1907-2007
CENTENNIAL

East Carolina University

Comprehensive Master Plan

Transportation Element Existing Conditions Analysis

Draft Report

October 22, 2009

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1 EXECUTIVE SUMMARY

1.1 Overview

This transportation element existing conditions report one component of the first phase of East Carolina University's (ECU's) Comprehensive Facilities Master Plan process. The report assesses the current transportation issues and opportunities, including not only specific needs and locations but also an assessment of how transportation contributes to ECU's overall campus growth and development. The report addresses the following topics:

- Main & athletic campus roads
- Medical campus roads
- Planned road improvements
- Vehicular–pedestrian safety issues
- Pedestrian and bicycle flows to campus
- Pedestrian accident data
- Pedestrian deficiencies
- Greenways master plan
- ECU transit system
- Intermodal Transportation Center
- Town–Gown Issues

Some of these topics involve technical or site-specific factors that will need to be addressed in later phases of the Master Plan process, and these are discussed in the report. This executive summary, however, concentrates on some key strategic issues that will affect ECU's future growth and development.

1.2 Key Issues

The parking and transit services at ECU have performed separately from each other and from the university administration. However, they have achieved a parking and transit system that has supported ECU's recent growth and is potentially in a very good position to support additional growth.

ECU has grown significantly over the last twenty years. The growth in programs has led to growth in student population, but there has not been a commensurate growth in ECU residence halls. Often times, when this happens on a campus, it leads to an over abundance of student commuters struggling to find parking because the surface parking lots have been built upon to accommodate programmatic growth. However, this has not been an obstacle to ECU's growth because of the services provided by the ECU Student Transit Authority (ECUSTA).

In the last five years most of the growth in parking spaces has been at the Medical Campus. Again, because the ECUSTA provides a valuable service to the students at ECU, there has not been a pressing need to expand parking on East Campus or the Athletic Campus. In fact, the Athletic Campus usually has vacant parking spaces in the peak times of the academic year. As so aptly demonstrated at ECU, the number of parking spaces needed by a university is often offset by the amount of transit service to the university.

ECUSTA's mission has always been to provide transportation to the students at ECU. The service has been funded mainly by student fees and has had the support of the student community over the past 40 years since it was first created in 1969. When the students started to migrate to the apartments off campus, ECUSTA made that transition smoother than if there had been no transit service or a limited campus service.

In the last few years, there has been a growing awareness that student fees are increasing to rates that are comparable to tuition and room/board at some universities. This awareness has led to administrative restrictions placed on individual fee increases, such as transit. The fee issue is mentioned here because ECUSTA is a fee based program, and constraining the student transportation fee will likewise constrain future growth of ECUSTA.

1.3 Administration

The ECU Administration should consider how much change is needed in the next twenty years regarding environmental sustainability of the parking and transit system. In other words, a dramatic shift away from current parking and transit policies will impact both the environment and mobility at ECU. For example, if the ECU Administration wants to reduce the vehicle miles traveled by car at ECU, then it will have to reduce parking availability, increase the transit service availability and build more student residences proximate to the East (Main) Campus.

The ECU Administration should consider adopting more formal guidance over both parking and transit service programs. One previous recommendation was to place ECUSTA under the Parking Director, but this is not necessary and may not be as efficient as it appears on the surface. A more appropriate change in management would be for the ECU Administration to place both programs under the authority of the same Associate Vice Chancellor. Both programs must be given the resources to develop short-range improvement plans, financial assessments, and the ability to communicate effectively with their customers. If the management of each service is given clear goals, resources, and a timeframe in which to implement the goals, then improvements to cost-effectiveness and service delivery should begin to happen annually.

1.4 Continuous Improvement Program

For an agency or program to improve its delivery of services to clients, it must be introspective and self-analyzing. It must collect the appropriate data, have reasonable benchmarks, and have an annual report that documents the activities, accomplishments, and setbacks in the previous year. All of this information is then used to develop short-range (five year) improvement programs and to develop work plans for staff in each agency.

1.4.1 Data Collection

Decisions about parking and transit management are being made without collecting ridership data that is timely and useful. These data (such as boardings and alightings, per stop, per route, per day) are also very useful for explaining and defending parking and transit management decisions (such as decisions to stop selling particular permits when their lots are fully occupied) and other issues (such as why buses are only full at certain times of the day in certain directions).

Examples include:

- Bus Ridership – drivers estimate the loads they are carrying, which is especially difficult when the buses are full and standing. A more customer-oriented method is to record the number of passengers getting on and getting off at each individual stop.
- Parking Lot Occupancy – is being collected after the permits are sold instead of while permits are being sold. A more customer-oriented method is to collect data frequently during the beginning of the semester, to determine when to stop issuing permits for any particular zone.

1.4.2 Benchmarking and Metrics

Quantifying success and failure, or just the need to improve in certain areas, of performance is extremely difficult without the measurement of the data collected. Examples include:

- Transit Efficiency – is often benchmarked against cost per passenger or passengers per hour served.
- Parking Efficiency – is usually a function of having available parking spaces and not making the customer drive around searching for an available space or worse, waiting in queues in a parking lot for a car to leave the lot.

1.4.3 Annual Customer Survey and Complaint Databases

Decisions about parking and transit management are being made without documentation of the quality of service being provided. The customer service information is also very useful for defending unpopular parking and transit management decisions and educating the general public about "hot button" issues. Examples include:

- Bus Stop Improvement Program – Comments about dark bus stops or shelters that need repairs.
- Parking Lot Improvement Program – Comments about bushes that need to be cut back from a parking lot entrance/exit in order to improve driver and pedestrian visibility.

1.4.4 Annual Report and Five Year Improvement Plan

An annual report provides documentation as to what has been accomplished with the available resources for the past year. It also provides an assessment as to whether the benchmarks or goals set out in the five year plan are reasonable. It can also provide documentation as to why decisions have been made that affect the parking and transit services. Examples include:

- Transit – goals are sometimes not achieved due to spikes in fuel prices or other unanticipated events.
- Parking – goals are sometimes not achieved due to political "push back" from university administrations.

1.4.5 Communications Program

Parking and transit customers are increasingly expecting not only a wider range of information but also use of today's available technology. Examples include:

- Transit – providing real-time information on cell phones as to when the next bus will arrive is a much requested communication technique for transit, and is increasingly becoming the norm.
- Parking – providing information about parking or trip alternatives can provide increased customer satisfaction.

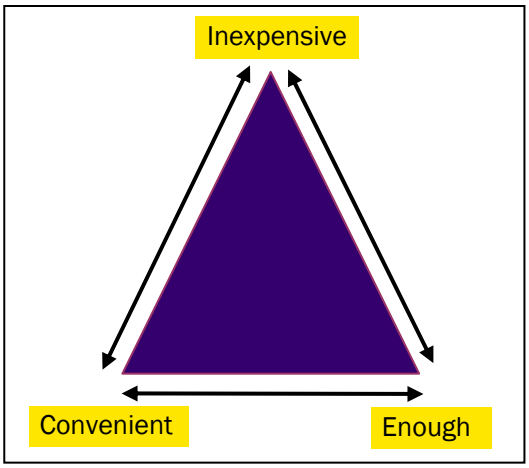
1.5 Sustainability and Efficiency

During the first meeting of the Master Plan Steering Committee, the Chancellor emphasized that sustainability and efficiency should be very important aspects of the plan. Below is an assessment of the each for both parking and transit at ECU.

1.5.1 Parking

When planning for university parking, there is an inherent conflict between the three major components for user satisfaction: COST, CONVENIENCE, and SUPPLY. At universities, only two of the three components can be met, not all three (unless the university is located in a very rural area with unlimited surface parking expansion).

a. If the parking is inexpensive and convenient, then there won't be enough parking spaces (the usual cause for cars circling inside of parking lots "hunting" for spaces)
b. If there is sufficient parking and it is inexpensive, it will not be convenient (most often needs a shuttle bus for access)
c. And if there is sufficient parking and it is convenient, it will be expensive (most often a parking structure).



Efficiency

The most efficient parking management model for major universities is that of shared parking spaces, with permits for particular zones being allocated to an established hierarchy of users. This is the current system at ECU. It is recommended that ECU continue to use the shared space system, but actively monitor parking lots to make sure that they are used efficiently without cars 'hunting' for spaces. This can be achieved by adjusting the permit costs and/or adjusting parking permit allocations, based upon direct observation of occupancy and solid data.

Sustainability

Parking sustainability is a function of how many spaces are made available, travel demand reduction, and how the parking lots are designed.

The total amount and location of parking spaces is a function of the highest levels of university administration. The number of spaces made available has an impact on air quality, traffic volumes and the institution's carbon footprint. Every university struggles with the trade-offs between:

- the convenience of allowing cars close to their destination, and
- the reduction in carbon footprint by reducing parking to encourage the university community to switch to alternative modes of transportation.

Most major universities are institutionalizing Travel Demand Management (TDM) programs as a way to reduce the perceived need to drive a car alone to the university. These programs often consist of transit passes for municipal systems, promotion of carpooling, vanpooling, bicycling,

walking and apartment complexes along bus routes among other innovative (car sharing) practices.

The design of a parking lot has an impact on water runoff and quality. The design can include open sections, vegetative bio-swales, bio-retention, and permeable pavers/porous pavement. Again, there is a trade-off between cost and reducing the environmental impact of parking lots. It is recommended that ECU pursue a program of parking lot design improvements that specifically target water runoff.

1.5.2 Transit

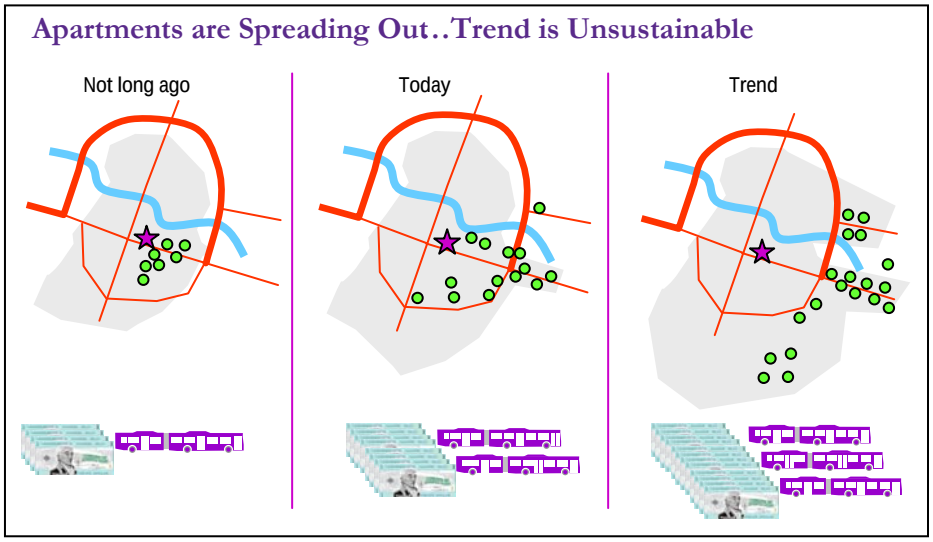
For a busy urban campus, transit can be a highly sustainable and efficient mode of transportation. ECU has a very robust university transit system, with high levels of service throughout the academic day, into the evenings and on weekends.

Efficiency

Transit is most cost-efficient when routes are short, with every bus full in each direction all day long. However, this is unrealistic except for very dense urban environments. The ECUSTA system is becoming less cost-efficient due to their servicing more apartment buildings further away from ECU, leading to increasingly long routes.

There may also be other efficiencies if transit was seen as an integral aspect function of ECU rather than being "owned" by the student body. For example, if ECU had land on which it could build a permanent bus operations/storage building with refueling tanks, replacing the current leased facilities, then its fixed-costs would decrease.

Another clear example of cost ineffectiveness is the preference to expand services over replacing vehicles that are at, and beyond their service life. In other words, the fleet replacement plan is not associated with any future service hour plan. This is indicative of the historic management priority at ECUSTA which is "to get the buses on the road every morning." This is a reactionary or brushfire management philosophy that is financially unsustainable.



