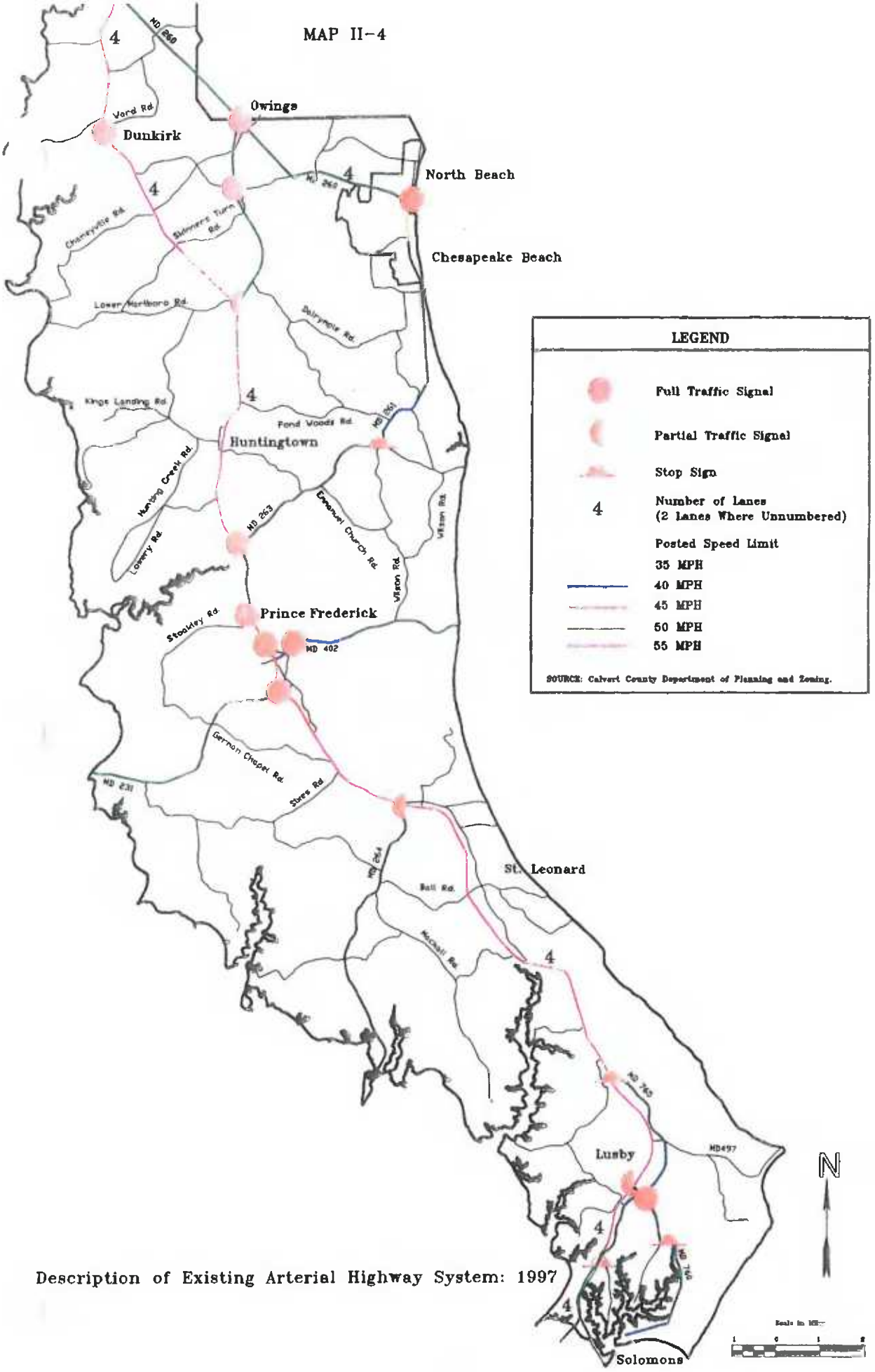
Highway travel is measured in vehicle-miles of travel (VMT). When a car travels one mile, one vehicle-mile is counted. Currently about 1.3 million vehicle-miles are traveled per weekday on arterial highways in Calvert County. About 910,000 vehicle-miles or, 70 percent of total VMT is carried on MD 4 -2/4. The remaining 30 percent is carried on other arterial highways in the County.

Traffic Congestion: Traffic congestion occurs when the volume of traffic on a given highway approaches or exceeds the design capacity of that facility. Such congestion typically occurs during weekday peak travel periods and is known as recurring congestion. On heavily traveled highways, congestion is also created when traffic enters or exits the highway to access adjacent land uses as well as by traffic accidents. The congestion created by these problems becomes more acute as traffic volumes increase.

At the direction of the Department of Planning and Zoning, Tri-County Council for Southern Maryland assessed the operational characteristics of the arterial highway system. Under the approach used, one of six levels of service (LOS), corresponding to the letters "A" through "F", was assigned to major highway links during the peak traffic period of the day. LOS "A" describes free-flow conditions in which individual vehicles are unaffected by the presence of other vehicles. LOS "F" describes a break-down in traffic flow or stop-and-go conditions.

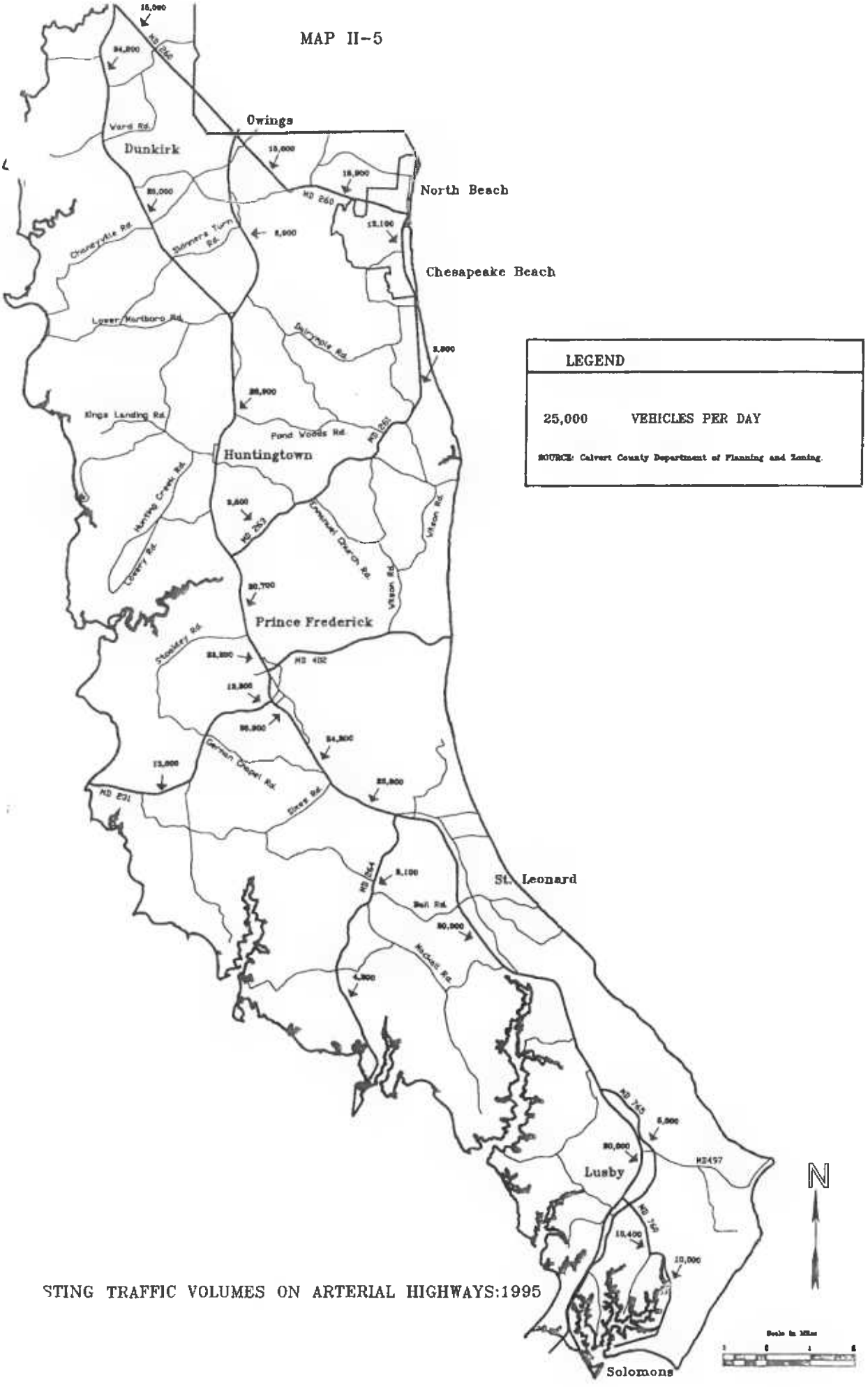
Map II-6 shows existing levels of service on arterial highways. All highways in the County are operating at acceptable service levels, experiencing little or no traffic congestion. Highways experiencing LOS "D" are located within or directly serve the most intensely developed areas of the County--Prince Frederick and the Towns of North Beach and Chesapeake Beach. As shown in Table II-5, about 22 miles, or 25 percent of arterial highway mileage, are operated at LOS "D". These highways experience stable flow, though speeds and freedom to change lanes are restricted during peak periods. All collector roads and highways in the County are operating at acceptable levels of service.

MAP II-4



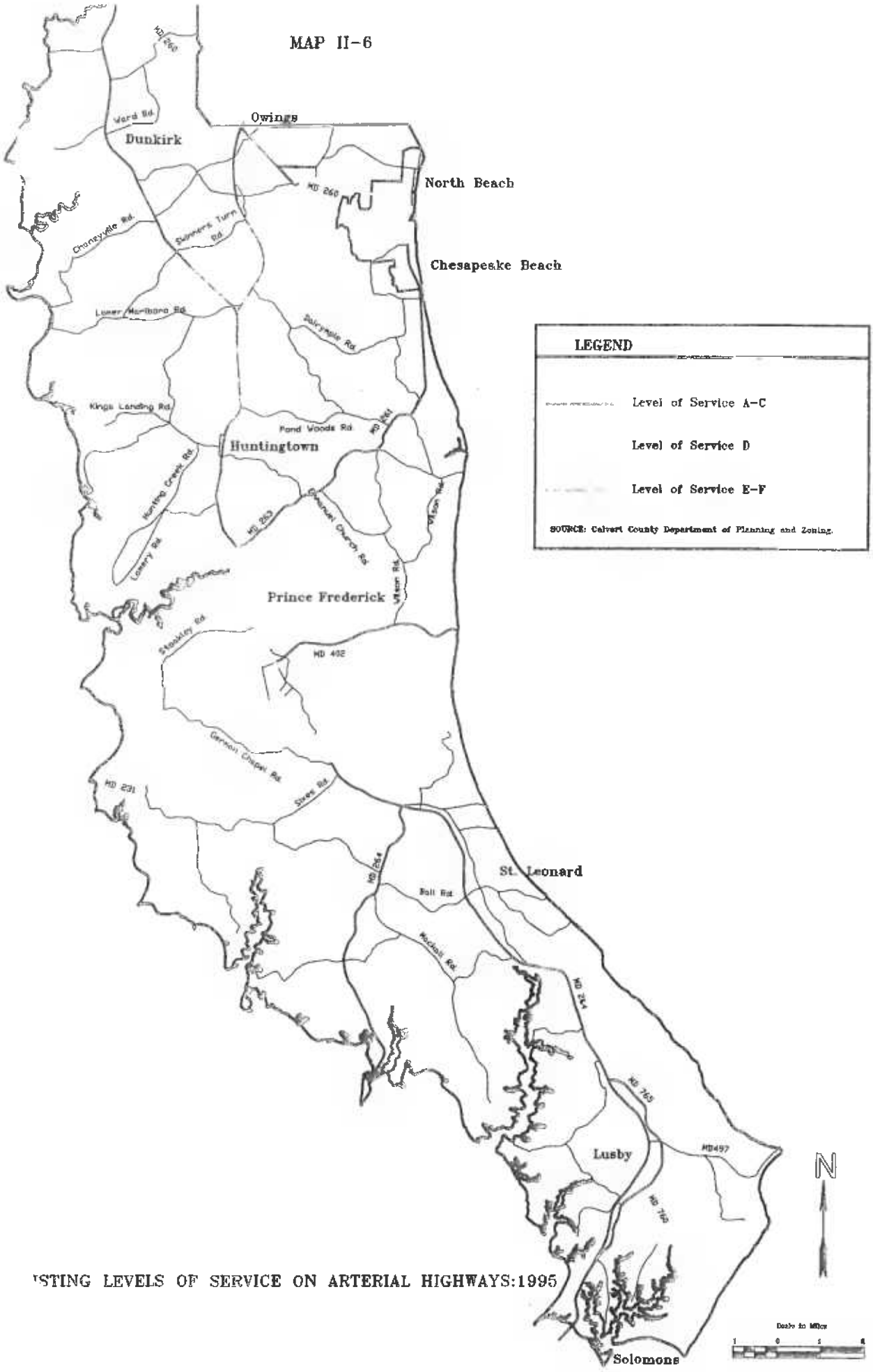
Description of Existing Arterial Highway System: 1997

MAP II-5



STING TRAFFIC VOLUMES ON ARTERIAL HIGHWAYS:1995

MAP II-6



'STING LEVELS OF SERVICE ON ARTERIAL HIGHWAYS:1995

TABLE II-5
EXISTING LEVELS OF SERVICE ON ARTERIAL HIGHWAYS: 1995

Level of Service (LOS)	1995	
	Miles	Percent of Total
LOS A - C	63.9	74.7
LOS D	21.6	25.9
LOS E & F	0.0	0.0
Total	85.5	100.0

Source: Calvert County Department of Planning and Zoning.

Traffic Accidents

As traffic volumes have increased in Calvert County so too has the number of traffic accidents.[5] Between 1980 and 1990, the number of traffic accidents increased by 25 percent from 550 to 690. The number of vehicle-in-transport accidents--that is, accidents involving the collision of two vehicles--increased by about 68 percent, from 224 to 377, over the same time period. In 1990, vehicle-in-transport accidents accounted for 55 percent of all traffic accidents.

The primary cause of traffic accidents in Calvert County, the failure to yield right-of-way, has increased more significantly than other causes. In 1980, the failure to yield right-of-way caused 34 percent of vehicle-in-transport accidents. In 1990, it was cited as the cause for about 47 percent of vehicle-in-transport accidents. This trend demonstrates the conflict between providing for a high level of mobility along arterial highways and allowing access along those highways to adjacent development. Heavy traffic volumes and multiple uncoordinated access points along arterial highways are prone to result in a high accident potential.

Traffic accidents involving a fixed object also accounted for a large proportion of accidents; second only to accidents involving another vehicle. In 1990, about one-third of all accidents, or about 227 accidents, involved the collision of a vehicle with a tree, fence, telephone pole, or some other fixed object along the road. Many roads have narrow shoulders or no shoulders at all and allow limited sight and stopping distances.

Public Transit

The existing public transit system in the County is shown on Map II-7. It consists of rapid transit bus service with associated park-and-ride lots and intra-county bus service, which is provided by Calvert County Public Transportation (CCPT). The demand responsive bus routes provided by CCPT are not shown on the map.

Rapid Transit: Rapid transit is intended to facilitate fast travel along heavily traveled corridors and between major activity centers in a metropolitan area. In 1995, rapid transit service in the County consisted of two bus routes, the Route Four Flyer routes, operated by Keller Transportation, Inc. under contract with the Maryland Department of Transportation, Mass Transit Administration. The first route was operated between the intersection of MD 263 and MD 2/4 and downtown Washington DC at a travel time of one hour 11 minutes. The second route was operated between the Town of North Beach and downtown Washington D.C. at a travel time of one hour six minutes. The Route Four Flyer routes were initiated in 1990 and in 1995 operated with seven buses. Only weekday service is provided.

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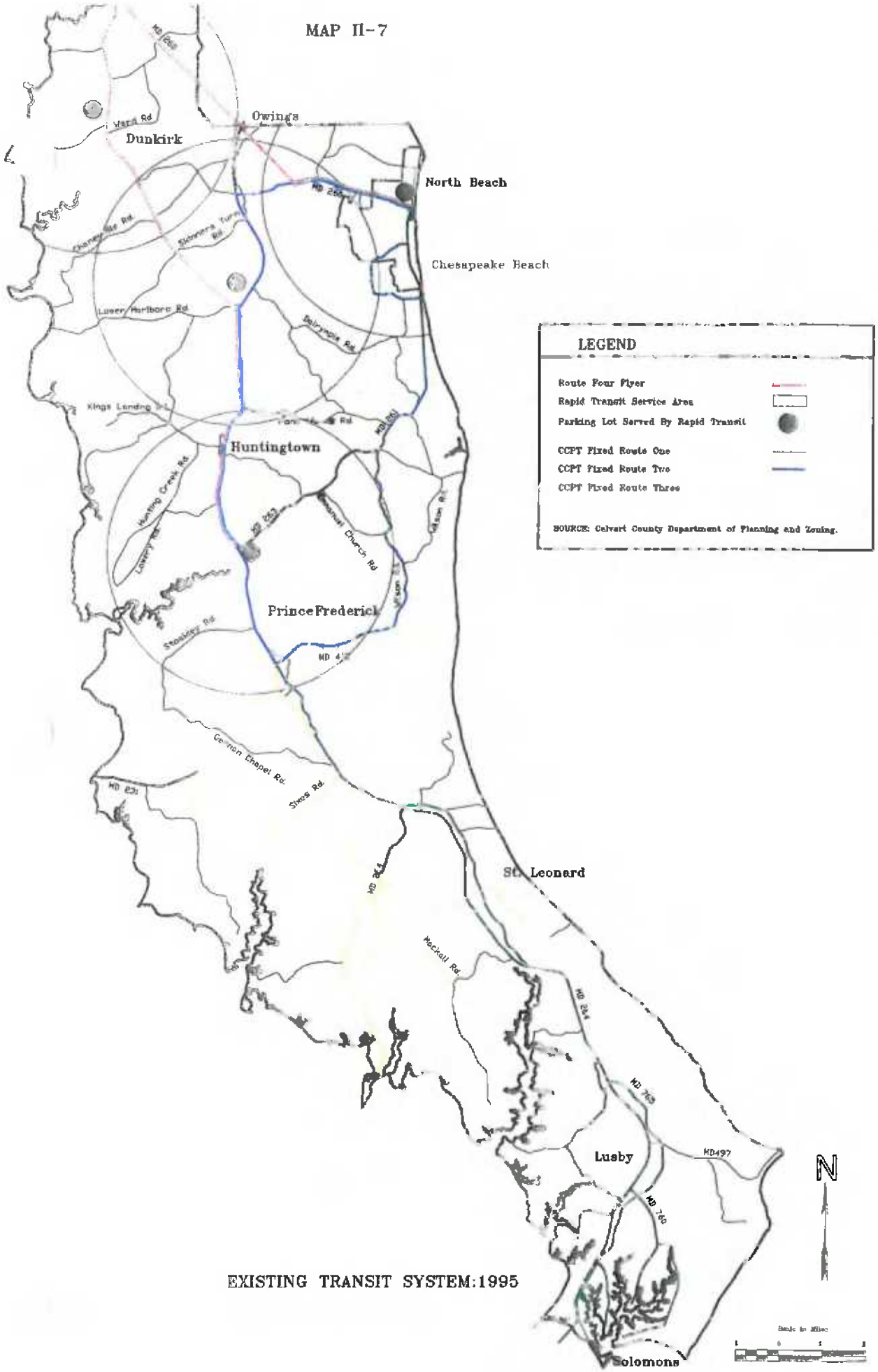
[5]A thorough evaluation of highway safety in Calvert County is provided in Tri-County Council for Southern Maryland, Technical Report XCIV-3140-II, "Calvert County Highway Safety", 1995. The source of data cited is the Maryland Automated Accident Reporting System (MAARS).

MAP II-7



EXISTING TRANSIT SYSTEM:1995

Ridership on the Route Four Flyer routes has increased steadily since 1990, as indicated in Figure II-2. Between 1990 and 1995, annual ridership has increased from 27,110 passengers-trips to 117,950 passenger-trips. In 1995, Route Four Flyer buses made stops at two public park-and-ride lots within the County--Sunderland and Dunkirk--and two private lots--Lord Calvert Bowling Lanes at MD 2/4 and MD 263 and the North Beach Volunteer Fire Department.[6] The service also made stops at three public park-and-ride lots along MD 4 in Anne Arundel County--Pindell, Bristol, Wayson's Corner--and the Prince George's County Equestrian Center before proceeding to Washington D.C.

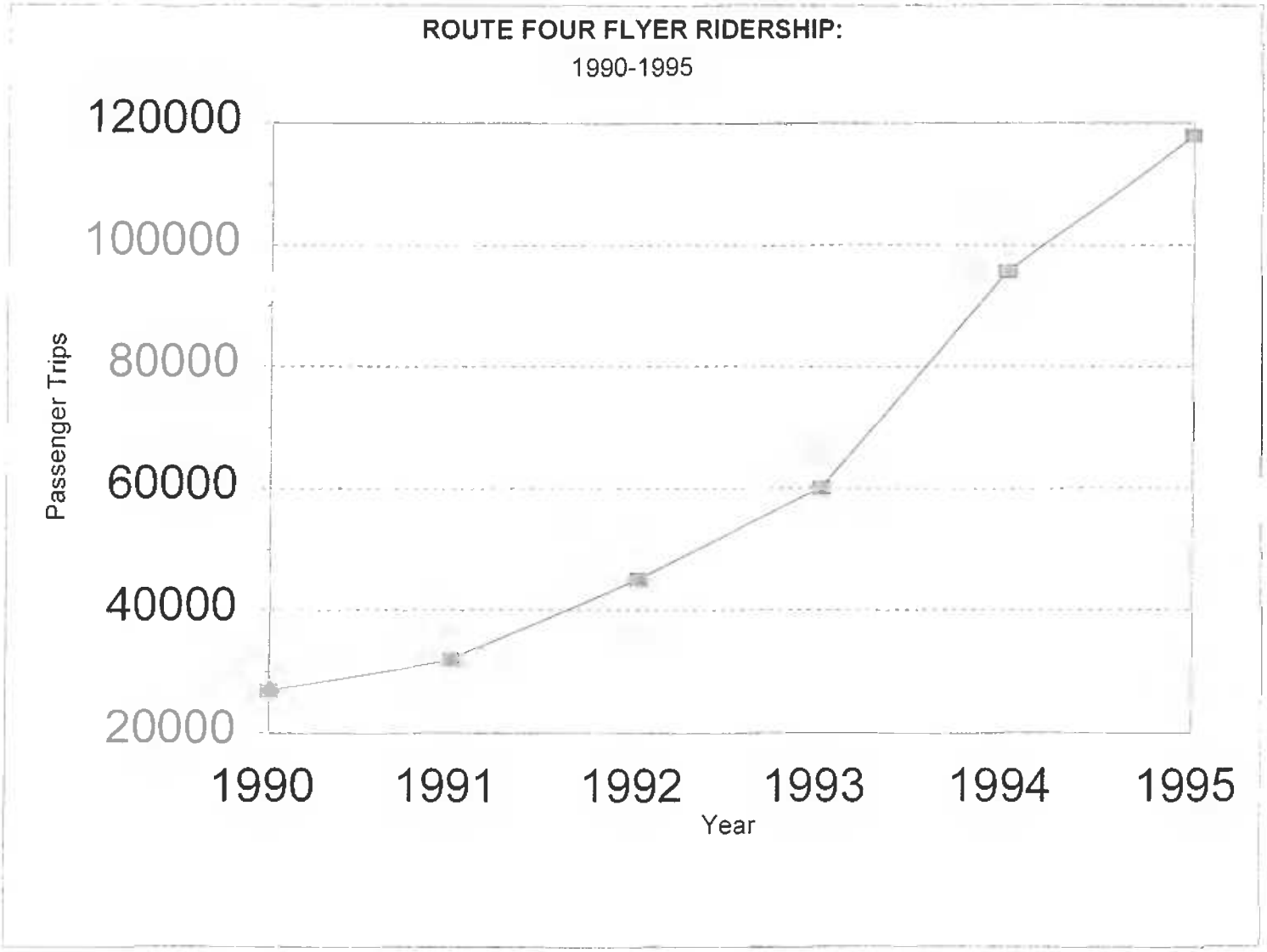
As shown on Map II-7, rapid transit serves a large portion of northern Calvert County. In 1995, about 29,600 people and 10,000 households were located within rapid transit service areas. The area served by rapid transit is defined in Calvert County as that area contained within a three-mile radius of a parking lot served by a rapid transit route. An optimum level of service is provided to residents within a 0.5 mile walking distance of a stop or station. Only in Chesapeake Beach and North Beach is it practical to walk to a rapid transit stop.

County Public Transit Service: Calvert County Public Transportation provides weekday public transit bus service from the Prince Frederick Town Center to points throughout the County. The County provides fixed-route public transit service over three routes, a combination of fixed-route and demand responsive service over one route, and fully demand responsive service over two routes.

- Route One operates between Prince Frederick and Solomons providing five round trips per weekday.
- Route Two operates between Prince Frederick and the Towns of North Beach and Chesapeake Beach, providing four round trips per weekday.
- Route Three operates between Prince Frederick and St. Leonard and serves Broomes Island, providing three round trips per weekday.
- Route Four operates between Prince Frederick, North Beach, and Dunkirk and provides door-to-door service to senior citizens traveling to medical appointments and shopping opportunities in North Beach.
- Routes Five and Six operate between Prince Frederick and points north and south of the Town Center, respectively. One passenger van operates over each route providing service to persons who do not have access to fixed-route services or are unable to use such services because of physical disability.

[6]It is important to note that ridership on the Route Four Flyer routes is not comprised entirely of Calvert County residents. The Mass Transit Administration conducted ridership counts by stop in October 1996 to determine the proportion of total riders boarding Route Four Flyer buses at the stops in Calvert County. The data indicate that about 38 percent of Route Four Flyer riders board buses at stops in Calvert County. The data show where riders board the buses but not where they live. It is likely that some riders boarding buses in Anne Arundel County live in Calvert County.

FIGURE II-2



Source: Maryland Mass Transit Administration and Calvert County Department of Planning and Zoning.

Ridership on the County public transit system has steadily increased since 1990. Between 1990 and 1995, annual ridership increased by about 33 percent from about 48,000 passenger-trips to 63,700 passenger-trips. About 75 percent of existing ridership is carried on fixed-route transit and 25 percent on demand responsive services. Ridership in the County transit system consists overwhelmingly of residents who do not have access to a private automobile for desired trips.[7] Indeed, over 70 percent of transit users do not have a drivers' license.

Commuter Parking

Commuter parking is an important element of the County transportation system, since the location, supply, and use of park-and-ride lots can affect mode choice and hence the level of traffic congestion. Park-and-ride lots in Calvert County have historically been developed by the State Highway Administration which also biannually monitors the use of these lots. Table II-6 shows data on the supply and use of the five carpool parking lots in the County in 1995. As shown, about 82 percent of the 268 parking spaces available county-wide were used on an average weekday in 1995.

Figure II-3 shows the historic trend in the supply and use of parking at carpool lots in the County. The utilization of available spaces hovered near or above 100 percent from 1985 to 1993. Since then use of spaces in the County has declined. This decline can be partly attributed to the expansion of park-and-ride facilities along MD 4 in Anne Arundel County.

There is ample opportunity for residents of Calvert County to participate in carpooling and vanpooling. Calvert County maintains a ridesharing matching program for County residents. Prince George's County operates a matching program for its residents and for persons living and working in that County. Finally, the Metropolitian Washington Council of Governments facilities ridesharing matching for residents of the metropolitan area.

TRAVEL PATTERNS

To the extent that we can understand existing travel patterns and behaviors we can better identify current transportation problems and determine the likely success of potential solutions. To date, the only source of travel pattern data particular to Calvert County is provided by the U.S. Census Transportation Planning Package (CTPP). This presents two major limitations.

First, the CTPP data provide neither a comprehensive nor complete picture of the travel behavior of County residents. The data address only the trip from home to work, expressing origins and destinations at the very general county level. An understanding of travel patterns must be based on a more comprehensive inventory and survey approach.

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[7]An assessment of the County transit system, including the results of an on-board ridership survey is provided in the 1996-1997 report entitled, "Calvert County Public Transportation Study: Technical Memorandum #3", which is available upon request from the Department of Planning and Zoning.

