2006 Mid-Cycle UPDATE

North Carolina Statewide Multimodal Transportation Plan

Acknowledgements

NCDOT gratefully acknowledges the commitment, cooperation, and professional contributions of the following:

North Carolina
Department of Transportation
Secretary **Lyndo Tippett**

Alpesh G. Patel, ***Project Manager***

Board of Transportation:

- Stan M. White
- Marvin K. Blount, III*
- Cameron (Cam) W. McRae*
- Lanny T. Wilson
- Louis W. Sewell, Jr.
- Thomas A. Betts, Jr.
- Kenneth Spaulding
- Nina S. Szlosberg
- D. M. Campbell, Jr.
- J. Douglas Galyon
- G. R. Kindley
- Nancy W. Dunn**
- Andrew M. Perkins, Jr.*
- Marion A. Cowell, Jr.*
- Larry S. Helms
- Arnold Lakey
- Robert (Bob) A. Collier, Jr.*
- Alan Thornburg
- Conrad Burrell

Statewide Transportation Plan Senior Management Team:

- Susan Coward
- Steve Varnedoe
- Calvin Leggett
- John Sullivan
- Mike Bruff
- Debbie Barbour
- Len Sanderson
- Roberto Canales
- Greg Thorpe
- Mark Foster

NCDOT Staff Contributions from:

- Division of Highways

Divisions of:

- Public Transportation
- Rail
- Ferry
- Bicycle and Pedestrian Transportation
- Aviation

Additional Contributions from:

- NC State Ports Authority
- Federal Highway Administration (NC Division)

Consultant:

- Wilbur Smith Associates

** Statewide Transportation Plan Committee ** Chair, Statewide Transportation Plan Committee*

Table of Contents

A Message from the Secretary on the Statewide Transportation Plan

The North Carolina Department of Transportation (NCDOT) affects the lives of citizens every day. The Department serves as a caretaker of a sizeable transportation system, including 79,000 miles of roadway, 74 public airports, public transportation in all 100 counties, 2 major passenger train routes, statewide bicycle routes and ferry service along 7 coastal routes. Our highway and ferry systems are the nation's second largest and the Bicycle and Pedestrian Division is the oldest of its kind in the country.

In support of Governor Easley's vision for One North Carolina, NCDOT strives to bring safe, effective and efficient transportation within reach of all its citizens. Continuing to serve our citizens while simultaneously preparing to meet future needs is a challenging task. This challenge underscores the importance of the state's Long-Range Statewide Multimodal Transportation Plan, simply referred to as the Statewide Transportation Plan, which was adopted by the N.C. Board of Transportation in September 2004, and serves as a virtual blueprint to help us plan the future. This report serves as both an implementation item and data update of that plan. The results clearly show that over the past few years our transportation needs continue to vastly outpace our funding.

A quality transportation system is crucial to North Carolina's economic prosperity and the safe and efficient movement of our citizens. It will take partnership, commitment and determination to work toward opportunities that bridge the growing funding gap and help North Carolina address its future transportation needs. Together we can build a world class transportation system that keeps pace with the demands of the 21st century and enhances the quality of life for all of our citizens for many years to come.

Lyndo Tippett

Secretary of Transportation

Executive Summary

The North Carolina Department of Transportation (NCDOT) is committed to supporting a safe and integrated transportation system that enhances the well being of the state. Over a four-year process from 2000-2004, NCDOT took a "first step" in better understanding the challenges, needs, and resources required to provide such a transportation system for a growing and economically diverse state. Starting in 2001, NCDOT first identified a 25-year infrastructure estimate (to the year 2025, in 2001 dollars) of both transportation needs ($84 billion) and available revenue ($55 billion) that was the basis for a multi-year public policy conversation with NC's citizens and stakeholders on establishing transportation priorities. This effort culminated in the adoption and recommendation of a new, long-term investment policy highlighted in the Statewide Transportation Plan in September 2004.

This 2006 Statewide Transportation Plan (STP) Mid-Cycle Update represents both an implementation item of and data refresh to the 2004 STP. The 25-year estimate covered by this update is to the year 2029, with both transportation needs and revenue estimates in 2005 dollars, thereby representing a 4-year analysis change to the previous STP. The updated estimates in this report are a reflection of economic changes, increasing travel demand, and rising operational costs, all of which affect NCDOT's ability to address current and future needs.

Since 2003, North Carolina has experienced unprecedented construction cost increases. Construction prices for concrete, steel and asphalt have increased by 45 percent, making it more costly for NCDOT to complete needed projects. In addition, construction costs are expected to continue to rise in the near future.

The right investment mix to address preservation, maintenance, modernization and expansion of the transportation system is required if NCDOT wants to build upon the efforts of the 2004 STP recommendations and address the updated information in this 2006 STP Mid-Cycle Update. Finding ways to maximize operational efficiency, leveraging the use of technology, and seeking to be strategic with how and where transportation dollars are invested creates safety, congestion relief and mobility benefits (across all modes) paramount to managing North Carolina's sizeable transportation system. The purchasing power of revenue from user fees such as the motor fuels tax is declining, which has major implications on the NCDOT transportation capital program. In many ways, the transportation system is the lifeblood of the North Carolina economy and an important component of quality of life for all residents.

System Needs

Over the past year, NCDOT staff have worked to update the multimodal transportation needs and determine future transportation revenues to 2030. Overall, the multimodal transportation investment needs identified in the 2006 STP Mid-Cycle Update total $124 billion compared to $84 billion from the 2004 STP. This is an increase of $40 billion, or 48 percent. The 2006 STP Mid-Cycle Update also identified the following:

- Highway needs (roadways, bridges and intelligent transportation systems (ITS) needs have increased by 43 percent;
- Public transportation needs have increased by 68 percent;
- Passenger and freight rail needs have increased by 20 percent;
- Ferry needs have increased by 28 percent;
- Bicycle and pedestrian needs have increased by 47 percent; and
- Aviation needs have increased by 69 percent.

The multimodal transportation needs are categorized by improvement type (expansion, modernization, preservation and maintenance) and by the North Carolina Multimodal Investment Network (NCMIN). The NCMIN organizes all transportation facilities by interest, travel function, role, and use into three tiers — Statewide, Regional, and Subregional. Based on these categories:

- 42 percent are on the Statewide Tier;
- 15 percent are on the Regional Tier;
- 43 percent are on the Subregional Tier;
- 38 percent are expansion needs;
- 23 percent are modernization needs; and
- 39 percent are preservation and maintenance needs.

Future Revenues

The amount of funding available to NCDOT for transportation improvements over the next 25 years is challenging to accurately predict. However, based on conservative assumptions concerning revenue growth and adjusting for inflation, NCDOT estimates that a total of $59 billion (in 2005 dollars) will be available for transportation investment over the next 25 years. This figure does not include any local revenue; only state and federal sources were identified.

Funding Gap

Comparing the needs against the available funding revenues identifies a funding gap of $65 billion.

Due to the many competing priorities for government funds and slow growing dedicated revenue sources compared to rapidly rising construction costs, it is not surprising that funding for transportation improvements has not kept pace with the growing multimodal transportation demands nor the growing needs of an aging system. As with all state DOTs, NCDOT is faced with a growing challenge of meeting the high demands and expectations with limited dollars and NCDOT cannot solve these funding challenges alone.

To counteract the widening gap between multimodal transportation needs and anticipated revenues, NCDOT must continue to develop key policies and initiatives. To date, the Governor and General Assembly have implemented several policies and initiatives that will help bridge the gap between multimodal transportation needs and revenues. These include the creation of the North Carolina Turnpike Authority, which will provide additional revenue for capital and at the same time, expedite the completion date for various projects; the approval to use GARVEE bonds and the NC Moving Ahead program; and repayment of approximately $200 million included in the FY 2007 State Budget. This repayment is a partial accounting for the multi-year transfer of transportation dollars from the state's Highway Trust Fund to the state's General Fund (originally done to help stabilize the fund's solvency). This is a positive, commendable policy step toward keeping transportation monies for transportation project needs and may lead to future such decisions. Additionally, recent legislation to increase statewide motor vehicle licenses and fees will generate almost $160 million more per year to meet transportation needs in North Carolina.