Sustainability

The most sustainable modes of transportation are, of course, walking and bicycling. But these are limited by distances for many people. Beyond bicycling distance, transit is the most environmentally sustainable mode of transportation, and becoming increasingly so. For example, buses being manufactured today (under 2007 EPA regulations) have 90% lower emissions than bus engines made before 2007. The current ECUSTA fleet consists of 6 buses that were purchased since 2007, and 32 buses purchased prior to 2007.

However, expansion of ECUSTA service while maintaining an efficient fleet-replacement program is not financially sustainable without raising student fees or restructuring the bus service. As of 2008, the ECUSTA is operating 13 buses that have surpassed their expected service-life (depends upon model).

Summary of Parking Issues

Parking lacks clear direction and leadership from administration

- Current parking zone system allows permit holders to re-park several times per day.
- The current parking supply is not being effectively utilized (90-95%) according to parking occupancy observations.
- Actual 2009 parking permit oversell rates exceed their targeted rates, indicating a lack of active management.
- Parking enforcement does not generate significant revenue for the department (4-5% of total permit revenue), and should therefore adjust its role to become campus stewards.
- There are no established travel demand management programs.
- There is no established maintenance and improvement program for parking facilities.

Parking is viewed as a stand-alone system rather than a campus-wide system, and may be growing further apart by choice

- Commuting student parking requires transit because of its distance from campus, further establishing the link between parking and transit.
- Parking and Traffic Services is attempting to end their annual payment transfer (15% of permit revenue) to the campus transit system, which supports the commuter parking lots.

ECU parking is appropriately placed among its academic peers

- Parking supply per person ratios are in line with academic peer group
- Parking permit prices for faculty/staff, residents, and visitors are comparable to academic peer group
- Parking permit prices for commuting students appears low respect to academic peer group, however is understandable knowing the distance from campus

Summary of Transit Issues

ECU benefits greatly from its transit system

- Transit is an integral part of campus life – for student parking, campus-to-campus circulation, and student commuting
- Commuting by transit is the norm for off campus students. Many campuses would be highly envious of this achievement.
- Transit contributes to ECU quality-of-life and sustainability goals – by reducing the need for parking spaces, land-take, traffic volumes, air pollution, accident risks
- Anecdotal complaints of 'empty buses' reflect the inevitable flows of commuters. Empty buses are often full in the other direction. Overall, system is heavily-used

Transit is viewed as a stand-alone system rather than a key campus-wide system

- Limited public transparency/accountability between transit services and those who fund them (e.g. Parking and Traffic Services payment to serve the commuter parking lots)

Recent growth is admirable but not financially sustainable

- Apartments are dispersing into suburbs – increasingly expensive to provide service
- Current funding structure does not reflect real cost of providing apartment services

There are opportunities to improve efficiency and demonstrate it better

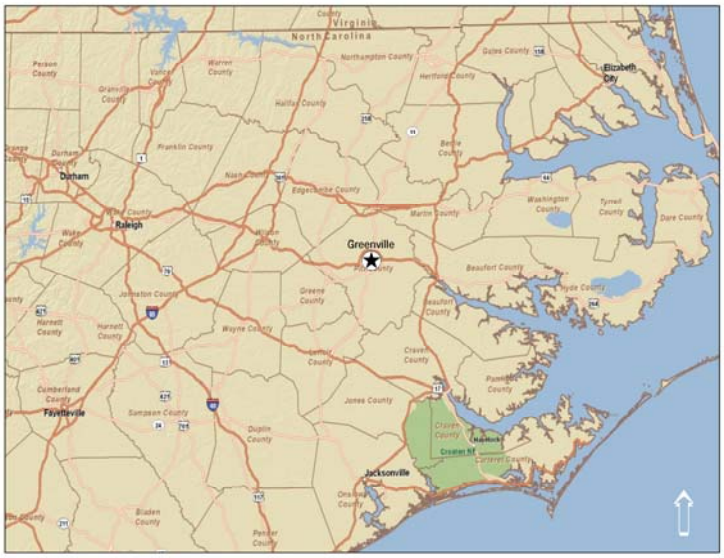
- Focus on short-term leads to some inefficiencies
- Leased depot may not be cost-effective
- Fleet replacement is funded by 'surprise' fee increases – bus replacement schedule needs to be revised into a rolling plan
- More coordination with city transit (GREAT) would help all parties, but all parties must overcome cultural/institutional obstacles and previous experiences
- Transit needs to market its value to ECU
- Administration must decide whether spread of apartments should be encouraged

2 INTRODUCTION

This assessment is intended to provide an overview of recent past and present issues regarding transportation and parking at ECU. To determine past issues, a total of 13 documents (studies, plans and assessments) have been reviewed and condensed into bullet points regarding facilities and policies recommended to improve transportation and parking at ECU and in the adjacent neighborhoods of the City of Greenville. For current issues, a site visit was made to ECU and analyses have been made of parking and transit data provided by ECU. An ECU Parking Peer Review summary has also been included for comparison purposes.

2.1 City of Greenville Location

The City of Greenville is 75 miles from Raleigh, 40 miles from I-95, and 130 miles from the Outer Banks in the Eastern Region of North Carolina. The nearest regional airport with national passenger service is located in Greenville just across the Tar River on US 13 / NC 11. Campus is easily accessed from the west and east by way of US 264 to Greenville Blvd to Evans Street.



Greenville is not served by passenger trains, but it does have a municipal transit system, GREAT (Greenville Area Transit). CSX Transportation and Carolina Coastal Railways are the two railroad companies that operate in the city. Regional transportation access to East Carolina University is predominantly by highway.

2.2 East Carolina University Location

The City is divided into a west and east Greenville by railroad tracks running parallel to Evans Street, which is the official east-west boundary for addressing purposes. The ECU main campus is located entirely in the eastern portion of the city, while the medical campus is located in the west portion of the city and adjacent to the Pitt County Memorial Hospital.

3 PREVIOUS PLANS, STUDIES, AND ASSESSMENTS

3.1 Introduction

The following thirteen documents were reviewed for significant facility and policy recommendations that could impact the quantity and quality of parking and transportation at ECU:

2000 ECU Campus Plan
2003 Regional Transit Study
2003 Parking ECU Report
2004 City of Greenville Uptown Parking Study Update
2004 Greenway Master Plan
2005 Greenville Urban Area Thoroughfare Plan 2025
2006 The Center City – West Greenville Revitalization Plan
2006 Greenville Intermodal Transportation Center Feasibility Study
2007 Stantonsburg Road/Tenth Street Connector
2009 Tar River/University Area Neighborhood Report and Plan
2009 ECU Parking Operating Budget Five-Year Plan
2009 ECU Transit Operating Budget Five-Year Plan
2009 ECU Student Transit Authority External Review

Table 3.1 summarizes the key recommendations from each of these documents

Table 3.1 Key Recommendations from Previous Plans, Studies and Assessments

Year	Plan/Study	Facility Recommendations	Policy Recommendations
2000	**ECU Campus Plan**	• Internal Pedestrian Connector (Campus Promenade) from Curry Court across S. Charles Blvd then northward in between playing fields and Minges and Dowdy Fliken Stadium across the railroad tracks and Fourteenth Street past the College Hill dorms and across Tenth Street. • Campus Internal Circulator north/south internal campus street that runs along side of Greenville Blvd across the railroad tracks and Fourteenth Street to Wright Circle. • The plan also recommended parking decks in the Athletics, East, and the Reade Street Campus Planning Precincts.	• Major goal for future planning of the campus is to minimize vehicular access in the interior of campus.
2003	**Regional Transit Study**	• Cooperatively develop a Transit Center. • Cooperatively purchase new buses.	• Create Transit Working Group. • Open PATS service to the general public. • Convert ECU Red & Blue routes to general public service. • ECU & PCMH continue operation of other routes. • Revise fare structure. • Use all available Federal and State funds. • Create a new Public Transportation Authority.

Year	Plan/Study	Facility Recommendations	Policy Recommendations
2003	**Parking ECU 2003 Report**	• Add another 2,618 parking spaces between the years 2000 and 2010.	• Include parking and transit in the physical planning processes at ECU. • Dedicate personnel to analyzing and planning parking and transit services improvements. • Collect data for improved parking and transit operational improvements. • Consolidate transit under parking director. • Restructure the parking permit allocation system. • Restructure the parking permit fee system. • Move more parking clients to the Athletics Campus with improved transit service. • Improve visitor parking and "private" parking on the Core (East) Campus. • Implement access control equipment at some surface lots to decrease need for enforcement personnel. • Improve ticket collections by automating the process through payroll deductions. • Increase the fine amounts. • Improve parking and transit information provided to customers.
2004	**City of Greenville Uptown Parking Study Update**	• Downtown parking garage is not financially feasible with an occupancy rate of 50%.	• Work with business owners to better utilize the parking available now. • City should improve existing surface parking lots. • City should improve the parking management of the existing and future parking spaces in the Downtown area.
2004	**Greenway Master Plan**	• Highest priority greenways are those in the vicinity of ECU. • Details a complete system of primary greenways centered mostly along streams and creeks. • Includes connector greenways to get pedestrians and bicyclists to the primary greenways.	• Use local funding for implementation. • Contains a funding chapter for innovative use of local funds for leveraging more funding.
2005	**Greenville Urban Area Thoroughfare Plan 2025**	• Tenth, Fourteenth Streets and Charles Blvd are all considered Major Thoroughfares in the plan and as such are primary facilities for moving vehicles within and through the Greenville MPO • Tenth Street Connector and New College Hill Drive are listed as priorities in the plan.	• Projects that the population of Greenville will almost double by the year 2030. • Projects most of the employment growth north of the Tar River and most of the residential growth to the east, south, and west of the ECU campus.
2005	**The Center City – West Greenville Revitalization Plan**	• Plan calls for approximately $170 million dollars worth of priority investments into the downtown area in redevelopment, streetscapes, utilities, schools and housing. • Tenth Street Connector and a 500 Arts Center surface parking lot are listed as priorities in the plan.	• Reorient the city taxes, land use planning and zoning toward implementing the plan. • Wayfinding must be a priority to get people to the downtown and ECU. • Crime reduction must be a priority to get investments in the downtown.

Year	Plan/Study	Facility Recommendations	Policy Recommendations
2006	**Greenville Intermodal Transport-ation Center Feasibility Study**	• Study determined that it is feasible for Greenville to build, maintain and operate a transportation center in the Downtown area of the city. • Site area will need to be 2 to 5 acres depending upon the layout.	• City will benefit from potential economic impacts of Construction, Activities accommodated at the center, Land Use Impacts (redevelopment incentives), Tourism Impacts, and Fiscal Impacts (income and property taxes from downtown redevelopment).
2006	**Spartanburg Road/Tenth Street Connector (U-3315)**	• Project is in the design alternatives phase at this time.	• Provide a grade-separated connection at the CSX Rail Line from the eastern part of Greenville to Pitt County Memorial Hospital (PCMH) / Health Science campus to improve access by emergency vehicles. • Increase direct connectivity between PCMH/Health Science campus, downtown Greenville, East Carolina University (ECU) main campus, and areas to the east and west of these locations and create a direct connection between Stantonsburg Road and Tenth Street to improve vehicular, pedestrian, and bicycle access, and to maintain acceptable traffic Levels of Service in the future. • Provide a "gateway" into the City of Greenville that welcomes drivers into the City and is an attractive corridor that conforms with currently approved transportation and comprehensive plans.
2009	**Tar River/ University Area Neighbor-hood Report and Plan**	• Preserve the historical, architectural, and single-family character of the College View and University neighborhoods. • Develop and implement a tree planting program. • Extend the Green Mill Run greenway to Tar River. • Preserve the tree canopy appearance of Fifth Street. • Link Farmville Blvd to Tenth Street.	• Encourage revitalization of older neighborhoods in Greenville in a manner that preserves neighborhood character and identity. • Implement programs to increase home ownership. • Support the ECU Master Plan consistent with the policies of this plan and review development proposals to ensure compatibility with the plan. • Implement Greenway Master Plan. • Create walkable communities/neighborhoods. • Develop sidewalk map and sidewalk plan.
2009	**ECU Parking Operating Budget Five-Year Plan**	• Increase surface parking from 11,786 spaces to 13,515 spaces. • Improve parking signage. • Expand parking metered spaces to 10% of total parking space count.	• Parking should be a stand alone (self liquidating) department and not transfer funds to other departments. • Do not build a parking garage unless the facility is paid for before it's given to ECU. • Revenue opportunities need to be included in the Parking Master Plan.