Table II-6

SUPPLY AND USE OF COMMUTER PARKING IN CALVERT COUNTY ON AN AVERAGE WEEKDAY: 1995

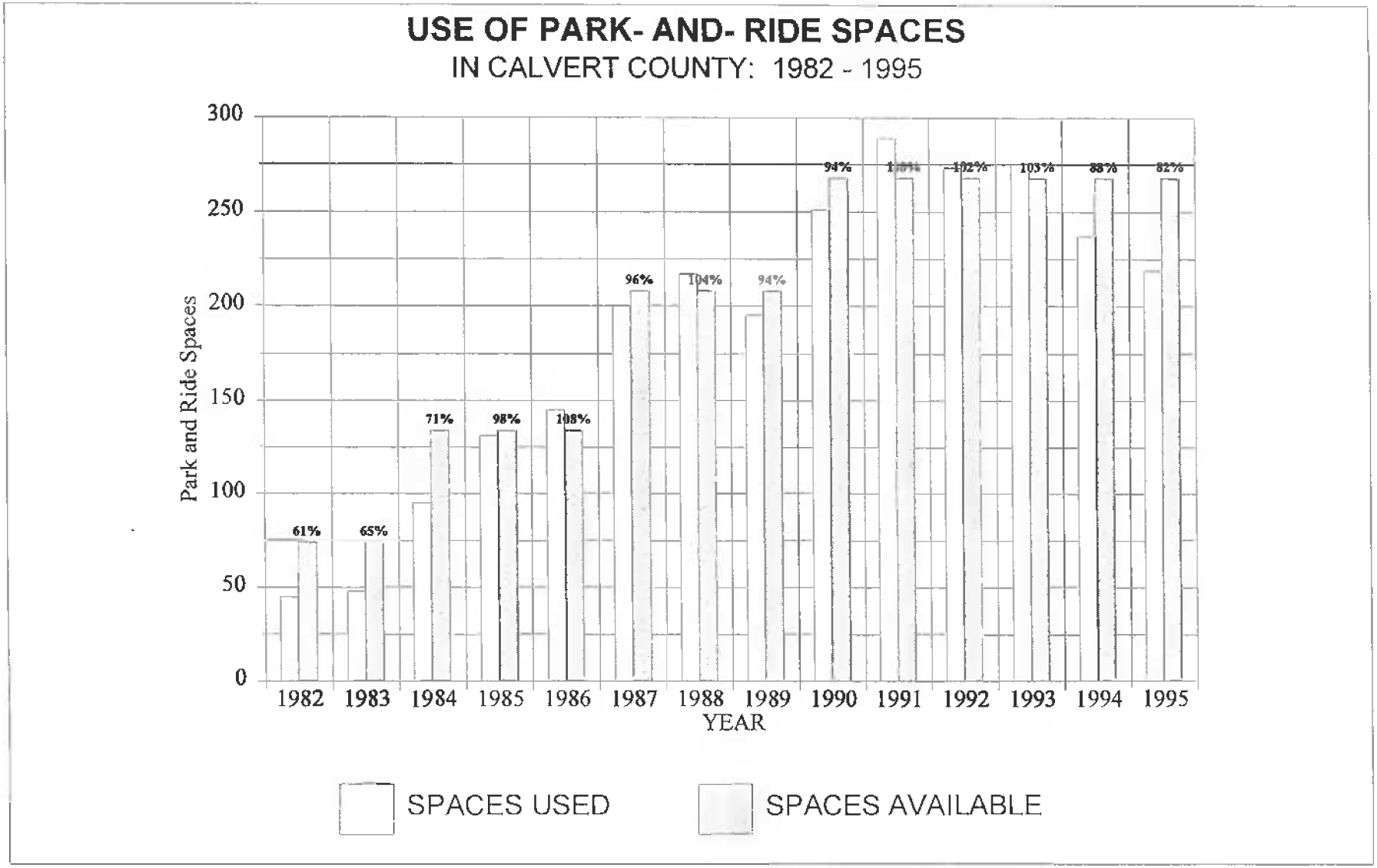
Parking Lot Location	Available Parking Spaces	Vehicles Parked	Percent of Spaces Used
MD 4 and Dunkirk District Park (Dunkirk)[1]	42	31	73.8
MD 2/4 and MD 262 (Sunderland)	104	92	88.5
MD 2/4 and MD 231 (Prince Frederick)	60	43	71.7
MD 2/4 and MD 524 (Huntingtown)	32	30	93.8
MD 765 and MD 497 (Lusby)	30	23	76.7
Total	268	219	81.7

Notes:

1.This lot served by Mass Transit Administration Route Four Flyer rapid transit bus route

Source: State Highway Administration and Calvert County Department of Planning and Zoning.

FIGURE II-3



Source: State Highway Administration and Calvert County Department of Planning and Zoning

Second, because of the pace of growth and development in Calvert County, the data provided by the 1990 Census are largely out-dated. As previously shown, the County population increased by about 25 percent between 1990 and 1995. While the CTPP data can indicate significant trends, they are not sufficient to describe *existing* conditions in Calvert County.

Within the constraints described above, the data are useful in describing overall patterns of commuter travel behavior. While the data focus only on the journey to work, managing weekday peak-period traffic is one of the most pressing transportation challenges facing Calvert County. This section of the chapter thus provides information on major commuter flows originating in and destined to Calvert County including mode choice.

Distribution of Commuting Trips

In 1990, the Calvert County labor force consisted of approximately 28,050 employees. About 57 percent of these workers, or 16,000 workers commuted to job sites located outside of Calvert County. The remaining 43 percent held jobs within the County[8].

Table II-7 shows the distribution of commuters among various destinations within the Washington D.C. metropolitan area. As shown, Prince George's County attracted about 6,970 commuters, or 25 percent of the County workforce. The District of Columbia attracted about 3,550 commuters or about 13 percent of the County workforce. These commuting patterns help to explain the long average distance traveled by County residents. In 1990, the average commute slightly exceeded 30 minutes and nearly one-fifth of County commuters traveled over one hour each way.[9]

While significant numbers of County workers commuted to job sites outside of the County, relatively few workers from other counties commuted to job sites in Calvert County. Table II-8 shows the distribution of commuters from other counties destined for Calvert County. As shown, while St. Mary's County was the greatest sending area in 1990, only about 1,500 workers from that County commuted to Calvert County.

Mode Choice

As previously mentioned, in 1990 the County labor force consisted of approximately 28,050 employees. Nearly 925 of these workers, or 3 percent worked at home. The remaining 27,125 workers commuted to work either alone in their vehicles, with one or more fellow commuters (carpool/vanpool), or by some other means (transit, walking, or biking). The U.S. Census was conducted before the previously described Route Four Flyer was initiated.

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[8]Between 1990 and 1995, the County labor force increased by about 7,270 workers, but the number of jobs available in the County increased by only 3,400. This means that, at a minimum, 3,870 additional County residents (7,270 - 3,400) joined than ranks of those who commute to jobs outside of Calvert County.

[9]These and other characteristics of County commuters are described in "Calvert County Commutation", prepared by Tri-County Council for Southern Maryland which is available, upon request, from the Department of Planning and Zoning.

Table II-7

DISTRIBUTION OF CALVERT COUNTY WORKFORCE BY COMMUTING DESTINATIONS: 1990

Destination	Number of Workers	Percent of County Workforce
Outside of Calvert County		
Prince George's County	6,973	24.9
Washington D.C.	3,554	12.7
St. Mary's County	1,307	4.7
Anne Arundel County	1,251	4.5
Fairfax County, VA	892	3.2
Charles County	626	2.2
Montgomery County	600	2.1
Other Destinations[1]	797	2.8
Subtotal	16,000	57.0
Within Calvert County[2]	12,050	43.0
Total	28,050	100.0

Notes:

1. About 43 percent of workforce commuting to "Other Destinations Outside of Calvert County" commuted to Arlington County, VA in 1990.

2. About 7 percent of workforce "Within Calvert County" worked at home in 1990.

Source: U.S. Census and Calvert County Department of Planning and Zoning.

TABLE II-8

DISTRIBUTION OF COMMUTERS DESTINED FOR CALVERT COUNTY BY SENDING AREA: 1990

Sending Area	Number of Workers
St. Mary's County	1,500
Anne Arundel County	720
Charles County	430
Prince George's County	340

Note:
Sending areas sending less than 300 commuters excluded.

Source: U.S. Census and Calvert County Department of Planning and Zoning.

Of the County's 27,125 commuters, 76 percent, or about 20,535 workers, drove alone; 22 percent, or 5,860 workers carpooled; and just over 2 percent, or about 730 workers used some other mode of travel[10]. While the County leads all other Maryland counties, except for Charles County, in the percent of commuters who carpool, carpooling has decreased as a share of all modes of travel to work. Driving alone has increased. Indeed fifteen years ago, nearly one-third of County commuters carpooled and nearly two-thirds drove alone to work.

As a result of this shift away from carpooling average vehicle occupancy, or the number of persons per vehicle, has declined. Vehicle occupancy is an important indication of the efficiency of the transportation network: the higher the average vehicle occupancy, the more persons that can be moved under the same roadway and traffic conditions. Average vehicle occupancy for home based work trips approximated 1.2 persons per vehicle in 1990.

Mode Choice By Destination

Mode choice varies according to trip destination. As shown in Table II-9, of the 6,970 workers who commuted to jobs located in Prince George's County, about 80 percent drove alone, while almost 20 percent carpooled. Mode choice is more evenly split for the commute to Washington D.C. Of the 3,550 workers who commuted to the District of Columbia, about 50 percent drove alone and about 50 percent carpooled.

Table II-10 shows the mode choice of those workers who commuted from other counties to jobs in Calvert County. Of the 1,500 commuters from St. Mary's County, about 76 percent, or 1,140 workers, drove alone to jobs in Calvert County, while nearly 22 percent, or 325 carpooled.

The data indicate that carpooling in Calvert County is largely dependent on the concentration of trip destinations (jobs sites) and of travel distance. The combined effects of a high concentration of jobs in the Washington D.C. area and of long travel distances contribute to rather high levels of carpooling for County residents. Other factors affecting carpooling include travel costs (most importantly gasoline prices), parking cost, congestion levels, and the ease and convenience of carpooling, including the availability of park-and-ride spaces and overall residential densities. Rising gasoline prices and congestion levels act to encourage carpooling, whereas the lack of commuter parking and low density patterns of residential development may act to discourage carpooling.

[10]A significant proportion of the 730 workers who used some other mode probably drove alone most of the distance of their trip and accessed public transit beyond the borders of the County.

TABLE II-9

MODE CHOICE OF COUNTY COMMUTERS BY DESTINATION: 1990

Destination	Workers By Mode			
	SOV[1]	Carpool	Other[2]	Total
Prince George's County	5,319 *80.4 %*	1,258 *19.0 %*	35 *0.6 %*	6,612 *100.0 %*
Washington D.C.	1,636 *48.5 %*	1,673 *49.7 %*	60 *1.8 %*	3,369 *100.0 %*
St. Mary's County	1,004 *81.0 %*	235 *19.0 %*	0 *0.0 %*	1,239 *100.0 %*
Anne Arundel County	990 *83.5 %*	191 *16.1 %*	5 *0.4 %*	1,186 *100.0 %*
Fairfax County, VA	655 *77.5 %*	177 *21.0 %*	13 *1.5 %*	845 *100.0 %*
Charles County	491 *83.0 %*	95 *16.0 %*	6 *1.0 %*	592 *100.0 %*
Montgomery County	400 *70.4 %*	152 *26.8 %*	16 *2.8 %*	568 *100.0 %*
Arlington County, VA	209 *64.5 %*	113 *34.9 %*	2 *0.6 %*	324 *100.0 %*

Notes:

1.Single Occupancy Vehicle (SOV) or driving alone to work

2.Includes public transit.

Source: U.S. Census and Calvert County Department of Planning and Zoning.

Table II-10
MODE CHOICE OF COMMUTERS DESTINED FOR CALVERT COUNTY: 1990

Sending Area	Workers by Mode			
	SOV[1]	Carpool	Other [2]	Total
St. Mary's County	1,139 *75.9 %*	325 *21.7 %*	36 *2.4 %*	1,500 *100.0 %*
Anne Arundel County	606 *84.2 %*	114 *15.8 %*	0 *0.0 %*	720 *100.0 %*
Charles County	373 *86.7 %*	52 *12.1 %*	5 *1.2 %*	430 *100.0 %*
Prince George's County	262 *77.1 %*	66 *19.4 %*	12 *3.5 %*	340 *100.0 %*

Notes:

1.Single Occupancy Vehicle (SOV) or driving alone to work.

2.Includes public transit.

Source: U.S. Census and Calvert County Department of Planning and Zoning.

CONCLUSION

This chapter has presented information pertinent to understanding existing transportation challenges in Calvert County. It has focused on growth in population, households, and number of jobs, the County transportation system, and travel patterns. The major inventory findings are provided below.

- Between 1960 and 1990, the County population more than tripled in size, the number of households more than quadrupled, and the number or jobs more than doubled. Since 1990, growth has continued at high rates. Heavy traffic volumes have resulted.

- The heaviest traffic volumes are carried on MD 4-2/4. In 1995, volumes on this four-lane divided highway ranged from 45,000 vehicles per day (vpd) at the north County line to about 20,000 vpd in Solomons. In Prince Frederick traffic volumes approximated 35,000 vpd.

- The highway system is presently operating well. While some delay at signalized intersections in Prince Frederick is experienced during the peak travel periods, all arterial and collector roads are operating at acceptable levels of service.

- Highway travel in the County is measured in vehicle-miles of travel (VMT). Currently, about 1.3 million vehicle-miles are traveled per weekday within Calvert County.

- Traffic accidents involving the collision of two vehicles increased by about 68 percent between 1980 and 1990. Heavy traffic volumes and multiple access points on MD 4-2/4 are contributing factors.

- Highway mileage in the County totals 628 miles. About 62 percent of this mileage, or 387 miles, are County-owned and about 20 percent, or 125 miles, are State-owned. The remaining 18 percent, or 116 miles, are privately-owned.

- The County operates weekday bus service from Prince Frederick to points throughout the County. It is primarily used by residents who do not have access to a car or are unable to drive. The service meets Maryland Mass Transit Administration (MTA) standards for transit efficiency.

- Commuter, or rapid, transit is provided by MTA over two Route Four Flyer bus routes that serve Washington D.C. In 1995, nearly 380 passenger-trips per day were carried over these routes. Transit riders represent a small proportion of total County commuters though 46 percent of County households are located within a three-mile radius of a transit park-and ride lot.

- In 1990, about 22 percent of County commuters carpooled. While 22 percent is a large share relative to all other counties in Maryland, this existing percentage represents a decline from a high of about 33 percent in 1980. In 1990, about 76 percent of commuters drove alone.

- In 1990, about 57 percent of employed County residents commuted to jobs outside of the County. About one-fifth of County commuters traveled an hour or more to work each way. Prince George's County and Washington D.C. are the top destinations.

CHAPTER III

CHAPTER III

OBJECTIVES

OBJECTIVES

The Calvert County Planning Commission adopted nine objectives to guide the design of the 2010 transportation plan. The objectives are concerned primarily with developing a transportation system that serves the County's settelment pattern and providing for safe, convenient, and energy efficient travel. The objectives are set forth in Figure III-1 accompanied by supporting transportation planning principles and design standards.

PRINCIPLES AND STANDARDS

As shown in Figure III-1, each objective is supported by a principle and a set of standards. Principles are generally accepted tenets which help explain the objectives. Standards are more directly related to the actual design of a plan, being used to evaluate how well a plan, or alternative plans, may be expected to attain a given objective.

Most of the standards are comparative; as in the example "vehicle-miles of travel should be minimized". In comparing alternative plans, the plan resulting in the lowest vehicle-miles of travel would best meet this standard and therefore best be able to attain Objective No. 6-- "A transportation system that promotes energy conservation". Other standards are design-related and can be met equally well under any plan. It is in these ways that the objectives and standards are used to design the best possible transportation plan--one that comes closest to attaining adopted objectives.

CONCLUSION

In the planning process, alternative plans can be prepared and ranked according to their ability to meet the objectives. Certain objectives are complimentary, meaning that a plan which achieves one objective may also achieve another objective. Conversely, certain objectives are conflicting, meaning that some compromises during plan design will need to be made. To meaningfully evaluate alternative plans, or even a single preliminary plan, each must be comparatively assessed against all of the objectives listed in Figure III-1.[11]

[11]This assessment is provided in Chapter V of this report.

FIGURE III-1
OBJECTIVES, PRINCIPLES, AND STANDARDS FOR THE 2010 COUNTY TRANSPORTATION PLAN

OBJECTIVE No. 1

A transportation system that effectively serves the existing land use pattern and helps to implement County land use and growth management objectives.

Principle

Accessibility, or the degree to which locations can be reached within a given time period, can be significantly enhanced through major transportation improvements. Transportation policy can be used to induce development in desired locations and to discourage development in other locations.

Standards

1. A high level of accessibility should be provided to towns and town centers.

2. A low level of accessibility should be provided to rural residential areas and to areas planned for protection from development.

OBJECTIVE No. 2

A transportation system that provides a high level of mobility for the residents, workers, and visitors of Calvert County.

Principle

Reasonably fast and convenient travel supports daily social and economic activities. Congestion and delay increase the cost of travel and can adversely affect the attractiveness of an area for residential, commercial, and industrial use. Effective public transit service can help reduce traffic congestion and thereby improve mobility in heavily traveled corridors. Public transit can also increase the mobility of those who are unable to make use of an automobile.

Standards

1. Arterial highways should be designed and operated to provide a Level of Service of "D" or better.[1]

2. The number of private access points along arterial highways should be minimized.

3. Rapid transit should be provided to maximize the number or residents readily served.[2]

4. Express and local transit routes should be focused on concentrations of demand, particularly the largest town centers.

OBJECTIVE No. 3

A transportation system that provides for efficient circulation within and adjacent to town centers.

Principle

A soundly planned road network is essential to the orderly development of town centers. A planned road network lends order and efficiency to community development and its implementation provides the infrastructure necessary to support that development. Future traffic congestion, travel delay, and safety problems can be avoided by relating land use development to transportation needs.

Standards

1. Town road networks should minimize the number of local trips that involve travel on arterial highways.

2. Bicycle ways and sidewalks should be provided where existing or anticipated demand for bicycling and walking is high.

3. Town roads should be designed with sufficient capacity and flexibility to accommodate anticipated town build-out.

4. Town road networks should permit the direct and efficient routing of transit vehicles.

OBJECTIVE No. 4

A transportation system that protects the overall quality of the natural environment.

Principle

Adverse effects on the natural environment in the form of air pollution and water pollution and the loss of woodlands, wetlands, and wildlife habitat can be minimized through the proper location, design, and operation of the transportation system. The relationship of the citizens of the County to the natural environment should be one of stewardship.

Standards

1. The location of transportation facilities through woodlands and wetlands and other natural areas should be minimized.

2. The amount of air pollutants emitted through use of the transportation system should be minimized.

3. The location of transportation facilities through prime farmland should be minimized.

OBJECTIVE No. 5

A transportation system that protects community development and the cultural heritage and rural character of the County.

Principle

The social and economic costs of transportation-related construction can be minimized through the proper location, design, and operation of the transportation system.

Standards

1. The destruction of historic buildings and of historic, scenic, scientific, archaeological, and cultural sites caused by the construction of transportation facilities should be minimized.

2. The penetration of existing residential areas by new roads and highways should be minimized

3. The dislocation of existing households, businesses, industries, and public and institutional buildings caused by construction of transportation facilities should be minimized.

4. The disruption of future development should be minimized through the advance reservation of rights-of-way.

OBJECTIVE No. 6

A transportation system that promotes energy conservation and minimizes the amount of non-renewable energy consumed.

Principle

The long-term efficiency of the transportation system depends on the conservation of existing non-renewable energy sources and the increased application of substitute renewable energy sources. Transportation facilities should be designed to allow for the eventual use of energy-efficient transportation modes, when such modes become practical. A transportation system and settlement pattern that reduces the length and number of vehicle trips promotes energy conservation.

Standards

1 The amount of non-renewable energy consumed in the transport of people and goods throughout the County should be minimized.

2. Total vehicle-miles traveled within the County should be minimized.

OBJECTIVE No. 7

A transportation system which provides for increased safety for motorists, bicyclists, and pedestrians.

Principle

Traffic accidents take a heavy toll in life, property damage, and human suffering, contribute to overall transportation costs, and increase the public costs for police, emergency medical services, and other social services. Both the incidence and severity of traffic accidents can be minimized through proper transportation and land use development.

Standards

1. Traffic control at intersections should maximize safety; grade separation of major highways being preferred.

2. Traffic operational and design improvements including but not limited to acceleration and deceleration lanes, crosswalks, and roundabouts should be used when their use would increase overall levels of safety.

3. Transportation improvements should be designed to be compatible with bicycling and walking, particularly within and adjacent to town centers.

OBJECTIVE No. 8

A transportation system that is properly integrated into the regional network of transportation facilities and contributes to the resolution of area-wide transportation problems.

Principle

Travel habits and patterns occur without regard to jurisdictional boundaries. Therefore, major transportation facilities and traffic flows must be viewed in a regional context. To the greatest extent possible, plans for major transportation improvements should complement adopted plans in neighboring jurisdictions when such plans are found to be sound. In heavily traveled corridors, the use of multiple modes can reduce traffic congestion, air pollution, and energy consumption.

Standards

1. The average vehicle occupancy for work trips originating in Calvert County should be maximized.

2. Park-and-ride lots should be located and expanded so as to maximize carpooling.

3. Rapid transit should be operated so as to attract the maximum number of commuters who would otherwise drive alone to work.

OBJECTIVE No. 9

A transportation system which meets all other objectives while minimizing total public and private costs.

Principle

Resources are limited. Any undue investment in transportation facilities and services must occur at the expense of other public and private investment. Financing the implementation of transportation improvements justifiably involves partnerships among jurisdictions and between the public and private sectors.

Standards

1. The sum of transportation system capital, operating, and maintenance costs should be minimized.

2. Full use of existing transportation facilities should be achieved prior to any capital intensive or disruptive construction of new facilities.

NOTES:

1. Level of Service (LOS) is a qualitative measure of operational conditions on a given highway segment. LOS designations range from "A" to "F", with "A" describing free flow conditions in which individual motorists are unaffected by the presence of other motorists, and "F" describing a break-down in traffic flow or stop-and-go conditions. A highway operating at a LOS "D" can be characterized by a high density of vehicles moving in a stable flow. Speed and freedom to maneuver are severely restricted, however, and drivers experience poor levels of comfort and convenience. Small increase in traffic flow will generally cause operational problems at this LOS.

2. Persons are considered readily served by commuter transit when they are located within a three-mile radius of a park-and-ride lot which is provided with transit service.

CHAPTER IV

CHAPTER IV

FINAL RECOMMENDED PLAN

INTRODUCTION

This chapter presents the final recommended 2010 County Transportation Plan. The chapter begins with a discussion of changes that can be anticipated to occur in Calvert County by 2010--that is, changes in the levels and location of population, households, and jobs. Because the plan's recommendations are designed to serve future travel, it is important that future patterns of growth and development be understood.

After a discussion of anticipated growth and change, the chapter addresses the preliminary recommended plan and the revisions made to it. The preliminary plan was the subject of significant public consideration.[13] Only minor revisions were indicated by the public input received and these are documented herein.

The main focus of this chapter is the 2010 County Transportation Plan. Upon adoption by the Board of County Commissioners, the plan becomes the guide to transportation development in Calvert County. The plan is provided in detail sufficient to allow anticipated costs to be estimated, broad-level environmental, land use, and traffic impacts to be evaluated, and preliminary engineering and other implementation activities to be commenced.

ANTICIPATED GROWTH AND CHANGE

Forecast of Future Growth

Forecasts provide estimates of future needs for resources and public facilities including roads and highways. Population, household, and employment forecasts are inputs to the traffic forecasting procedures, indicating the magnitude and location of future traffic growth. During the planning process, the 2010 forecast levels presented in Table IV-1 were distributed throughout the County

[13]Documentation of the public input into the planning process and consideration of the preliminary recommended plan has been compiled and can be made available upon request to the Department of Planning and Zoning.

TABLE IV-1

EXISTING AND FORECAST POPULATION, HOUSEHOLDS, AND EMPLOYMENT IN CALVERT COUNTY: 1990 AND 2010

Characteristic	Year		Change 1990-2010	
	1990	2010	Number	Percent
Population	51,370	95,000	43,630	84.9
Households	16,990	32,000	15,010	88.3
Employment	17,400	27,400	10,000	57.5

Note: The year 1990 was used as the base year in the forcast of population, household, and employment growth and is thus presented here even though more recent data are available (see Chapter II). Actual figures since 1990 indicate that population, household, and job growth are tracking closely the forcasts, indicating continued validity of the forcasts for transportation plan desgin.

Source: U.S. Bureau of Economic Analysis, U.S. Census, Maryland Office of Planning, and Calvert County Department of Planning and Zoning.

based upon the levels of development that the current Zoning Ordinance would permit. The forecasts are summarized below[14].

- Between 1990 and 2010, the population of the County is forecast to increase by about 85 percent from 51,370 persons to about 95,000 persons;
- Between 1990 and 2010, the numbers of households is forecast to increase by about 88 percent from 16,990 to 32,000 households; and
- Between 1990 and 2010, the number of jobs is forecast to increase by about 57 percent, from 17,400 to 27,400 jobs.

The above forecasts indicate that the ratio of jobs to housing may be expected to decline through 2010. In 1990, there were 1.02 jobs for every household in the County. By 2010 that ratio may be expected to fall to about 0.86. This suggests that the proportion of the County workforce that commutes to jobs outside of the County is not likely to fall below the 57 percent level recorded in 1990. Therefore, managing peak-period traffic flows will present a significant transportation challenge through 2010.

County Comprehensive Plan and Zoning

The County Comprehensive Plan recommends that town centers be designated as the location for population, household, and employment growth and investment in supporting infrastructure. Eight town centers have been designated: Solomons, Lusby, St. Leonard, Prince Frederick, Huntingtown, Dunkirk, Owings, and Chesapeake Beach-North Beach. Master plans and zoning ordinances have been adopted for all but two of these town centers: Lusby and Owings.

Outside of town centers, the Comprehensive Plan calls for a low density and rural settlement pattern. The current Zoning Ordinance, which regulates the use of land in the County, implements this recommendation while allowing a number of older residential communities to continue to develop at higher densities until completely developed. The current zoning is summarized on the 1994 Calvert County Zoning Map which is available upon request from the Department of Planning and Zoning.

[14]The year 1990 was used as the base year in forecasting population, households, and employment (jobs) in Calvert County. Since 1990, population, household, and employment growth has closely tracked the forecasts indicating the continued reliability of the forecasts for transportation planning through the year 2010.

- Areas shown in white on the Zoning Map allow an average density of one housing unit per five acres and presently contain about 35 percent of the total dwelling units in the County. If existing zoning is carried out indefinitely, until County build-out is reached, the share of total households that these areas contain may be expected to approximate 28 percent[15].

- Areas shown in yellow are zoned single-family residential and contain communities that were officially platted prior to enactment of current County zoning, including Chesapeake Ranch Estates and White Sands. Residential densities are higher in these areas. These districts contain about 35 percent of existing County households and may be expected to maintain this share under build-out conditions.

- The Resource Protection and Farm Conservation Districts which are shown in green on the Zoning Map are intended primarily for the use and preservation of natural resources. These districts contain about 20 percent of existing County households and may be expected to maintain this share under build-out conditions.

As indicated by the above, if current zoning is carried out until total County build-out is achieved, about 83 percent of households in the County would be located outside of town centers at a low overall density[16]. Conversely, nearly all future commercial development may be expected to locate in town centers. The automobile is the form of transportation best equipped to serve this type of settlement pattern though it would do so under severely congested conditions.

While the plan presented in this chapter is concerned with growth and development up to and through 2010, consideration of the ultimate direction indicated by existing plans and regulations is instructive. The settlement pattern determines the efficiency of the transportation system. The ultimate magnitude and location of future households and jobs will determine how well improvements planned today will serve future travel needs. If the settlement pattern envisioned in the 1983 Comprehensive Plan and the current County Zoning Ordinance is realized, another and more expensive round of transportation improvements than is presented later in this chapter will be required.