These policies and initiatives will certainly assist in bridging the funding gap between needs and revenues. However, since the motor fuels tax revenue stream is eroding, more policies and initiatives must be identified to ensure the multimodal transportation system is preserved, maintained, modernized, and expanded to meet the needs of a fast growing state.

Implications

If the growing gap between multimodal transportation needs and available revenue is not addressed, North Carolina may experience consequences, such as a:

- Reduced ability to recruit and maintain industries;
- Decline in access to higher paying jobs;
- Decline in employment;
- Decline in state and local tax revenues;
- Decline in tourism;
- Decline in safety; and an
- Increase in traffic congestion.

The consequences of not addressing the growing gap between transportation needs and revenues may:

- Increase the cost of production;
- Increase the cost of distribution;
- Increase personal cost of travel;
- Decrease home values;
- Weaken state, regional and local economies;
- Weaken the tourism industry; and
- Decrease the mobility of people and goods.

Transportation System Investment Needs

To identify the true transportation needs throughout the state, the 2006 STP Mid-Cycle Update examined all transportation modes. "Mode" refers to the facilities associated with transportation systems, such as highway, public transportation, bicycle and pedestrian facilities, etc. The 2006 STP Mid-Cycle Update identified investment needs on the multimodal transportation system to the year 2030. During the development of the 2004 STP, the North Carolina Multimodal Investment Network (NCMIN) was developed to classify the type of travel served by a combination of modes. The three NCMIN Tiers are Statewide, Regional and Subregional. Transportation investment needs for each mode are categorized into one of these three tiers.

Determining Needs

In order to identify needs, inventory data using the North Carolina Highway Performance Monitoring System (HPMS) database were compared to "minimum tolerable conditions" (MTC) and "design standards" considered acceptable by NCDOT. MTC's are based on judgment regarding levels at which congestion, safety risk, physical, and structural deterioration are expected to adversely affect system performance and the public interest. Facilities falling below the specified "minimum tolerable conditions" in any given period are identified as a need.

Highway and bridge needs were identified by using industry standard time-based modeling programs. NCDOT data (2005) were inputted into these programs to ensure an accurate representation of the needs were identified.

Non-highway mode needs were estimated using a combination of NCDOT data, reports, and input from NCDOT Division staff. These needs include capital and operating costs associated with continuing and improving the particular non-highway mode, as well as the costs associated with providing new services and/or facilities.

Based on this process, a total of $124 billion (2005 dollars) of multimodal transportation needs were identified during the 2006 STP Mid-Cycle Update. Analyzing needs by NCMIN Tiers reveals that there are $52 billion of needs on the Statewide Tier, $19 billion of needs on the Regional Tier and $53 billion on the Subregional Tier.

Improvement Types

The transportation investment needs are categorized into four improvement types:

Expansion – Activities focused on adding capacity or new facilities/services, including:

- Adding new highway lanes;
- Reconstruction with more lanes;
- New highways;
- New transit vehicles and related equipment;
- Facilities for new regional rail or bus rapid transit; and
- New passenger rail sets (and signals, track, yard facilities, stations, new ferry service including boats and terminals).

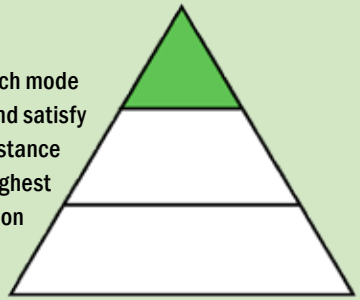
Modernization – Improvements related to upgrading the safety, functionality, and overall operational efficiency of a facility or service without adding major physical capacity:

- Minor widening of narrow lanes;
- Bridge widening, rehabilitation, and replacement;
- Access management / traffic flow /safety improvements;
- Railroad/highway grade crossings, track and signal upgrades; and
- Most ITS improvements.

Preservation – Activities that protect the infrastructure and extend service life such as:

North Carolina Multimodal Investment Network

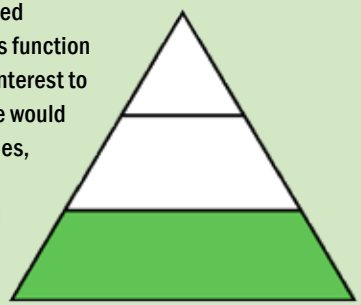
NCMIN is a tool to organize, manage, and analyze the facilities in our transportation system as one broad network. Some facilities serve statewide movements, others are more regional in terms of the service they provide, while still others are more localized or subregional. Each type of facility is important, and the NCMIN acknowledges the different functions of each type of facility.



The Statewide Tier includes facilities in each mode that provide the most statewide benefits and satisfy statewide criteria: those that serve long-distance trips, connect regional centers, have the highest usage, and provide mostly a mobility function (as opposed to a land access function).

The Regional Tier connects major population centers and serves a mixture of functions. Some of the Regional Tier facilities can be viewed as serving statewide transportation criteria, but they usually provide an unmistakable localized function. They are equally important to a particular region of the state and also provide some land access.

The Subregional Tier facilities serve localized movements. They provide more of an access function than mobility, and are typically of a higher interest to cities and counties than the state. The state would have responsibility for many of these facilities, but the state's interest would be small. Therefore, state investment probably would focus on maintenance/preservation as opposed to expansion.



- Roadway resurfacing;
- Pavement markings;
- Signal maintenance;
- Guardrail/joint replacement;
- Bridge painting;
- Bridge expansion joint replacement;
- Minor bridge deck repairs;
- Transit bus replacement;
- Maintenance facility repairs/upgrades;
- Intelligent Transportation Systems (ITS) components;
- Ferry boats replacements; and
- Terminal repairs.

Maintenance – Regular, routine roadway and bridge treatments that sustain the highway's condition (mowing, lighting, shoulder/guardrail repair, patching, etc.). Roadway maintenance needs for each NCMIN Tier were provided by NCDOT staff. Maintenance applies only to the highway mode because similar "sustaining" activities for non-highway modes are classified as preservation improvements.

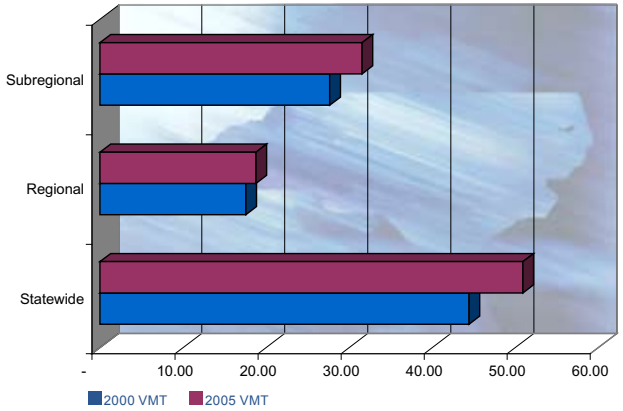
Of the $124 billion in multimodal transportation investment needs, $47 billion (38%) are identified as expansion needs; $29 billion (23%) are modernization needs; and $48 billion (39%) are maintenance and preservation needs.

Multimodal Transportation Needs Comparison between 2004 STP and the 2006 STP Mid-Cycle Update

North Carolina is rapidly growing. The population grew from 5 million in 1970 to 8.5 million in 2004, and is expected to grow to over 12 million people in the next 25 years. Vehicle miles traveled (VMT) more than tripled from 30 billion in 1970 to 101 billion in 2005, and VMT is expected to increase 50 percent more by 2020 due to increases in the number of registered motor vehicles and licensed drivers, and sprawling patterns of land development. Truck freight hauled in North Carolina is projected to increase to 808 million tons by 2020, a 190 percent increase since 1998[1]. While this growth is good, it places a tremendous strain on the transportation system.

Since the 2004 STP (based on 2001 data) was completed, multimodal transportation needs have changed due to the age of the system, growth in population , VMT, and land-use. Between 2000 and 2005, VMT in North Carolina has increased 13 percent on state-maintained roadways[2]. Based on NCMIN Tiers as shown in the following figure, the Statewide Tier VMT increased by 15 percent, which can be attributed to more Interstate and Expressway travel; Regional Tier VMT increased by 7 percent and the Subregional Tier VMT increased by 14 percent. These increases have added tremendous strain to North Carolina roadways.