Year	Plan/Study	Facility Recommendations	Policy Recommendations
2009	**ECU Transit Operating Budget Five-Year Plan**	• Determine Return on Investment of Hybrid bus purchases. • Install automatic passenger counters on all buses for data collection.	• Discontinue limited summer service. • Discontinue Saturday and Sunday service. • Charge apartment complexes 100% of operating costs. • Discontinue advertising except for ECU related due to low revenues. • Review Charter rates. • Adjust fuel cost projections by CPI in the future. • Enhance the Safe Ride program. • Re-evaluate Weekend-Express Night Service on a Cost to Benefit basis. • Reduce combine the total number of routes from 28 to 24. • Reduce service based upon passenger counts (usage). • Evaluate all routes by cost per passenger. • No further expansion of service unless the expense is justified.
2009	**ECU Transit Authority External Review**	• Bus replacement must be more systematic or maintenance costs will increase while reliability decreases. • Add 55 foot coach buses to the fleet to provide athletic charters. • Replace the 60 foot buses with more environmentally friendly, smaller vehicles. • Transit technology (automatic passenger counters, global positioning systems, transit scheduling software, etc.) needs to be implemented to assist management and improve service.	• Professional transit staff need to be hired, especially a safety manager and training manager. • Develop a five year service plan. • Charge apartment complexes the full operating cost. • Expand Charter Bus Service. • Review and enhance the Campus Safe Ride program and include an assessment of the need for a mobility challenged service for faculty, staff and students with mobility issues. • Improve communications with administration and riders through surveys and providing more detailed information about services and operations.

3.2 Development Opportunities/Constraints Adjacent to Campus

3.2.1 Tar River / University Neighborhood Association (TRUNA)

The residential area located to the immediate north and east of main campus is part of this association, and its policies both impact and are impacted by any university action. A 2009 development report and plan (click here for report) identifies properties, existing zoning restrictions, and future land use recommendations, and includes eight (8) structures owned by the university. The plan also identifies its vision, goals and objectives, as well as strategies for development. Parking and Traffic must work collaboratively with this association now and in the future as the campus grows.

3.2.2 City of Greenville Financial Services - Parking Department

The City of Greenville (Public Works) has recently changed on street parking limitations for neighborhood areas surrounding ECU's main campus from 2- or 4-hour parking to residential permit parking (8 am – 5 pm). The city website notes that these changes have been made "in

order to address parking and safety concerns". The parking concerns relate to a lack of available residential parking during daytime hours, and the safety concerns relate to city fire truck access for roads measuring 28' between curbs with on street parking in both directions. These changes were coordinated with the ECU Parking & Traffic Department and will have varying impacts on both the city and university's transportation systems, depending upon the individual and their reason for visiting campus. Some of these impacts may be beneficial to one and not the other, while others may be beneficial to both, or may only be temporary. These impacts may include:

- Encouraging more commuting students to purchase parking permits and use transit from park-and-ride lots
- Increased "hunting" for meter and visitor parking
- Encouraging illegal parking both on and off campus
- Removing traffic along E. 5th Street and concentrating traffic along E. 10th Street, Charles Blvd, and E. 14th Street during AM and PM peak times
- Increased on campus parking after 5 PM
- Increased pedestrian and/or bicycle travel to / from campus

Parking and Traffic must also work collaboratively with the city to ensure that policy changes and their future impacts are mutually beneficial, and sequentially coordinated. Every attempt should be made to provide alternatives, rather than simply impose limitations, which correspond to an overall comprehensive transportation system strategy.

3.2.3 Center City – West Greenville Revitalization Plan (2006)

This plan for the City of Greenville is specific to the downtown / university area, and was adopted in 2006 by the city council. Some key findings include the following:

- Mission Statement: "To assure that Greenville (NC) is a better place to live, raise a family, and do business, while improving the safety, security, image, and economic vitality of the urban core and the neighborhoods of West Greenville."
- 10th Street Connector becomes primary access to Center City
- Possibility for on street parking along Evans St and First St
- East Carolina University identified as the first strength of the area
- Recommendations for ECU:
  - Develop new entrance along E. 10th St
  - Leverage private development in downtown
  - Define edges of campus by purchasing non-university properties
  - Create linkages to downtown
  - Monitor late night student activities
  - Improve security of downtown
  - Develop student housing along Reade St
  - Plan campus expansion towards Evans St

3.2.4 City of Greenville Uptown Parking Study Update (2004)

This study updated the previous 1998 parking study, and found that only 53% of available parking spaces in downtown are occupied on a typical week day. Among these, the four largest university-owned parking lots were 59% occupied (366 out of 620). Occupancy counts of these four blocks were as follows:

Table 3.2 Parking Study Results – ECU-owned Parking Lot Occupancy (2004)

Block #	Occupied Spaces	Total Spaces	Occupancy Rate	Location
35	72	72	100%	Closest to Campus
36	183	193	95%	
37	84	230	37%	
38	27	125	22%	Furthest from Campus
ECU-owned	**366**	**620**	**59%**	
Entire Study Area	*1,842*	*3,465*	*53%*	

Recommendations from this study included (a) the delay of structured parking deck construction in uptown; (b) parking management system adjustments on behalf of the city; (c) future collaboration with a private developer and / or East Carolina University for the construction of a parking deck; and (d) encouraged use of alternative forms of transportation, such as walking, biking, carpool / vanpool, and the use of public transit in order to keep the costs of parking low.

3.2.5 City of Greenville Comprehensive Plan Update (2004)

The city's comprehensive plan (Click here for link) is titled 'Horizons', and serves as a vision statement for the City Council and citizens. This plan was adopted in 2004, and outlines goals, objectives and policies for specific 'vision areas' of the city. The following are key findings from this comprehensive plan:

Mobility objectives *(city-wide)*

- Reduce existing traffic congestion and safety problems
- Provide safe, convenient, and efficient opportunities for pedestrian and bicycle movement
- Coordinate transportation plans with ECU and Hospital
- Improve the public mass transportation system
- Develop alternative transportation system (pedestrian and bicycle)

Management actions *(downtown ('Central') and university ('East Central') areas)*

- Expand office uses
- Encourage consolidated parking and study feasibility of parking garage near the Town Commons
- Provide additional parking and publicize the availability of parking
- Consider creating a multi-modal transportation center
- Increase the attractiveness of public and private parking lots
- Develop additional residential opportunities
- Improve streetscape and lighting
- Increase security
- Widen 14th Street from Charles Blvd to Greenville Blvd
- Extend Brownlea Dr to connect with Charles Blvd
- Address parking problems in the Tar River neighborhood
- Extend Green Mill Run greenway

4 EXISTING CONDITIONS

The following sections briefly assess the existing conditions of transportation-related topics for all ECU campuses. Topics include the status of any proposed studies, projects, or plans that involve the university, as well as an analysis of both the parking and transit systems.

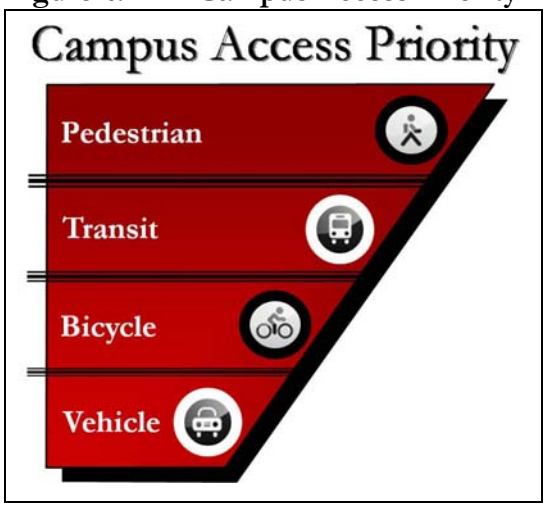
4.1 Peak Class Times and Impact on Transportation

The class change 'flooding' of campus streets by students or the gathering of students at bus stops during class change can negatively impact both the traffic and transit systems on and off campus. Vehicles may come to a complete stop for minutes, while riders may be left behind as buses become full, which routinely occurs at commuter park-and-ride lots prior to the AM peak class time (roughly 9:30 am). There are several contributing factors that may exacerbate these problems, including:

- "Hunting" for the closest parking spaces within a zoned parking system
- Re-parking while on campus because permit allows maximum flexibility
- Faculty/Staff driving to campus meetings
- Facilities Maintenance vehicles parking along sidewalks, alleyways, and/or curbs in order to perform routine work
- Campus construction and renovation activities
- Daily deliveries to dining halls
- Students departing 'just in time' for classes rather than arriving early
- Irregular bus departure timing (leaving before specified time)
- Consolidated transit stops within retro-fitted locations

The cumulative impact of each of these factors is a congested traffic network and inefficient modes of transportation during peak periods. Strategies to alleviate congestion and promote efficient modes should address the campus pedestrian conditions, followed by transit riders, bicycles, carpool/vanpool commuters, and finally single-occupied vehicles. Figure 4.1 displays this principle with the campus access hierarchy.

Figure 4.1 Campus Access Priority Hierarchy



4.2 Vehicular Mode

This section describes the vehicular element of transportation with respect to the ECU campuses and the city of Greenville. Topics include roadway operations and functionality, traffic count data, and planned road improvements within the Greenville Metropolitan Planning Organization (MPO).

4.2.1 Roadway Operations and Functionality

This section identifies and classifies the primary streets that serve the campuses.

Main Campus

ECU's main campus is located adjacent to the city's central business district (CBD), bounded by two major and two minor thoroughfares (E. Tenth St, S. Cotanche St, and E. Fifth St, Elm St). Founders Drive is a private university street running through the center of main campus, connecting Fifth and Tenth Streets. This public street is used by faculty/staff, students, and visitors primarily as an informal vehicular drop off or pick up location, which can be problematic during class change. The campus perimeter streets (mentioned above) carry a much larger volume of vehicular and bus traffic than adjacent streets, with approximately nine stop light controlled intersections on all four streets surrounding the campus.

East Fifth St is predominantly residential, functioning as the 'front door' to campus, featuring a main gateway sign to the university, visitor parking signs, lower speed limits, narrower travel lanes, marked bicycle lanes, and a deeper campus building setback separated by vegetation. Many off campus students cross East Fifth St on foot from their neighborhood apartments adjacent to main campus each day. There is a single stop-light controlled intersection located at Founders Dr to help facilitate this pedestrian crossing, however a majority of students cross at mid-block locations.

East Tenth St is a predominantly commercial street that functions as a major vehicular east-west corridor through the city, with as many as five lanes of traffic and/or a concrete median, a higher speed limit, several traffic-light controlled intersections, and less vegetation to cover a greater amount of surface parking for the university. There are no bicycle lanes or pavement markings along East Tenth St. An urbanized stream (Green Mill Run) flows parallel to East Tenth St along the south side, which periodically floods, and has limited development adjacent to the university.

Elm St is a residential city street with sidewalks and on street parking along both sides, a low speed limit, as functions as the eastern perimeter of campus for vehicular traffic. The actual campus property line ends at Maple St, one block to the west. Elm St functions as an important vehicular connection between East Fifth (minor) and East Tenth (major) Streets, as well as a major corridor to the south and connecting with East 14th (minor) and Greenville Blvd (major). Because of the presence of on street parking there are no bicycle lanes or pavement markings.

South Cotanche St is classified as a major thoroughfare that brings traffic from downtown to East Tenth St (name changes to Charles St after this point), along the western perimeter of main campus. This small segment of roadway (less than 0.5 miles) varies from three to four lanes among its four intersections. Located on the east side of Cotanche St is the student recreation center, however visitor parking lots and on street parking along city streets is located to the west

side, requiring pedestrian crossing of this major thoroughfare. There are no bicycle lanes or pavement markings along this portion of Cotanche St.

Interior campus streets such as Faculty, Trustees, and Chancellors Way, as well as Alumni Lane, Library Drive, Wright Circle and others have been retrofitted (over several decades) into one-way loop roads, service access roads, or dead end to small parking areas.