Past and present development patterns have already established that the automobile will be the predominant mode of transportation in the County through 2010. While numerical increases in the use of transit can be realized by 2010, the automobile will be the only practical means of travel for the vast majority of County residents for all trip purposes. As a result, traffic can be expected to burden highways serving major town centers as well as the local roads which provide for circulation within these centers. The plan presented in this chapter, by establishing a framework of

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[15]It is anticipated that, under current County zoning, build-out would be reached by 2030.

[16]It is important to note that a large proportion of these households will be located in Community Planning District 17 which encompasses Chesapeake Ranch Estates. Indeed in 1990, about 20 percent of total County households were located within Community Planning District 17. This district's share of total households will likely remain in theh 15-20 percent range through 2010. This area which can be characterized by its relatively high residential densities is served by two town centers, Solomons and Lusby.

transportation facilities and services, shows how this burden could be lessened, and indeed alleviated in the most important locations.

PRELIMINARY RECOMMENDED TRANSPORTATION PLAN

A preliminary recommended plan was prepared and widely distributed for comment to public agencies with planning responsibility or plan implementation authority including all County governmental departments, the Tri-County Council for Southern Maryland, State Highway Administration, Maryland Mass Transit Administration, and all neighboring jurisdictions; and to the State of Maryland legislative delegation representing Calvert County and Southern Maryland, concerned County governmental committees and commissions including the Economic Development Commission and the Budget Review Board, business and civic groups, and the general public.

The preliminary recommended plan was formally presented to six civic and business organizations with County-wide membership, responsibilities, and activities. It was presented to the Calvert County Planning Commission three times and presented to the Board of County Commissioners at its televised business meeting on August 26, 1997. A public informational meeting was held on October 9, 1997, and a public hearing was held on October 14, 1997[17]. The preliminary recommended plan was covered by local newspapers--The Calvert Independent and The Recorder.

The preparation of the preliminary recommended plan was informed by significant public input on transportation and transportation planning in Calvert County. The implications for transportation in the County of continued growth and land development was a major component of the public discourse on the draft 1997 County Comprehensive Plan which coincided with the preparation of the preliminary recommended transportation plan. Such discourse included descriptions of existing conditions, anticipated changes in the quality and function of transportation facilities and services, major and minor highway and transit projects which could potentially be required, and the formulation of comprehensive planning goals regarding transportation. Citizen input on transportation was obtained during the comprehensive planning process at public informational meetings on the draft comprehensive plan, at meetings with business and civic groups throughout the County, and at both regularly scheduled and special meetings of the Planning Commission and Board of County Commissioners. These activities took place coincident with ongoing transportation project planning which also included public meetings and hearings on major highway improvements and traffic operational and safety enhancements, among others topics.

In response to the input received on the preliminary recommended plan, a number of substantive, through minor, revisions were made. The final recommended plan described in this chapter therefore is a refined version of the preliminary recommended plan and reflects the input obtained during the

[17] A record of the October 14, 1997 public hearing can be obtained from the Department of Planning and Zoning.

public review and consideration process[18]. The revisions are described below.

- Recommendations for the maintenance of the existing County road and highway system were explicitly provided under the modified heading "Highway System Maintenance and Improvement". Previously, road maintenance was described only in Chapter VI of this report entitled "Plan Implementation".

- A planned 2010 highway functional classification map for Calvert County was added. The text previously referred to Chapter II and the existing highway functional classification map. The text was expanded to clarify the difference between the federal functional classification scheme used by the State Highway Administration and the functional classification of roads and highways in Calvert County, and to recommend that the Federal Highway Administration and State Highway Administration, in cooperation with the County, bring the federal functional classification into conformance with the County classification.

- The reconstruction of W. Dares Beach Road was added to the list of recommenced collector road improvements. Upon the opening of Prince Frederick Boulevard (Section 1 of the Prince Frederick Loop Road) between MD 231 and W. Dares Beach Road, significant volumes of traffic are likely to be imposed on this route as it becomes an important link in the Prince Frederick road network. The reconstruction should increase the capacity of this facility, be compatible with bicycle use, and include sidewalks on both sides of the roadway.

- The proposed upgrades of Cove Point Road (MD 497) and Little Cove Point Road were removed from the list of recommended collector road improvements. The impending opening of the third gate of the Chesapeake Ranch Estates residential community will relieve the traffic burdens placed on this route, negating the need, at least through 2010, for capacity and safety enhancements. If the proposed gate opening does not occur, need for the improvements should again be assessed.

- A recommendation was added concerning the design of residential streets in new subdivisions. The plan recommends that the road design standards set forth in the Calvert County Road Ordinance be evaluated to determine the extent to which they are compatible with the residential character of the subdivisions they serve. Reduced specifications for standard subdivision roads should be developed and used where it can be shown that public safety and road maintenance considerations among others would not be unduly compromised.

- A recommendation was added concerning the development of street networks adjacent to town centers. If residential development is directed to lands adjacent to town centers, efficient road networks should be developed so that residential streets connect with each

[18]A number of stylistic and editorial changes were made, most reflective of input received, to improve the clarity of presentation. These are not recorded here as they have no bearing on the plan's recommendations.

other and provide direct access to the town centers.

- The proposed State highway improvement schedule was amended; changing the time-frame for implementation of the construction of the grade separation at MD 4 and MD 260 from "within 15 years" to "within five years". This change is made to Table VI-3.

- A recommendation was added that a detailed transportation study be undertaken for the northeast sector of Calvert County which includes the Towns of Chesapeake Beach and North Beach in recognition of the importance that the sound development of this area has for Calvert County and the role of transportation in making the orderly growth of this area possible.

- Table IV-9 which lists key town center master plan roads was amended to include "Coster Road Extended" in Lusby. This new commercial road would extended from MD 765 eventually connecting to the proposed extension of Rousby Hall Road. Its main purpose, however, in the shorter term would be to make land zoned Employment Center / Town Center accessible.

- Table IV-4 which lists locations for short-term traffic engineering was amended to include the following intersections: Main Street @ Church Street, Main Street @ Duke Street, MD 765 @ MD 2/4 south of Prince Frederick, Boyd's Turn Road and Horace Ward Road @ MD 260, and MD 231 @ Stafford Road. These intersections and the other locations listed in Table IV-4 should be evaluated and improved within five years if found necessary.

2010 COUNTY TRANSPORTATION PLAN

The recommended transportation plan presented below is designed to serve the existing and future (2010) settlement pattern of Calvert County. As will be described, the plan seeks to accommodate the demand for travel as it is reflected in the location of existing and future households and jobs. It calls for an integrated set of transportation improvements.

Resources to improve transportation are limited. It follows then that the most efficient use of existing roads and highways should be achieved prior to committing to costly improvements. The plan, therefore, seeks first to resolve future transportation problems through non-capital or low-capital intensive measures such as access control, traffic management, and highway design improvements. Major highway construction is minimized.

This plan consists of four major elements--transportation system management, highway system maintenance and improvement, public transit, and land use and community design. Each element described below is accompanied by its own set of recommended actions. The plan design process is summarized in Appendix A of this report.

TRANSPORTATION SYSTEM MANAGEMENT

Transportation system management (TSM) is aimed at making the most efficient use of existing roads, highways, and transit services without constructing additional highway capacity. A number of measures fall under the TSM heading, including access control and management, traffic management, and travel demand management. Each has the potential to improve traffic flow and safety and reduce fuel consumption and air pollution.

Access Control and Management

Of all TSM techniques, the control and management of highway access has the greatest potential to improve highway capacity and safety. Access control refers to the legal restriction of access from private property to public rights-of-way. The State Highway Administration instituted access control as part of its reconstruction and widening of MD 2/4 south of Broomes Island Road (MD 264). Access to this section of the highway is provided only by public roads. Access to MD 4-2/4 north of Broomes Island Road, however, was left largely unrestricted, a condition which has contributed to high accident rates and will impede future flow if not corrected.

Access management is a more encompassing term than access control, referring to a full range of physical and regulatory techniques to ensure efficient and safe use of a highway. Table IV-2 lists access management techniques applicable to arterial highways in Calvert County[19]. To the greatest extent possible, improvements should remove conflicts between slowly accelerating and decelerating traffic and high speed through traffic, close or consolidate excessive or poorly located driveway entrances, provide connecting service roads, and coordinate the location of median breaks, intersecting public roads, and traffic signals.

Access management measures should be consistently applied with the objective of converting MD 4-2/4 into a controlled-access expressway. Access to an expressway is typically limited to public road intersections, with some, if not all, major intersections being grade-separated. The State Highway Administration, with the participation of the County, is preparing an access control and management concept plan for the MD 4-2/4 corridor. The concept plan will show how and where to consolidate driveway entrances and construct parallel service roads. It will represent a major step toward protecting highway capacity and safety.

The worst congestion, travel delay, and safety hazards along MD 4-2/4 will continue to occur at major intersections. While advances may be expected to be made in maximizing safety and efficiency at intersections, grade separation at major highway intersections represents the best solution for moving heavy volumes of traffic safely. However, interchanges, flyovers, and overpasses are expensive to construct and maintain. Significant savings in reduced congestion and accidents must be shown to justify such investments. Table IV-3 lists the planned locations for grade separated intersections in Calvert County.

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[19]A number of the techniques listed in Table IV-2 are also applicable to collector highways in Calvert County.

TABLE IV-2
ACCESS AND TRAFFIC MANAGEMENT TECHNIQUES POTENTIALLY APPLICABLE TO CALVERT COUNTY: 2010 COUNTY TRANSPORTATION PLAN

Management Category	Management Technique
Left Turning Movements	Raised median to prevent left turns Raised channelization to limit access to right-in and right-out Raised median with left-turn movements Left-turn acceleration lane Alternating left-turn lanes Continuous left-turn lanes
Right Turning Movements	Widen narrow right lanes to assist right turns Installation of right-turn deceleration lanes Continuous right-turn lanes, auxiliary lanes Installation of right-turn acceleration lanes
Driveways	Conversion of two-way driveway to two one-way driveways Conversion of two-way driveway to two two-way driveways with restricted movements Physical barrier to prevent uncontrolled access to driveway Closure of driveway when access is provided via another public road Purchase of rights of access and closure of driveways Construction of public road entrance to consolidate driveways
Local Road Network	Construction of service roads Construction or reconstruction of local roads to serve local trips previously made on the mainline Extension of parallel private drives and closure of driveways
Grade Separation	Overpasses -- bridge over mainline Flyovers -- ramp bridging the mainline Interchange -- allows continuation of movement from and to mainline
Complimentary Measures	Improved median opening geometry Pavement markings Directional signs and lighting Site planning and design

Source: Calvert County Department of Planning and Zoning.

TABLE IV-3
RECOMMENDED LOCATION OF FUTURE GRADE SEPARATION ALONG MD 4 - 2/4[1]

Area	Intersection	Year Project to be Completed Before
Northern County Line	MD 4 @ MD 260	2010
Dunkirk	MD 4 @ Ward Road	2020
Sunderland	MD 4 @ MD 2	2020
Huntingtown	MD 2/4 @ Cox Road	2020
Prince Frederick[2]	MD 2/4 @ N. of Stoakley	2015
	MD 2/4 @ Steeple Chase	2015
	MD 2/4 @ N. of MD 765	2015
St. Leonard	MD 2/4 @ Ball Road	Beyond 2020
Solomons	MD 2/4 @ Dowell Road	Beyond 2020

Notes:

[1]The decision concerning the type of grade separation -- that is, interchange, flyer or overpass -- must await more detailed planning and preliminary engineering at each specific intersection. The grade separation at MD 4 and MD 260 will likely be a flyover. The types are described in Table IV-2.

[2]The grade separations in Prince Frederick are necessary components of the proposed Prince Frederick collector road system; allowing motorist to access development on both sides of MD 2/4 throughout the Town Center without having to mix through traffic.

Source: Calvert County Department of Planning and Zoning.

Traffic Management

Traffic management is a multi-disciplinary approach to minimize travel delay and congestion and maximize safety. It aims to coordinate the activities of agencies involved in traffic operations, transportation planning, law enforcement, and emergency response; such activities including among others traffic engineering, road construction, incident management, and traffic code enforcement. By 2010, traffic management will be needed in Calvert County to address weekday peak-period, or recurring congestion, congestion resulting from accidents and other highway incidents, and congestion caused by highway construction and maintenance. Other occurrences requiring a coordinated approach include special events, catastrophic events, and inclement weather.

The most critical component of traffic management is traffic engineering. Traffic engineering is an ongoing process involving the monitoring of conditions and the implementation of coordinated improvements. In Calvert County it is undertaken by the County Department of Public Works and the State Highway Administration depending on the jurisdiction of the highway under consideration.

Traffic engineering is often undertaken in response to private land development proposals, ensuring that appropriate improvements are made to accommodate anticipated traffic. Traffic engineering is also undertaken to improve existing safety and congestion problems. Table IV-4 lists short-term improvements aimed at existing and worsening problems. These improvements should be evaluated and implemented, if required, within five years. Over the longer term, traffic engineering improvements may include synchronizing traffic signals and replacing inefficient and unsafe traffic signals with roundabouts where practicable.

Roundabouts are landscaped islands at the intersection of two roads or highways that provide a highly effective means of traffic control under many conditions (see Figure IV-1). Where roundabouts are in place, motorists enter the intersection yielding only to circulating traffic which approaches slowly from the left. The restricted circulating speeds provide a safe environment for the operation of otherwise conflicting traffic movements. Studies show that roundabouts can be a safer and higher capacity alternative to traffic signals; no time being lost waiting for traffic signals to change. Long-term cost considerations can also work in favor of roundabouts[20].

Travel Demand Management

Travel demand management refers to measures which are intended to reduce travel or to shift travel to alternative times, modes, or routes and thereby reduce traffic congestion, air pollution, and fuel consumption. An extensive list of travel demand management measures is provided in Appendix B of this report for informational purposes. Implementation of some measures would require the State or County to enact legislation or change existing policies.

[20]For guidelines on the planning, design, and construction of roundabouts at a wide variety of intersections, including but not limited to freeway terminal interchanges, State highway intersections, and State/local highway intersections, see Roundabout Design Guidelines, prepared and published by the Maryland Department of Transportation, State Highway Administration.

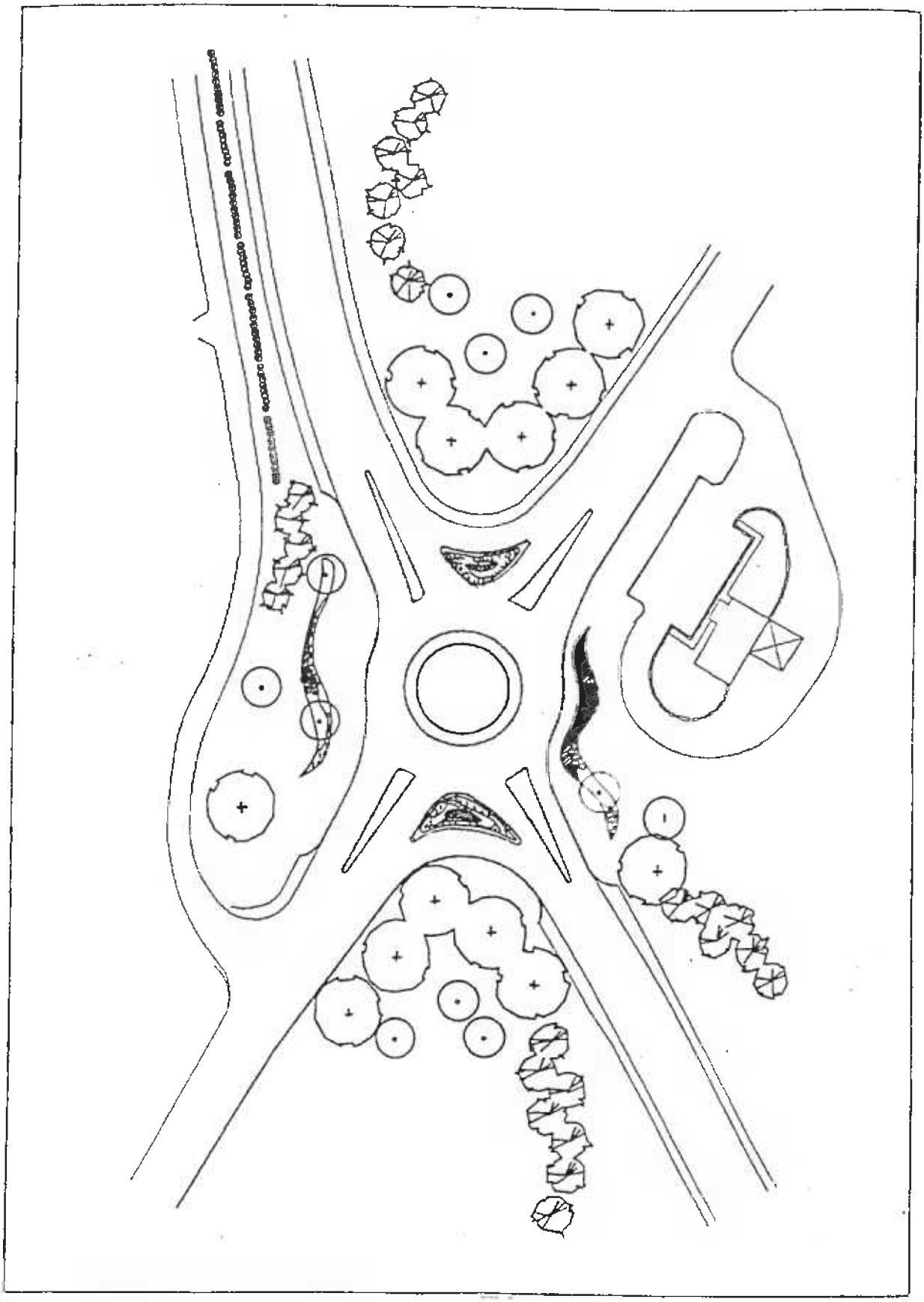
TABLE IV-4
SHORT-TERM SAFETY AND TRAFFIC ENGINEERING IMPROVEMENTS: 2010 COUNTY TRANSPORTATION PLAN

Facility Name	Termini	Description of Improvement	Problems Addressed by Proposed Improvement
Cassell Boulevard	Dares Beach Road (MD 402) to existing terminus	Traffic calming measures to reduce speed on Cassell Boulevard and improve pedestrian safety	Unsafe high speeds through residential area
Rousby Hall Road (MD 760) @ Olivet Road	---	Intersection improvement	Congestion and safety concerns
Huntingtown Road @ Hunting Creek Road (MD 521)	---	Intersection Improvement	Poor intersection geometry and safety concerns
MD 4 @ Chesapeake Beach Road (MD 260)	---	Consider adding a double left-turn and storage area from MD 4 to MD 260 east and install flashing warning light	Excessive delay on mainline; congestion at left turn approach
MD 2/4 @ Stoakley	---	Add exclusive right turn lane to MD 2/4 southbound	Delay and congestion at intersection
MD 2/4 @ Monitor Way	---	Install traffic signal	Unsafe operation in absence of traffic control
Main Street (MD 765)	Commerce Lane to MD 2/4	Legally restrict use during peak traffic periods, monitor effectiveness, consider closing permanently	Conflict between traffic and MD 2/4 at approach to Dares Beach Road intersection and traffic entering MD 2/4 from Main Street slip ramp
Main Street (MD 765) @ Church Street and Armory Road	---	Intersection Improvement	Poor intersection geometry; congestion and delay
Main Street (MD 765) @ Duke Street	---	Intersection Improvement	Poor sight distance for left turns from eastbound Duke Street
MD 765 @ MD 2/4 south of Prince Frederick	---	Consider restricting left turns to southbound MD 2/4	High speeds and peak period volumes make left turns unsafe
Hallowing Point Road (MD 231) @ Stafford Road	---	Add exclusive right turn lane to Md 231 southbound	Delay and congestion at intersection
Boyds Turn Road / Horace Ward Road @ MD 260	---	Intersection improvement	Intersection geometry and safety concerns

Source: Calvert County Department of Planning and Zoning.

FIGURE IV-1

A Typical Roundabout



Source: Maryland State Highway Administration.

The most promising travel demand management activity for Calvert County is the continued promotion of ridesharing. As indicated in Chapter II, in 1990 about 22 percent of the County's commuting workforce used a carpool or vanpool. Ridesharing can be promoted through the proper placement and design of park-and-ride lots which must emphasize personal security and the security of parked vehicles. In order to accommodate anticipated levels of commuting, the number of parking spaces in the County will need to be at least doubled--that is, increased from about 270 spaces to over 540 spaces[21]. Map IV-1 shows the location of existing and proposed park-and-ride lots.

Other travel demand management measures potentially applicable to Calvert County include: changes to the County's existing approach to providing parking at its buildings including the elimination of free employee parking and the provision of preferential parking for carpoolers; amendments to existing parking supply requirements set forth in County zoning; and creation of transportation management associations in which major employers voluntarily cooperate to promote the use of alternative means of commuting for their employees. Land use measures which can help achieve the aims of travel demand management are discussed later in this chapter under the heading "Land Use and Community Design".

Summary of Transportation System Management Recommendations

The following list summarizes the TSM element of the 2010 County Transportation Plan.

- Implement the highway access management techniques set forth in Table IV-2 along all arterial highways as warranted and along MD 4-2/4 with the long-term goal of converting that facility into a controlled access expressway.

- Upon its completion, review, adopt, and--through development review processes--implement the State Highway Administration access control concept plan for the MD 4-2/4 corridor with the long-term goal of converting that facility into a controlled access expressway.

- Design the future grade separated intersections set forth in Table IV-3 and, through land use planning and development reviews, adjust future development to such designs.

- Create a traffic management team with representatives of the County Department of Public Works, County Department of Public Safety, County Sheriff Department, Maryland State Highway Administration, and Maryland State Police.

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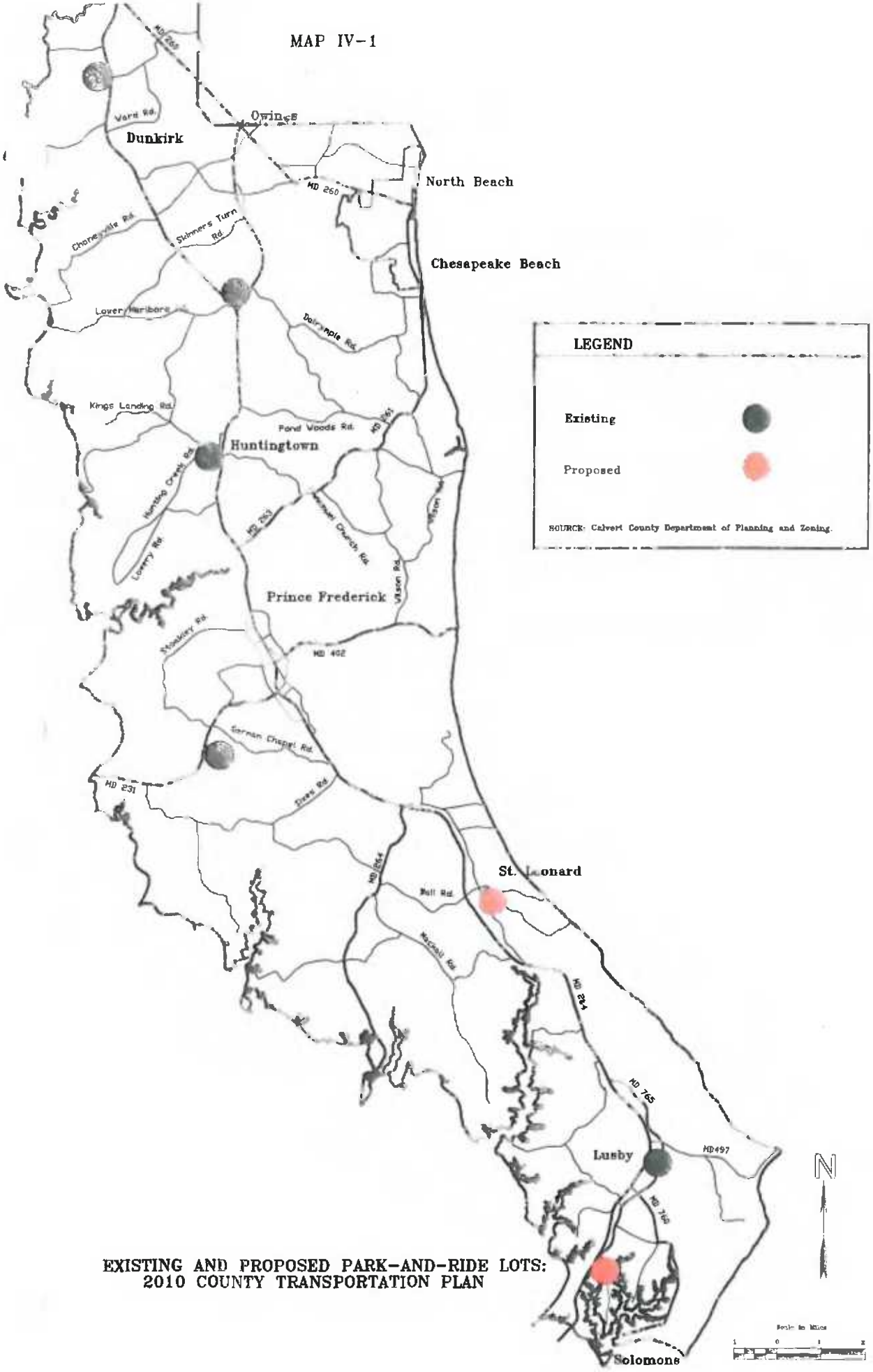
[21]Park-and ride lot capacity should be expanded in each of the areas lots currently exist. This expansion may take the form of adding spaces to existing lots--as in Sunderland where undeveloped capacity remains--or providing new lots--as in Dunkirk where expansion of the existing lot is constrained by site conditions. Outside of areas currently provided with a park-and-ride-lot, new lots should be provided--St. Leonard and Solomons.

MAP IV-1



EXISTING AND PROPOSED PARK-AND-RIDE LOTS:
2010 COUNTY TRANSPORTATION PLAN

- Incorporate the assessment of roundabouts into traffic control warrant analyses and intersection engineering studies at both County and State levels.

- Evaluate the feasibility of replacing selected traffic signals with roundabouts, particularly on collector highways and along arterial highways where a roundabout may prove to be a safer and more efficient traffic control device as for example along MD 2 at its intersections with MD 260 and Mt. Harmony Road.

- Continue and expand as necessary the ridesharing programs described in Chapter II of this report.

- Expand commuter parking capacity by 100 percent, by adding about 270 parking spaces and building new lots in Solomons and St. Leonard.

HIGHWAY SYSTEM MAINTENANCE AND IMPROVEMENT

Functional Classification

Functional classification is an important principle underlying transportation and land use planning. It defines the type of service which any particular road should render[22]. Functional classification also provides a means for defining direct and time savings routes through the total road network, being used in traffic simulation and other planning work.

As described in Chapter II, the functional classification of highways in Calvert County is accomplished through a comparative evaluation of four major factors: traffic, physical characteristics, system integration, and land use service. The County recognizes three classifications: arterial, collector, and land access or local[23]. The functional classification of highways in Calvert County under the 2010 County Transportation Plan is shown on Map IV-2. Shown are the arterials and collectors.