VMT Comparison, 2000 and 2005, by NCMIN Tier (miles in millions)



Transportation Investment Needs

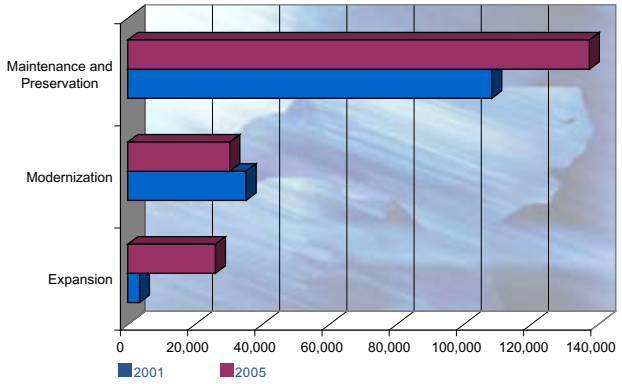
The multimodal transportation investment needs identified in the 2006 STP Mid-Cycle Update total $124 billion, which is an increase of $40 billion (48%) from the 2004 STP. As shown in the table to the right, all multimodal needs increased significantly. As noted earlier, population and VMT increase are one of the main reasons for the increase in needs. However, construction cost inflation and significant increases in energy costs have reduced the purchasing power of motor fuel tax. Over the last five years, North Carolina has realized unprecedented construction cost increases. Since 2003, construction prices for concrete, steel and asphalt have increased by 45 percent, making it more costly for NCDOT to complete needed projects and construction costs are still rising. In fact, construction lettings have declined approximately 70 percent since 2002.

The figures on the next page illustrate the differences in the multimodal transportation needs between the 2004 STP and the 2006 STP Mid-Cycle Update. The large increase in highway expansion needs is attributed partially to the growth in population and VMT, but a change in how roadway capacity (how many cars a roadway can handle) is calculated occurred in 2002 and this produced more roadway expansion needs.

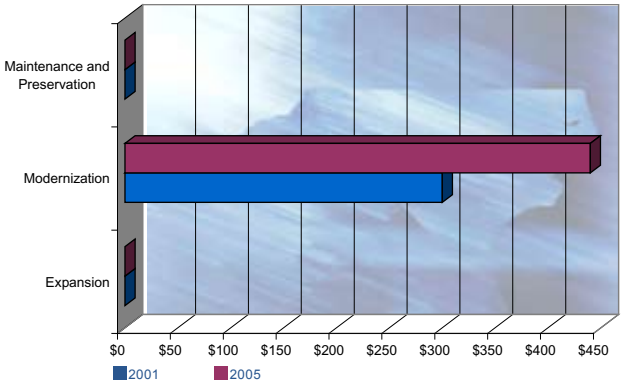
	2004 STP 2001 - 25 (Billion Dollars)	2006 Mid-Cycle Update 2005 - 30 (Billion Dollars)	Dollar Change	Percent Change
Highway (includes ITS)	$60.77	$80.96	$19.83	32.6%
Bridges	$6.90	$16.43	$9.53	138.1%
Public Transportation	$10.60	$17.77	$7.17	67.6%
Rail	$4.04	$4.86	$0.82	20.2%
Ferries	$1.06	$1.36	$0.30	28.0%
Bicycle & Pedestrian	$0.30	$0.44	$0.14	46.7%
Aviation	$1.02	$1.72	$0.70	68.7%
TOTAL	**$84.69**	**$123.54**	**$38.48**	**45.4%**

[1] NCDOT
[2] FHWA Highway Statistics. 2000 and 2005

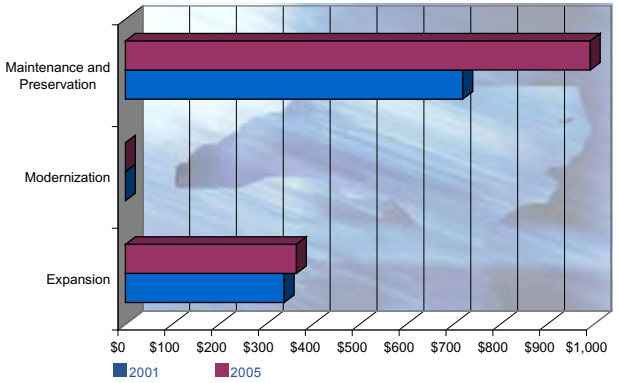
Total Needs in Miles, 2001 vs. 2005



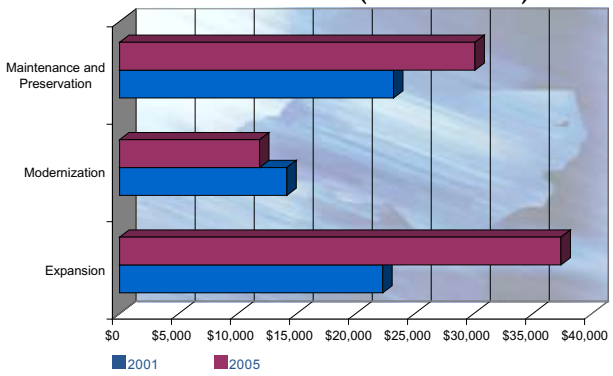
Total Bicycle and Pedestrian Needs, 2001 vs. 2005 ($ in millions)



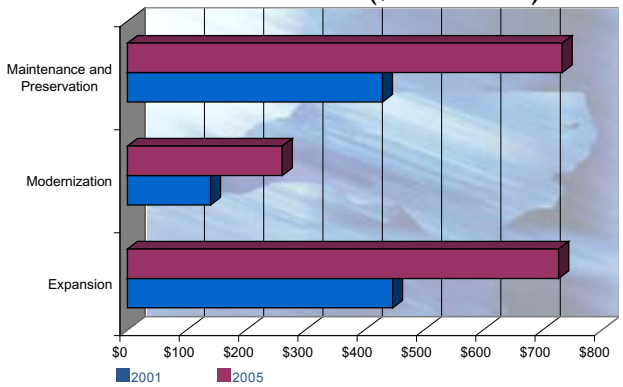
Total Ferry Needs, 2001 vs. 2005 ($ in millions)



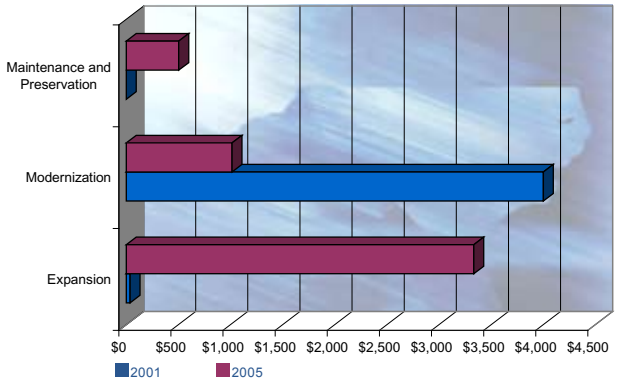
Total Highway Needs, 2001 vs. 2005 ($ in millions)



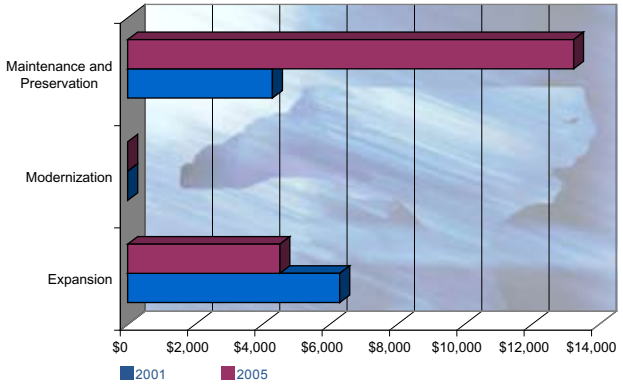
Total Aviation Needs, 2001 vs. 2005 ($ in millions)



Total Passenger and Freight Rail Needs, 2001 vs. 2005 ($ in millions)



Total Public Transportation Needs, 2001 vs. 2005 ($ in millions)