Table 4.1 Main Campus Perimeter Roadways

Street Name	Boundary Street	# of Lanes	Classification	Median	Sidewalks	Bike Lanes	# of Stop Lights*
E. 5th St	North	2	Minor	No	Both Sides	Yes	3
E. 10th St	South	4-5	Major	Turn Lane	Both Sides	No	6
Elm St	East	2+	Minor	No	Both Sides	No	2
S. Cotanche St	West	3-4	Major	Turn Lane	Both Sides	No	2

* Refers to number of stop lights adjacent to campus property only (2 = corners of campus perimeter).

Athletic Campus

ECU's athletic campus (football, basketball, baseball stadiums) is located to the south of main campus, with the College Hill student residential area located in between, bounded by four major thoroughfares (E. Tenth St, Greenville Blvd, Charles Blvd, and Elm St). College Hill Dr (local) connects the residence halls with main campus, however railroad tracks act as a barrier between the residence halls and the athletic facilities further south. These tracks also restrict pedestrian and bicycle movements from the Minges Park & Ride lot to main campus. An indirect vehicular connection exists between these two locations (Haskett Way/14th St/Berkley Rd). The lack of a direct vehicular connection between 14th and 10th Streets limits the number and speed of vehicles that drive through this student-residential area.

East 14th St is classified as a major east-west thoroughfare through the city and ECU's athletic campus. Sidewalks are present along portions of the street, however bicycle accommodations are not. Three gravel parking lots exist along the south side of 14th St adjacent to railroad tracks, across the street from the Belk residence hall. There are no formal pedestrian crossing locations for these gravel lots, which can hold around 250 residential student vehicles.

Ficklen Dr is a two-lane local roadway that accesses the ECU football and basketball stadiums, as well as more than 1,600 of surface parking spaces utilized by commuting students. Three bus stops are located along this roadway, however, transit accommodations such as pull off lanes, pedestrian crossing areas, and bicycle pathways have not been constructed.

Charles Blvd has recently been improved with the addition of new sidewalks extending south to Greenville Blvd, a concrete median, new pedestrian crossing pavement markings, and tree plantings. This major thoroughfare connects the Belk Building and Curry Court parking lots with the baseball, softball, football, and basketball stadiums as well as main campus. This roadway also serves as primary access for commuting students to the Minges Park and Ride facility. There are no bicycle lane markings, however the outer lane pavement widths were designed to accommodate bicycle transportation.

Elm St, south of East Tenth St, is a major thoroughfare with a concrete or vegetation median, and at-grade crossing of railroad tracks. The Green Mill Run greenway crosses Elm St at the city's Elm Street Park, just south of East Tenth St.

Greenville Blvd is a major thoroughfare running from southwest to northeast across the city. Development along this roadway is almost exclusively commercial until it traverses ECU's athletic campus (between Charles Blvd and 14th St), where the developments are primarily residential. There are no accommodations for bicycle transportation, and very few pedestrian crossing locations along this auto-dominated corridor.

Table 4.2 Athletic Campus Perimeter Roadways

Street Name	Boundary Street	# of Lanes	Classification	Median	Sidewalks	Bike Lanes	# of Stop Lights*
E. 14th St	Separates Athletic & College Hill	2	Major	No	Portions	No	2
Ficklen Dr	Internal	2	Local	No	No	No	0
Charles Blvd	West	4	Major	Concrete	Both Sides	Unmarked	2
Elm St	East	3-4	Major	Concrete	Both Sides	No	2
Greenville Blvd	South	5	Major	Turn Lane	Portions	No	1

* Refers to number of stop lights adjacent to campus property only (2 = corners of campus perimeter).

Medical Campus

ECU's medical campus is located adjacent to Pitt County Memorial Hospital, approximately two miles west of the city's CBD, bounded on three sides by two major and one minor thoroughfare (W. Fifth St, Arlington Blvd, and Moye Blvd). Internal streets connect campus parking lots with Heart and Arlington Boulevards to the south and west.

West Fifth St (NC-43) is a four-lane roadway along the northern boundary of the medical campus, which connects with the city of Rocky Mount (NC) and Interstate-95. This rural (two-lane) highway corridor is not heavily utilized to access the city of Greenville from points west and north however, as the dominant route has been from US-264 since its connection with I-95 in 2003. There are no bicycle or pedestrian accommodations along this portion of West Fifth St.

Stantonsburg Rd functions as the primary thoroughfare into the city from the west (US-264). As a five-lane roadway with multiple stop-light controlled intersections, this street supports not only hospital traffic, but commuting students traveling to the medical or main campuses. The speed limit on Stantonsburg Rd decreases from 55 mph at the city limits, to 45, and then 35 near the hospital, less than 2-miles apart. There are sidewalks along both sides of Stantonsburg Road, but the volume of traffic is too high to allow on-street bicycle accommodation.

Moye Blvd runs north to south and connects Stantonsburg Rd and West Fifth St, serving as the eastern boundary of the medical campus. This minor thoroughfare has been re-aligned as recently as 2006 in order to accommodate the construction of a new heart center for Pitt County Memorial Hospital located in what was previously the Moye Blvd right-of-way. Commercial and office properties along Moye Blvd are in the process of being developed, adjacent to the Pitt County Memorial Hospital and ECU medical campus.

Arlington Blvd is a major thoroughfare connecting Stantonsburg Rd with West Fifth St along the west perimeter of the campus. This recently completed connection has sidewalks along both sides as well as outer lane pavement widths to accommodate bicycles (without striped bike lanes). A local roadway named MacGregor Downs intersects Arlington Blvd at two right-in-right-out locations, with a concrete median dividing any through movements.

Table 4.3 Medical Campus Perimeter Roadways

Street Name	Boundary Street	# of Lanes	Classification	Median	Sidewalks	Bike Lanes	# of Stop Lights*
W. 5th St	North	5	Major	Turn Lane	None	No	2
Stantonsburg Rd	South	5	Major	Turn Lane	Both Sides	No	2
Moye Blvd	East	4	Minor	None	Portions	No	2
Arlington Blvd	West	4	Major	Concrete	Both Sides	Unmarked	2

* Refers to number of stop lights adjacent to campus property only (2 = corners of campus perimeter).

4.2.2 Existing Traffic Count Data

Understanding the average daily traffic volume on city streets will help explain the arrival patterns of faculty/staff and students, as well as identify any potential pedestrian-traffic conflict areas. The NCDOT counts traffic volumes in Greenville in alternate years, with 2006 being the most recently released data set. This resource is available for download in ArcGIS shapefile format at the following address: http://www.ncdot.org/doh/preconstruct/tpb/traffic_survey/. Table 4.4 shows the NCDOT Annual Average Daily Traffic (AATD) counts, created from 2006 data.

Table 4.4 Annual Average Daily Traffic for Campus Perimeter Streets

Street Name	Nearest Intersection	Campus	AADT Volume
Cotanche St	E. 9th St	Main	14,000
E. 10th St	Charles St	Main	27,000
E. 10th St	Maple St	Main	30,000
Elm St	E. 10th St	Main	12,000
Arlington Blvd	Evans St	Athletic	31,000
Berkley Rd	E. 14th St	Athletic	3,000
Elm St	E. 14th St	Athletic	9,200
Evans St	E. 14th St	Athletic	23,000
Greenville Blvd	Charles St	Athletic	30,000
Arlington Blvd	Stantonsburg	Medical	28,000
Moye Blvd	W. 5th St	Medical	5,400
Stantonsburg Rd	Emergency Dr	Medical	25,000
Stantonsburg Rd	Memorial Dr	Medical	22,000
US-264	US-264 Bypass	Medical	22,000
W. 5th St	Arlington St	Medical	15,000
W. 5th St	US-264 Bypass	Medical	7,600
W. 10th St	Memorial Dr	Medical	13,000
Greenville Blvd	US-264	North	25,000
US-264	Greenville Blvd	North	16,000

Figure 4.2 and Figure 4.3 display the AADT counts around the city of Greenville, indicating that the majority of traffic near main and athletic campuses arrives from the south and east, using E. 10th St, Charles Blvd, and Evans St.

Figure 4.2 2006 NCDOT Annual Average Daily Traffic (AADT) Counts Map

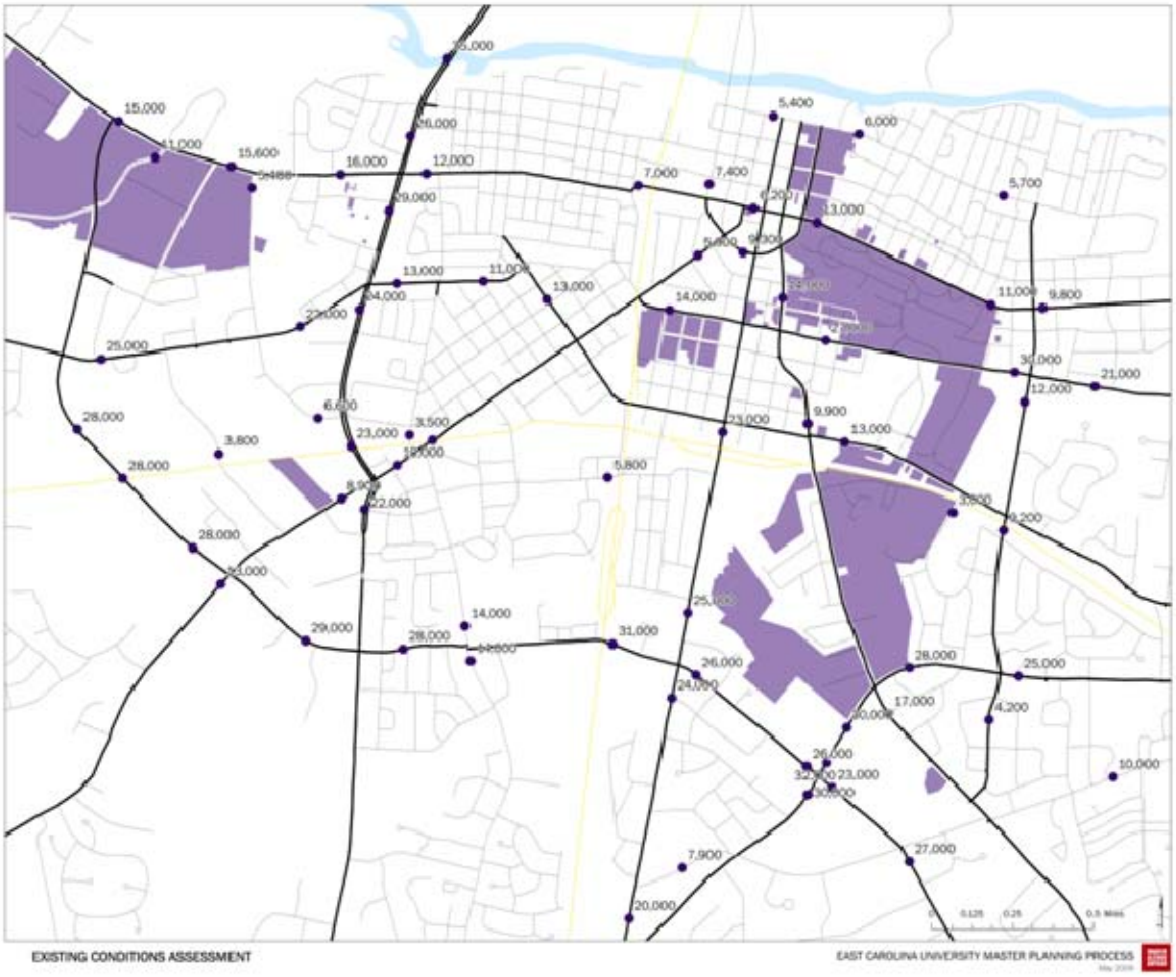
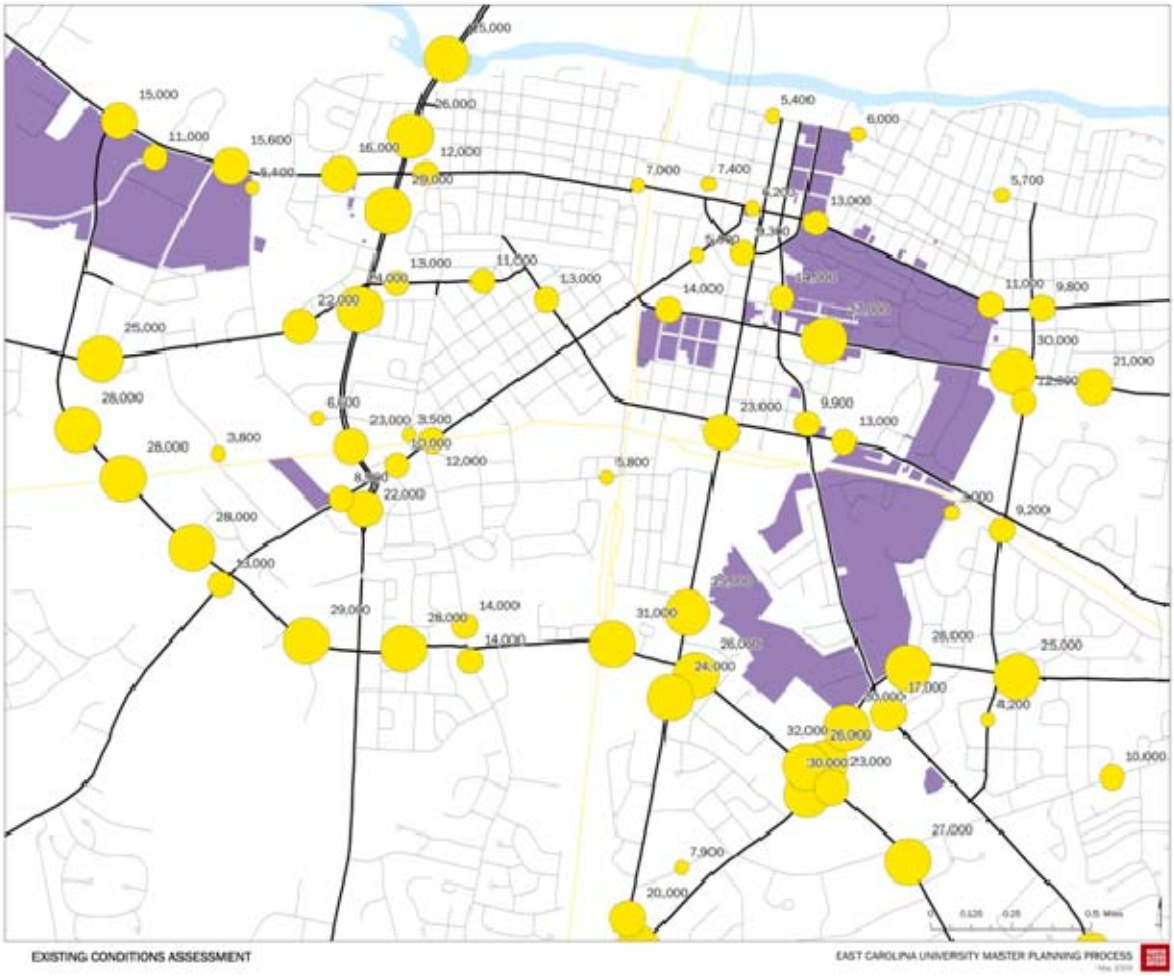