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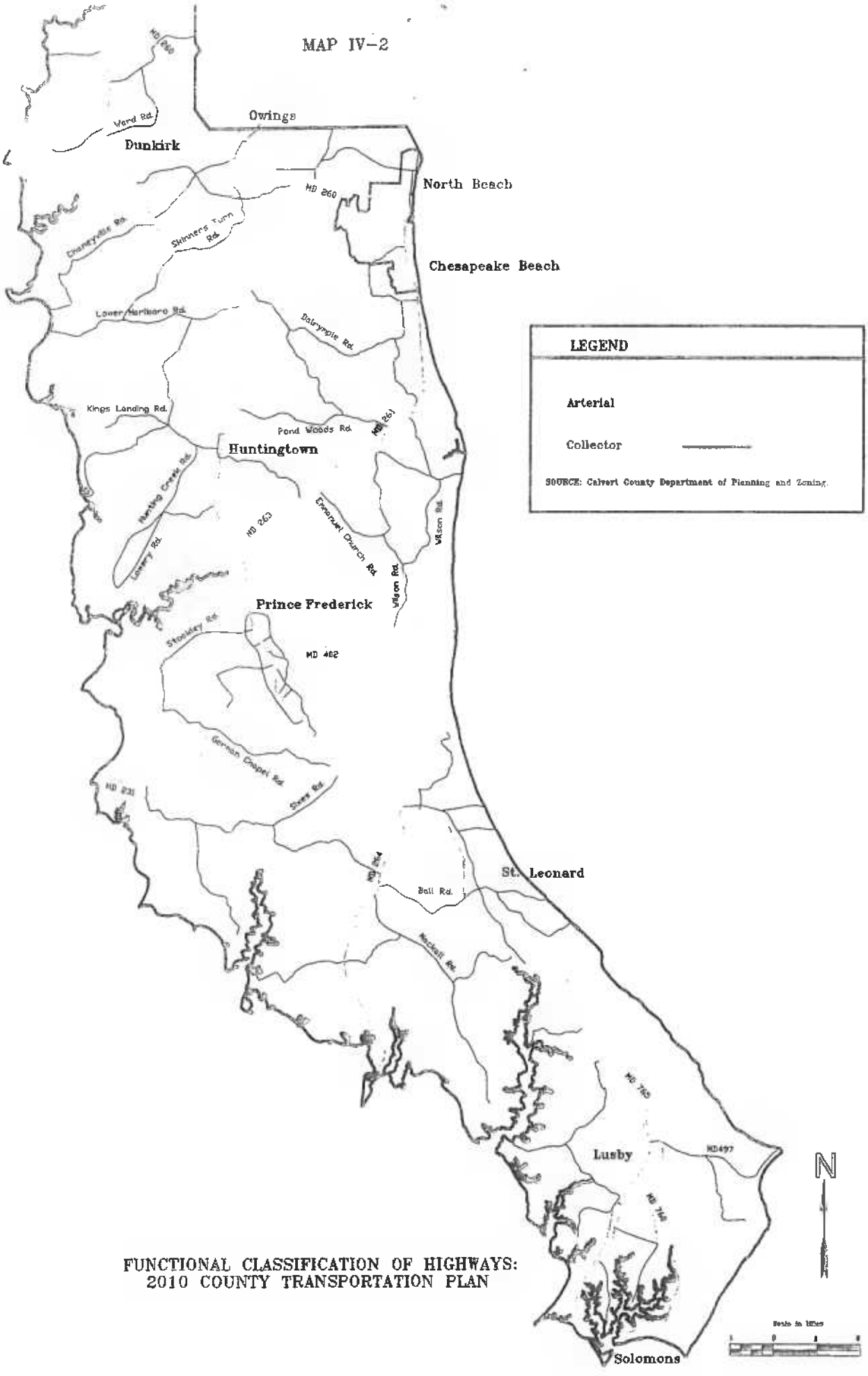
[22]County land use regulations can be used to protect public health, safety, and general welfare by ensuring that the design of land use development is compatible with the intended role of the highway or road upon which such development fronts. This takes the form of setback requirements from highway rights-of-way: which, in general, for commercial use stand as follows: 100 feet from an arterial highway; 50 feet from a collector highway; and 35 feet from a land access or local road (see Section 6.3 of the Zoning Ordinance). Map IV-2 should be used as the basis for applying setback regulations. A thorough evaluation may be necessary to determine whether, within the more urbanized areas of the County, the aforementioned setback requirement may be relaxed, as is presently the case within town centers wherein master plans have been adopted.

[23]The concept of functional classification and descriptions of each classification are provided in Chapter II of this report.

MAP IV-2



FUNCTIONAL CLASSIFICATION OF HIGHWAYS:
2010 COUNTY TRANSPORTATION PLAN

he arterial highway system can be further classified in terms of eligibility for federal funding for highway improvements. This classification was prepared by the Maryland Department of Transportation, State Highway Administration in cooperation with the U.S. Department of Transportation, Federal Highway Administration, as required by the federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Highway facilities classified under the federal scheme as rural principal arterials,rural minor arterials, rural major collectors, and urban minor arterials are reflected as arterial highways under the County's functional classification. The plan recommends, that during the next update of the federal functional classification in Calvert County, the State Highway Administration bring the federal classification into conformance with the County classification, providing the basis for better regional transportation planning. The following changes are needed:

- change the classification of MD 506 from major collector to minor collector;
- change the classification of the southern section of MD 264 from minor collector to major collector; and
- classify MD 765 from Lusby to Solomons Island as a rural major collector or urban minor arterial as may be found most appropriate.

Highway Maintenance

The most prominent aspect of highway maintenance is resurfacing. Roads should be resurfaced or repaved once every 15 years. This is the standard and generally accepted schedule for roadway resurfacing, though some flexibility is left to engineering judgement in consideration of traffic loadings, climate, and the most cost-effectiveness use of available funds. Applying the 15-year standard schedule to the County road system indicates that 68 miles of collector roads and 259 miles of land access roads should be resurfaced by 2010.

Other highway maintenance activities include clearing vegetation along roadsides, fixing potholes, improving drainage, and removing snow and ice. County funding for all types of road maintenance is supplemented by highway user revenues collected through the federal gasoline tax and disbursed to Calvert County by the State of Maryland.

Traffic on most collector roads is anticipated to increase dramatically by 2010. Failure to maintain collector roads would compromise safety, increase wear-and-tear costs to vehicle owners, and lead to far more costly and disruptive construction in future years. Failure to maintain land access roads could, in addition to the above indicated consequences, cause stormwater management and drainage problems and distract from neighborhood appearance with the potential to adversely affect residential property values.

Highway System Improvement

Highway improvement recommendations were designed through an approach in which various improvements were tested to determine their ability to resolve anticipated congestion and other transportation deficiencies. The plan recommends specific improvements to the arterial highway and collector highway systems in the County and identifies the key town center road projects contained within previously adopted town center master plans.

Arterial Highway Improvement: Arterial highways function primarily to convey heavy volumes of traffic within and through an area. These highways connect distant locations within and beyond the borders of the County and provide the high degree of mobility required by the County's low density settlement pattern.

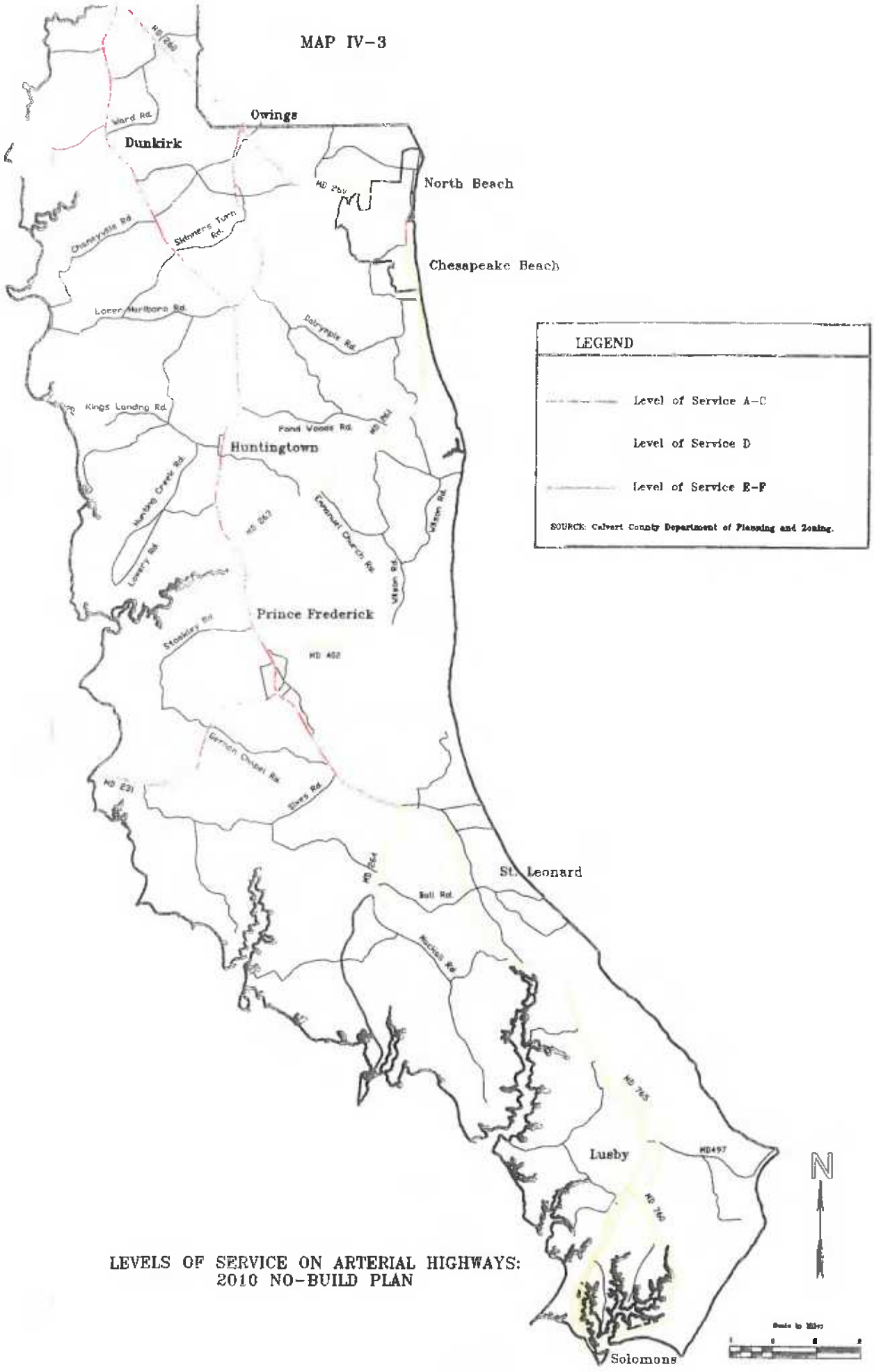
One of the first steps in designing a transportation plan is to determine the location and severity of future traffic congestion under a no-build or do-nothing scenario. As shown on Map IV-3, weekday peak-period congestion may be expected throughout the arterial system in 2010 if no improvements are made. Arterial highway mileage expected to operate at a LOS "E" or "F" would increase from zero miles in 1995 to about 38 miles in 2010[24]. Consequently, under a no-build plan in 2010, about 44 percent of arterial millage would experience moderate to severe traffic congestion during peak traffic periods (see Table IV-5). The amount of highway construction that would be required to resolve all future peak-period congestion would be exceedingly expensive and disruptive. Arterial improvements are therefore targeted to those areas where traffic congestion may be expected to be most severe.

Map IV-4 and Table IV-6 summarize the recommended arterial highway improvements. In terms of highway construction, travel lanes should be added to the highways within and serving the Prince Frederick Town Center. MD 2/4 should be widened to a six-lane divided highway from Plum Point Road (MD 263) to the south end of the Town Center. MD 231 should be widened from a two-lane highway to a four-lane divided highway from German Chapel Road to MD 2/4. The plan also recommends that a deficient section of MD 261 be upgraded, that MD 765 in Solomons be extended from Dowell Road to Spinnaker Way, and that the intersection of MD 260 and MD 4 be grade separated. Upon implementation of the arterial highway recommendations, about 13 lane-miles would be added to the arterial system in the County.

In addition to these major highway improvements, the plan recommends that several sections of MD 4-2/4 be reconstructed or otherwise upgraded by 2010. When the State Highway Administration dualized MD 4-2/4, north of Prince Frederick during the 1960's and 1970's, it retained sections of the existing road. Because of limited sight distances and inadequate or missing shoulders, a number

[24]The concept of Level of Service (LOS) is described in Chapter II of this report. LOS "E" and "F" or grouped together here because of the variable nature of operating conditions on a highway assigned these designations. A highway operating at maximum capacity (LOS "E"--moderate congestion) will, with only minor disruptions, experience stop-and-go conditions (LOS "F"--severe congestion).

MAP IV-3



LEVELS OF SERVICE ON ARTERIAL HIGHWAYS:
2010 NO-BUILD PLAN

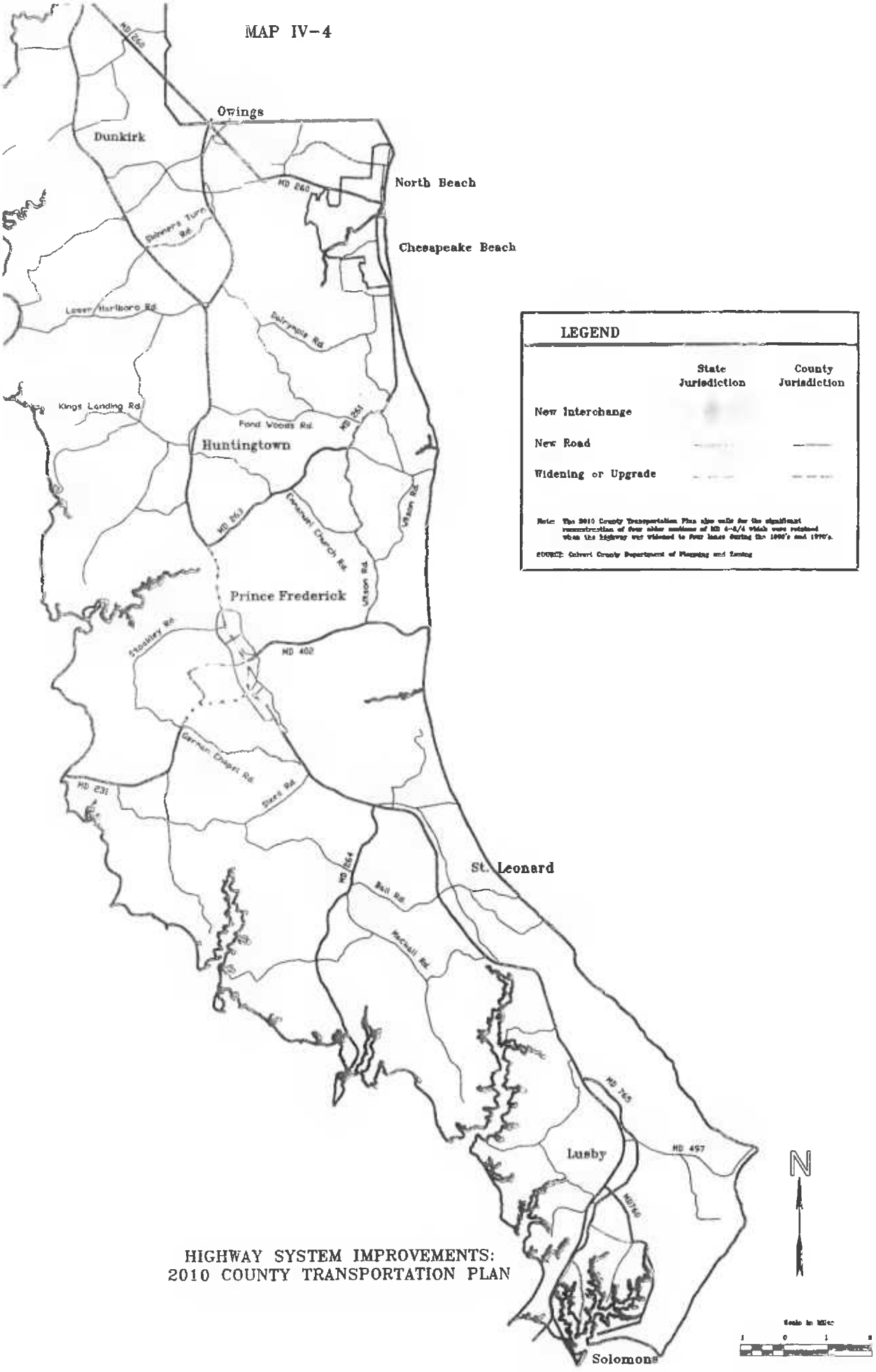
TABLE IV-5

EXISTING AND FUTURE TRAFFIC CONGESTION ON ARTERIAL HIGHWAYS: 1995 AND 2010 NO-BUILD TRANSPORTATION PLAN

Level of Service (LOS)	1995		2010	
	Miles	Percent of Total	Miles	Percent of Total
LOS A - C	63.9	74.7	4.4	5.2
LOS D	21.6	25.3	43.1	50.4
LOS E & F	0.0	0.0	38.0	44.4
Total	85.5	100.0	85.5	100.0

Source: Calvert County Department of Planning and Zoning.

MAP IV-4



LEGEND

	State Jurisdiction	County Jurisdiction
New Interchange		
New Road	———	———
Widening or Upgrade	– – –	– – –

Note: The 2010 County Transportation Plan also calls for the significant reconstruction of four older sections of MD 4--4/4 which were retained when the highway was widened to four lanes during the 1960's and 1970's.

SOURCE: Calvert County Department of Planning and Zoning

HIGHWAY SYSTEM IMPROVEMENTS:
2010 COUNTY TRANSPORTATION PLAN

TABLE IV-6
ARTERIAL HIGHWAY SYSTEM IMPROVEMENTS: 2010 COUNTY TRANSPORTATION PLAN

Facility Name	Termini	Description of Improvement	Problems Addressed by Improvement
MD 4 @ MD 260	---	Construct new interchange	▪ Congestion at intersection of MD 4 and MD 260 ▪ Unsafe operations at intersection approach
MD 261	Christianna Parran Road to Plum Point Road (MD 263) @ Stinnett Road	Upgrade to arterial standards, add shoulders and widen travel lanes to 12'.	• Existing road inadequate to handle future traffic loadings - 2010 Plan ADT: 10,000
MD 2/4	Plum Point Road (MD 263) to Stoakley Road	Widen from a four-lane highway to a six-lane highway	• Future congestion on MD 2/4 - 2010 Plan ADT: 45,500
MD 2/4	Stoakley Road to a point 2.8 miles south on MD 2/4	Widen from a four-lane highway to a six-lane highway	• Future congestion on MD 2/4 - 2010 Plan ADT: 40,000
MD 231	German Chapel Road to MD 2/4	Improve from a two-lane highway to a four-lane divided highway. An intermediate improvement may involve installation of a continuous left turning lane.	• Future congestion on MD 231 - 2010 Plan ADT: 25,500
H.G. Trueman Drive (MD 765)	Dowell Road to Spinnaker Way	Extend road from Dowell Road to Spinnaker Way, including bicycle and pedestrian ways.	• Inability of area residents to access commercial uses in Solomons without traveling on MD 2/4 • Future congestion on MD 2/4 • Safety problem related to

Note: The traffic volumes shown, e.g. ADT: 45,000 are the volumes anticipated under the recommended plan. Under the no-build plan, traffic volumes on MD 2/4 and MD 231 in Prince Frederick would be considerably higher because an integrated collector road system would not be in place. ADT, or Average Daily Traffic, is the total number of vehicles that pass over a given section of road during the average 24 hour weekday.

Source: Calvert County Department of Planning and Zoning.

of these sections are inadequate to handle heavy traffic volumes. The required improvements, summarized in Table IV-7, should be given high priority under the State Highway Administration's system preservation activities.

Collector Highway Improvement: In Calvert County collector roads and highways link residential and agricultural areas to each other and to the arterial network or serve major traffic flows within developing areas. Map IV-4 and Table IV-8 summarize the collector road improvements. All improvements listed in Table IV-8 should to the greatest extent possible meet the commercial/industrial or primary collector highway standards set forth in the Calvert County Road Ordinance[25]. Upon implementation of the collector highway recommendations, about 12 miles of existing roadway would be upgraded and about eight miles of new roadway would be constructed. A summary map of the Prince Frederick Loop Road is shown in Appendix D.

Town Center Road Improvement: Table IV-9 summarizes the key road improvement recommendations previously adopted and set forth in town center master plans. In general, the need for these projects will be dictated by the pace and intensity of land development. The new roads listed in Table IV-9 provide for the safe circulation of traffic generated by land development in the town centers . Upon implementation, about 4 miles of new town center master plan roads would be provided.

Summary of Highway System Maintenance and Improvement Recommendations

The following list summarizes the highway maintenance and improvement element of the 2010 County Transportation Plan.

- Use the functional classification shown on Map IV-2 for purposes of applying requisite land use regulations.
- Bring the federal highway functional classification scheme into conformance with the County classification of roads and highways as noted herein.
- Implement the arterial highway improvements listed in Table IV-6.
- Reconstruct and upgrade the sections of MD 4-2/4 specified in Table IV-7.
- Implement the collector highway and road improvements listed in Table IV-8.
- Implement the key town center road improvements list in Table IV-9.

[25]It must recognized that site constraints may impose limitations on the ability to achieve all road design specifications in the Calvert County Road Ordinance when upgrading existing roads and that less than ideal design solutions may prove most appropriate provided that safety considerations are met. Typical sections for primary collector, secondary collector, and commercial/industrial roadways, as set forth in the Road Ordinance, are shown in Appendix C.

TABLE IV-7

RECONSTRUCTION AND DESIGN UPGRADES TO MD 4 - MD 2/4:
2010 COUNTY RECOMMENDED PLAN

Lane Direction	Termini	Distance (miles)	Recommended Improvement
Northbound	Lyons Creek Road to MD 260	1.2	Adjust vertical alignments, widen outside shoulder
Southbound	Lyons Creek Road to Chaneyville Road	4.1	Adjust vertical alignments, widen outside shoulder
Northbound	MD 262 to 1,000 feet south of Chaneyville Road	2.2	Adjust vertical alignments, widen outside shoulder, install outside shoulder where missing
Northbound	Sheckells Road to Llewelyn Lane	1.4	Adjust vertical alignments

Source: Calvert County Department of Planning and Zoning.

TABLE IV-8
COLLECTOR HIGHWAY SYSTEM IMPROVEMENTS: 2010 COUNTY TRANSPORTATION PLAN

Facility Name	Termini	Description of Improvment	Problems Addressed by Improvement
Stinnett-Emmanuel Church-Wilson Roads	Plum Point Road (MD 263) to Dares Beach Road (MD 402)	Improve exisiting roads to primary collector standards and improve intersections along route granting priority to through movement of traffic on this facility.	• Inadequate road spacing and direct service between Prince Frederick and Towns of Chesapeake Beach and North Beach • Increased traffic generated by continued residential development and consequent safety concerns • Extreme future congestion on MD 2/4 will impose added traffic onto this road
Prince Frederick Loop Road	[1] (See footnote)	Construct new road to commercial standards	• Anticipated extreme congestion and unsafe conditions on MD 2/4 • Poor circulation in Town Center • Lack of infrastructure to support planned development
West Dares Beach Road	MD 2/4 to existing terminus	Reconstruct road to commercial standards with sidewalks	• Anticipated extreme congestion • Safety problems • Road inadequate to support additional commercial development • Poor circulation in Town Center
West Dares Beach Road Extended	Existing terminus to proposed improved Williams Road	Construct new road to commercial standards	• Poor circulation in Town Center • Inadequate road spacing • Lack of infrastructure to support planned land use development
Williams Road	MD 231 to proposed extension of West Dares Beach Road	Improve existing road to primary collector or commercial standards	• Poor circulation in Town Center • Inadequate road spacing • Lack of infrastructure to support planned land use development
German Chapel Road	MD 231 to MD 2/4	Improve existing road to primary collector standards	• Increased traffic generated by continued residential and commercial development and consequent safety concerns • Severe congestion on MD 231 from German Chapel Road to MD 2/4 will impose traffic onto this road
Rousby Hall Road Extended	Rousby Hall Road (MD 760) at Olivet to MD 765	Construct primary collector or commercial facility on new alignment (closed-section)	• Inadequate roadway spacing to support existing and planned urban development
Dowell Road	MD 2/4 to terminus at Lord Calvert Yacht Club	Improve existing road to primary collector standards (closed-section)	• Existing road is inadequate to handle future traffic loadings - 2010 ADT: 11,200
Skinners Turn Road	MD 2 to MD 4	Upgrade design of road to industrial standards	• Improvement needed to support industrial development

TABLE IV-8
COLLECTOR HIGHWAY SYSTEM IMPROVEMENTS: 2010 COUNTY TRANSPORTATION PLAN

Facility Name	Termini	Description of Improvment	Problems Addressed by Improvement
5TH Street Ext.	Boyds Turn Road to North Beach Town Line	Improve sight and stopping distance, separate pedestrian and vehicular ways	• Inadequate sight and stopping distance and separation between road and pedestrian ways
Boyds Turn - MD 260 Connector	Boyds Turn Road to MD 260	Construct new roadway to industrial standards	• Improvement needed to support industrial development

Notes:

[1]As shown in detail on map in Appendix C: MD 2/4 to MD 231, West Dares Beach Road to Stoakley Road, Stoakley Road north and east to MD 2/4, MD 2/4 east and south to Dares Beach Road (MD 402), Dares Beach Road (MD 402) to Main Street.

Source: Calvert County Department of Planning and Zoning.

TABLE IV-9
TOWN CENTER MASTER PLAN ROAD IMPROVEMENT PRIORITIES: 2010 COUNTY TRANSPORTATION PLAN

Town Center	Facility Name	Termini	Description of Improvement
Dunkirk	West Ward Road	MD 4 to Ferry Landing Road	Construct new road to primary collector standards (closed section)
	Kirksville Lane	Existing terminus to proposed Ward Road extended	Construct new road to secondary collector (closed section)
Huntingtown	Walnut Crossing	Walnut Creek subdivision to Hunting Creek Road (MD 521)	Construct new road (closed section) permitting on-street parallel parking
	Hunting Creek Road - Old Town Road Connector	MD 2/4 to Hunting Creek Road	Construct new road (closed-section) permitting on-street parallel parking
Prince Frederick	"Old Field Road"	Monitor Way to Church Street	Construct new road (closed section) permitting on-street parallel parking
St. Leonard	"Long Beach Road Extended"	Calvert Beach Road through MD 765 to proposed Maryland Avenue	Construct new road to secondary County collector standards (closed-section)
	Maryland Avenue / "South Street"	The proposed extension of Long Beach Road (west of MD 765) through Calvert Beach Road then eastward to MD 765	Construct new road (closed-section)
	"East Avenue"	Calvert Beach Road to proposed Long Beach Road extended	Construct new road (closed-section)
Lusby	"Coster Road Extended"	MD 765 to eventual connector to proposed Rousby Hall Road extended	Construct new road to commercial standards (closed section)

Note: The plan recommends that all road improvement proposals contained in adopted Town Center Master Plans be periodically evaluated to determine their continued relevance to town center development and be implemented overtime as warranted. The improvements listed above are deemed critical to town center development through the year 2010. All are included in adopted town center master plans except for "Coster Road Extended" which is located in a town center which has not yet adopted a master plan.

Source: Calvert County Department of Planning and Zoning.

- Periodically evaluate road improvement projects contained in adopted town center master plans to determine their continued relevance to town center development. Implement such improvements as warranted.

PUBLIC TRANSIT

The plan's recommendations concerning transit are primarily conceptual in nature, meaning that they are intended to guide the provision of transit services as such services become needed in the County. Transit development planning undertaken at State, regional, and County levels should implement these recommendations.

As discussed below, the 2010 County Transportation Plan recommends that local bus services be focussed on the large town centers, that express busses connect town centers, and that rapid commuter buses connect these centers to major job destinations outside of the County. These three different levels of transit service--local, express, and rapid--should be fully integrated with each other, making use of the same scheduling, marketing initiatives, and terminal and transfer stations and facilities. New technologies should be employed to make transit more convenient to use and more cost-effective to provide. The plan's transit recommendations are shown on Map IV-5.