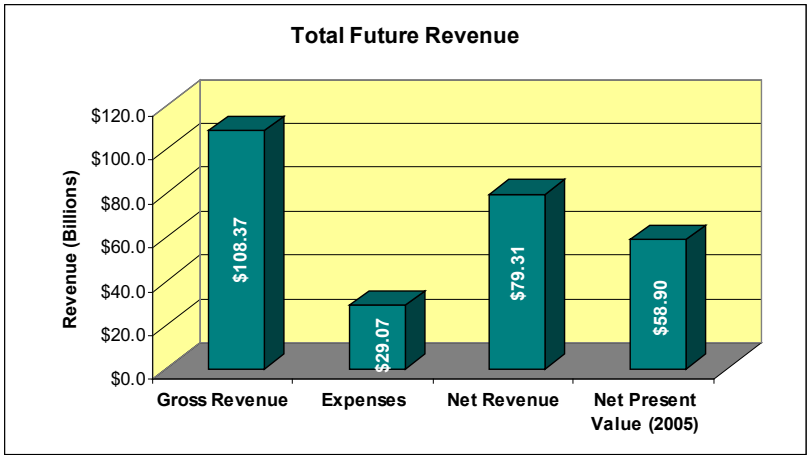


Future Funding Levels

Updating the STP requires an assessment not only of needs, but also of the revenue to meet those needs. While this update does not address local revenues used for transportation, it does:

- Identify current state and federal taxes and fees used to fund transportation improvements;
- Assume how things might change in the future in order to estimate future revenues;
- Compare assumptions used and forecasts produced in the 2004 STP with those of this update; and
- Coordinate with the North Carolina Cash Forecasting Model.

The bottom line is an estimated $59 billion (in 2005 dollars) from Fiscal Year (FY) 2005 through FY 2029 (25-year projection) for NCDOT to fund transportation improvements. This estimate was derived based on producing estimates of state and federal revenue, deducting NCDOT expenses, and calculating the net present value of net revenue. The forecasting methodology does not include any local or toll revenue, or the issuance of any new bonds.



Gross Revenue

Gross revenue totals $108 billion and includes estimates of both state and federal revenue sources. The key state sources can be grouped into two major categories: (1) motor fuel taxes; and (2) licenses and fees, with a relatively small percentage of revenue in a third category of investment income. Motor fuel taxes will account for 53 percent of all future state revenue, with licenses and fees accounting for 47 percent. Investment income will be less than 1 percent of the total. The Highway Fund will receive 63 percent of future state revenue and the Highway Trust Fund will receive the remaining 37 percent.

The existing annual state revenue is $2.7 billion. Based on increases due to population growth and other factors, it is anticipated that the average annual state revenue for the 25-year planning period will be $3.3 billion, for a total of $84 billion.

Estimates of future federal aid were produced by increasing by 3 percent the level of federal-aid funding received by NCDOT for each authorization period. This is a conservative assumption since the increases in funds from previous authorization periods have been greater. Based on the anticipated federal-aid receipts that NCDOT will receive from SAFTEA-LU, the resulting 25-year estimate of federal aid is $24.7 billion.

Net Revenue

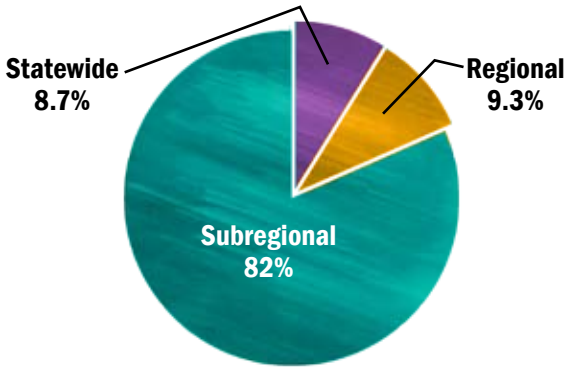
Costs to administer NCDOT as well as transfers to other state agencies and the General Fund, state aid to municipalities, debt service, and other miscellaneous programs must be deducted from gross revenue. The result is $79 billion in net revenue. The net revenues are in year of expenditure dollars and need to be brought back to their net present value (NPV) in 2005. A discount rate of 2.5 percent was used to determine the NPV of $59 billion.

Highways, Bridges, and ITS

There is a total of 103,104 miles of public roadway in North Carolina. Of this total, NCDOT maintains 79,009 miles, making the North Carolina system the second-largest state-maintained roadway network in the U.S. The majority (82%) of state-maintained roadways are classified as secondary routes, with "marked" routes accounting for only 18 percent of the mileage maintained by NCDOT. The vast majority (93%) of the state-maintained roadway mileage is paved, though there is a significant amount (7%) of unpaved mileage in rural areas. NCDOT also maintains a total of 13,629 bridges (excludes culverts).

As illustrated in the figure below, the Statewide Tier contains nearly 9 percent of the State-maintained roadway miles, but approximately 50 percent of the vehicle miles traveled (VMT) on State-maintained roadways can be attributed to Statewide Tier roadways. Likewise, the Regional Tier contains 9 percent of the system mileage, but 15 percent of the vehicle miles traveled are on these roadways. The Subregional Tier contains 82 percent of the system mileage, but only 35 percent of the vehicle miles traveled.

State Maintained Roadway Miles by NCMIN Tier



Needs

Preserving, maintaining, modernizing, and expanding the second largest transportation system in the nation is no simple task. During the next 25 years, nearly 137,000 miles of roadway will have preservation needs totaling $15 billion and; nearly 30,000 miles of roadway and over 11,000 bridges will have modernization needs totaling $13 billion and $14 billion, respectively. Over 26,000 miles of roadway will have expansion needs totaling $38 billion; and routine maintenance needs (mowing/ditch cleaning/rest area, ITS IMAP, and bridges) total $17 billion. A total of $97 billion of needs were identified on North Carolina highways (roadways, bridges and ITS).

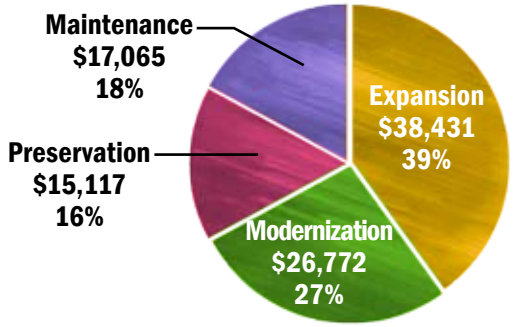
- Analyzing the total highway needs by improvement type shows:
  - Preservation improvements represent 16 percent, or $15 billion;
  - Maintenance improvements represent 18 percent, or $17 billion;
  - Modernization improvements represent 27 percent, or $27 billion; and
  - Expansion improvements represent 39 percent, or $38 billion.
- Analyzing the total needs by NCMIN Tiers shows:
  - Statewide Tier improvements represent 49 percent, or $48 billion;
  - Regional Tier improvements represent 12 percent, or $11 billion;
  - Subregional Tier improvements represent 39 percent, or $38 billion; and
  - The greatest Statewide Tier need is expansion ($34 billion); the Regional Tier is modernization ($5 billion); and the Subregional Tier is maintenance and preservation ($24 billion).

- Analyzing the total highway needs shows:
  - Roadway improvements represent 81 percent, or $79 billion;
  - Bridge improvements represent 17 percent, or over $16 billion; and
  - ITS improvements represent 2 percent, or nearly $2 billion.

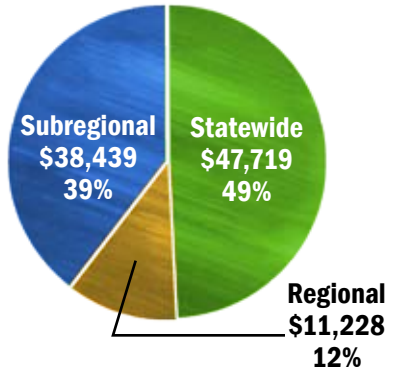
Based on NCMIN Tiers, 77 percent of the Statewide Tier needs are accruing (future); 64 percent of the Regional Tier are accruing; and 61 percent of the Subregional Tier needs are accruing.

Effectively maintaining North Carolina's transportation system results in a safer and more efficient system and a well-maintained transportation system which supports economic development opportunities throughout the state.