Figure 4.3 2006 Traffic Density



4.2.3 Planned Road Improvements

In February of 2005 the NC Board of Transportation adopted the 2025 Thoroughfare Plan (2025 Thoroughfare Plan) for the Greenville Urban Area MPO (GUAMPO). This plan recognizes the link between transportation planning and land use planning, and as such combines the urban streets of Greenville, Winterville, Ayden, Simpson, and portions of Pitt County in an effort to coordinate growth in this developing region.

Figure 4.4 shows a portion of the plan's map. The following four projects from the 2025 thoroughfare plan may potentially impact the transportation systems in place across ECU campuses:

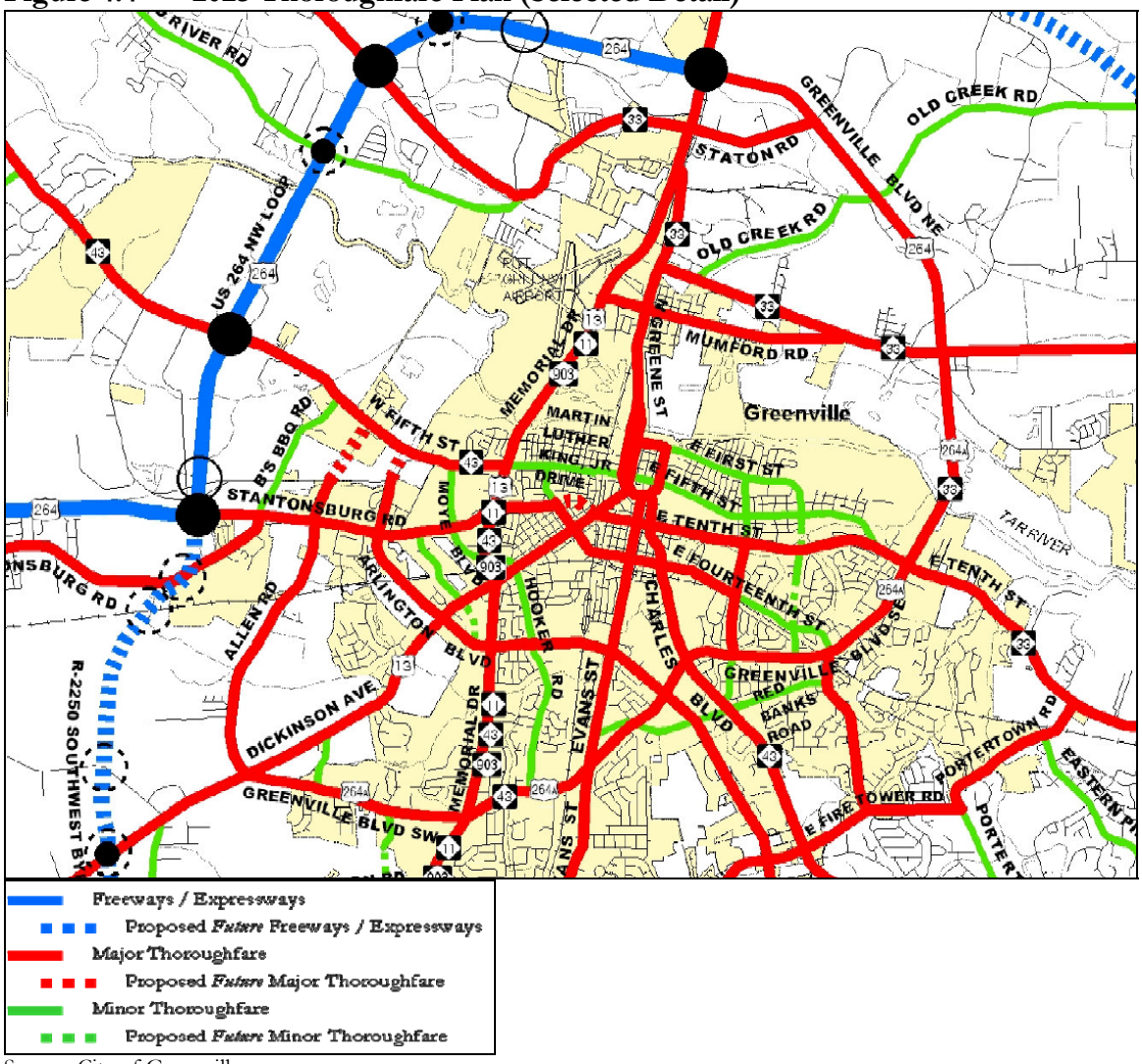
- **Tenth Street Connector** – this project provides a new east-west connection in the heart of Greenville, and connects East Carolina University and Uptown Greenville to the Regional Medical Center and the Brody School of Medicine. This project is funded in the TIP (#. U-3315) (http://www.greenvillenc.gov/tenth_street_connector_project/index.htm). As of 2009 the project is considering four possible alternatives in cooperation with the NCDOT and FHWA, each with varying levels of impact to adjacent properties.

- **Allen Road Extension –** this would be a new connection between McGregor Downs Rd and NC-43 North (West Fifth St). This roadway is recommended to provide safer and more rapid north to south traffic flow to the west of the hospital area.

- **Arlington Boulevard Extension –** this multi-lane roadway extends Arlington Boulevard to NC-43 North/West Fifth St. This extension will aid in lowering congestion in the medical district primarily for the emergency/trauma units that access Arlington Blvd. This project was recently added to the TIP. The Arlington Blvd extension has been completed as of 2007, around the same time as the Allied Health building(s) were opened.

- **Brownlea Drive Extension –** this completes the alternative route to Elm St for north-south residential traffic in the eastern section of Greenville, connecting portions of existing road. This project is included in the City's Capital Improvement Program (unfunded).

Figure 4.4 2025 Thoroughfare Plan (Selected Detail)



Source: City of Greenville

4.3 Parking System

This subsection will assess the existing parking system at ECU according to the following framework:

- Parking zone system
- Parking supply
- Parking demand
- Permit oversell
- Permit pricing
- Revenue
- Citations
- Benchmarking

4.3.1 Existing Parking Zone System

ECU's current parking zone system allows for selected users to gain more proximate parking access at a greater cost. This type of user group hierarchal-system is very common for a medium to large sized population in a relatively urban setting because it attempts to balance land resources and parking demand with large population groups. There are three basic types of on campus parking permits available (A, B, and C), at three distinct levels of service and price. An additional off campus storage permit (D) is available to resident students who were not able to obtain an on campus parking permit at the beginning of the semester.

A-Permit

The A-permit represents the highest level of service (closest proximity), at the highest price ($312 per year). This permit offers premium parking access on the Main, College Hill, and Medical campuses, located adjacent to the buildings. Although there are currently five A-permit distinctions depending upon geography, the only significant difference among the five is the A-2 permit, which is offered to resident students (on the college hill area) while all of the remaining are for faculty/staff. The advertized parking permit oversell rate for A-permits is roughly 10%, however 2008-9 permit sales shows that oversell rates approach 30% for main campus. It is understood that several faculty/staff members at ECU maintain a parking permit for main campus although their office is located somewhere else. Additionally there are individuals with accessibility needs who have an A-permit, however, park in handicap/accessibility spaces rather than occupy A-zone spaces. The effect of this reduces the calculated 30% oversell on a typical week day to an unknown parking oversell rate.

B-Permit

The B-permit represents the medium level of service (next closest proximity), at a mid-range price ($156 per year). This permit offers fringe parking access to the same campuses, located less than a 5-minute walk from campus buildings. There are also five B-permit distinctions depending upon geography, and likewise, the only significant difference being the B-2 permit offered to resident students (living on the west side of main campus) while all of the remaining are for faculty/staff. B-permits do not have an expressed oversell rate, and 2008-9 permit sales indicate a 0-7% range for Main campus, as well as a generalized 30% oversell rate for the Medical campus due to combined parking zones.

C-Permit

The C-permit represents the lowest level of service (park and ride), at the lowest price ($84 per year). This permit offers commuting students the choice of either (a) parking roughly one-half miles away from main campus and using an alternative form of transportation (walking, biking, or riding the student transit system), or (b) parking on main campus after 5 pm (in few locations it is 3 pm) for evening classes. C-permits also do not have an expressed oversell rate, in fact, ECU Parking and Traffic does not have a limitation to the number of C-permits that may be sold in a given year because of the ample surface parking that is available at both the football stadium and Curry Court locations. Additionally, after 4 pm a C-permit holder may also park in any A- or B-zoned parking space on any campus.

Parking Overflow

The current parking zone system allows for higher permit holders to overflow into lower permit zones when needed. In the event of an A-permit holder arriving on campus and finding completely full parking lots, they can simply overflow into any available B-zone, and likewise into a C-zone. Since there are an estimated 1,200 unoccupied parking spaces available on a typical weekday, with no cap to the number of C-zone permits sold, this scenario will not likely result in a C-permit holder left without a place to park because the current demand does not exceed the supply.

4.3.2 Parking Supply

According to the 2008-9 ECU parking inventory, the total parking spaces are divided into the following user group categories. Table 4.5 displays the relative percentage of total parking spaces available for each user group, and the approximated ratio of persons per parking space.

Parking Supply by User Group

Commuting students represent a majority (66%) of the campus population, however, do not have the highest percentage of total parking spaces available to them (31%). The permit oversell rate (see permit oversell ratios section below) explains this circumstance. Additionally, the off campus commuter student population is also served by a very robust transit service through the ECUSTA (see transit section of this analysis).