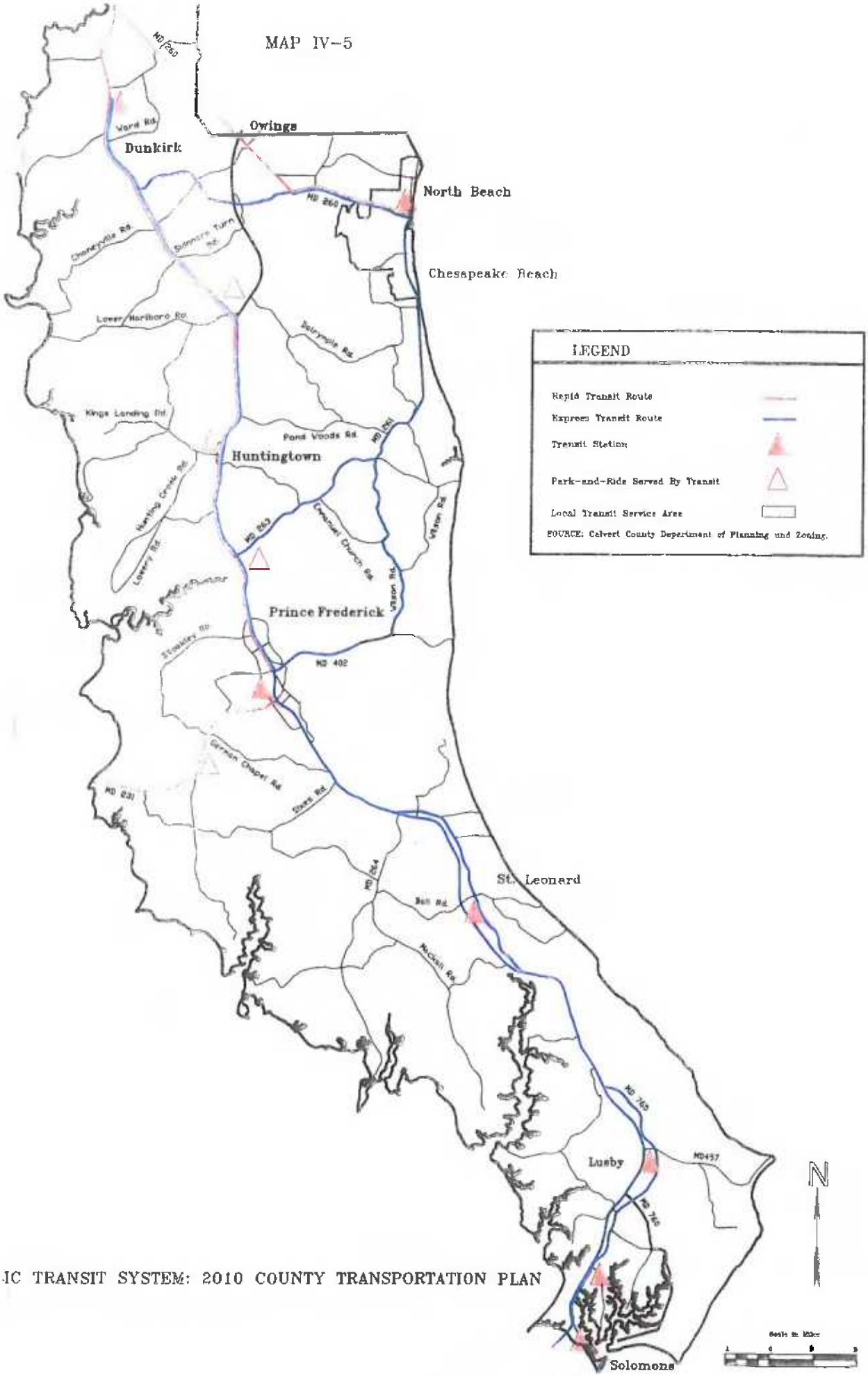
Rapid Transit Expansion and Improvement

Rapid transit is intended to facilitate relatively fast travel along heavily traveled corridors and between major activity centers in a metropolitan area. In the southern Maryland region, rapid transit is provided by buses operating in mixed traffic over arterial highways. Currently, two commuter bus routes link County residents to jobs in and adjacent to Washington D.C. As described in Chapter II, the existing rapid transit system is adequately distributed to serve the County's current settlement pattern. Transit buses operate over MD 4-2/4, MD 260, and MD 231 making stops at three park-and-ride lots in the County. Rapid transit should continue to be expanded as warranted by demand, particularly along MD 260 which has the potential to operate successfully as a rapid transit corridor.

Express Transit Expansion and Improvement: Express transit is intended to be provided over arterial and collector highways with stops at intersecting highways, intersecting transit routes, and major activity centers. Express transit serves trips of moderate length, for instance between Prince Frederick and Chesapeake Beach. Express service is more accessible and operates at somewhat lower overall speeds than rapid transit. It can provide feeder bus service to rapid transit routes and may be operated during non-peak hours where demand warrants.

Local Transit Expansion and Improvement: Local transit service is intended to meet travel demand internal to a given area. It is more accessible than rapid or express transit; operating at lower speeds and making more frequent stops. Local transit links residential areas to shopping, recreational, educational, and other major land uses within a defined service area. Presently the demand for paratransit is met by demand responsive routes providing some clients with door-to-door service.

MAP IV-5



IC TRANSIT SYSTEM: 2010 COUNTY TRANSPORTATION PLAN

The plan envisions that Calvert County Public Transportation (CCPT) would continue to operate demand responsive paratransit service through the design year consistent with the Americans With Disabilities Act (ADA) of 1990.

Transit Service Areas: As described in Chapter II, CCPT currently provides fixed-route transit service over three routes from Prince Frederick to communities in the northern and southern portions of the County. As an organizing framework for the future provision of local transit, the plan recommends that three local transit service areas be designated: Chesapeake Beach-North Beach, Prince Frederick, and Solomons. The local service areas would be linked to each other by express bus service and linked to the larger metropolitan area by rapid transit routes (see Map IV-5).

Transit Stations: One of the most important organizing elements of a transit system in a developing area is the transit station. Transit stations are the locations where travelers can change from one mode of travel to another, as for example from automobile, bicycle, or walking to rapid transit, or from rapid transit to local transit. Transit stations should be located to take advantage of good transportation access and land uses providing high travel demands and should be designed to protect the personal security of transit users. Unlike, park-and-ride lots, which serve primarily the work trip, transit stations can serve a variety of trip purposes. Transit stations also provide amenities in addition to automobile parking, including protection from weather, route and fare information, and tele-communications capabilities.

Transit System Management and Enhancement: To help ensure that transit services are provided as effectively as possible, activities to enhance service and promote ridership should be continually undertaken. Each local transit service area will be distinct in its demand for transit and therefore the service provided should be tailored to meet transportation needs within each area. Tailoring transit service to meet community needs requires that transit development planning be integrated with detailed local land use planning.

The traditional fixed-route local transit system operated in most urban areas may not serve as an adequate model for the future provision of local service in Calvert County. Communication and information technology will continue to provide flexibility in the routing and scheduling of vehicles. Such technology can also enhance the convenience of transit use, fare collection, record keeping, and performance monitoring. The application of state-of-the-art techniques will be vitally important as the population density of transit service areas in the County will not match that found within the urban areas historically provided with transit. In addition to the application of technology, marketing and public education activities should continue to be undertaken to promote transit use.

Summary of Public Transit Recommendations

The following list of actions summarizes the public transit element of the 2010 County Transportation Plan.

- Extend the Route Four Flyer rapid transit route into Prince Frederick and provide a stop in the Town Center at a location which may become a transit station.

- Establish a rapid transit route between Prince Frederick and Hughesville in Charles County serving the Route Five Flyer to Washington D.C.

- Provide rapid transit buses with traffic signal preemption capabilities, allowing buses to obtain priority at the approach to signalized intersections along MD 4-2/4.

- Study the feasibility of providing rapid transit bus service along MD 260 and MD 2 from Chesapeake Beach to Annapolis.

- Study the feasibility of providing rapid transit bus service along MD 2/4 from Prince Frederick to the Patuxent Naval Air Station in St. Mary's County.

- Provide an express bus route between Solomons and Prince Frederick with stops along the way including within St. Leonard.

- Provide an express bus route between the Towns of Chesapeake Beach and North Beach and the Dunkirk Town Center.

- Develop transit stations in each of the town centers. Stations in Prince Frederick, Solomons, and Chesapeake Beach should accommodate all levels of transit service.

- Operate paratransit services primarily within designated service areas, within and adjacent to the largest town centers.

- Continue to enhance the quality of transit services through the application of technology and undertake marketing and educational activities to promote ridership.

LAND USE AND COMMUNITY DESIGN

The overall settlement pattern, as well as the specific location and design of buildings, affects travel and the efficiency of the transportation system. Through the year 2010, most shopping, medical, and personal business trips in the County will be destined for town centers while most households will be located beyond the borders of town centers in a low density pattern. This settlement pattern has established that the automobile will be the primarily means of travel through 2010.

To accommodate this reliance on the automobile and provide the basis for the long-term development of a more balanced transportation system it is critical that town center roads be provided as development occurs and that new land development be designed to minimize the number of automobile trips, to facilitate walking, bicycling, and transit use, and to make the most efficient use of parking areas[26]. Community design guidelines with these and similar aims should be

[26]This is not to say that the total travel demand in town centers should be reduced, but rather that the total number of automobile trips made within town centers should be reduced, all other things being

developed. Undertaking this effort will involve the review of existing zoning ordinances to determine the extent to which they promote travel convenience and accessibility in town centers.

If over the long-term, new residential development is directed to lands adjacent to town centers, it will be essential that local road networks be established to provide for efficient circulation between residential areas and the town center. Major subdivision streets should connect to each other and provide direct access to town centers.

Land Use Policy

Adopted town center master plans should continue to be implemented. Concentrating residential and commercial development in and around town centers, will over the long-term allow alternatives to driving to be used for many trip purposes. New development in town centers should conform to the framework established by planned transportation facilities and services.

Transit stations should also serve as an organizing element for land use development in town centers. Stations should be located so as to benefit from medium- and high-density residential development. Incentives should be provided to encourage commercial development to locate near transit stations. County land use policy concerning siting and developing transit stations should be established.

Pedestrian and Bicycle Facilities

Sidewalks play a role in making town centers accessible and safe. The implementation of sidewalk projects contained in town center master plans should be expedited. To date, only two such projects have been implemented as shown in Table IV-10.

Table IV- 11 lists guidelines for providing sidewalks in town centers and other urban areas. The guidelines indicate that when the primary land use is commercial or industrial, sidewalks should be provided on both sides of the street. When the primary land use is residential, sidewalks should be provided on at least one side of the street, except for along arterial highways where sidewalks should be provided on both sides. Table IV-12 lists the sidewalks that need to be in place by 2010 to support the development of town centers. These are drawn from adopted town center master plans.

Regarding bicycle facilities, a detailed bicycle facilities plan should be prepared. This bicycle plan should identify a recommended network of bicycle ways within and between town centers and provide the specifications required to accommodate bicycle travel along existing and proposed roads and highways and along off-road routes. Such specifications must necessarily vary according to roadway characteristics, including traffic volumes, travel speeds, and geometric features. The bicycle plan should identify specific impediments to safe bicycle travel in the County, particularly

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equal. This can be accomplished, for instance, by locating complementary land uses including parking close enough together to permit a shopper to complete multiple errands with one vehicle trip. The design of linear highway oriented shopping centers runs counter to this concept and to the gradual development of a balanced transportation system.

TABLE IV-10
SIDEWALK AND BICYCLE IMPROVEMENTS RECOMMENDED IN ADOPTED TOWN CENTER MASTER PLANS

Town Center	Description of Recommended Improvements
Dunkirk	• Construct a bicycle path along proposed access road linking Ferry Landing Road and Dunkirk District Park.
Huntingtown	• Construct sidewalks and install street trees in the currently developed commercial portions of the Mixed Use District. • Secure easements for a hard surface trail between the business district and Huntingtown Elementary School.
Prince Frederick	• Construct sidewalk along Main Street from the Town Center south boundary to Church Street. • Construct sidewalk along Church Street from Main Street to MD 2/4. • Construct a trail system connecting Prince Frederick with natural areas outside of the Town Center subject to a study and approval of property owners.
St. Leonard	• Construct sidewalk, street trees, and lighting along both sides of MD 765 within the Village District - Subarea B.
Solomons	• Construct sidewalk along MD 2 and Charles Street from Lore Street to the northeastern end of Farren Avenue on the east side of the highway. • Construct sidewalk along Charles Street from Farren Avenue to MD 2. • **Construct sidewalk along MD 2 from Charles Street to Lore Street.** • Construct sidewalk along MD 765 from Lore Street to Spinnaker Way. • Construct sidewalk along proposed extension of MD 765 from Spinnaker Way to Newtown Road. • Construct sidewalk along Newtown Road from MD 2/4 to Dowell Road. • Construct sidewalk along Dowell Road from MD 765 to terminus. • **Construct riverwalk along Patuxent River on Solomons Island.**

Note: Recommended improvements shown in the **bold text** have been implemented.

Source: Calvert County Department of Planning and Zoning.

TABLE IV-11
GUIDELINES FOR PROVIDING SIDEWALKS IN TOWN CENTERS:
2010 COUNTY TRANSPORTATION PLAN

Roadway Functional Classification	Land Use	New Streets	Existing Streets[1]
Arterial Highways[2]	Industrial Commercial Residential	Both sides Both sides Both sides	Both sides Both sides Both sides
Collector Streets	Industrial Commercial Residential	Both sides Both sides Both sides	Both sides Both sides At lease one side
Land Access Streets[3]	Industrial Commercial Residential >1 unit/acre < or = 1 unit/acre	Both sides Both sides Both sides At least one side	Both sides Both sides At least one side At least one side

Notes:

[1] Sidewalks may be omitted on one side of a street where there are no existing or anticipated uses which would generate pedestrian trips on that side.

[2] Where parallel service roads are in place, sidewalks should be provided along the service road on the side farthest from the arterial highway.

[3] Sidewalks need not be provided along cul-de-sacs streets or other streets less than 600 feet in length, unless such streets serve multi-family developments, nor along streets served by parallel off-street walking paths.

Source: Calvert County Department of Planning and Zoning.

TABLE IV-12
LOCATION OF SIDEWALK IMPROVEMENTS: 2010 COUNTY TRANSPORTATION PLAN

Town Center	Road Name	Termini
Dunkirk	Ferry Landing Road Ward Road Penwick Road MD 4	Proposed W. Ward Road Ext. to MD 4 MD 4 to Proposed Park Drive MD 4 to Existing Terminus Park Drive to Apple Way
Huntingtown	Old Town Road (MD 524) Hunting Creek Road (MD 521) Thanksgiving Lane	MD 2/4 (north of town) to MD 2/4 (south of town) Old Town Road to Huntingtown Elementary School Hunting Creek Road to Old Town Road
Prince Frederick	Stoakley Road MD 2/4 W. Dares Beach Road Dares Beach Road (MD 402) Armory Road Church Street (MD 231) Hallowing Point Road (MD 231) Main Street (MD 765) Main Street (MD 765)	Theater Drive to MD 2/4 Stoakley Road to south of Prince Frederick Existing terminus to MD 2/4 MD 2/4 to Calvert High School Steeple Chase Road to Main Street MD 2/4 to Main Street Prince Frederick Blvd. to MD 2/4 Church Street to MD 2/4 Duke Street to Calvert Towne Drive
St. Leonard	St. Leonard Road (MD 765) Calvert Beach Road	Matapany Road to Polling House Proposed East Ave. to fire station
Solomons	Charles Street Solomons Island Road (MD 765) Newtown Road Dowell Road	Farren Avenue to MD 2 Lore Street to Spinnaker Way MD 2/4 to Dowell Road MD 765 to terminus

Source: Calvert County Department of Planning and Zoning.

travel for utilitarian, rather than recreational purposes, and recommend measures to remove such impediments. To the greatest extent practical, especially within and adjacent to town centers, all road and highway improvement projects should be made bicycle compatible.

Residential Street Design

The plan recommends that the road design standards set forth in the Calvert County Road Ordinance be evaluated to determine the extent to which they are compatible with the residential character of the subdivisions they serve. Reduced specifications for standard subdivision streets should be developed and employed where it can be shown that public safety and road maintenance, among other considerations, would not be unduly compromised. Any benefits attendant to reduced design specifications, including lower construction and maintenance costs, reduced vehicular speeds, and increased safety for pedestrians and bicyclists should be determined. In the typical residential subdivision in Calvert County, residential streets or roads should be no wider than the minimum width needed to accommodate the traffic mix the street will serve.

Northeast Sector Transportation Study

The plan recommends that a detailed study be undertaken to assess the existing and future transportation needs of the Northeast sector of the County which includes the Towns of Chesapeake Beach and North Beach. The study should include a plan for the future development of transportation facilities and services and be undertaken in cooperation with the Towns. The sound development of this area is key to County-wide land use development objectives of concentrating development and infrastructure investments in and adjacent to town centers and maintaining rural development patters outside of these areas. Good transportation access to the two municipalities and circulation within the broader northeast sector is necessary for the area to develop in an efficient and orderly way. Definitive recommendations about specific transportation improvements in this area can only be made after a focussed study is undertaken .

Summary of Land Use and Community Design Recommendations

The following list of actions summarizes the land use and community design element of the 2010 County Transportation Plan.

- Develop guidelines for transportation efficient community design including guidelines for the citing of public transit stations in town centers.
- Continue to implement adopted town center master plans, particularly road projects as land development occurs.
- Implement the sidewalk projects set forth in Table IV-12.
- Prepare a detailed bicycle facilities plan for the County.
- Evaluate the residential street design specifications set forth in the Calvert County Road Ordinance and revise such standards as may be found necessary to ensure that such streets are compatible with the rural character of the subdivisions they serve.

- Prepare a study of the existing and future transportation needs of the northeast sector of the County and a plan for the development of facilities and services relating to transportation.

CONCLUSION

This chapter contained three main parts. First, it presented anticipated changes that will affect the County's growth and development and hence future travel patterns. Second, it noted that a preliminary recommended plan was prepared and widely presented for public review and consideration. The chapter detailed the revisions made to the preliminary recommended plan in response to the public review of the plan's findings and recommendations. Third, the chapter presented the final recommended transportation plan for Calvert County--the 2010 County Transportation Plan.

The improvements recommended in the plan are designed to serve the travel patterns anticipated to be in place by 2010. Knowledge of these travel patterns was derived from forecasts of the number and location of households and jobs in the County and throughout Southern Maryland. The location of future growth within Calvert County is in turn guided by the adopted County Comprehensive Plan and Zoning Ordinance. Therefore, in serving travel generated by future development, the 2010 County Transportation Plan is fully consistent with and designed to implement the County Comprehensive Plan.

The plan contains four major elements--transportation system management, highway system maintenance and improvement, public transit, and land use and community design. The plan seeks first to make the most efficient use of available roads and highways before proposing costly and disruptive highway construction. Major highway recommendations are focussed on the Prince Frederick area road network which is anticipated to be severely congested and deficient by 2010.

The following chapter, Chapter V, presents a broad-level technical evaluation of the transportation plan. This evaluation addresses the performance of the plan and its impact on community development and the environment. It provides information to help determine how closely the plan comes to meeting the objectives its designers sought to achieve. The chapter indicates that the plan would significantly enhance transportation quality and safety in Calvert County while minimizing costs. Chapter VI address the implementation of the transportation plan. It prioritizes plan recommendations and specifies the costs associated with implementing the most essential recommendations.

CHAPTER V

CHAPTER V

PLAN EVALUATION

INTRODUCTION

This chapter presents an evaluation of the 2010 County Transportation Plan. Consistent with good planning practice this evaluation was undertaken for the preliminary recommended plan. Because the preliminary plan was not significantly altered by the public comments received, the results of the original evaluation remain true for the final recommended plan.

In evaluating a transportation plan, the ability of the plan to meet adopted transportation development objectives is studied. This is important because it provides the opportunity to determine if the plan ultimately recommended for adoption is realistic, sound, and workable.

PLAN EVALUATION

Nine transportation development objectives are set forth in Chapter III of this report. To determine the extent to which the recommended plan meets these objectives, it was scaled against the standards which support each objective. The evaluation presented herein is both qualitative and quantitative; quantitative when good data were readily available and the standard under consideration lent itself to quantification.

The standards are of two types. Some are strictly design standards. These were actually used in designing the plan and are therefore assumed to have been met through design or it is assumed they could be met through proper plan implementation. Other standards are comparative in nature. These are used here to compare the recommended plan against the no-build or "do-nothing" plan. This comparison is important; revealing the changes that can be brought about through implementation of the 2010 County Transportation Plan. The evaluation is presented below.

Objective No. 1

Objective No. 1: A transportation system that serves the existing land use pattern and helps to implement County land use and growth management objectives.

- Standard No. 1: A high level of accessibility should be provided to towns and town centers.

  Accessibility, or the degree to which locations can be reached within a given time period, can be enhanced through transportation improvements. The recommended plan would improve accessibility to town centers. Under the plan, MD 2/4 and MD 231 in the Prince Frederick area would be widened to accommodate anticipated traffic volumes. Stinnet-Emmanuel Church-Wilson Roads would be upgraded allowing this route to serve anticipated travel

between Prince Frederick and the Towns of Chesapeake Beach and North Beach. This improvement may be expected to serve trips that otherwise would be made on MD2/4 and thereby alleviate congestion on MD 2/4. The upgrade of German Chapel Road would also work to improve accessibility to Prince Frederick because it would help alleviate severe congestion on MD 231 and MD 2/4.

The plan also calls for the designation of local transit service areas in Solomons, Prince Frederick, and Chesapeake Beach and North Beach; the development of transit stations within these areas; and the expansion of rapid and express transit services so that these town centers are connected to each other and to major destinations beyond the borders of the County by transit.

- Standard No. 2: A low level of accessibility should be provided to rural residential areas and to areas planned for protection from development.

  This standard has also been essentially met because it served as an input to the plan design process. Under the plan, no improvements to the capacity of the road network serving resource protection or conservation areas would be made. Improvements to the collector road network are limited to those roads serving currently developed areas or those areas planned for development, such as town centers. The plan would focus the provision of public transit on town centers.

Objective No. 2

A transportation system that provides a high level of mobility for the residents, workers, and visitors of Calvert County.

- Standard No. 1: Arterial highways should be designed and operated to provide a Level of Service (LOS) "D" or better[27].

  Table V-I compares the level of traffic congestion under existing conditions to that under the no-build plan and the recommended plan. Highways operating at LOS "D" or better are considered not to be experiencing traffic congestion. Under existing conditions (1995), 100 percent of arterial mileage operates at a LOS "D" or better. Under the 2010 no-build or "do-

[27]Level of Service (LOS) is a qualitative measure of operational conditions on a given highway segment during the weekday peak travel period. LOS designations range from "A" to "F", with "A" describing free flow conditions in which individual motorists are unaffected by the presence of other motorists, and "F" describing a break-down in traffic flow or stop-and-go conditions. A highway operating at a LOS "D" can be characterized by a high density of vehicles moving at a stable flow. Speed and freedom to maneuver are severely restricted, however, and drivers experience poor levels of comfort and convenience. Small increase in traffic flow will generally cause operational problems at this LOS.

TABLE V-1
COMPARISON OF ARTERIAL LEVELS OF SERVICE:
1995 AND 2010 NO-BUILD AND 2010 COUNTY TRANSPORATATION PLANS

Level of Service (LOS)	1995		2010 No-Build		2010 Recommended Plan	
	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total
LOS A - C	63.9	74.7	4.4	5.2	4.4	5.1
LOS D	21.6	25.3	43.1	50.4	51.8	60.1
LOS E & F	0.0	0.0	38.0	44.4	30.0	34.8
Total	85.5	100.0	85.5	100.0	86.2	100.0

Source: Calvert County Department of Planning and Zoning.

nothing" plan, about 47 miles, or 56 percent of arterial mileage would operate at a LOS "D" or better. Under the recommended plan, about 56 miles or 65 percent of arterial mileage would operate at a LOS "D" or better.

The recommended plan would eliminate anticipated traffic congestion on about eight miles of arterial highway. It is important to note that these eight miles of highway--MD 2/4 and MD 231 in Prince Frederick--would be the most congested links in the highway network in the absence of recommended improvements. Under the recommended plan, traffic congestion would still occur on about 30 miles, or 35 percent of the arterial highway system. It is important to note that this congestion would occur during the peak travel periods or rush hours. During non-peak periods, arterial highways in the County would generally operate free of congestion. Map V-1 show the level of service on arterial highways under the 2010 recommended plan. Changes in highway operating conditions can be seen by comparing Map V-1 to Maps II-6 and IV-4 which show levels of service under existing conditions and under the 2010 no-build plan, respectively.

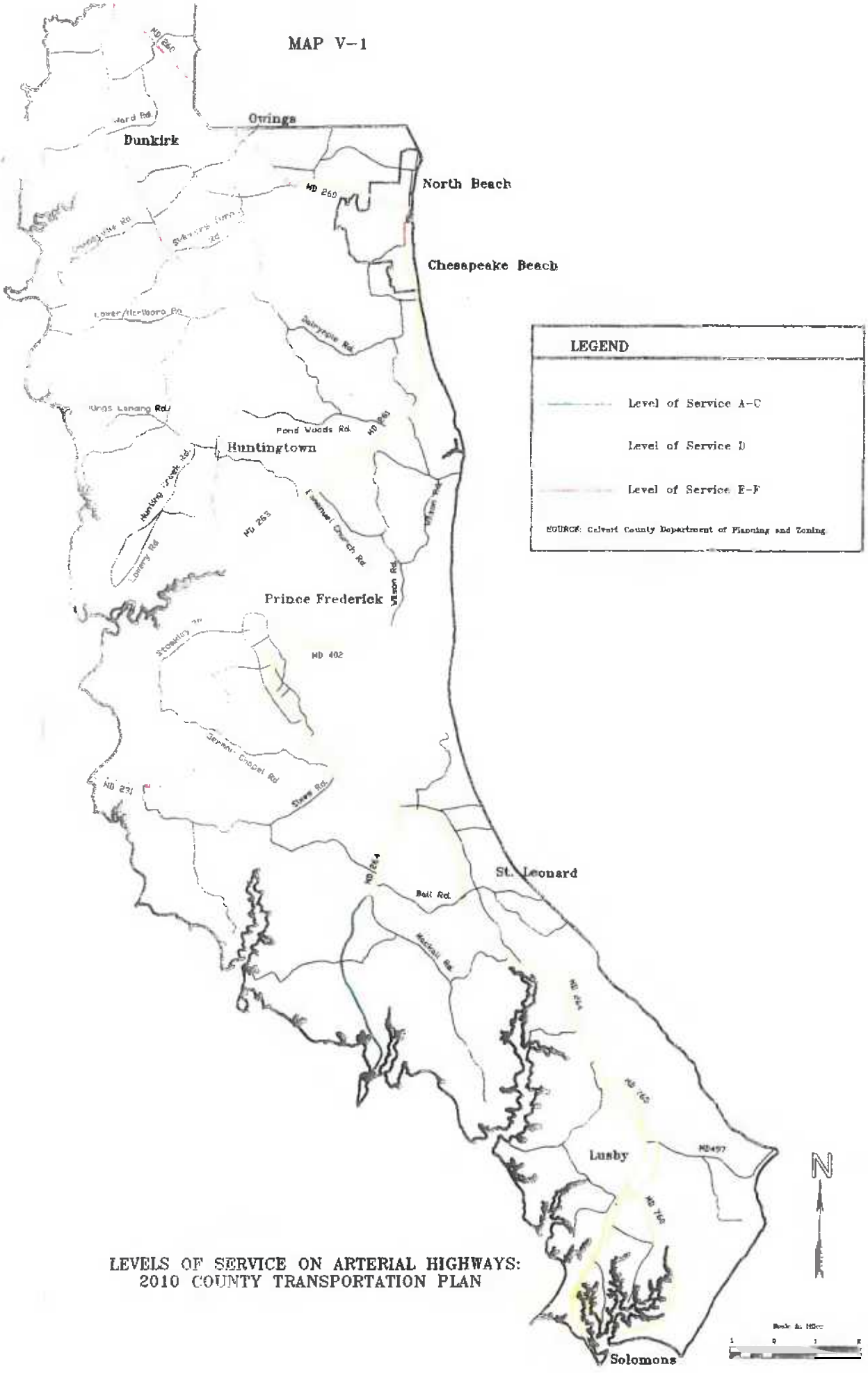
- Standard No. 2: The number of private access points along arterial highways should be minimized.

Short of major highway construction, access control has the greatest potential to improve highway capacity. The plan recommends that the access control plan, presently being prepared by the State Highway Administration for the MD 4-2/4 corridor be adopted and implemented. Under the access control plan, many access points onto MD 4- 2/4 would be closed. These closures would come about through providing service roads and consolidating driveways. Under the no-build plan, some proportion of these access points would likely be closed as the County continues to follow good long range access control principles in its subdivision and site plan review processes.

- *Standard No. 3: Rapid transit should be provided to maximize the number of residents readily served.*

A rapid transit service area is defined as that area located within a three-mile radius of a park-and-ride lot which is served by commuter transit--the Route Four Flyer. Table V-2 shows the population and number of households located within rapid transit service areas under existing conditions, under the 2010 no-build plan, and the 2010 recommended plan.

MAP V-1



LEVELS OF SERVICE ON ARTERIAL HIGHWAYS:
2010 COUNTY TRANSPORTATION PLAN

TABLE V-2
RAPID TRANSIT SERVICE AREAS: 1995 AND 2010
NO-BUILD AND 2010 COUNTY TRANSPORTATION PLANS

RAPID TRANSIT SERVICE AREA	1995	2010 NO-BUILD			2010 RECOMMENDED PLAN		
		NUMBER	CHANGE 1995-2010		NUMBER	CHANGE 1995-2010	
			NUMBER	PERCENT		NUMBER	PERCENT
Population	29,600	40,200	10,600	35.8	52,500	22,900	77.4
Households	10,000	14,800	4,800	48.0	19,100	9,100	91.0

Source: Calvert County Department of Planning and Zoning.