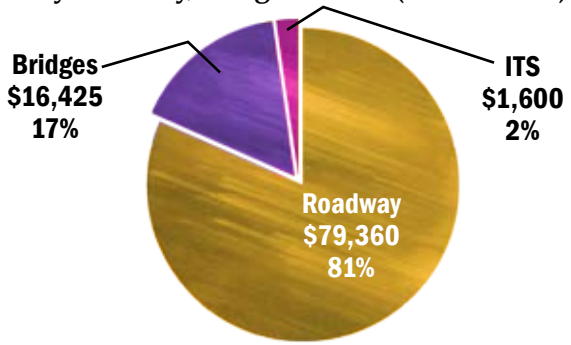
Highway Needs by Improvement Type ($ in millions)



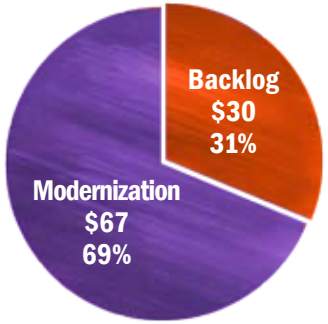
Total Roadway Needs by NCMIN Tier ($ in millions)



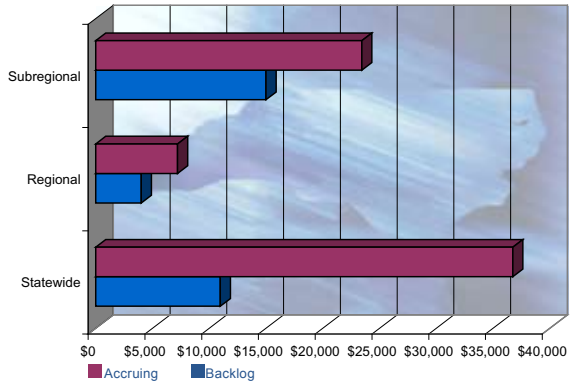
Highway Needs by Roadway, Bridge and ITS ($ in millions)



Roadway Needs by Backlog and Accruing ($ in billions)



Highway Needs by NCMIN Tier and Backlog and Accruing ($ in millions)



Intelligent Transportation Systems

Like many other regions across our nation, many areas in North Carolina are facing a growing congestion problem. Growth in traffic volumes in the many regions are outpacing new road construction, resulting in more vehicles trying to squeeze into less space. Adding lane capacity and building new highways has traditionally been the remedy for congestion. However, an alternative to traditional capacity-adding projects is integrating Intelligent Transportation Systems (ITS) solutions to improve traffic operations on existing roadways as well as enhance public transportation services. Capital infrastructure such as roadways, intermodal ports, airports and transit facilities are extremely vital components of North Carolina's transportation system. In order to manage these resources more efficiently, ITS are being deployed statewide in North Carolina.

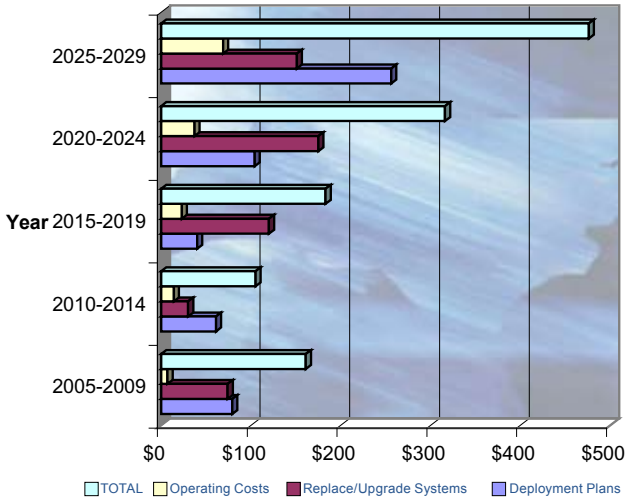
There are nine ITS Statewide Strategic Deployment areas throughout the state. Although relatively new, there are several ITS deployments that are either fully functional, in construction, or in the planning stages throughout the state. The key component in every ITS Deployment Plan was to develop a central database of traveler information to be disseminated to motorists throughout the region.

Statewide ITS Strategic Deployment Plan Regional Map

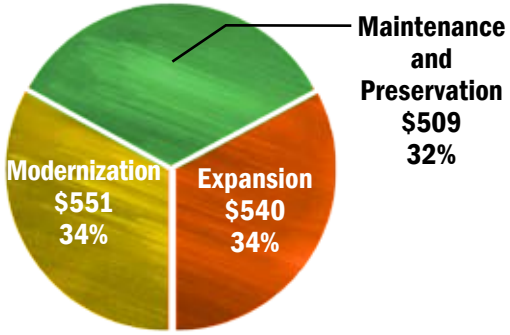
Needs

As shown in the figures to the right, the 25-year ITS needs total nearly $2 billion. Deployment plans (expansion) represent 34 percent of the future needs and over 92 percent are located on the Regional Tier. Replacing and upgrading systems (modernization) represent 34 percent of the future needs and over 98 percent are located on the Regional Tier. Operating costs (maintenance and preservation) represent 32 percent of the needs and 100 percent are located on the Statewide Tier. The Regional Tier accounts for 65 percent of all ITS needs and the remaining 35 percent is on the Statewide Tier. The Subregional Tier does not have any ITS needs over the next 25 years.

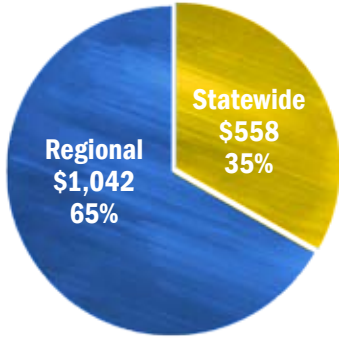
Intelligent Transportation Systems Needs by 5-Year Increments



25-Year ITS Needs by Improvement Type ($ in millions)



25-Year ITS Needs by NCMIN Tier ($ in millions)



Regional transit agencies team with social services organizations to ensure transportation for all citizens.

Public Transportation

More than 100 public transportation systems serve millions of North Carolinians in every county. The NCDOT Public Transportation Division assists the state's public transit systems in providing mobility options through technical assistance and funding. The NCDOT helps local transit agencies operate more safely and efficiently by combining limited federal and state resources with local communities and transportation providers. The actual buses, trains or vans are operated directly by local transit systems.

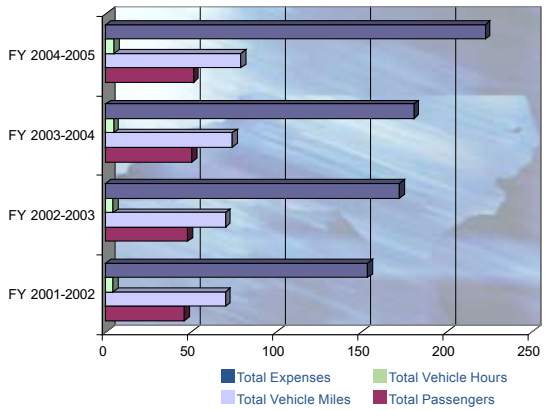
Six types of public transportation systems operate in North Carolina include:

- Human service transportation;
- Community transportation;
- Urban transit;
- Regional transit;
- Vanpool and carpool programs; and
- Intercity buses.

Public transportation serves several statewide functions:

- Provides mobility to persons without automobiles and to those who do not drive;
- Links rural communities to metropolitan areas; and
- Reduces traffic congestion and air pollution.

Public Transportation Operating Statistics



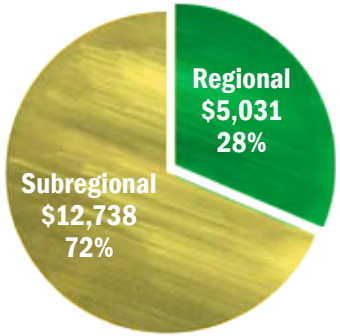
In 2005, the passengers totaled over 51 million, vehicle miles traveled totaled over 79 million, vehicle hours totaled nearly 5 million and expenses totaled over $222 million.

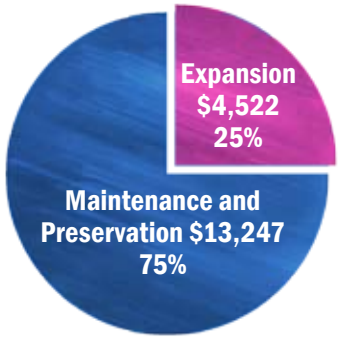
The figure above shows key statistics for the 105 transit systems in North Carolina between 2001 to 2005. Total vehicle hours, total passengers, total vehicle miles, and total vehicle hours grew proportionally by 12 to 13 percent. However, total expenses during the same time period grew by 45 percent.