The persons per space ratio is one method used to measure relative supply of parking for each user group. The campus-wide ratio of 2.3 persons per parking space is typical for most universities, which would range depending upon the geographical setting and annual student enrollment. The important component from this analysis are the relative distributions between user groups, in particular the fact that resident student parking supply is roughly the university average (2 persons per space), while the faculty/staff population is much closer to 1 person per space, and commuting students are closer to 5 persons per parking space. These figures do not assume that a parking system is 'good' or 'bad,' merely that these are the existing conditions for the 2008-9 academic year and they may be compared to previous years or used in future campus planning.

Table 4.5 Parking Supply by User Group

2007 Population	% Population	User Group	Parking Spaces**	% Spaces	Persons per Space	Spaces per Person
5,153	17 %	Faculty/Staff	4,590	34 %	1.1	0.89
20,453	66 %	Commuters	4,169	31 %	4.9	0.20
5,345	17 %	Residents	2,386*	18 %	2.2	0.45
Unknown	Unknown	Visitor	767	6 %		
		Other	1,506*	11 %		
30,951		**TOTAL**	**13,418***		**2.3**	**0.43**

* Includes patient, and off campus (storage) residential parking areas
** Combined parking zones (Faculty/Staff and Commuter zones) are appropriated using the ratio of permit sales

Parking Supply by Campus Location

An alternative method to analyze the existing parking supply at ECU is to compare the geographic location. According to the ECU Parking and Traffic Services department, the Main campus area is typically divided into three pieces (Reade St, West and East Main campus). The Athletics campus is divided into the Athletics Complex and the Carol Belk Building. The College Hill area, Medical campus, and West Research campus are considered stand-alone locations, and all of the remaining parking areas are lumped together into a group called 'Out Parcel Lots'. Table 4.6 displays this summary.

The approximated number of parking spaces per user group may vary slightly as a result of some combined parking lots located on the Medical Campus (B3/B4, and B4/B5 zones), however, the total number of parking spaces within the ECU inventory remains the same at 13,418.

The Medical campus, which is still developing, represents the largest parking lot supply of these groups. For reference, Reade St (8%), East (5%) and West (9%) Main campus combined total is roughly 22% of the parking inventory. Combining the Carol Belk Building area (9%) with the Athletics Complex (18%) parking would represent more than 27% of the total parking supply at ECU.

The residential storage lot (1,034 spaces) represents a significant parking supply, located within the Out Parcel group. These spaces are included for this analysis, however for benchmarking purposes (see Benchmarking section below) they are considered off campus parking and therefore excluded.

Table 4.6 Parking Supply by Campus Location

	Generalized User Groups**					
Campus Location	**Fac/Staff**	**Commuters**	**Residents**	**Visitors**	**Other**	**% Spaces**
Reade Street	285		650	16	57	8 %
College Hill	634	229	702	22	154	13 %
Athletics Complex	225	1,883		28	254	18 %
Carol Belk Building Area	86	1,019		8	137	9 %
East Main Campus	556			44	125	5 %
West Main Campus	830			188	172	9 %
Out Parcel Lots	130	210	1,034*	14	455	14 %
West Research Campus		131			6	1 %
Medical Campus	1,351	1,190*		447	146	23 %

* Includes patient, and off campus (storage) residential parking areas

** Some parking zones are combined (Faculty/Staff and Commuter), resulting in slightly different parking space totals for these user groups.

4.3.3 Parking Demand

The most effective method to observe and quantify parking demand is to conduct a parking occupancy inventory during the AM peak period of typical weekdays (Tue-Thur). Such an inventory survey has not been conducted by ECU parking and traffic services. The next best option for this task is to gather qualitative observations regarding the general availability of parking for certain locations on campus from those individuals who routinely work in the field. Parking enforcement officers would be excellent employees to relay this type of information. Such a request was made to the parking and traffic services department, and the following information was provided:

- Reade St vicinity: 110 available parking spaces (11%)
- West Main Campus vicinity: 192 available parking spaces (16%)
- East Main Campus vicinity: 36 available parking spaces (5%)
- College Hill vicinity: 110 available parking spaces (6%)
- Athletic Complex vicinity: 760 available parking spaces (32%)
- Carol Belk Building vicinity: 675 available parking spaces (54%)
- Medical Campus vicinity: 190 available parking spaces (6%)
- All remaining areas/lots are 90-100% occupied

From these data it may be concluded that there is a great deal of parking capacity within the periphery (park-&-ride lots) of the ECU Athletics campus. There is also some excess parking capacity available on Main campus itself, particularly near the downtown area (West Main and Reade St) to the west and northwest.

There are a range of methodologies to achieve optimum parking occupancy rates, some of which include the following:

- Actively manage parking permit oversell rates
- Adjust parking permit price
- Adjust parking zone system

- Coordinate activities with neighboring agencies (both public and private)

4.3.4 Permit Oversell Ratios

Parking permit oversell is a measure of relative parking space 'availability.' An oversell ratio that is greater than 1.0 represents more than one parking permit sold for each parking space. A parking system with maximum flexibility (the ability to parking in many, or all parking zones) will have higher oversell ratios than a parking system that has a more rigid or restrictive zone system. Resident student permit oversell ratios are usually much lower than commuting student permit ratios because commuters may not have classes five days per week, whereas resident students must have a parking space for their vehicle 7-days per week.

University transportation systems that actively manage their parking supply and demand will set permit oversell targets, for each permit type, at the beginning of the academic semester. Once the targeted oversell is reached they will close the sale of permits until such time as they observe a consistently low parking occupancy rate (less than 90%) for certain parking zones during peak times. When this occurs, the department will begin selling a limited number of permits in order to achieve optimal parking occupancy (90-95%) without disrupting parking availability.

Table 4.7 lists the current parking permit oversell rates.

Table 4.7 Parking Permit Oversell Rates

User Groups	2007-8 Population	Permits Sold	2008-9 Spaces	Permits per Space*
Faculty/Staff	5,153	5,132	4,590	1.12
Resident Students	5,345	2,259	2,386	0.95
Commuting Students	20,453	6,107	4,169	1.46
Visitors	Unknown	Unknown	767	
Others	Unknown	Unknown	1,506	
TOTAL	**30,951**	**13,498**	**13,418**	1.01

*1.12 permits per space represent an oversell rate of 12%, or 112 permits for every 100 spaces

It is important to actively manage a parking system throughout the academic year by maintaining consistent permit oversell ratios, making parking lot occupancy observations, and updating an accurate parking space inventory. These types of data are a useful tool for the campus administrators, who may be planning for the removal of existing parking facilities for future campus buildings.

4.3.5 Permit Pricing and Revenue

Parking demand is directly related to the parking permit price(s) available to the campus population. It has been shown at other universities that as permit prices increase over several years, the number of parking permits sold will increase to an unknown market limit, and then begin to decrease. This phenomenon is referred to as permit price elasticity.

ECU began its current parking zone system in 2003, and has not increased its permit prices. Beginning in the fall of 2009, however, the permit prices will increase by 8-20%, as shown in the table below.

For the 2008-9 academic year the average cost of an ECU parking permit (total revenue divided by total permits sold) was $154. By comparison, the mandatory student transit fee for the 2008-9 academic year was approximately $130. In the coming academic year, permit prices are being increased by 8-20%, or $12-24 depending upon the permit type.

Parking permits for lots that are located furthest from campus (C-[commuter park & ride] and D-[resident student storage]) are increasing by 17-20%, whereas those located much closer to campus are increasing by only 8%.

Table 4.8 Annual Permit Price (2008-10)

Permit Type	Population Group	Annual Cost 2008-9	Annual Cost 2009-10	% Increase
Reserved	Deans & Above	$336	Unknown	Unknown
A1	Faculty / Staff	$288	$312	8%
A2	Resident Students	$288	$312	8%
A3	Faculty / Staff	$288	$312	8%
A5	Faculty / Staff	$288	$312	8%
A7	Faculty / Staff	$288	$312	8%
B1	Faculty / Staff	$144	$156	8%
B2	Resident Students	$144	$156	8%
B3	Faculty / Staff	$144	$156	8%
B4	Commuters	$144	$156	8%
B5	Faculty / Staff	$144	$156	8%
B7	Faculty / Staff	$144	$156	8%
C1	Faculty / Staff	$72	$84	17%
C2	Commuters	$72	$84	17%
D	Resident Students	$200	$240	20%

Table 4.9 Annual Permit Revenue (2008-9)

Permit Type	Population Group	Permits Sold	Annual Cost 2008-9*	Permit Revenue
Reserved	Deans & Above	66	$336	$22,176
A1	Faculty / Staff	1,454	$288	$418,752
A2	Resident Students	711	$288	$204,768
A3	Faculty / Staff	508	$288	$146,304
A5	Faculty / Staff	210	$288	$60,480
A7	Faculty / Staff	161	$288	$46,368
B1	Faculty / Staff	1,588	$144	$228,672
B2	Resident Students	694	$144	$99,936
B3	Faculty / Staff	680	$144	$97,920
B4	Commuters	1,384	$144	$199,296
B5	Faculty / Staff	129	$144	$18,576
B7	Faculty / Staff	0	$144	$0
C1	Faculty / Staff	336	$72	$24,192
C2	Commuters	4,723	$72	$340,056
D	Resident Students	854	$200	$170,800
TOTAL	**Yearly Permits**	**13,498**	***$154 Average***	**$2,078,296**

*Prices have increased by 8-20% for the 2009-10 academic year

The amount of parking permit revenue generated from the sale of more than 13,000 permits last year was nearly $2.1 million. This does not include revenue to be collected from the 276 (visitor) parking meters on campus. By comparison, the Parking and Traffic Services department will collect (through the summer of 2009) approximately $100,000 in parking citation revenue (discussed in the following section), a mere 5% of permit revenue. It should be clearly understood that the sale of parking permits generates the overwhelming majority of revenue

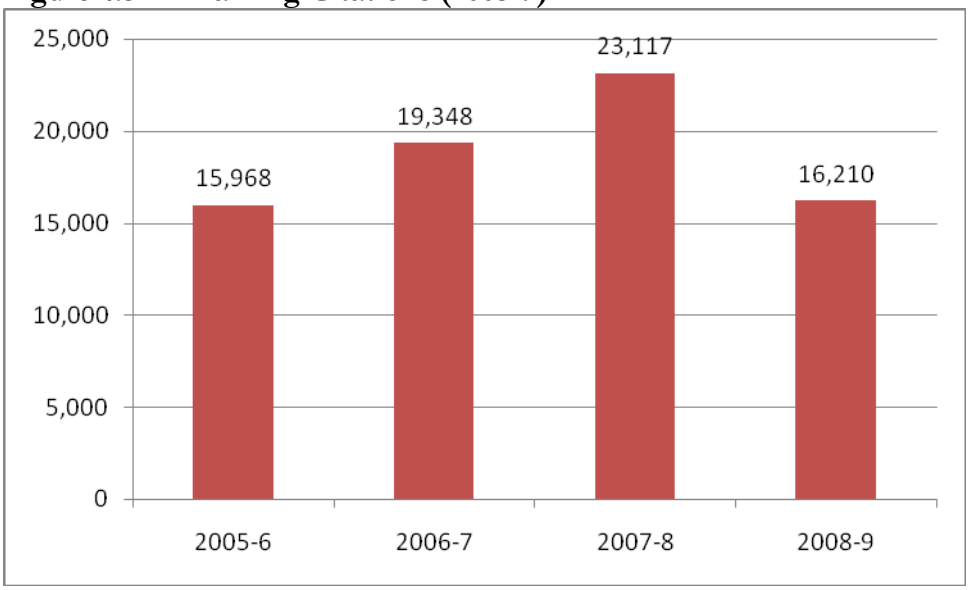
(88%) and should therefore receive the highest level of active management possible for its customers.

4.3.6 Parking Citations

Public Universities within North Carolina are allowed to collect up to 20% of the parking citation revenue received each year, the remaining 80% is returned to the state education fund. In order to retain the 20% each university much demonstrate the direct costs associated with collecting these monies, through employee and equipment expenditures.

Parking citation data received from ECU includes the 2005-6 academic year through the present. Since the current academic year has not been concluded to date, the 2008-9 citations and revenue are slightly lower than previous years, however, a clear trend is observed.