As shown, under the recommended plan the number of households located with a three-mile radius of a commuter transit parking lot would increase by about 9,100 households, or 91 percent over existing conditions. This compares to an increase of about 4,800 households, or 48 percent under the no-build plan. A similar pattern of increase can be expected with regard to population. Significant increases in both population and number of households located near rapid transit would occur under the recommended plan.

Under the recommended plan, the percent of total County population and households located within rapid transit service areas would increase. In 1995, about 10,000 households, or 46 percent of County households, were located within rapid transit service areas. This compares to about 14,800 households, or 41 percent under the 2010 no-build plan, and about 19,100 households, or 53 percent under the 2010 recommended plan. A similar pattern could be expected with regard to population. The percent of both population and households served by rapid transit would decrease under the no-build plan but increase markedly under the recommended plan.

More significant increases in the coverage of rapid transit service may be expected over time if three additional recommended actions occur: the park-and-ride lot recently allowed, on a trial basis, at the Calvert County Fairgrounds is found viable and is established; rapid transit between Chesapeake Beach and Annapolis is found viable and is provided, and rapid transit between Prince Frederick and Patuxent Naval Air Station is found viable and is provided.

An optimum level of rapid transit service is provided to residents located within 0.5 mile walking distance of a rapid transit stop or station. Presently, walking to a rapid transit stop is only practical within the Towns of Chesapeake Beach and North Beach.

- Standard No. 4: Express and local transit routes should be focused on concentrations of demand, particularly the largest town centers.

Under the recommended plan, three local transit service areas would be designated and service would be provided to enhance the mobility of the residents located within these areas. Table V-3 shows the population and households that would be located within local transit service areas under the recommended plan in 2010. In 2010, about 15,500 households, or 48 percent of the households in the County, would be located within areas served by local transit.

TABLE V-3
LOCAL TRANSIT SERVICE AREA POPULATION AND HOUSEHOLDS :
2010 COUNTY TRANSPORTATION PLAN

PROPOSED SERVICE AREA	POPULATION	HOUSEHOLDS
Cheasapeake Beach/North Beach	15,500	6,300
Prince Frederick	8,700	3,100
Solomons	16,300	6,100
TOTAL	40,500 (42.6% of County Population)	15,500 (48.4% of County Households)

Source: Calvert County Department of Planning and Zoning.

Objective No. 3

A transportation system that provides for efficient circulation within towns and town centers.

- Standard No. 1: Town road networks should minimize the number of local trips that involve travel on arterial highways.

  This standard has been essentially met because it served as an input to the plan design process. The Prince Frederick Loop Road and most town center road improvements are planned to allow circulation within town centers without the necessity of traveling on MD 4-2/4.

- Standard No. 2: Bicycle ways and sidewalks should be provided where existing or anticipated demand for bicycling or walking is high.

  This standard also served as an input to the plan design process. Specific locations are identified for sidewalks. Guidelines for the placement of sidewalks during the development process are also provided in the plan. The recommended plan calls for the preparation of a bicycle facilities plan.

- Standard No. 3: Town roads should be designed with sufficient capacity and flexibility to accommodate anticipated town build-out.

  This standard has served as an input to the plan design process and should be met through the proper implementation of the plan. The plan calls for the construction of roads to adopted County standards, the provision of sidewalks, the development of community design guidelines for transportation efficient development, and the designation of local transit service areas and provision of local transit services. Flexibility may mean that, where possible, extra right-of-way be acquired when new roads are developed so that future transportation projects can be more readily provided.

- Standard No. 4: Town road networks should permit the direct and efficient routing of transit vehicles.

  This standard should be met through plan implementation. The plan recommends that three local transit service areas be delineated and that transit development plans be prepared for each. The plan also calls for the preparation of community design guidelines for transportation efficient development and the creation of transit stations in town centers.

Objective No. 4

A transportation system that protects the overall quality of the natural environment.

- Standard No. 1: The location of transportation facilities through woodlands and wetlands and other natural areas should be minimized.

A precise determination of the environmental impacts of new road construction must await detailed project level planning. However, through the use of wetland mapping and areal photography, the impacts associated with potential road alignments can be roughly estimated.

Under the recommended plan, about 66 acres of woodlands and about seven acres of wetlands would be impacted by new highway construction. The no-build plan would impact about four acres of woodlands and one acre of wetlands. These latter impacts would come about through the construction of Prince Frederick Boulevard between MD 231 and West Dares Beach Road.

- Standard No. 2: The amount of air pollutants emitted through the use of the transportation system should be minimized.

Calvert County is part of the Washington, DC-Maryland-Virginia ozone non-attainment area which includes Washington, D.C. and surrounding jurisdictions in both Maryland and Virginia. In 1990, 3.1 tons of volatile organic compounds, 3.5 tons of nitrogen oxides, and 22.8 tons of carbon monoxide were emitted by vehicles originating in Calvert County on an average summer weekday. County vehicle emissions accounted for just over 1 percent of total regional emissions in each of these three air pollutant categories.

In the absence of federally mandated improvements in vehicle emission standards and cleaner burning fuels, air pollution from vehicles in Calvert County would worsen through the year 2010 as the number of miles traveled increases. Air pollution would likely be worse under the no-build plan than under the recommended plan. Under the no-build plan, severe peak-period traffic congestion would occur in the Prince Frederick area and fewer opportunities would be available for transit use and carpooling.

- Standard No. 3: The location of transportation facilities through prime farmland should be minimized.

Under the recommended plan, just over one acre of prime farmland would be lost to new highway construction. This loss would occur in the Prince Frederick area through the construction of the Prince Frederick Loop Road. No prime farmland would be lost under the no-build plan.

Objective No. 5

A transportation system that protects community development and the cultural heritage and rural character of the County.

- Standard No. 1: The destruction of historic buildings and of historic, scenic, scientific, archaeological, and cultural sites caused by the construction of transportation facilities should be minimized.

  This standard should be met through careful facility design during plan implementation. A precise quantitative evaluation of the extent to which this standard is met depends upon the completion of project planning including road alignment studies. In addition, it may be necessary in some cases to determine the actual presence and/or significance of historic or archaeological sites and structures that could potentially be impacted by transportation development.

  The project level planning undertaken for the Prince Frederick Loop Road indicates that nearly seven acres of land associated with sites of historic or archeological importance would be required for right-of-way in road construction. No destruction of identified sites or structures however would take place.

- Standard No. 2: The penetration of existing residential areas by new roads and highways should be minimized.

  No planned roads or highways would traverse existing residential areas or established communities. However, the recommended plan does call for the upgrade of some existing highways, along which are located residential properties. A precise evaluation of the extent to which upgrades and improvements to existing roads impact residential property must await the completion of detailed project planning.

- Standard No. 3: The dislocation of existing households, businesses, industries and public and institutional buildings caused by the construction of transportation facilities should be minimized.

  As with the above, more detailed project planning is needed to determine the extent to which this standard is met. Such project planning has been undertaken as part of the study of the Prince Frederick Loop Road, the widening of MD 2/4 in Prince Frederick, and the long proposed interchange at MD 260 and MD 4. These studies indicate that about 55 residential and 27 commercial properties would be affected and about 65 acres of residential land and 25 acres of commercial land would be required for highway right-of-way.

- Standard No. 4: The disruption of future development should be minimized through the advance reservation of right-of-way.

  This standard should be met through the proper implementation of the plan.

Objective No. 6

A transportation system that promotes energy conservation and minimizes the amount of non-renewable energy consumed.

- Standard No 1: The amount of non-renewable energy consumed in the transport of people and goods throughout the County should be minimized.

  Under the recommended plan, about 80,400 gallons of motor fuel per average weekday would be expected to be consumed by passenger vehicles[28] operating on major highways within the County in 2010[29]. Under existing conditions, about 61,900 gallons of motor fuel per average weekday are consumed by passenger vehicles operating on the major highways in the County.

  Average daily fuel consumption would likely be slightly higher under a no-build plan than under the recommended plan. Under the no-build plan, severe traffic congestion would be present in the Prince Frederick area and fewer opportunities would be available for transit use and carpooling. Under the no-build plan, daily fuel consumption would approximate 82,800 gallons.

- Standard No. 2: Total vehicle-miles of travel within the County should be minimized.

  Vehicle-miles of travel (VMT) is a measure of vehicle travel made on the arterial highways in a study area. In this evaluation, each mile traveled on arterial highways in the County was counted as one vehicle-mile. In 2010 under the recommended plan, about 2.01 million vehicle-miles of travel may be expected on the County's arterial highways during an average weekday. This represents an increase of about 55 percent, or 710,000 vehicle-miles, over the 1995 level of about 1.30 million. shows 2010 average weekday traffic volumes on the arterial system under the recommended plan. The anticipated growth in traffic can be seen by comparing Map V-2 with Map II-5.

As shown in Table V-4 , VMT is expected to be slightly higher under a no-build plan. This is a consequence of the fact that the no-build plan would not provide the Prince Frederick Loop Road or other collector road improvements that would help to alleviate heavy traffic burdens on arterial highways, namely MD 2/4 and MD 231[30]. In 2010 under the no-build plan, about 2.07 million

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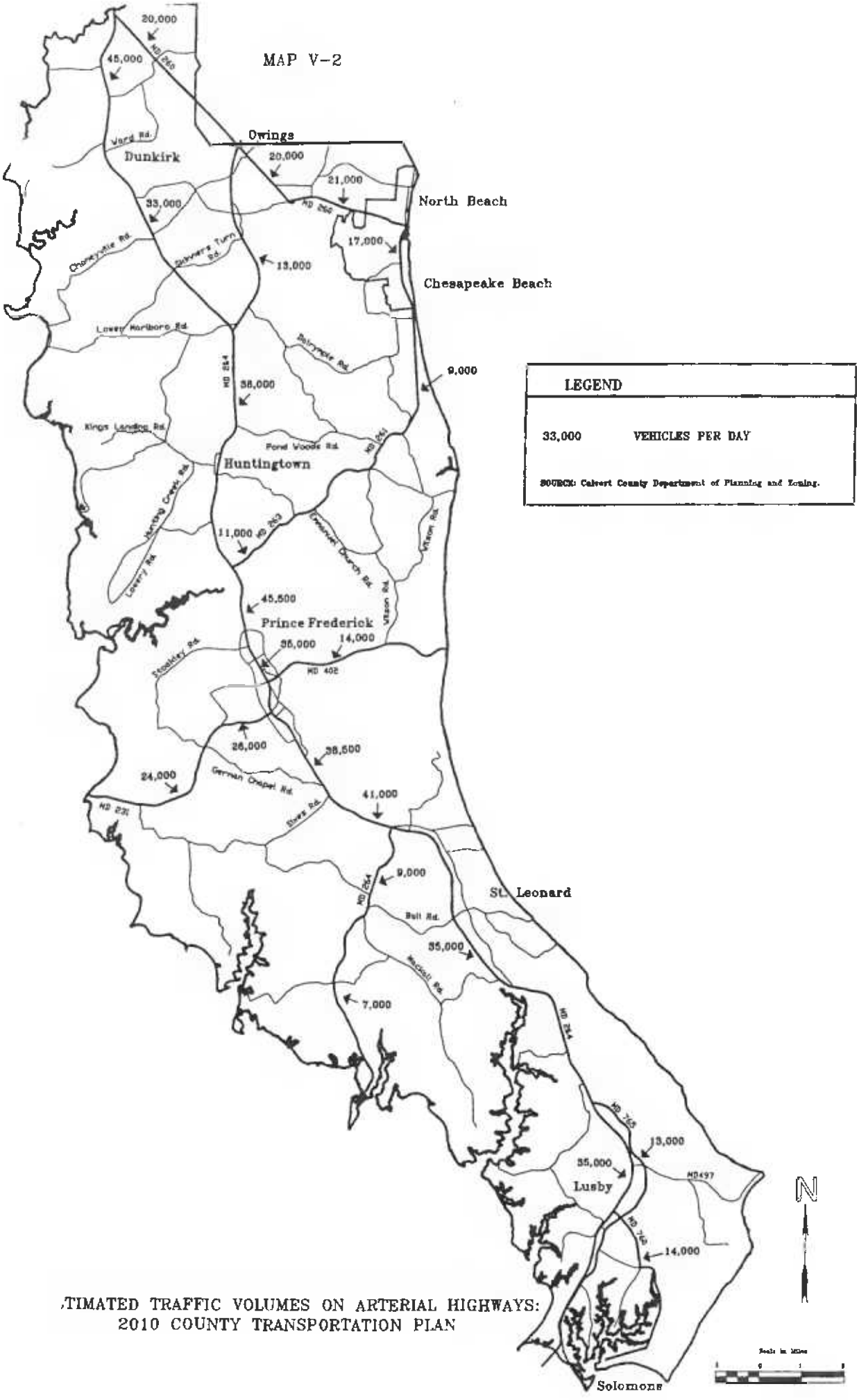
[28]Passenger vehicles include automobiles, light trucks, sports utility vehicles, and mini-vans.

[29]This assumes that an average motor fuel efficiency level of 25 miles per gallon is attained by 2010, which would represent a 19 percent increase over the 1995 level of about 21 miles per gallon.

[30]The recommended plan's proposals for expanded transit and carpooling would likely work to reduce total vehicle-miles of travel, form that which could be expected under a do-nothing scenario. The impact of increased transit and carpooling was not quantitatively assessed.

MAP V-2



LEGEND	
33,000	VEHICLES PER DAY

SOURCE: Calvert County Department of Planning and Zoning.

ESTIMATED TRAFFIC VOLUMES ON ARTERIAL HIGHWAYS:
2010 COUNTY TRANSPORTATION PLAN

TABLE V-4
VEHICLE-MILES OF TRAVEL: 1995 AND 2010 NO BUILD AND 2010 COUNTY TRANSPORTATION PLANS

ARTERIAL HIGHWAY	1995 VMT (in millions)	2010 NO-BUILD PLAN		2010 RECOMMENDED PLAN	
		VMT (in millions)	PERCENT CHANGE 1995-2010	VMT (in millions)	PERCENT CHANGE 1995-2010
MD 4 - 2/4	0.91	1.38	51.6	1.34	47.3
All Other Arterials	0.39	0.69	76.9	0.67	71.8
TOTAL	1.30	2.07	59.2	2.01	54.6

Source: Calvert County Department of Planning and Zoning.

vehicle-miles of travel may be expected on the County's arterial highways during an average weekday. This represents an increase of about 59 percent, or 770,000 vehicle-miles over the 1995 level.

Objective No. 7

A transportation system that provides for increased safety for motorists, bicyclists, and pedestrians.

- Standard No. 1: Traffic control at intersections should maximize safety; grade separation of major highways being preferred.

  This standard is assumed met through the design of the plan as it recommends the use of innovative traffic engineering, roundabouts, and interchanges, flyovers, or overpasses where possible.

- Standard No. 2: Traffic operational and design improvements including but not limited to acceleration and deceleration lanes, crosswalks, and roundabouts should be used when their use would increase overall levels of safety.

  This standard is assumed met through the design of the plan or should be met through proper plan implementation.

- Standards No. 3: Transportation improvements should be designed to be compatible with bicycling and walking, particularly within and adjacent to town centers.

  This standard is assumed met through the design of the plan or should be met through proper plan implementation.

Objective No. 8

A transportation system that is properly integrated into the regional network of transportation facilities and contributes to the resolution of area-wide transportation problems.

- Standard No 1: The average vehicle occupancy for work trips originating in Calvert County should be maximized.

  Average vehicle occupancy, as measured by the number of persons per vehicle, may be expected to be higher under the recommended plan than under the no-build plan. This may be expected to occur because the plan emphasizes the use of carpooling and pooling as alternatives to driving alone to work. In 1990, average vehicle occupancy for work trips originating in Calvert County approximated 1.15 persons per vehicle.

- Standard No. 2: Park-and ride-lots should be located and designed so as to maximize carpooling.

  The plan recommends that park-and-ride parking spaces by increased by 100 percent from 270 in 1995 to 540 in 2010. This expansion should include the creation of carpool lots in Solomons and St. Leonard.

- Standard No 3: Rapid transit should be operated so as to attract the maximum number of commuters who would otherwise drive to work alone.

  This standard should be met through proper implementation of the plan. In particular, the plan calls for the use of traffic signal preemption capabilities so that rapid transit buses are given preferential treatment at signalized intersections.

Objective No. 9

A transportation system which meets all other objectives while minimizing total public and private costs.

- Standard No. 1: The sum of transportation system capital, operating, and maintenance costs should be minimized.

  As shown in Table V-5, the combined capital, operating, and maintenance costs of the 2010 County Transportation Plan approximates $211.2 million, or about $17.6 million annually from 1998 through the design year 2010. Not all of these costs would be born by the County, but would instead be shared by the State and Federal levels of government and the private sector[31]. The cost of the no-build plan, that is, the cost of only maintaining and operating existing facilities and services would approximate $40.3 million, or about $3.3 million per year through 2010. All costs presented here are current 1997 dollars.

- Standard No. 2: Full use of existing transportation facilities should be achieved prior to any capital intensive or disruptive construction of new facilities.

  It is assumed that this standard is met by design. Except on the most severely congested links in the highway network, the plan calls only for increased and enhanced commuter bus service, the control and management of highway access, and innovative traffic engineering; foregoing costly highway improvements that would also help resolve anticipated traffic congestion.

[31]A detailed assessment of the costs of implementing the plan is provided in Chapter VI of this report.

SUMMARY

This chapter has presented an evaluation of the 2010 County Transportation Plan, comparing its impact on travel and transportation in the County to existing conditions and to a no-build or "do-nothing" plan. As the foregoing discussion indicates, the recommended plan would provided important benefits over a no-build plan; meeting the adopted objectives. Table V-6 compares the recommended plan with the 2010 no-build plan and with existing conditions. A number of observations are pertinent:

- The extent of recurring, peak-period, traffic congestion will increase between 1995 and 2010, but not as much under the recommended plan as under the no-build plan. In 1995, 100 percent of arterial mileage operated at a LOS "D" or better. Under the recommended plan, 65 percent would operate at this acceptable level of service, meaning that traffic congestion would still be experienced on about 30 miles. It is important to note that this congestion may be expected only during peak travel periods--the weekday morning and evening rush hours. Under the no-build plan, the proportion of highway mileage operating at a LOS "D" or better would drop to 56 percent, meaning that congestion would be experienced on about 38 miles (compared to 30 miles under the recommended plan). It is important to note that the recommended plan would not resolve all anticipated congestion, but it would resolve the most severe congestion; most notably on MD 2/4 and MD 231 in the Prince Frederick area.

- Travel in the County will grow dramatically between 1995 and 2010. Arterial vehicle-miles of travel (VMT) will increase by 55 percent under the recommended plan and 59 percent under the no-build plan. This difference can be attributed to the recommended plan's proposals for new and improved collector roads. These will allow traffic to be better distributed throughout the highway network; reducing traffic--by some 60,000 vehicle-miles per day--on arterial highways.

- The recommended plan would increase the percent of County households and residents which would be readily served by rapid bus transit. The percent of total County households served by rapid transit would increase from 46 percent in 1995 to 53 percent in 2010. Under the no-build plan, the percent of households served would actually decrease to 41 percent. Providing opportunities for residents to more readily use alternatives to the private vehicle for commuting will be essential given anticipated peak period congestion on major highways.

- The plan would focus the transit service provided within the County toward areas of high demand; designating three local transit service areas. The percent of County households provided with ready access to local or express transit would approximate 48 percent in 2010.

TABLE V-5

COSTS OF THE 2010 NO-BUILD PLAN AND 2010 COUNTY TRANSPORTATION PLAN

Transportation Plan Element	No-Build Plan Cost ($ million)	Recommended Plan Cost ($ million)
Highway		
Capital	6.4	171.3
Operating/Maintenance	22.9	22.9
Subtotal	29.3	194.2
Public Transit		
Capital	0.9	1.4
Operating/Maintenance	10.1	15.6
Subtotal	11.0	17.0
Total	40.3	211.2

Note:
Not all of the above costs would be born by the County, but would instead be shared by the State and Federal levels of government and private sector developers. Costs shown are current 1997 dollars.

Source: Calvert County Department of Planning and Zoning.

TABLE V-6

SUMMARY OF PLAN EVALUATION

Category	Comparative Standard	1995	2010 No-Build	2010 Recommended Plan
Performance	Percent of arterial mileage at LOS D or better	100 percent	56 percent	65 percent
	Arterial highway vehicle-miles of travel	1.30 million	2.07 million	2.01 million
	Percent of households served by rapid transit	46 percent	41 percent	53 percent
	Percent of households in local transit service areas	--	--	48 percent
Environment	Acres of woodland impacts	--	4 acres	66 acres
	Acres of wetland impacts	--	1 acre	7 acres
	Acres of prime farmland impacts	--	0 acres	1 acre
	Gallons of fuel consumed per average weekday	61,900 gallons	82,800 gallons	80,400 gallons
Costs	Capital costs	--	$7.3 million	$172.7 million
	Operating and maintenance costs	--	$33.0 million	$38.5 million
	Sum of capital, operating, and maintenance costs	--	$ 40.3 million	$211.2 million

Source: Calvert County Department of Planning and Zoning.

- Construction of the road improvements recommended in the plan would impact about 66 acres of woodlands, seven acres of wetlands, and about one acre of prime farmland. The majority of these impacts would not occur if the no-build plan or "do-nothing" approach to transportation development was followed. The number of gallons of fuel consumed by vehicles would increase between 1995 and 2010, by about 30 to 33 percent.

- The sum of capital, operating, and maintenance costs involved in implementing the recommended plan would approximate $211.2 million by 2010 (1997 current dollars). About 20 percent of that cost, or $40.3 million would be incurred under the no-build plan, because existing facilities and services would still need to be maintained. The costs of implementing the plan would be shared by the County, State and Federal levels of government, and the private sector.

CHAPTER VI

CHAPTER VI

PLAN IMPLEMENTATION

INTRODUCTION

The 2010 County Transportation Plan is a broad design for achieving adopted transportation development objectives. It includes transportation system management measures that help make existing highways operate more efficiently, public transit improvements that enhance mobility in town centers and reduce traffic congestion, and highway maintenance and improvement projects. The plan is not truly complete, however, until priorities are established and implementation is addressed.

To be a useful guide to physical development a transportation plan must be prioritized. Priorities are naturally drawn from the essential elements of the plan--that is, those elements with county-wide significance which complement broader County goals[32]. The 2010 County Transportation Plan will be largely achieved if:

- existing roads are regularly resurfaced and maintained in optimum conditions;
- improvements to the County collector highway system are implemented; and
- improvements to the State arterial highway system are implemented.

These are the essential elements of the plan. The need for good transportation is so interwoven into daily life that failure to pursue these basic priorities will substantially reduce the quality of life in Calvert County. Failure to maintain existing roads will compromise safety, increase vehicle wear-and-tear, cause stormwater drainage problems, and distract from neighborhood appearance with adverse affects to property values. Failure to make the recommended highway improvements will compromise safety, cause gridlock, and increase the cost of commerce.

RESURFACE EXISTING COUNTY ROADS

Project Summary: Resurface 68 miles of collector roads by 2010.
Resurface 259 miles of land access roads by 2010.

Comment: Roads should be resurfaced or repaved once every 15 years. This is the standard and generally accepted schedule for roadway resurfacing, though some flexibility is left to engineering judgement in consideration of traffic loadings, climate, and the most efficient use of available funds. Applying the

[32]Because of the regional nature of travel and transportation problems, the essential elements of any good local plan will have broader significance and it is therefore important that such elements be recognized as regional priorities by the concerned units and levels of government outside of the County.

15-year standard schedule to the County road system results in the project summary provided above.

The cost of resurfacing County roads through 2010 is summarized in Table VI-1[33]. Resurfacing 327 miles of the County road system by 2010 will cost $34.4 million or about $2.9 million per year.[34] For FY 1998, the County budgeted $2.1 million for resurfacing roads, allowing for 16 miles to be resurfaced.

Funds for resurfacing are drawn from general revenues and are supplemented by highway user revenues collected through the federal gasoline tax and disbursed to Calvert County by the State of Maryland. For FY 1998, about $2.7 million in highway user revenues was disbursed to Calvert County and will support road maintenance activities including, among others, resurfacing, removing snow and ice, and clearing vegetation along roadsides.

Continuing the County's long standing commitment to maintaining high quality roads will require that on average about $800,000 more per year be added to the road paving program over that allocated in FY 1998.

IMPROVE COUNTY HIGHWAYS AND ROADS

Project Summary: Construct 8.3 new miles.
Improve or upgrade 11.6 miles.

Comments: The mechanism for implementing capital projects is the Capital Improvement Program (CIP). The CIP is a multi-year schedule which identifies the location, timing, and financing of capital improvements.

The recommended capital improvements to the County road system are shown as blue lines on Map VI-1. As input to the CIP, Table VI-2 lists the capital road improvement projects. The table identifies the time-frame over which implementation of projects should occur, the year recommended improvements should be in place, and the total estimated cost to the County of each of three phases--five years, ten years, and 15 years. Table VI-2 also provides comments pertinent to the implementation of each investment, including anticipated private sector participation in funding.

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[33]All costs are shown in current 1997 dollars.

[34]The remaining 60 miles of the existing County owned road system would be resurfaced between 2010 and 2013.

TABLE VI-I
COSTS OF RESURFACING EXISTING COUNTY ROADS:
2010 COUNTY TRANSPORTATION PLAN

Class of Roads	Miles	Cost per Mile ($\mile)	Total Cost ($ millions)	Cost Per Year 1999-2010 ($ millions)
Collector Highways	68	125,000	8.5	0.7
Land Access Roads[1]	259	100,000	25.9	2.2
Total	327	--	34.4	2.9

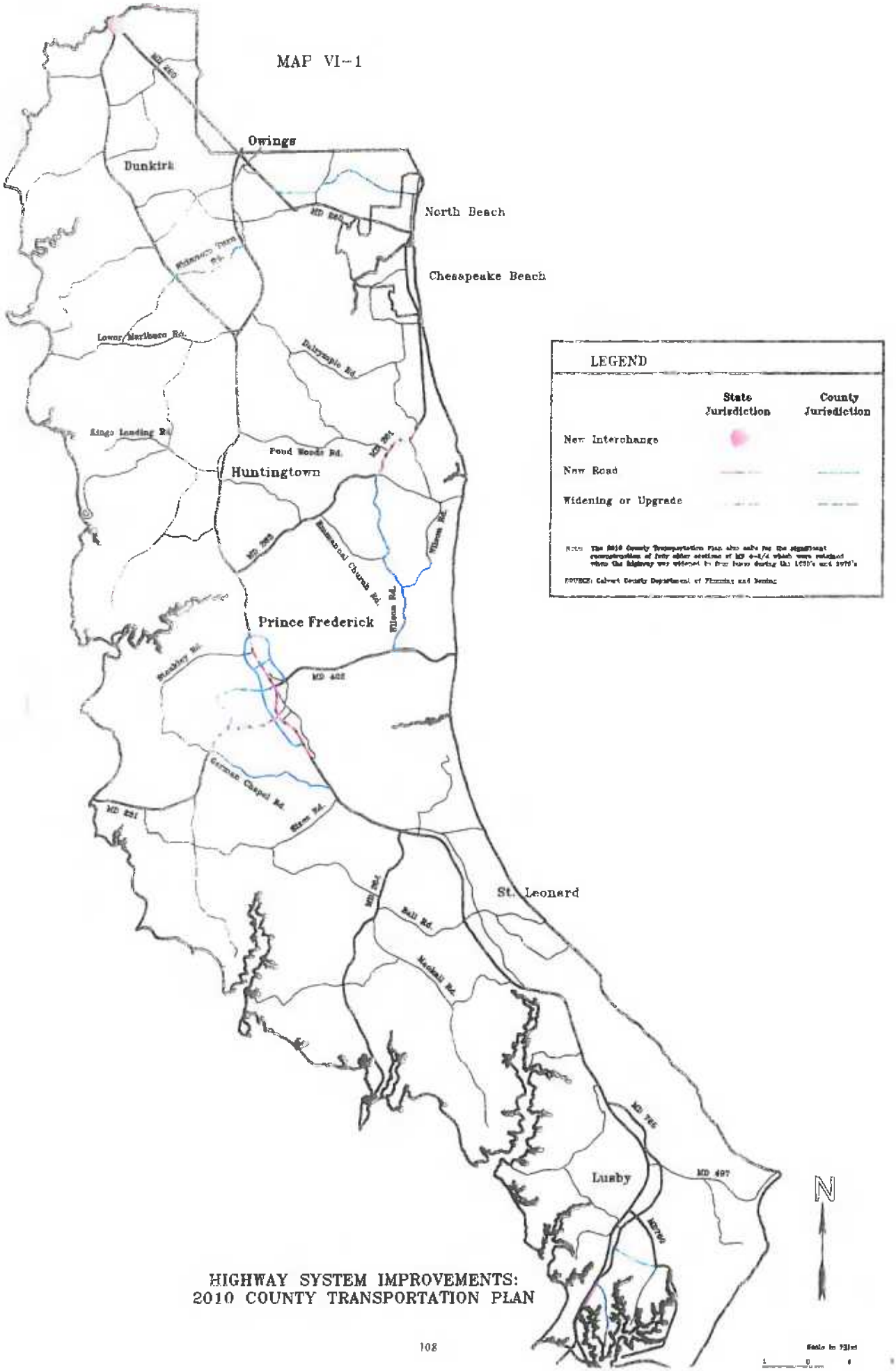
Notes:

1.Land access roads include roads in subdivisions, town centers, and other County roads not classified as collectors, whose primary purpose is to provide access to abutting property.