Needs

The 25-year public transportation needs total nearly $18 billion. Based on improvement types, 75 percent ($13 billion) are maintenance and preservation needs and the remaining 25 percent ($5 billion) are expansion needs. Based on tiers, 72 percent ($13 billion) are located in the Subregional Tier and the remaining 28 percent ($5 billion) are on the Regional Tier. The Statewide Tier does not have any identified public transportation needs. Ninety percent ($5 billion) of the Regional Tier needs are for expansion while the remaining 10 percent ($500 million) are maintenance and preservation needs.

25-Year Transit Needs by NCMIN Tier
($ in millions)





25-Year Transit Needs by Improvement Type
($ in millions)

Statewide Railroad Facts

4,182 public crossings
2,404 are equipped with protective devices
1,845 with gates and flashing-light signals
550 with flashing-light signals only
9 with traffic-signal tie-ins only (at adjacent roadway intersections)
3,148 private at-grade crossings
53 pedestrian at-grade crossings
825 public grade separations
21 private grade separations
21 pedestrian grade separations

Passenger Rail

NCDOT has long recognized the need for alternative transportation as part of a comprehensive transportation system. The state's rail policy has emphasized enhancing and growing passenger rail services, preserving existing rail lines for future use, improving infrastructure to support and enhance passenger and freight service, and extending passenger rail service in the state.

North Carolina's passenger rail facilities serve a statewide transportation function. In FY 2005, the six intercity train services (operated by Amtrak) carried 520,698 passengers. The state subsidizes two intercity routes.

In 2005, Amtrak served 16 cities. Overall, ridership increased statewide by 7 percent between 2004 and 2005. Southern Pines, Hamlet, Rocky Mount and High Point experienced large ridership increases at 24, 39, 49, and 68 percent respectively. Raleigh continues to have the highest ridership among the 16 cities served by Amtrak with its 2005 ridership totaling over 115,000 passengers.

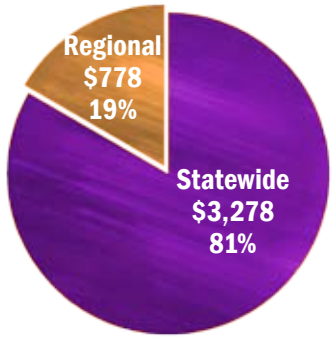
As North Carolina's population and traffic grow, development of rail transportation becomes increasingly important as an alternative to auto and air transport for both freight and passengers.

Needs

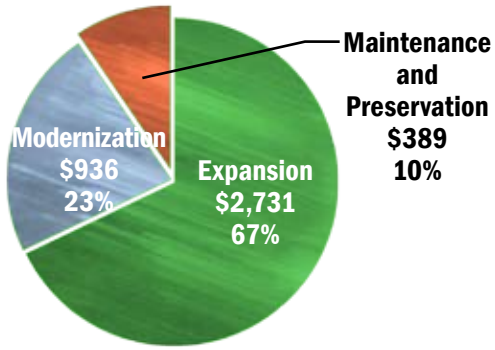
As shown in the figures to the right, the 25-year passenger rail needs total $4 billion. Existing corridor needs represent 81 percent of the future needs and 100 percent are located on the Statewide Tier. New corridor needs represent 19 percent of the future needs and 100 percent are located on the Regional Tier. The Subregional Tier does not have any passenger rail needs.

Based on improvement type, 67 percent ($3 billion) are expansion needs, 23 percent ($900 million) are modernization needs and the remaining 10 percent ($400 million) are maintenance and preservation needs. Based on tiers, 59 percent ($2 billion) of the Statewide Tier needs are for expansion, 29 percent ($900 million) for modernization and 12 percent ($400 million) for maintenance and preservation. One hundred percent ($800 million) of the Regional Tier needs are identified as expansion. One hundred percent of the modernization ($900 million) and maintenance and preservation ($389 million) needs are located on the Statewide Tier, while 72 percent ($2 billion) of expansion needs are located on the Statewide Tier. The remaining 28 percent ($800 million) are located on the Regional Tier.

25-Year Passenger Rail Needs by NCMIN Tier ($ in millions)



25-Year Passenger Rail Needs by Improvement Type ($ in millions)



Freight Rail

Freight rail is an important component of the North Carolina transportation system and plays a vital role in economic development throughout the State. Rail provides three basic types of freight service: bulk unit train, mixed carload, and intermodal (container, trailer, and automobile). In 2004, over 177 million tons originated in, terminated in, or passed through North Carolina, representing an increase of approximately 1.5 percent since 2000. On a parallel basis, the number of carloads increased by nearly 5 percent during the same five-year period.

North Carolina's existing railroad network consists of 3,250 main line miles of track with the majority of the track owned and operated CSX Corporation and Norfolk Southern Corporation. There are no regional railroads in North Carolina, but there are 13 local railroads and eight switching and terminal railroads.

The NCDOT's role in freight is generally limited to the Rail Industrial Access Program (RIAP) and the Short Line Infrastructure Assistance Program (SIAP); however, the improvements made for passenger rail also provide benefits to freight movements in the state. The RIAP funds rail investments required by new or expanded business to encourage economic development. The RAIP has invested more than $7 million of state funds into constructing or refurbishing tracks required by a new or expanded industry to encourage economic development.

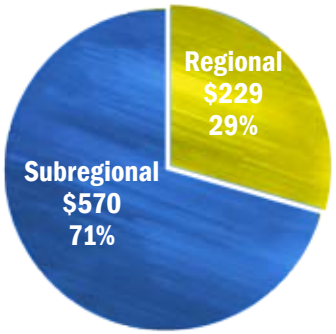
Maintaining and upgrading track throughout North Carolina is vital because the tracks are critical to the long-term success of freight movement throughout the state. Over the last five years (2001 to 2005), the NCDOT invested over $30 million to improve the busy Raleigh to Charlotte North Carolina Railroad corridor operated by Norfolk Southern.

Needs

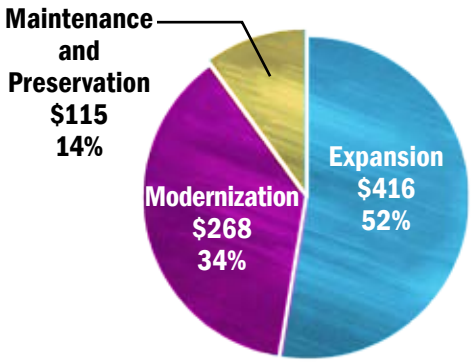
The 25-year freight rail needs total $800 million. Improvements to track used by Class I railroads represent two-thirds of the future needs and 56 percent are located on the subregional tier. Short line rail improvements represent 24 percent of the future needs and 100 percent are on the subregional tier.

As shown in the figures to the right, based on improvement types, 52 percent ($416 million) are expansion needs; 34 percent ($268 million) are modernization needs; and 14 percent ($115 million) are maintenance and preservation needs. Based on tiers, 71 percent ($570 million) of the needs are on the Subregional Tier while the remaining 29 percent ($229 million) are on the Regional Tier. The Statewide Tier does not have any identified freight rail needs. One hundred percent ($229 million) of the Regional Tier needs are for expansion, while on the Subregional Tier, 66 percent ($375 million) are for expansion; 20 percent ($115 million) are for maintenance and preservation; and 14 percent ($80 million) are for modernization.

25-Year Freight Rail Needs by NCMIN Tier ($ in millions)



25-Year Freight Rail Needs by Improvement Type ($ in millions)
TOTAL DOLLARS = $799 million



Ferries

Currently, NCDOT's Ferry Division extends over 7 routes, has 21 ferries and employs over 400 workers. Each year, North Carolina ferries transport over 1 million vehicles. In 2005 they transported more than 2.3 million passengers across 5 separate bodies of water - the Currituck and Pamlico sounds and the Cape Fear, Neuse and Pamlico rivers. Between 2001 and 2005, the highest passenger year was 2002 where a total of 2.6 million passengers were transported by ferry. Ferries also carry essential goods to water-locked communities. Many residents depend on the ferries for transportation to school, work, and other needed services. The majority of the ferry routes were operating at 50 to 75 percent of maximum capacity during the peak months in the year 2005. The Hatteras – Ocracoke route continues to operate at or over capacity between June and August.