Figure 4.5 Parking Citations (2005-9)



Revenue generated from parking citations has followed the same pattern, since citation fines have not changed. The 2005-6 low was $450,000, and the 2007-8 high was $533,000 in revenue collected. The citation revenue retained, however, was between $90,000 and $106,000 after returning 80% to the State of North Carolina. This citation revenue ($90-106,000) compares to 4-5% of the annual parking permit revenue generated ($2.1 million).

Although parking enforcement is a necessary component of any university parking system, the financial return on investment and the perceived 'service' that it offers the campus population is relatively low. Many universities have transitioned their parking enforcement staff towards a more customer service-oriented role, as 'university stewards' or 'lot attendants' who:

- Offer wayfinding assistance
- Provide crime prevention
- Perform routine maintenance of the parking facilities

This approach has helped to improve the perception of transportation departments, as well as help define their important role within the daily university operation.

4.3.7 Peer Benchmarking

The purpose of peer benchmarking is to examine whether ECU offers a similar level of parking service with its academic or state peer institutions.

The first step is to consider what data is available, and which measures will be compared with university peers. For this analysis we utilized the Integrated Postsecondary Education Data System (IPEDS) for Fall 2007 population data, and Internet searches for Fall 2009 parking data (prices and supply). Although more recent population data may have been available for some universities, it is more important to have a complete set of population data for all peers in order to compare with ECU and rank with respect to one another.

The following categories have been selected as peer benchmarking metrics for this analysis.

- (A) Parking Spaces per Person Ratio
- (B) Faculty/Staff Permit Price
- (C) Resident Student Permit Price
- (D) Commuting Student Permit Price
- (E) Visitor Parking Price

Who are ECU's Academic Peers?

ECU has identified the following 15 universities as academic peers. Universities with a medical school are indicated with an asterisk (*).

- Florida International University
- Northern Illinois University
- Ohio University*
- Old Dominion University
- SUNY Buffalo*
- Texas Tech University*
- University of Louisville*
- Univ of Missouri – Kansas City*
- University of Nevada – Reno*
- University of North Dakota*
- University of South Carolina*
- University of Wisconsin – Milwaukee
- Virginia Commonwealth University*
- Western Michigan University
- Wright State University*

Who are ECU's North Carolina Peers?

Also included in this analysis are four in-state universities that are all part of the UNC-system, and compete for student enrollment within North Carolina schools.

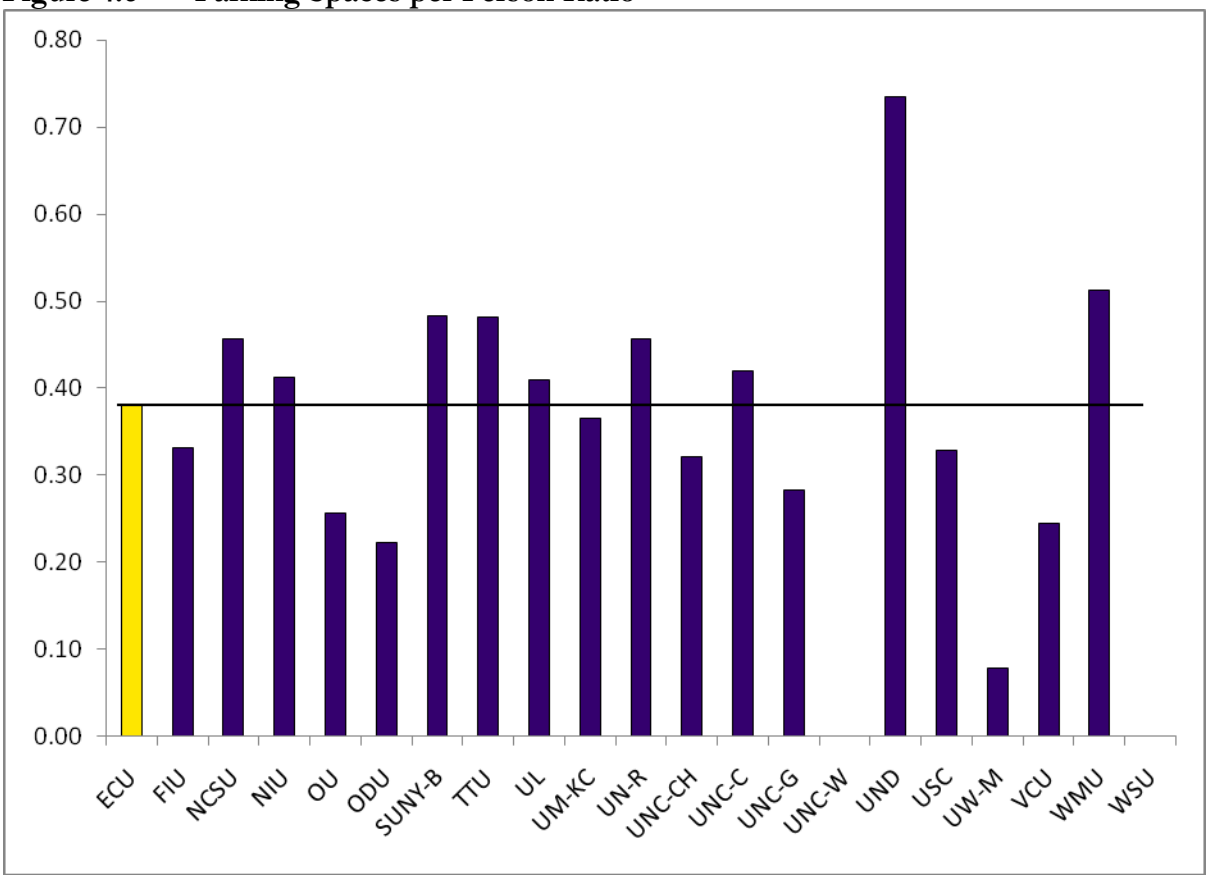
- North Carolina State University
- UNC Chapel Hill*
- UNC Charlotte
- UNC Greensboro
- UNC Wilmington

(A) Total Parking Supply Ratio

ECU's total campus population per on campus parking space is right in the middle of its peers. Of the 16 reporting universities, eight are above and eight are below ECU's mark of 0.38 persons/space, or slighly less than 3 persons per parking space (0.33).

It should be noted that the total parking space figures utilized for this comparion **exclude** any off campus (storage) parking lots, park-and-ride lots, or any (medical) patient parking. By excluding these off campus spaces, which could be several thousand parking spaces in a large park-and-ride lot located several miles from campus, there are fewer opportunities for irregular or unrealistic parking supply ratios that would cloud the analysis.

Figure 4.6 Parking Spaces per Person Ratio



Population Data Source: Integrated Postsecondary Education Data System (IPEDS) for Fall 2007
Parking Data Source: M/A/B database – On campus (non-medical) parking spaces

The availability of public or private parking lots located adjacent to campus is another benchmarking consideration. It is unknown whether these university peers have adjacent parking facilities, which would either compete for the same customers or supplement the campus parking supply. Downtown Greenville, however, has ample parking that is both public and private, and generally around 50% occupied (see 2004 City of Greenville Uptown Parking Study). Additionally there are private companies that lease parking spaces specifically to ECU faculty/staff or students (http://www.pirateparking.com/). These companies charge as much or more to park for a single semester ($299) than an ECU parking permit would cost for an entire year ($72-$288 for 2007-8 academic year).

Table 4.10 Peer University Population and Parking Supply Ratios

Peer University Name	Total Campus Population	On campus (non-patient) parking spaces	Spaces per Person
East Carolina Univ	31,153	11,844	0.38
Florida International Univ	42,232	14,000	0.33
North Carolina State Univ	39,240	17,894	0.46
Northern Illinois Univ	29,126	12,013	0.41
Ohio Univ	25,005	6,394	0.26
Old Dominion Univ	25,232	5,600	0.22
SUNY at Buffalo	33,339	16,134	0.48
Texas Tech Univ	40,043	19,300	0.48
Univ of Louisville	26,730	10,932	0.41
Univ of Missouri-Kansas City	17,899	6,542	0.37
Univ of Nevada-Reno	19,831	9,054	0.46
Univ of North Carolina at Chapel Hill	39,755	12,773	0.32
Univ of North Carolina at Charlotte	25,080	10,543	0.42
Univ of North Carolina at Greensboro	21,184	6,000	0.28
Univ of North Carolina at Wilmington	14,023		
Univ of North Dakota	15,311	11,249	0.73
Univ of South Carolina	39,597	13,000	0.33
Univ of Wisconsin-Milwaukee	32,881	2,557	0.08
Virginia Commonwealth Univ	37,919	9,270	0.24
Western Michigan Univ	27,599	14,147	0.51
Wright State Univ	18,598		

UNC-Wilmington and Wright State University on campus parking data is not available at this time.

The parking spaces per person ratio may be viewed as an overall percentage of individuals with the likelihood of parking on campus. It is possible for a university to have a ratio larger than 1.0 if, for example, they have a very large athletic stadium complex located on campus with surplus parking for game-day vehicles. The opposite scenario is also possible, a university with a relatively small student enrollment, although nearly all universities fall with the 0.2 to 0.6 parking spaces per person range.

Table 4.11 Peer University Parking Permit Prices (annual fee)

Name	Faculty/Staff			Commuter			Resident		
	Low	Median	High	Low	Median	High	Low	Median	High
East Carolina Univ	156	234	312	84	84	84	240	276	312
Florida International Univ	123	180	236	247	247	247	247	247	247
NC State Univ	216	308	399	195	248	300	175	230	285
Northern Illinois Univ	100	100	100	37	56	75	37	56	75
Ohio Univ	105	218	330	105	105	105	165	248	330
Old Dominion Univ	207	325	442	216	216	216	266	266	266
SUNY Buffalo	10	10	10	288	288	288	288	288	288
Texas Tech Univ	173	195	216	108	249	390	195	195	195
UNC-Chapel Hill	69	273	477	315	365	414	315	365	414
UNC-Charlotte	295	295	295	295	295	295	295	295	295
UNC-Greensboro	285	285	285	285	285	285	285	285	285
UNC-Wilmington	206	288	370	235	268	300	300	300	300
Univ of Louisville	255	255	255	126	126	126	143	143	143
Univ of Missouri-Kansas City	360	360	360	212	212	212	212	212	212
Univ of Nevada-Reno	100	238	375	100	238	375	100	238	375
Univ of North Dakota	120	203	285	70	70	70	70	70	70
Univ of South Carolina				70	195	320	70	195	320
Univ of Wisconsin-Milwaukee	750	975	1,200	190	595	1,000	190	595	1,000
Virginia Commonwealth Univ	358	539	720	244	414	584	244	414	584
Western Michigan	260	280	300	260	280	300	260	280	300
Wright State Univ	120	120	120	67	76	85	67	76	85