All costs shown are current 1997 dollars.

Source: Calvert County Department of Planning and Zoning.

MAP VI-1



LEGEND

	State Jurisdiction	County Jurisdiction
New Interchange		
New Road		
Widening or Upgrade		

Note: The 2010 County Transportation Plan also calls for the significant reconstruction of forty other sections of MD 4-4/4 which were realigned when the highway was widened in prior years during the 1950's and 1970's.

SOURCE: Calvert County Department of Planning and Zoning

HIGHWAY SYSTEM IMPROVEMENTS:
2010 COUNTY TRANSPORTATION PLAN

TABLE VI-2
GENERAL IMPLEMENTATION SCHEDULE FOR COUNTY ROAD IMPROVEMENTS
2010 COUNTY TRANSPORTATION PLAN

IMPLEMENTATION PHASE I

Time-Frame for Implementation ..... 5 years
Target Year for Completion 2003
Estimated Cost to County ..... $3.3 million

PROJECT NAME	PROJECT DESCRIPTION	COMMENTS ON IMPLEMENTATION
5th Street Ext. Reconstruction	To improve safety add shoulders and sidewalks and improve sight and stopping distances.	Design work should begin immediately.
Prince Frederick Boulevard Extension (Section 2 of Inner Loop of Prince Frederick Loop Road)[1]	Construct new road to commercial standards.	$75,000 included in FY 98 Capital Budget for Engineering and Design. A section of the proposed road is currently under design for construction by the private sector.
West Dares Beach Road Reconstruction	Reconstruct road to commercial standards; widen existing roadway, and add sidewalks.	Design work should begin immediately.

IMPLEMENTATION PHASE II

Time-Frame for Implementation ..... **10 years**
Target Date for Completion **2008**
Estimated Cost to County ..... **$ 17.3 million**

PROJECT NAME	PROJECT DESCRIPTION	COMMENTS ON IMPLEMENTATION
Sections 3-5 of Inner Loop of Prince Frederick Loop Road[2]	Construct new road to commercial standards.	Significant private sector participation anticipated as development is likely to proceed prior to need for road.
West Dares Beach Road Extension	Construct new road to commercial standards.	New road would make accessible land zoned for Employment/Town Center. Private sector participation is anticipated as development likely to occur prior to date road is needed.
Williams Road Reconstruction	Reconstruct road to primary collector or commercial standards.	Road would be reconstructed to provide access to lands zoned for Employment/Town Center. Private sector participation is anticipated as development likely to occur prior to date road is needed.
Dowell Road Upgrade	Improve road to primary collector standards; widen travel lanes, and add shoulders and bicycle/pedestrian path.	Impact fee currently being collected to finance this improvement.
Skinners Turn Road Upgrade	Upgrade road to industrial standards, widen travel lanes, and add shoulders.	Upgrade necessary to serve land zoned for industrial development.

IMPLEMENTATION PHASE III

Time-Frame for Implementation ..... 15 years
Target Year for Completion 2013
Estimated Cost to County ..... $27.4 million

PROJECT NAME	PROJECT DESCRIPTION	COMMENTS ON IMPLEMENTATION
Outer Loop of Prince Frederick Loop Road	Construct new road to commercial standards.	Complete implementation not warranted until beyond 2010. Significant private sector participation anticipated as development is likely to proceed prior to need for road.
German Chapel Road Upgrade	Upgrade existing road, widen travel lanes, improve sight distance, add shoulders.	Complete implementation not warranted until beyond 2010. Private sector participation likely as development along road proceeds over time. County may need to make spot safety improvements before 2010.
Stinnett- Emmanuel Church- Wilson Road Upgrade	Upgrade existing roads, widen travel lanes, improve sight distance, add shoulders; improve intersections along route.	Complete implementation not warranted until beyond 2010. Private sector participation likely as development along road proceeds over time. County may need to make spot safety and capacity improvements before 2010.
Rousby Hall Road Extension	Extend road from existing terminus at Olivet Road to MD 765. Construct to primary collector or commercial standards.	Complete implementation not warranted until beyond 2010. New road would make accessible land zoned Employment/Town Center. Private sector participation anticipated as development likely to occur prior to date road is needed.
Boyds Turn Road - MD 260 Connector	New road would connect Boyds Turn Road with MD 260. Construct to industrial standards.	Complete implementation not warranted until beyond 2010. New road would serve developing industrial lands. Private sector participation anticipated.

Notes:
1.Section 2 of the Inner Loop of the Prince Frederick Loop Road extends from West Dares Beach Road to Fox Run Boulevard on the west side of MD 2/4.

TABLE VI-3
GENERAL IMPLEMENTATION SCHEDULE FOR STATE HIGHWAY CAPITAL IMPROVEMENTS:
2010 COUNTY TRANSPORTATION PLAN

Time Frame for Implementation	Project Name	Project Description	Comments on Implementation
Within 5 years	MD 765 Extension in Solomons	Extend MD 765 from Dowell Road to Spinnaker, providing a continuous route parallel to MD 2/4 from Lusby to Solomons	One section of this proposed road is currently under construction by the private sector. The other portion is presently being studied by the State Highway Administration.
	Interchange at MD 4 and MD 260	Construct a grade separation at the intersection	Project is presently being studied by the State Highway Administration. In the FY 1988-2003 CTP funding for only planning has been set aside.
Within 10 years	MD 261 Upgrade	Widen travel lanes and remove poor road alignment. Add shoulders from Christiana Parran Road to Plum Point Road (MD 263)	The upgrade of MD 261 is on the State Highway Needs Inventory.
	MD 2/4 Widening in Prince Frederick	Widen MD 2/4 to six lanes from about Stoakley Road south approximately 2.8 miles	State Highway Administration has received location approval and is set to start designing the project. In the FY 1998-2003 Consolidated Transportation Program, funding for only engineering has been set aside.
Within 15 years	MD 231 Widening in Prince Frederick	Widen MD 231 to four lanes from German Chapel Road to MD 2/4	Project should be added to the State Highway Needs Inventory. Design and installation of an intermediate solution, which may include a continuous left-turn lane, should begin immediately.
	MD 2/4 Widening North of Prince Frederick	Widen MD 2/4 to six lanes from about Stoakley Road north to Plum Point Road (MD 263)	Project is on the State Highway Needs Inventory.

Notes:
The 2010 County Transportation Plan also calls for the reconstruction of sections of MD 4-2/4 totaling about nine miles. These are sections of the original roadway that were retained when MD 4-2/4 was upgraded to a four-land divided highway during the 1960's and 1970's. These sections are inadequately designed to handle existing and forecast traffic volumes. Cost of reconstruction may reach $1 million per mile. Design of these improvements should begin immediately upon plan adoption.

Source: Calvert County Department of Planning and Zoning.

Road Impact Fees

An impact fee is a development exaction that requires a developer, or builder, to pay a single fee to cover a proportionate share of the costs of providing or expanding the capital facilities needed by the new development[35].

Of the projects listed in Table VI-2, four stand out as potentially good candidates for financing through the use of impact fees imposed on residential development, though there may be others: the upgrade of German Chapel Road, the upgrade of Stinnet-Emmanuel Church-Wilson Roads, the extension of Rousby Hall Road, and the upgrade of Dowell Road[36]. These are good candidates for impact fees because the need for these improvements can be directly linked to the anticipated travel patterns of newly arriving residents, the improvements can be made gradually over time, and new residents will benefit directly from the improvements.

Table VI-4, provides a schedule for the amount of revenues that could be raised by various denominations of average impact fees over a period of 15 years. As shown in the table, an average $2,000 road impact fee would generate about $12.4 million over 15 years. This would cover over 44 percent of the total costs of implementing these four projects. Monies raised through impact fees could be used to make incremental improvements with the long-term goal of maintaining adequately designed and safe roads.

Property Tax

Presently, the property tax in Calvert County is $2.23 per $100 of assessed value--the seventh lowest in the State of Maryland. In 1997, a one-cent increase in the property tax would generate about $269,400[37]. Over 15 years, this single one-cent increase in the property tax rate could generate over $5.7 million. Over five years and ten years, a one-cent increase could generate $1.5 million and $3.4 million, respectively. Table VI-5 shows the amount of revenue that could be raised over five, ten, and 15 years through various increases in the property tax rate.

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[35]This definition contains four components. Single Fee: An impact fee is a one-time, per-unit, charge on new development, usually imposed as a condition of final plat approval and collected prior to the issuance of a building permit. Proportionate Share: An impact fee charged to new development must be proportionate to the benefits received by the development. The new development must only pay a pro-rata share of the facilities it will use. Capital Facilities: An impact fee must be used to finance the construction or expansion of capital facilities or to retire the debt incurred in the construction or expansion of these facilities. Impact fees cannot be used to cover operational and maintenance expenses or to eliminate facility deficiencies. Needed by New Development: Impact fees must finance only those capital improvements required by the new development paying the fee. New development must benefit from the capital improvements it helped to finance; however, it needed not be the sole beneficiary of such improvements. Impact fees cannot finance improvements designed to serve only existing development.

[36]About $80,000 has been collected through impact fees for the upgrade of Dowell Road. The amount of this fee and the area within which it is imposed may need to be reassessed in light of forecast growth and travel patterns.

[37]A one-cent increase in the property tax rate would raise the tax payable on a property valued at $150,000 by $6 per year.

TABLE VI-4
AMOUNTS GENERATED AND PROPORTIONS OF TOTAL COSTS OFFSET BY VARIOUS LEVELS OF IMPACT FEES IMPOSED OVER A 15-YEAR PERIOD

Average Amount of Impact Fee ($/unit)	Revenue Generated ($ millions)	Proportion of Total Costs Met (%)	Remaining Costs to be Met ($ millions)
500	3.1	11	24.9
750	4.6	17	23.3
1,000	6.2	22	21.8
1,250	7.7	28	20.2
1,500	9.3	33	18.7
1,750	10.8	39	17.1
2,000	12.4	44	15.6
2,250	13.9	50	14.0
2,500	15.5	55	12.5
2,750	17.0	61	10.9
3,000	18.6	66	9.4
3,250	20.1	72	7.8
3,500	21.7	78	6.3

Notes:
Analysis based on a forecast addition of 6,200 households between 1997 and 2012 in the geographic areas served by the four road improvement projects now considered candidates for the use of impact fees for funding: the upgrade of Stinnett-Emmanuel Church-Wilson Roads, German Chapel Road, and Dowell Road, and the extension of Rousby Hall Road.

The "Proportion of Total Costs Met" column shows the share of the total costs of providing the four road improvements that could be achieved by the various denominations of impact fees. For example, an impact fee of $2,000 would generate $12.4 million which equals 44 percent of the total costs of providing the aforementioned improvements.

The "Remaining Costs to be Met" column shows the cost that would remain upon the collection of impact fees. In the above example, an impact fee of $2,000 would provide 44 percent of the total costs, leaving about $15.6 million to be covered by the County in partnership with the private sector. All revenues shown are in current 1997 dollars.

Source: Calvert County Department of Planning and Zoning.

TABLE VI-5
REVENUES GENERATED OVER 5, 10 AND 15 YEARS
THROUGH HYPOTHETICAL INCREASES IN THE PROPERTY TAX

Numerical Increase in Rate	Percentage Increase in Rate (percent)	Amount Generated Over 5 Years ($millions)	Amount Generated Over 10 Years ($millions)	Amount Generated Over 15 Years ($millions)
1 cent	0.4	1.5	3.4	5.7
3 cents	1.3	4.6	10.1	17.0
5 cents	2.2	7.6	16.9	28.3
7 cents	3.1	10.7	23.7	39.6
9 cents	4.0	13.7	30.4	50.9
11 cents	4.9	16.7	37.2	62.2

Notes:
Analysis assumed the continuation of the 4.1 percent average annual rate of increase in the value of assessed property in Calvert County recorded between 1987 and 1997. All of the hypothetical numerical increases shown above represent increases of less than five percent in the tax rate over its current level--$2.23 per $100 of assessed value. A one-cent increase in the current property tax rate would raise the tax payable on a property valued at $150,000 by $6 per year. As shown above, an increase of five cents in the tax rate, to $2.28 per $100 of assessed value, would constitute a 2 percent increase and would generate about $7.6 million over five years, $16.9 million over 10 years, and $28.3 million over 15 years. All revenues shown are current 1997 dollars.

Source: Calvert County Department of Planning and Zoning.

Piggyback Tax

In 1993, the General Assembly raised the maximum "piggyback" tax rate to 60 percent. Seven counties in Maryland have elected to raise rates to this level. Doing so in Calvert County would generate an additional $4 million per year, or $60 million over 15 years holding all variables constant. A family of four earning $60,000 per year would pay approximately $240 more in income taxes each year.

Transfer Tax

Transfer taxes are currently in place in 15 Maryland counties, excluding Calvert County. Transfer taxes are collected at time of settlement in the transfer of property. Over 70 percent of revenue collected from a transfer tax in Calvert County would come from residents moving into the County, either buying an existing home or the land on which to build.

Special Taxing Districts

For roads and other infrastructure, special taxing districts can be created to assess the costs of improvements to those owners who will directly benefit. To date in Calvert County, road-based special taxing districts have been applied only in the upgrading of private roads. Special taxing districts may be most applicable within town centers.

Tax Increment Financing (TIF)

With tax increment financing, a bond is sold to finance new capital improvements. The value of the commercial property in the TIF district is enhanced by the capital project and tax revenues rise. Incremental increases in tax revenues are then earmarked for debt service until the debt incurred in providing the capital project is paid. Tax increment financing may be most applicable within town centers.

TOWN CENTER MASTER PLAN ROADS

The 2010 County Transportation Plan identifies a number of key town center master plan roads. These are discussed in Chapter IV. While these projects are not central to meeting major transportation needs through 2010, they are important to town center development. Implementation of these projects should continue through good land development review procedures; at minimum, necessary rights-of-way should be reserved.

Town center road improvements which would bring about immediate benefits include West Ward Road in Dunkirk and Walnut Crossing in Huntingtown. The construction of Maryland Avenue would establish the planned grid layout of streets in St. Leonard. The construction of Coster Road Extended in Lusby would make lands zoned for commercial development accessible.

Other important components of town center development include public water and sanitary sewer facilities, transit stops and stations, sidewalks, private utilities, and of course private sector investment. It is necessary for these components to be planned, designed, financed, and developed as interrelated elements. As shown in the following section, it is recommended that a task force be

created with the objective of coordinating these various aspects of town center development and designing appropriate ways for financing their provision.

IMPLEMENTATION RECOMMENDATIONS

The Calvert County Board of Commissioners establishes priorities on an annual basis to guide work undertaken by the various County governmental departments. As a whole, these priorities help define the agenda for the governance of the County. This section of the chapter lists the major actions that will need to be undertaken by various County departments to implement the 2010 County Transportation Plan. It is recommended that, upon plan adoption, the Board of County Commissioners use this list to assign priorities to the concerned County departments.

It is recommended that each department highlighted below be the lead agency in achieving the actions which accompany it; relying as may be appropriate on the expertise of other departments. Because of the complexity of a number of these actions, focused and well managed inter-departmental working groups may prove successful. Such actions are listed under the heading "Intergovernmental Project Team".

Department of Administration

- Use the Capital Improvement Program (CIP) process to implement the recommended transportation improvements.

Department of Planning and Zoning

- Prepare an official map pursuant to Sections 6.01-6.03 of Article 66B Annotated Code of Maryland. An official map is a legally binding document that specifies the precise location and extent of existing and future streets and roads. Its main purpose is to prevent development within proposed rights-of-way so that the public and private costs of implementation can be minimized.

- Use the list of improvements proposed for the State highway system as the basis for recommending to the Board of County Commissioners transportation priorities for the Maryland Department of Transportation.

- Work with the State Highway Administration to revise its Highway Needs Inventory to reflect the State highway system improvements recommended in the 2010 County Transportation Plan.

- Continue to work with the State Highway Administration to implement the planned widening of MD 2/4 in Prince Frederick and the planned interchange at MD 4 and MD 260.

- Work with the State Highway Administration to acquire land for and construct two additional park-and-ride lots and expand the capacity of existing lots as warranted.

- Work with the State Highway Administration to expedite the completion of the access control concept plan for the MD 4-2/4 corridor.

- Work with the Maryland Mass Transit Administration to incorporate the rapid transit recommendations into transit and land use development in Calvert County, including the use of transit stations and traffic signal preemption.

Department of Public Safety

- Continue to prepare five-year Transit Development Plans and study whether it is feasible to contract the provision of public transit service to the private sector.

- Incorporate the local, express, and rapid transit recommendations into transit system development within the County.

Department of Public Works

- Conduct necessary preliminary engineering to identify definitive alignments for all proposed new and improved County roads, including precise rights-of way widths, and centerline widths and to identify the environmental impacts of the proposed improvements. For projects needed within five years, as shown on Table VI-2, preliminary engineering and design should begin immediately after plan adoption.

- Work with the State Highway Administration to conduct necessary preliminary engineering to identify definitive alignments for all proposed State highway improvements, including precise rights-of way widths and centerline widths and to identify the environmental impacts of the proposed improvements. Less detailed studies may be conducted jointly by the State and County to identify alignments suitable to begin the process of right-of-way acquisition prior to the conduct of more exact engineering.

- Incorporate the transportation system management recommendations into the traffic management and engineering work undertaken on County roads.

- Work with the State Highway Administration to incorporate the transportation system management recommendations into the traffic management and engineering work undertaken on State highways in the County.

Intergovernmental Project Team

- Study and report on innovative ways to finance and share the costs of preliminary engineering for projects that serve State, regional, and County transportation objectives.

- Prepare a strategy for financing implementation of the 2010 County Transportation Plan.
- Prepare a strategy for financing and timing the provision of capital facilities and services in Town Centers.

CONCLUSION

The chapter has described and prioritized the essential elements of the 2010 County Transportation Plan, set forth potential sources of funding for implementation, and the listed the actions necessary to bring about the plan. Implementation can be accomplished through cooperation between the County, State, and private sector.

* * *

APPENDICES

APPENDIX A
SUMMARY OF THE PLAN DESIGN PROCESS

It is in the design phase of the planning process that a plan is prepared to satisfy adopted objectives. Plan design requires a review of significant information, the use of traffic simulation models, and planning and engineering judgement drawn from various sources.

Steps in the Plan Design Process

The plan design process consisted of four major steps. These are summarized below.

- The first step was to identify a no-build, or "do-nothing" plan. This plan consisted of the transportation network as it existed in 1995 plus any improvements that the County or State officially committed to providing before the year 2010.

- The second step was to determine the deficiencies in the no-build plan--that is, to determine how well the no-build plan could be expected to operate under 2010 travel conditions. Determining the potential deficiencies in the no-build plan consisted primarily of identifying all highway facilities expected to operate with congestion during weekday peak periods. This was accomplished by assigning forecast travel demand to the no-build network and analyzing the performance of each highway link in that network.

- Based on the foregoing, in the third step two highway plan scenarios were postulated which could potentially resolve identified deficiencies. As with the above, forecast travel demand was assigned to the alternative highway networks and remaining deficiencies were determined.

- After evaluating each alternative scenario, the scenarios were synthesized into a preliminary highway plan. Non-highway improvements were then combined to complement the highway improvements and to help meet the plan design objectives listed in Chapter III. This preliminary recommended plan accompanied with the results of a detailed evaluation was then advanced for public review and consideration.

Sources of Design Solutions

Transportation improvement proposals were drawn from three sources. The first source of design solutions consisted of plans prepared and adopted by Calvert County including the Calvert County Comprehensive Plan, the Prince Frederick Town Center Master Plan, The Dunkirk Town Center Master Plan, the St. Leonard Town Center Master Plan, the Solomons Town Center Master Plan, and the Calvert County North-East Sector Plan.

This source of design solutions also included plans and studies prepared by other public agencies, including such studies as the Maryland Statewide Commuter Assistance Study, the MD Route 4 Corridor Congestion Management System Program, and the MD Route 301 Corridor Transportation Study prepared by the Maryland Department of Transportation and the Southern Maryland Mass Transportation Alternatives Study prepared by Tri-County Council for Southern Maryland. The solutions included specific proposals for new and improved roadways and non-capital intensive measures to increase the safety and efficiency of the County and regional transportation systems.

The second source of design solutions consisted of the experience and expertise of the staff of the Calvert County Departments of Planning and Zoning and Public Works. Here recommendations for improving unsafe traffic conditions and providing road improvements to promote planned commercial and industrial development were advanced.

The third source of design solutions was developed from analyses of traffic assignments. Future travel demand, derived from the future land use pattern, was assigned to alternative highway networks. Deficiencies were identified and various improvements which could potentially resolve such deficiencies were postulated and tested. A set of improvements which could resolve anticipated congestion was then advanced for consideration.

No-Build Plan

One possible course of action would be to make no significant improvements to the existing transportation system. This course would attempt to meet future travel demand entirely with existing highway and transit facilities and services. This "do-nothing" or no-build alternative not only represents a possible policy alternative for the County, it also becomes the point of departure in the design of one or more "build" transportation plan alternatives. As previously described, the designation of a no-build plan was the first step in the plan design process.

No-Build Highway Network: The no-build plan consists of the transportation facilities in use in 1995. It assumes that minor highway improvements will continually be made through the design year of 2010, including highway resurfacing and minor system preservation activities. Such improvements, however, would not add significant highway capacity or affect area-wide travel patterns. The only capacity improvements which have received official public commitment for construction are (1) Prince Frederick Boulevard, a two lane roadway, between MD 231 and W. Dares Beach Road and (2) an upgrade of Dowell Road for which impact fees are being collected. These improvements are considered part of the no-build plan.

As previously indicated, the second step in the plan design process is an analysis of the performance of the no-build plan. Future 2010 travel demand, derived from the forecasts noted above, was assigned to the no-build transportation network. This analysis indicated the location of future transportation deficiencies. As shown on Map IV-3 of this report, major portions of the arterial network may be expected to experience congestion during weekday peak periods and therefore operate at a Level of Service "E" or "F".

As shown in Table IV-5 of this report, arterial highway mileage expected to operate at a LOS "E" or "F" would increase from zero miles in 1995 to about 38 miles in 2010. Consequently, under the no-build plan in the year 2010, about 44 percent of arterial millage would experience moderate to severe traffic congestion during peak traffic periods.

No-Build Transit: With respect to transit, the no-build plan consists of the services existing in 1995. The no-build plan also includes commuter transit service to a new commuter parking lot on Hallowing Pont Road (MD 231) at the Calvert County Fairgrounds. The performance of the no-build highway system was tested independent of transit.

Highway Scenario Testing

With an understanding of the probable magnitude and distribution of travel throughout the County and the probable impact of that travel on the no-build transportation system, alternative scenarios were designed and tested to determine the ability of different approaches to resolve traffic congestion expected in 2010. The results of the scenario testing are provided in a technical memorandum, prepared by Tri-County Council for Southern Maryland and are available upon your request from the department of Planning & Zoning.

Scenario I: Scenario I would seek to accommodate heavy north-south commuter travel by adding travel lanes to congested arterial highways. MD 4-2/4 would be widened from four to six lanes from Prince Frederick through Dunkirk MD 231, MD 2, and MD 260 would be widened to four lanes. In total, about 59 lane-miles would be added to the arterial system in the County. This would bring total arterial lane mileage to about 279 lane-miles and represent an increase of about 27 percent over that available in 1995. The grade separation of the intersection of MD 260 and MD 4 would also be provided.

This scenario would also include a number of improvements to the collector road system in the County: a loop road around Prince Frederick, the extension of MD 765 from Dowell Road to Spinnaker Way, and a new collector road connecting MD 765 to Rousby Hall Road at its intersection with Olivet Road.

Scenario II: Scenario II would seek to resolve congestion problems by upgrading collector roads, particularly those that parallel congested arterial highways, instead of adding lanes to those arterial highways. Such upgrades would provide design speeds of 40 mph and include widening of travel lanes, construction of shoulders, and increasing sight and stopping distances.

Scenario II would also widen MD 2/4 within Prince Frederick to six lanes. In total, nearly six lane-miles would be added to the arterial system in the County. This would bring total arterial lane mileage to about 226 lane-miles and represent an increase of almost 3 percent over that available in 1995. The grade separation of the intersection of MD 260 and MD 4 would also be provided.

As indicated in Chapter II, travel demand in the County is overwhelmingly oriented north to south. While there are a number of collector roads that provide north-south service, none would provide service as direct and fast as MD 2/4, even under heavily congested conditions. Consequently, few improvements to collector roads were shown to improve traffic conditions on congested arterial highways; the upgrades of German Chapel Road and Stinnett-Emmanuel Church-Wilson Roads being notable exceptions.

Preliminary Plan

Based on the results of the foregoing highway scenario testing, improvement showing promise to resolve severe traffic congestion and meet adopted transportation development objects (see Chapter III) were synthesized into a preliminary highway plan. This followed an approach in which improvements were tested to determine their ability to resolve anticipated congestion. Non-highway improvements were then combined to complement the highway improvements, not being tested as highway improvements were, and the resulting preliminary recommended plan was advanced for public review and consideration. A performance summary of the highway system under the preliminary recommended plan is provided in Table B-1.