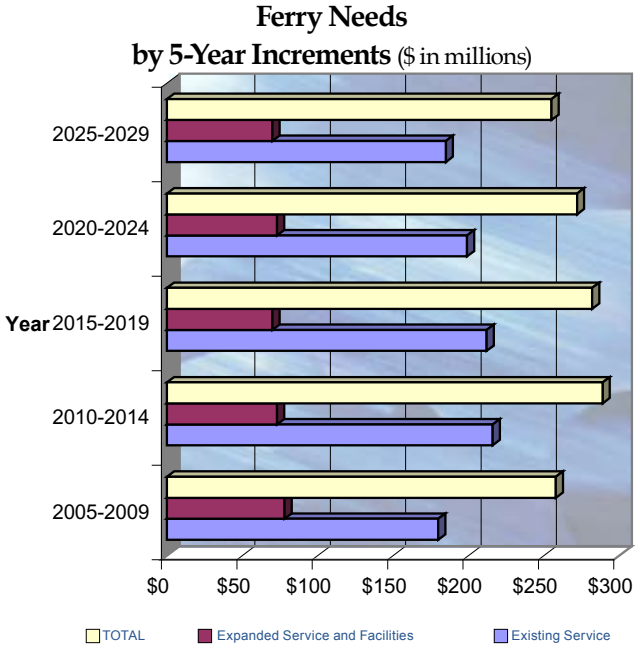
The figure to the right provides the existing ferry routes in North Carolina.

Needs

In the next 10 years, the following routes are expected to exceed capacity:

- Hatteras – Ocracoke – 25 percent increase in passengers resulting in over-capacity conditions (10% - 154%) by April – September; and
- Ocracoke – Swan Quarter – 48 percent increase in passengers resulting in over capacity (101%) conditions in peak month of July.

As shown in figures below, the total 25-year ferry needs are over $1 billion. The needs reflected below are the subsidies (total costs less ferry toll revenue) required to meet projected passenger demands. The cost to add capacity and improve terminal facilities (expansion) is estimated to cost $365 million and the preserving the existing ferry system is estimates to cost $992 million over the next 25 years.



Bicycle and Pedestrian System

Bicycle and pedestrian planning in North Carolina is considered as part of any transportation project, not as an afterthought. Current spending on independent projects is $6 million annually, approximately $4.8 million on bicycle projects and $1.2 million for independent Transportation Improvement Program (TIP) projects. Additionally, $1.4 million is dedicated for pedestrian projects ($100,000/division).

Bicycling

NCDOT has designated a cross-state system of Bicycling Highways based on nine routes covering 3,000 miles. These routes generally parallel the major highways along which cyclists often wish to travel, but offer a more lightly traveled alternative than the busy major roads that are familiar to most people. NCDOT has developed printed guides of each route, which includes segment maps and information on terrain, road conditions, services and points of interest. The nine routes are:

- Carolina Connection – NC Bike Route 1;
- Mountains to Sea – NC Bike Route 2;
- Ports of Call – NC Bike Route 3;
- North Line Trace – NC Bike Route 4;
- Cape Fear Run – NC Bike Route 5;
- Piedmont Spur – NC Bike Route 6;
- Ocracoke Option – NC Bike Route 7;
- Southern Highlands – NC Bike Route 8; and
- Sandhills Sector – NC Bike Route 9.

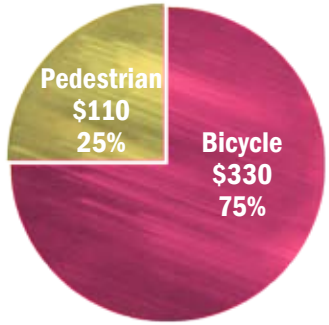
Pedestrian

Construction of most pedestrian facilities occurs at the municipal level. However, NCDOT currently has a statewide allocation for constructing pedestrian facilities totaling $1.4 million. This total is divided equally among the state's 14 NCDOT divisions, which each receive $100,000 annually for small scale pedestrian improvements. NCDOT currently receives an annual allocation of $275,000 for the advancement of pedestrian safety. To receive maximum benefit, NCDOT has focused its efforts on statewide or regional demonstration projects, initiatives, or programs to encourage pedestrian safety and to develop walkable communities.

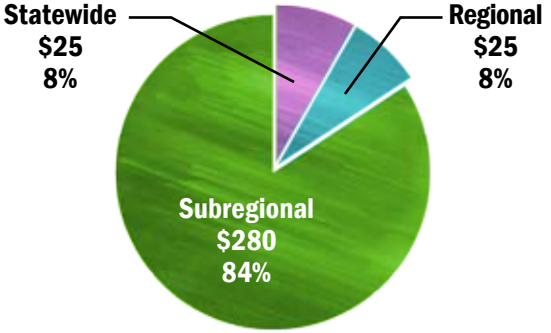
Needs

As shown in the figures to the right, the 25-year bicycle and pedestrian needs total $440 million. Bicycle needs represent 75 percent of the future needs and over 84 percent are located on the Subregional Tier. Pedestrian needs represent 25 percent of the future needs and over 72 percent are located on the Subregional Tier. All bicycle and pedestrian needs are categorized as modernization needs and combined together 9 percent are on the Statewide Tier, 9 percent are on the Regional Tier and 82 percent are on the Subregional Tier.

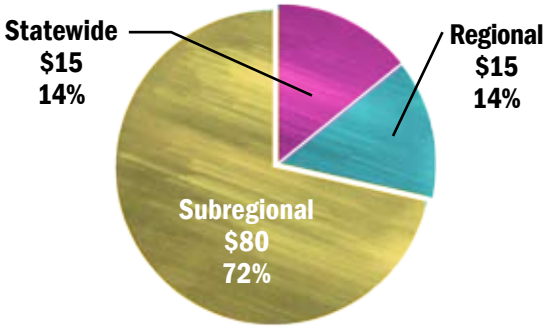
Bicycle and Pedestrian Improvements ($ in millions)



Bicycle Improvements



Pedestrian Improvements



Aviation

There are 74 publicly owned, public use airports in North Carolina and 11 have scheduled service while the remaining 63 are classified as general aviation. The NCDOT Division of Aviation administers the State Aid to Airports Program.

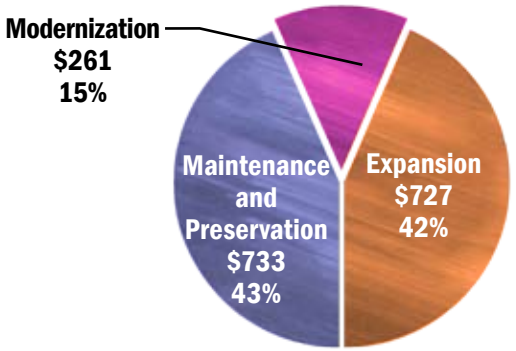
North Carolina's most recent statewide aviation planning study was completed in 2004. This study, referred to as the *North Carolina General Aviation Airport Development Plan*, focuses on publicly-owned and operated general aviation airports throughout the state. This plan evaluated the needs of the general aviation airports and sets minimum state standards for their development. Through this process, airport needs were identified and prioritized.

An Economic Impact Study of Aviation was conducted by the Division in 2006. The study, encompassing all 74 publicly owned airports in the state, identified economic impacts of at least $9.5 billion annually statewide. General aviation is the fastest growing element of aviation in the state, with annual economic impacts exceeding $1.8 billion statewide, compared with annual results of $168 million from a similar study done in 1995.

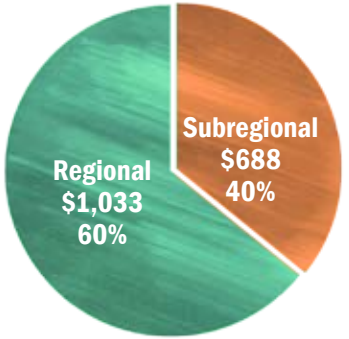
Needs

As shown in the figures below, the 25-year aviation funding needs are estimated to total nearly $2 billion and 42 percent are for expansion needs; 15 percent for modernization needs; and 43 percent are for maintenance and preservations needs. Based on tiers, 60 percent of the aviation needs are identified on the Regional Tier, while the remaining 40 percent are on the Subregional Tier.

Aviation Needs by Improvement Type ($ in millions)



Aviation Needs by Tier ($ in millions)



Ports

Under the jurisdiction of the Department of Commerce, the North Carolina ports system includes the Ports of Wilmington, Morehead City and the inland container consolidation centers at Charlotte (CIT) and Piedmont Triad (PTIT), all operated under the jurisdiction of the North Carolina State Ports Authority (NCSPA). The NCSPA receives no appropriated operating funds or dedicated capital funding, but it has received state funding for large capital improvement and major maintenance projects.

The *2006 Economic Impact Study of the North Carolina State Port Authority* indicated that in 2005:

- 84,833 jobs in the State of North Carolina are in some way related to the maritime activity at the Port of Wilmington and Morehead City;
- Marine cargo and vessel activity at the public and private marine terminals generated $5.6 billion of total economic activity in North Carolina;
- Port business activity created $3 billion of personal wage and salary income in the State of North Carolina; and
- A total of $300 million of state and local tax revenue was generated by maritime activity at the NCSPA public terminals at Wilmington and Morehead City, and the private owned terminals in Wilmington.
- The port service providers generated $84.1 million, while the $215 million balance was generated by the related port users.

North Carolina's ports generate a great deal of economic benefit throughout the state, and are an integral part of the transportation system in the state. In FY 2005, 3 million tons of cargo were handled at the NCSPA marine terminal at Wilmington, 2.4 million tons at Morehead City, and nearly 3 million tons of cargo moved via the private terminals in Wilmington.

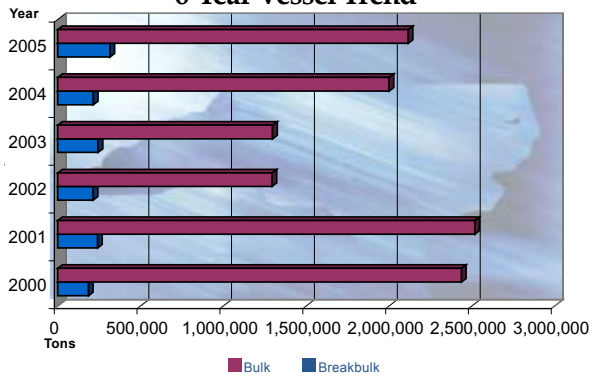
Planned New Port

In April 2006, the NCSPA purchased 600 acres of riverfront property in Brunswick County. The property is 9 miles from the ocean, while Wilmington is 26 miles. The site is adjacent to the Military Ocean Terminal at Sunny Point, which supports Department of Defense strategic initiatives. The NCSPA plans to build a new port terminal, the North Carolina International Port (NCIP) to coincide with the projected doubling of the North American container market between now and 2015.

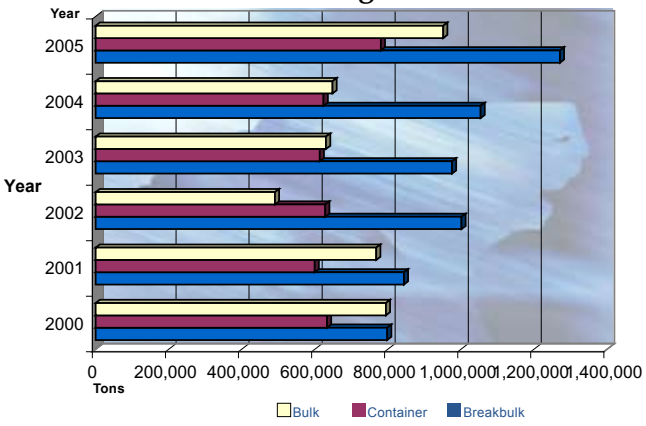
Needs

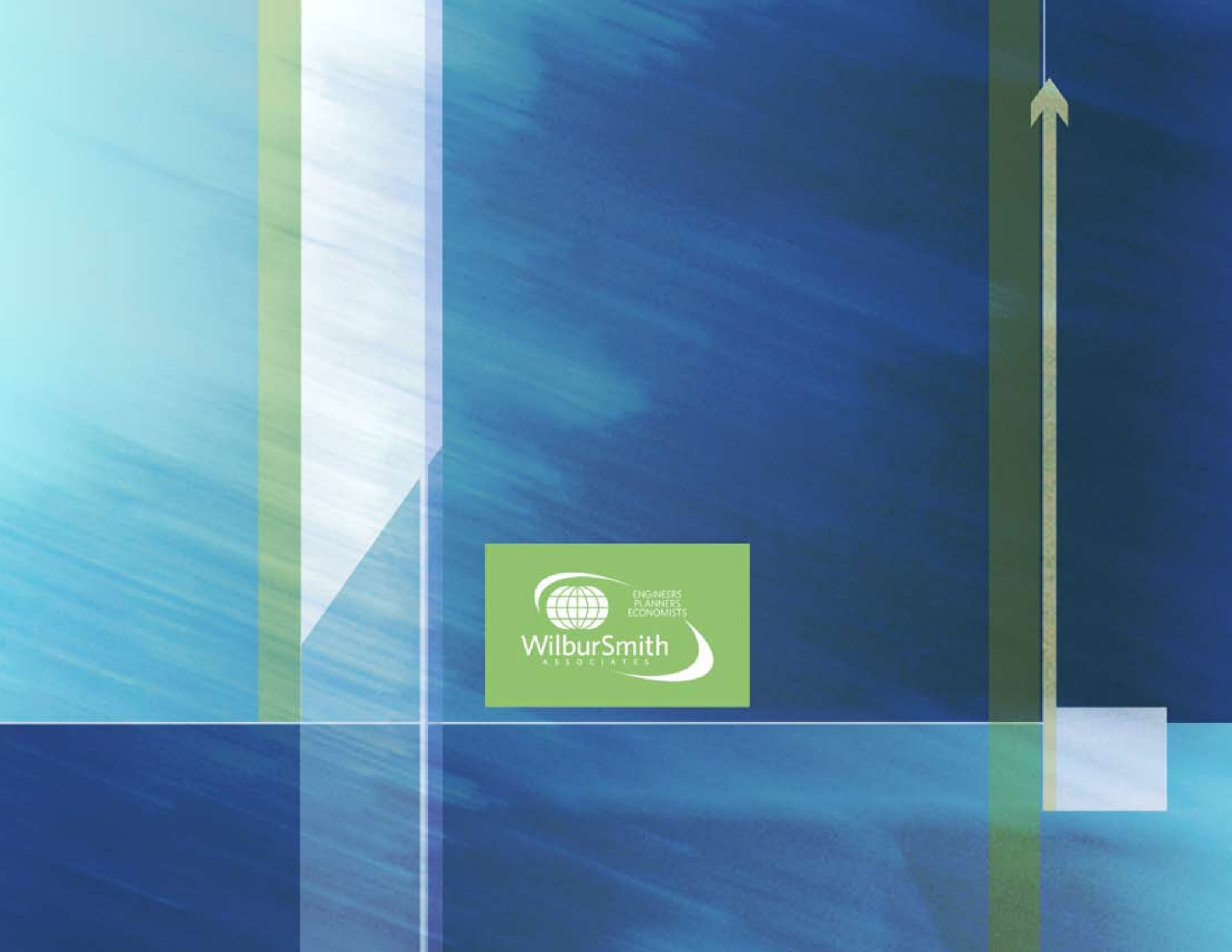
In order to ensure that all transportation needs are addressed, the NCSPA coordinates with NCDOT on a regular basis. Most of the highway related needs associated with accessing North Carolina's ports are captured in the Highway and Bridges needs. The 2006 STP Mid-Cycle Update identifies numerous "last mile" highway related needs in accessing the Port of Wilmington, Morehead City and the new North Carolina International Port. Many of these projects are already planned and programmed due to the close working relationship that exists between these two state partners.

Port of Morehead City
6-Year Vessel Trend



Port of Wilmington
6-Year Tonnage Trend




ENGINEERS
PLANNERS
ECONOMISTS
WilburSmith
ASSOCIATES