***

TABLE B-1
PERFORMANCE SUMMARY : 2010 PRELIMINARY RECOMMENDED PLAN

ROAD NAME	SEGMENT	VOLUME	LANES	V/C	LOS
MD 4	County Line	60000	4	1.58	F
MD 4	S. MD 260	44800	4	1.18	F
MD 4	N. Brickhouse	44800	4	1.18	F
MD 4	N. Ward Rd.	44800	4	1.18	F
MD 4	N. Fowlers Rd.	32800	4	0.86	E
MD 4	N. MD 2	32800	4	0.86	E
MD 2/4	S. MD 2	37900	4	0.99	E
MD 2/4	N. Pond Woods	37800	4	0.99	E
MD 2/4	N. Huntingtown	37500	4	0.98	E
MD 2/4	N. Cox Rd.	37500	4	0.98	E
MD 2/4	S. Cox Rd.	37800	4	0.99	E
MD 2/4	N. MD 263	37800	4	0.99	E
MD 2/4	S. MD 263	45500	6	0.80	D
MD 2/4	N. Loop	45500	6	0.80	D
MD 2/4	N. Stoakley	40800	6	0.71	D
MD 2/4	S. Stoakley	40900	6	0.80	D
MD 2/4	N. MD 402	33700	6	0.66	D
MD 2/4	S. MD 402	34600	6	0.67	D
MD 2/4	N. MD 231	34600	6	0.67	D
MD 2/4	S. MD 231	32700	6	0.64	C
MD 2/4	N. MD 506	38400	6	0.75	D
MD 2/4	S. MD 506	39300	4	1.03	E
MD 2/4	W. MD 264	42000	4	1.10	F
MD 2/4	MD 264 - Ball	34600	4	0.83	E-D
MD 2/4	Ball - MD 765	34600	4	0.83	E-D
MD 2/4	MD765 - MD497	34600	4	0.83	E-D
MD 2/4	MD497 - MD760	34600	4	0.83	E-D
MD 2/4	MD760 - Dowell	34600	4	0.83	E-D
MD 2/4	S. Dowell Rd.	39300	4	0.94	E
MD 2	N. MD 260	10700	2	0.56	D
	S. MD 260	13300	2	0.70	E
	N. Mt. Harmony	11000	2	0.58	D
	N. Dalrymple	13500	2	0.71	E
	S. Dalrymple	11800	2	0.62	D
MD 260	MD 4	18900	2	0.99	E
	MD 2 & 778	14000	2	0.74	E
	Mt. Harm/Paris	14500	2	0.76	E
	W. Boyds Turn	14600	4	0.43	C
	MD 261	16000	4	0.47	C
MD 261	5th Street	5500	2	0.29	C
	N. MD 260	13800	2	0.72	E
	S. MD 260	14400	2	0.76	E
	Bayside - C.P.	12000	2	0.63	D
	E. Pond Woods	8400	2	0.44	D
	W. Pond Woods	9600	2	0.50	D
MD 231	W. MD 2/4	25500	4	0.74	D-E-E
	W. Loop	21100	4	0.62	C-D-D
	N. German Chpl.	19000	4	0.55	C-C-D
	N. MD 508	23600	2	1.24	F
	W. MD 508	21200	2	1.11	F
	Patuxent River	20400	2	1.07	F
MD 263	MD 2/4	11000	2	0.58	C
	W. MD 261	6000	2	0.32	C
MD 402	MD 2/4 - Loop	9800	2	0.47	D
	Wilson - Loop	13600	2	0.65	D-E
	MD 768	6500	2	0.34	B
MD 264	MD 2/4 - Ball	9000	2	0.47	D
	W. Ball Rd.	7200	2	0.38	C
MD 765 Solm.	MD2/4 - 497	13000	2	0.62	D
	MD497 - 760	6300	2	0.30	C
	MD760 - Dowell	14000	2	0.67	E-D
	Dowell - MD 2	13000	2	0.62	D
MD 760	MD 2/4 - 765	10000	2	0.48	D
	MD765 - Olivet	13000	2	0.62	D
	S. Olivet	10100	2	0.48	D

- - -

APPENDIX B
A REVIEW OF TRAVEL DEMAND MANAGEMENT MEASURES

Demand Management		Description	Potential Impact On Vehicle Trips and Vehicle-Miles Traveled	Actions Required to Implement
Category	Specific Measure			
Pricing	Cash-out of employer-paid parking	Require employers offering free/subsidized parking to give cash value of parking to those employees, and to charge those employers the market value of parking. Such a program would apply initially to leased parking and new employer-owned parking. (Such a program could apply to schools and universities)	Potential reduction in vehicle trips through increased use of transit and ridesharing on theory that some employees will "pocket" cash payment and use other mode of travel	Employer cooperation, Federal legislation, and State legislation
	Pay-as-you-drive auto insurance	Offset of automobile insurance premiums by per-gallon insurance fee collected at the pump. Recognize that portion of risk is related to vehicle use	Potential reduction in vehicle trips and vehicle-miles of travel	State legislation
	Public sector parking pricing	Local and county governments can alter the price of off-street parking to discourage long-term commuter-related parking and encourage use of other modes	Limited potential reduction in single-occupancy work-related vehicle trips	Local and county policies
	Parking excise tax	A State or local parking excise tax would be imposed on all parking spaces. The tax could be increased incrementally and revenues could be used to defray the cost of transportation services	Potential reduction in vehicle trips and vehicle-miles of travel if fees encourage a reduction in non-work vehicle trips	State legislation, county and local policies
	Parking pricing for non-work-related destinations	A charge would be levied through use of Intelligent Transportation System (ITS)-related electronic "smart cards". Low-cost sensors which interact with in-vehicle smart cards would be installed on the public right-of-way which abuts driveways to shopping and other activity centers to enable the imposition of modest trip destination charges. Charges could vary depending on location and time of day	Potential reduction in vehicle miles of travel and non-work vehicle trips, particularly if the policy is implemented uniformly on a region wide basis	State, county and local policies
	Road pricing	Users of designated highway segments charged a fee; fees may vary according to time of day and congestion levels	Potential reduction in vehicle trips and vehicle-miles of travel if alterative routes are not attractive and if more distant land use destinations are not available	State legislation
	Area pricing	Personal vehicles entering designated areas would be required to purchase a permit. Permit fees may be varied by time of day, ambient air quality conditions, and traffic congestion levels	Potential for significant reductions in vehicle trips to and within designated areas	State legislation

Demand Management		Description	Potential Impact On Vehicle Trips and Vehicle-Miles Traveled	Actions Required to Implement
Category	Specific Measure			
Pricing (continued)	Graduated registration fees	A graduated registration fee related to annual miles traveled and vehicle emission production	Potential reduction in trip-making and vehicle-miles of travel	State legislation
	Motor fuel tax	Per gallon tax	Potential reduction in trip-making and vehicle-miles of travel	Federal or State legislation
	Employee Commuter Option (ECO) Pass systems	The ECO Pass is a program allowing employers and institutions to offer low-cost annual bus passes as a benefit to their employees and students. The pass would also include a guaranteed ride home in the event an employee works late or encounters a personal emergency. The cost of the program varies by the employer's location, number or employees, and level of transit service	Potential reduction in trip-making and vehicle-miles of travel as the cost of transit is reduced	Federal or State legislation
Parking Control Measures	Parking management; control of parking supply	The use of zoning regulations to limit the number of parking spaces provided for new development; the number of spaces provided may be varied depending on the location of the development and alternative transportation options provided to the property. (Parking supply restrictions can also be applied to schools and universities)	Potential reduction in vehicle trips	County or own
	Preferential parking for carpools and vanpools	Reservation of most convenient parking spaces for carpool and vanpool vehicles	Potential reduction in vehicle trips by encouraging ridesharing	Employer cooperation
	Major activity center fringe park-and-ride parking	Parking facilities constructed in locations remote to major activity centers to promote use of other modes	Potential reduction in vehicle miles of travel	State, county, and town policies
Land Use Measures	Major activity center and neighborhood site planning	Use of zoning, official mapping, subdivision control, site plan review, and permitting to achieve appropriate urban design that reduces dependence on automobile; provide good circulation systems for bicyclists and pedestrians and associated amenities, a mix of land use activities, higher residential densities, public transit access, and traffic calming	Potential reduction in vehicle trips and vehicle-miles of travel	Revision of land use regulations, State legislation, changes in funding to provide financial incentives
	Growth management	The use of land use regulation to direct the extent, timing, rate, and location of new urban development in accord with adopted land use plans	Potential reduction in vehicle trips and vehicle-miles of travel	Adoption of growth management policy, revision of land use regulations, State regulation or law, changes in funding to provide financial incentives

Demand Management		Description	Potential Impact On Vehicle trips and Vehicle-Miles Traveled	Actions Required to Implement
Category	Specific Measure			
Work Schedule Changes	Telecommuting	Employees work at remote locations and avoid trip to central office could be at home, at a satellite work center, or a neighborhood work center	Potential reduction in vehicle trips and vehicle-miles of travel	Employer cooperation
	Flextime and compressed work week	Flextime allows employees to set work starting and ending times to avoid peak-period congestion and to coordinate with transit scheduling. A compressed work week allows employees to work fewer days per week	Potential reduction in vehicle trips made during peak hours; may increase off-peak vehicle trips and vehicle-miles of travel	Employer cooperation
Other	Trip-reduction ordinances	Public land use regulations promoting employer efforts to reduce the number of single occupancy vehicle trips made by employees; ordinances may permit increased densities in return for measures to reduce vehicle trip making	Potential reduction in trip-making and vehicle-miles of travel	County or town ordinance
	Area-wide rideshare	Public coordination of private efforts to encourage ridesharing	Potential reduction in vehicle trips and vehicle-miles of travel	State, county and town governments
	Transportation management associations	Promotion of geographically related transportation demand management measures; associations may be policy and/or service oriented	Potential reduction in vehicle trips and vehicle-mile of travel	Employer cooperation
	Education/marketing	Measures to heighten public interest and knowledge of transportation and air quality problems to promote responsible trip making and reduce single occupancy travel. Possible measures include, but are not limited to, expanded driver education, increased driver license educational requirements, and regular public service announcements	Potential reduction in vehicle trips and vehicle-miles of travel	State, county and town governments
	ITS advanced transit information systems	ITS to provide transit and paratransit information regarding departures, arrivals and specialized services designed to help system users better structure their time and reduce waiting time	Limited potential reduction in vehicle trips and vehicle-miles of travel	State and county policies

Source: Southeastern Wisconsin Regional Planning Commission and Calvert County Department of Planning and Zoning.

APPENDIX C

STANDARD ROAD AND STREET DETAILS
CALVERT COUNTY ROAD ORDINANCE

- Table of Minimum Standards for Roadways
- Secondary Collector: Type C-1
- Primary Collector: Type C-2
- Commercial / Industrial Roadway: Type CI-1

PLATE	ROADWAY TYPE	PAVEMENT WIDTH	DESIGN SPEED M.P.H.	SIGHT DISTANCE		HORIZONTAL MIN. RADIUS (2)	VERTICAL MAX. GRADES	NUMBER OF LOTS
				I	SS			
RD-1	R-1	12'-18'	N/A	CERTIFY EXISTING		N/A	N/A	N/A
RD-2	R-2	18' 20'	20 mph 30 mph	225' 380'	125' 200'	127' 300'	10.0%	5 LOTS (4)
RD-3	R-3	20' OPEN 23' C+G	30 mph	380'	200'	300'	10.0%	(5)
RD-4	R-4	20' OPEN 23' C+G	30 mph	380'	200'	300'	10.0%	1-50 LOTS
RD-5	R-5	22' OPEN 24' OPEN 27' C+G	30 mph	380'	200'	300'	10.0%	51-100 101-150 LOTS
RD-6	C-1	24' OPEN 30' C+G	35 mph	480'	250'	450'	8.0%	>150 LOTS
RD-7	C-2	24' OPEN 36' C+G	40 mph	580'	325' (3)	573'	8.0%	>2000 ADT
RD-8	CI-1	28' OPEN 44' C+G	35 mph	480'	250'	450'	8.0%	N/A
RD-14A		18' OPEN	N/A	380'	200'	N/A	10.0%	3-5

NOTES:
(1) TYPE R-1 FOR PRIVATE ROADWAY AT SPEEDS LESS THAN 30 MPH (FAMILY CONVEYANCE).
(2) SEE SECTION 5.4.1 FOR EXCEPTIONS TO THE STATED MINIMUM RADIUS.
(3) THE DESIGN ENGINEER SHALL ATTEMPT TO PROVIDE PASSING SIGHT DISTANCE OF 1800' AT LEAST ONCE IN EVERY MILE OF LENGTH FOR PRIMARY COUNTY COLLECTOR ROADWAYS THROUGH UNDEVELOPED AREAS.
(4) EXISTING RECORDED LOTS ONLY!
(5) SEE 6.1 FOR ROADS SERVING EXISTING RECORDED LOTS AND/OR FEWER THAN 10 LOTS.

REVISED	
DATE	BY

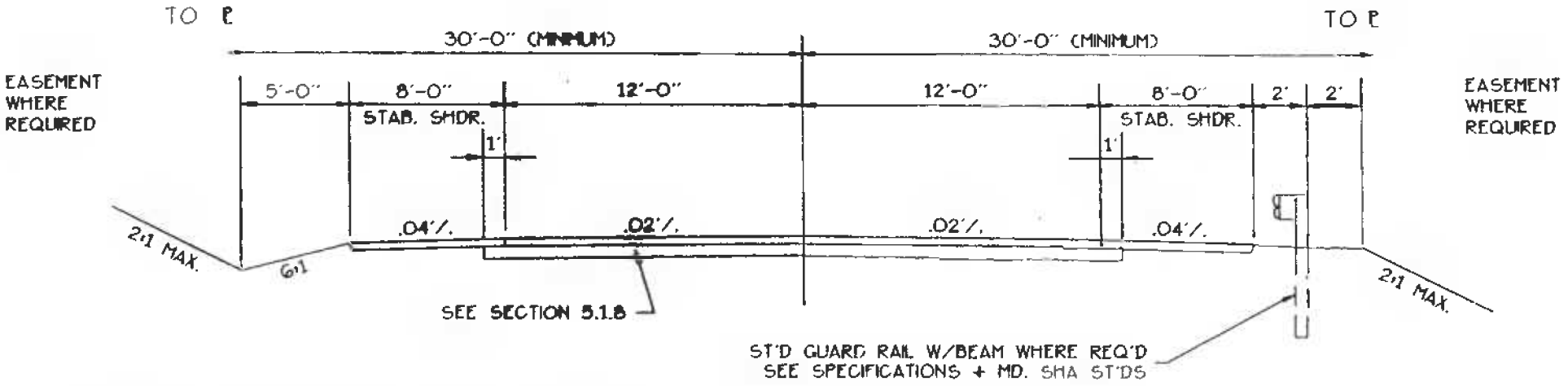
CALVERT COUNTY MARYLAND

APPROVED
DIRECTOR
DEPARTMENT OF PUBLIC WORKS

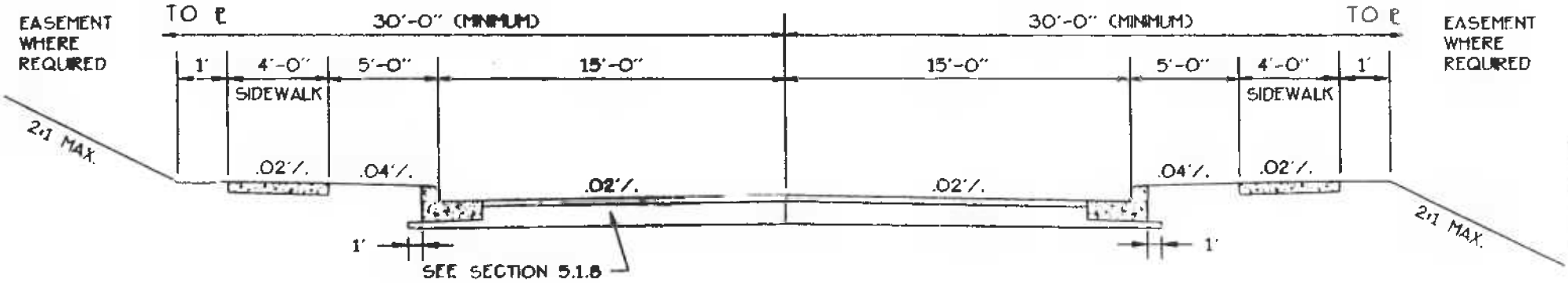
STANDARD ROAD + STREET DETAILS

TABLE OF MINIMUM STANDARDS FOR ROADWAYS

STANDARD NUMBER
RD-9



TYPE C-1 ROADWAY W/O CURB + GUTTER



TYPE C-1 ROADWAY WITH ST'D CURB + GUTTER

NOTE: 1. SHOULDERS TO BE 6" BANK RUN GRAVEL WITH DOUBLE SURFACE TREATMENT.
2. SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO PROPERTY LINE UNLESS OTHERWISE DIRECTED.

REVISED	
DATE	BY

CALVERT COUNTY MARYLAND

APPROVED

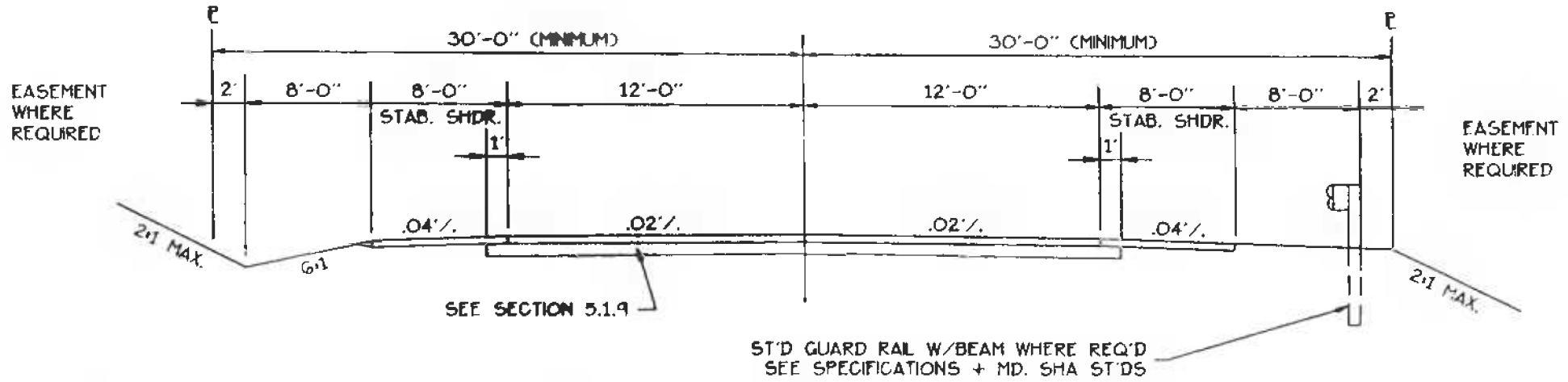
_____ DIRECTOR
DEPARTMENT OF PUBLIC WORKS

STANDARD ROAD + STREET DETAILS

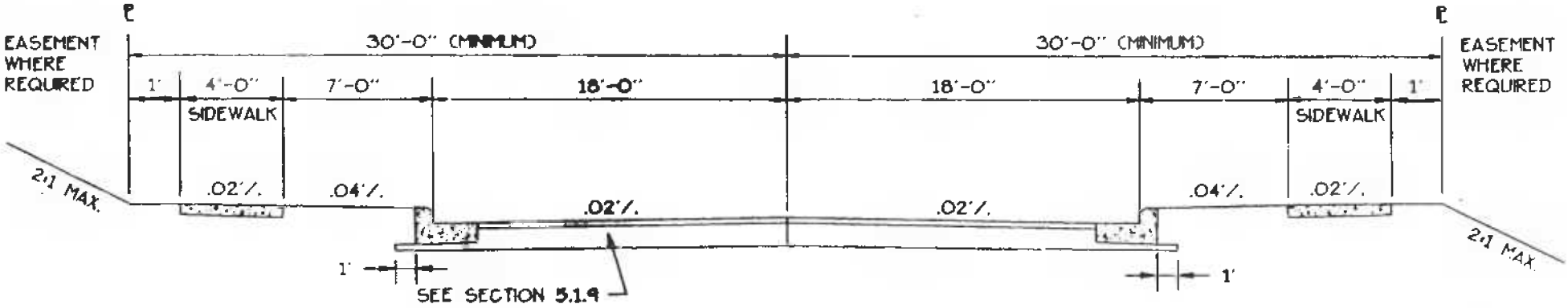
SECONDARY COUNTY COLLECTOR ROADWAY TYPE C-1

STANDARD NUMBER

RD-6



TYPE C-2 ROADWAY W/O CURB + GUTTER



TYPE C-2 ROADWAY WITH ST'D CURB + GUTTER

NOTE: 1. SHOULDERS TO BE 6" BANK RUN GRAVEL WITH DOUBLE SURFACE TREATMENT.
2. SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO PROPERTY LINE UNLESS OTHERWISE DIRECTED.

REVISED	
DATE	BY

CALVERT COUNTY MARYLAND

APPROVED

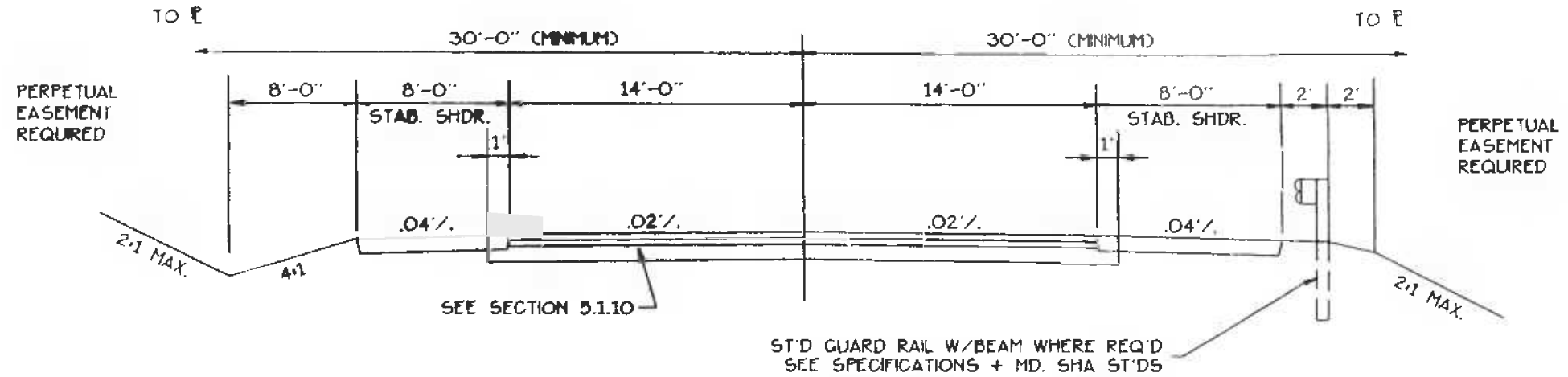
_____ DIRECTOR
DEPARTMENT OF PUBLIC WORKS

STANDARD ROAD + STREET DETAILS

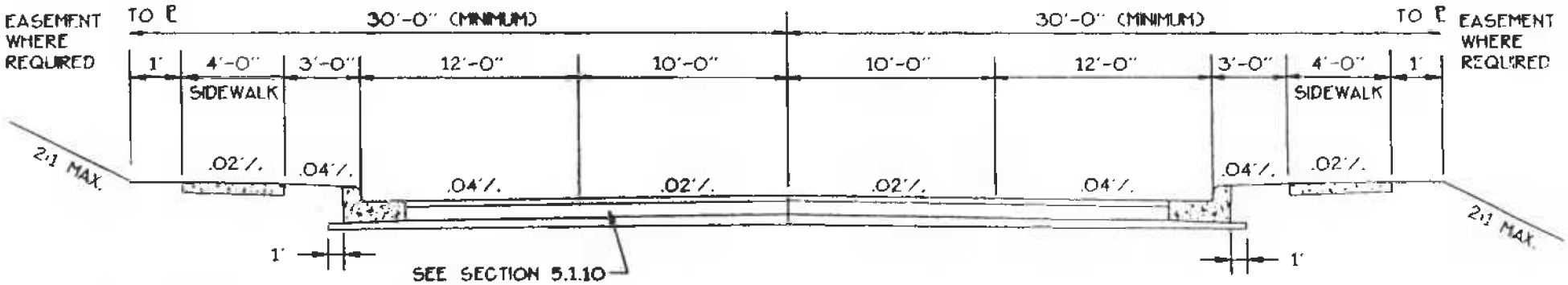
PRIMARY COUNTY COLLECTOR ROADWAY TYPE C-2

STANDARD NUMBER

RD-7



COMMERCIAL + INDUSTRIAL ROADWAY
W/O CURB + GUTTER



COMMERCIAL + INDUSTRIAL ROADWAY
WITH ST'D CURB + GUTTER

NOTE: SLOPES TO BE FERTILIZED. LIMED. AND SEEDED OR SODDED TO PROPERTY LINE UNLESS OTHERWISE DIRECTED.

REVISED	
DATE	BY

CALVERT COUNTY MARYLAND

APPROVED

DIRECTOR

DEPARTMENT OF PUBLIC WORKS

STANDARD ROAD + STREET DETAILS

(COMMERCIAL + INDUSTRIAL) ROADWAY TYPE CI-1

STANDARD NUMBER

RD-8.

APPENDIX D

PRINCE FREDERICK LOOP ROAD

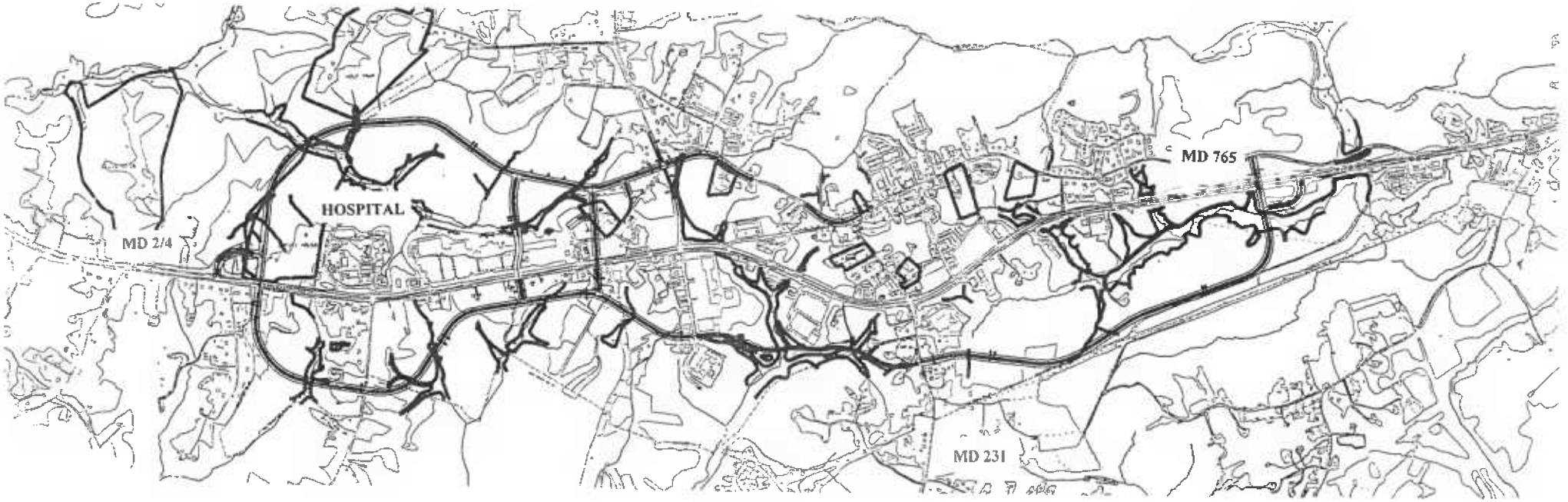
The preferred alignment of the loop road--also known as the Prince Frederick Collector Road--is provided in a detailed series of figures drawn at a scale of 1" = 200'. These figures are contained within a 1996 Environmental Assessment prepared for the U.S. Department of Transportation, Federal Highway Administration and the Maryland Department of Transportation, State Highway Administration (Report Number: FHWA-MD-EA-96-01-D). The alignment shown minimizes wetland disturbances. The figures contained in the Environmental Assessment are to be used to guide the location and design of the loop road and associated cross-street improvements. Copies can be made available upon request of the Calvert County Department of Planning and Zoning or by contacting the State Highway Administration, Office of Planning and Preliminary Engineering at 707 N. Calvert Street, Baltimore, Maryland 21202.

Map D-1 shows the alignment of the Prince Frederick Loop Road.

MAP D-1

PRINCE FREDERICK LOOP ROAD

2010 COUNTY TRANSPORTATION PLAN



RESOLUTION OF THE CALVERT COUNTY PLANNING COMMISSION APPROVING THE 2010 COUNTY TRANSPORTATION PLAN

WHEREAS, it is the duty of the Calvert County Planning Commission, pursuant to Article 66B of the Annotated Code of Maryland, to make and approve a plan to guide the physical development of the County; and

WHEREAS, a transportation plan would serve to refine and detail the adopted County Comprehensive Plan for Calvert County; and

WHEREAS, a transportation plan for the County has been prepared which has included:

1. The collection, compilation, processing, and analyses of relevant demographic, economic, land use, transportation, and travel data pertaining to the County;

2. The forecast of growth and change;

3. The formulation of transportation development objectives, principles, and standards;

4. The design of recommendations to guide the future development of transportation facilities and services throughout the County; and

5. The design of recommendations to guide implementation of the plan; and

WHEREAS, the Calvert County Planning Commission has considered the plan and its supporting findings and recommendations and held of public hearing on the same; and

WHEREAS, the plan and its supporting findings and recommendations are set forth in the form of text, maps, charts, and figures in a report entitled, 2010 County Transportation Plan for Calvert County, Maryland; and

WHEREAS, the Planning Commission considers the plan to be a necessary guide to the future development of transportation facilities and services within the County;

NOW, THEREFORE, BE IT HEREBY RESOLVED, that the Calvert County Planning Commission hereby approves the 2010 County Transportation Plan and recommends the plan to the Calvert County Board of Commissioners for adoption, as a guide to the future development of transportation facilities and services within Calvert County;

BE IT FURTHER RESOLVED, that the Chairman of the Planning Commission transmit a certified copy of this resolution to the Calvert County Board of Commissioners.

John Rubard
Planning Commission Chairman

Attestation:

Frank Tatum
Planning Commission Secretary

11/05/97