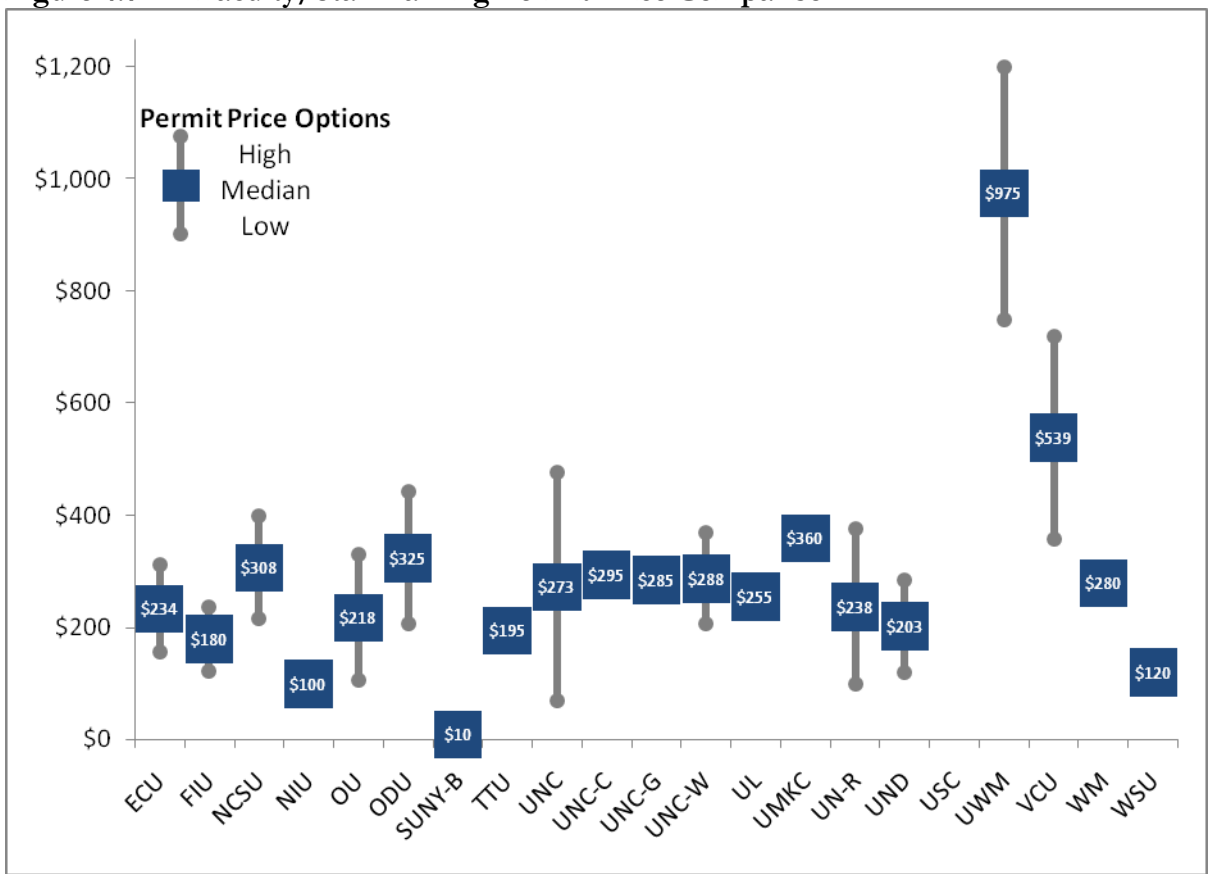
Median permit price is calculated, and does not represent an actual permit that is available for purchase.
Universities that offer more than one permit price for a given user group will have three different values displayed (i.e. ECU offers Faculty/Staff a low permit price of $156, and a high permit price of $312; the median price is therefore calculated to be $234 per year).

(B) Faculty/Staff Permit Price

Permit prices have not changed since the existing parking zone system has been in place (2003). The Fall 2009 permit price increase of $12-24 will be the first increase in six years. Among its peers ECU is located right in the middle with respect to faculty/staff permit prices.

Most universities offer several permit price options based upon campus location, restricted access, salary range, or years of service (tenure). For the purposes of this analysis we used the typical low and high permit price to calculate a median price, which is displayed in the chart below. The range in permit price is indicated by the grey bars extending up to the high price permit and down to the low price permit. For ECU specifically, they offer a low employee permit of $156 and a high permit of $312 per year, for a median pirce of $234.

Figure 4.7 Faculty/Staff Parking Permit Price Comparison



Data Source: Collected from Internet searches, or direct contact with parking departments

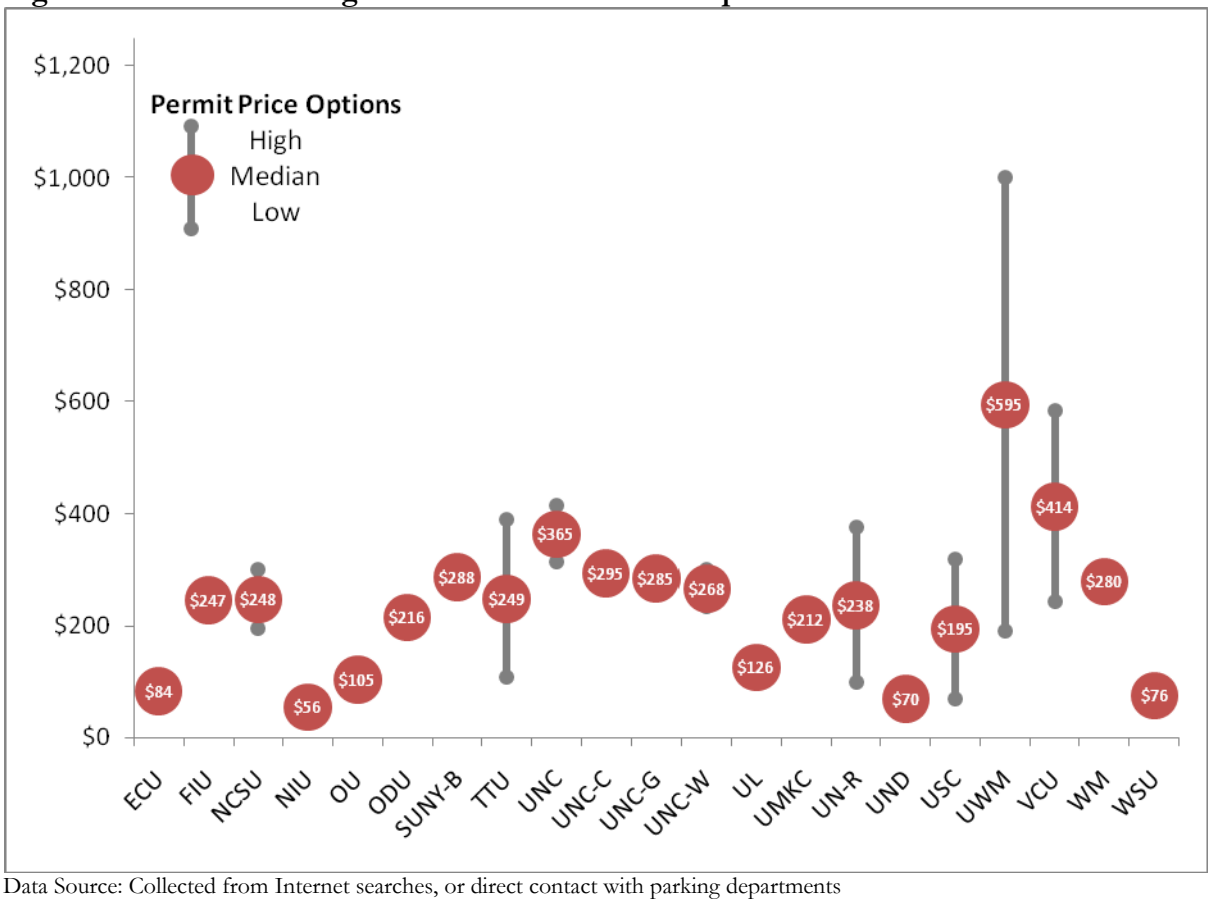
The SUNY-Buffalo parking department offers a permit to faculty/staff for a nominal $10 registration fee. The true cost of parking on campus is subsidized by a mandatory student transportation fee of $288 per year, which covers not only parking permits for any faculty/staff or student, but also free transit service for all.

The University of South Carolina has a faculty/staff parking permit fee structure that is based upon years of service to the university. A detailed list of permit prices is not available on their department webpage, and they have not returned phones calls or email inquiries.

(C) Commuting Student Permit Price

The commuter permit price at ECU has also remained constant since 2003, when the parking zone system was introduced. The commuter permit price will increase by $12 per year beginning in the Fall of 2009. The location of commuter parking at ECU is at least 0.5 miles from main campus (or further for some lots), which may explain why the median price ($84) is relatively low compared to its peers. It is unknown whether this assumption is correct, however, as the commuter parking lots for these peer universities may also be located a short distance or a short bus-ride away from campus.

Figure 4.8 Commuting Student Permit Price Comparison



Data Source: Collected from Internet searches, or direct contact with parking departments

Only three of ECU's peers offer a less expensive median commuter permit price. Two of these three peers (NIU and UND) have a higher ratio of parking spaces per person, indicating that prices may be low due to a parking surplus in some areas of campus, much like ECU's athletic campus.

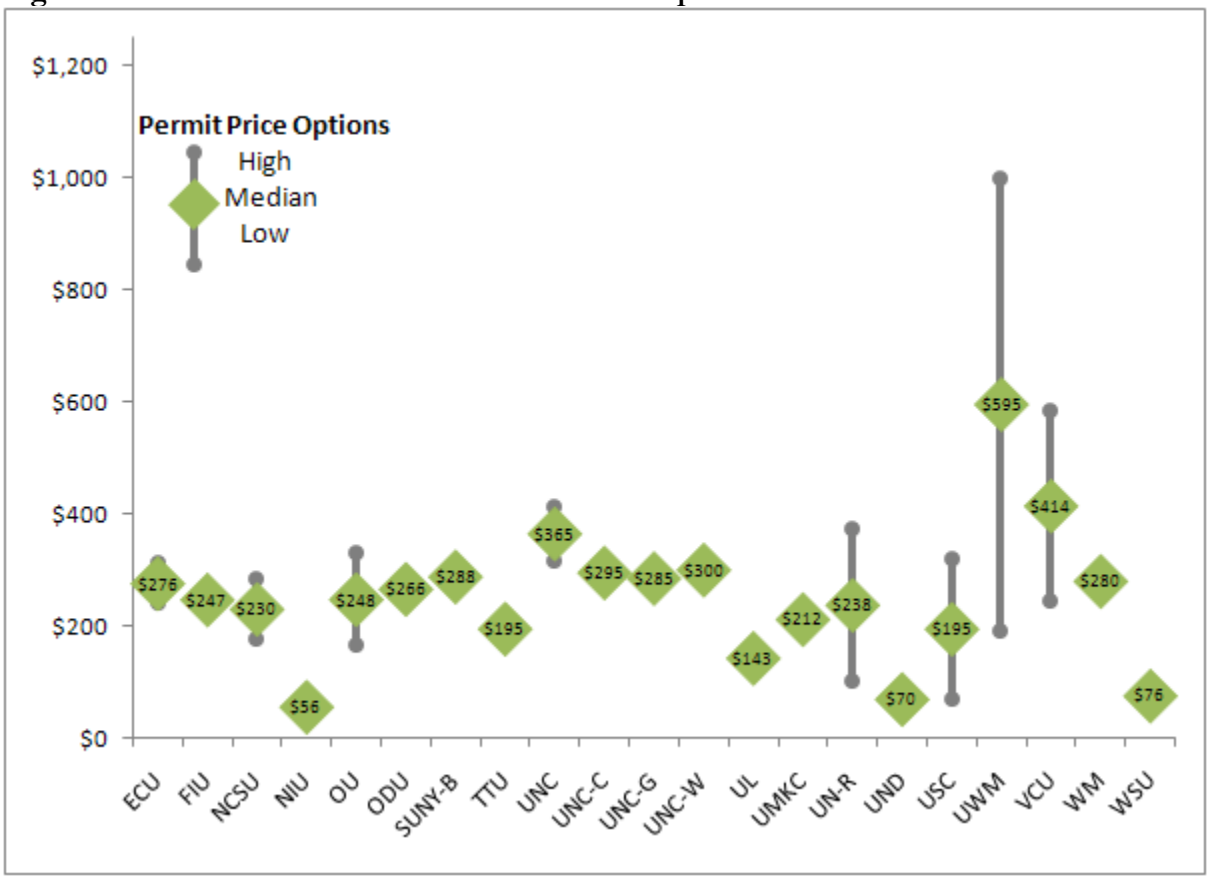
The range of permit prices is also important to consider, because ECU only offers one permit price ($84 per year), while the commuter permit price at other universities may vary greatly. Texas Tech, for example, offers a low of $108 and a high of $390 for commuters. Likewise, the University of Wisconsin – Madison offers both a $190 and a $1,000 annual commuter permit price.

(D) Resident Student Permit Price

ECU offers two resident student permit price options, a high permit price of $312 per year, which is an increase of $24 from last year, and a storage lot (D-permit) price option of $240. The median price ($276) is topped by eight peer universities. The low permit option for ECU ($240 annually) allows access to a gated storage lot located approximately 2 miles from main campus. It is unknown whether other peers offer a similar option, or whether all resident parking is located on campus.

The location of resident student parking should be a determining factor as it relates to permit price. On campus resident parking at ECU is located in the immediate vicinity of the residence halls, with a walking distance of less than 3-minutes (Reade Street lots in downtown Greenville). This proximity represents a high level of parking service, and therefore carries a premium price ($312 per year).

Figure 4.9 Resident Student Permit Price Comparison



Data Source: Collected from Internet searches, or direct contact with parking departments

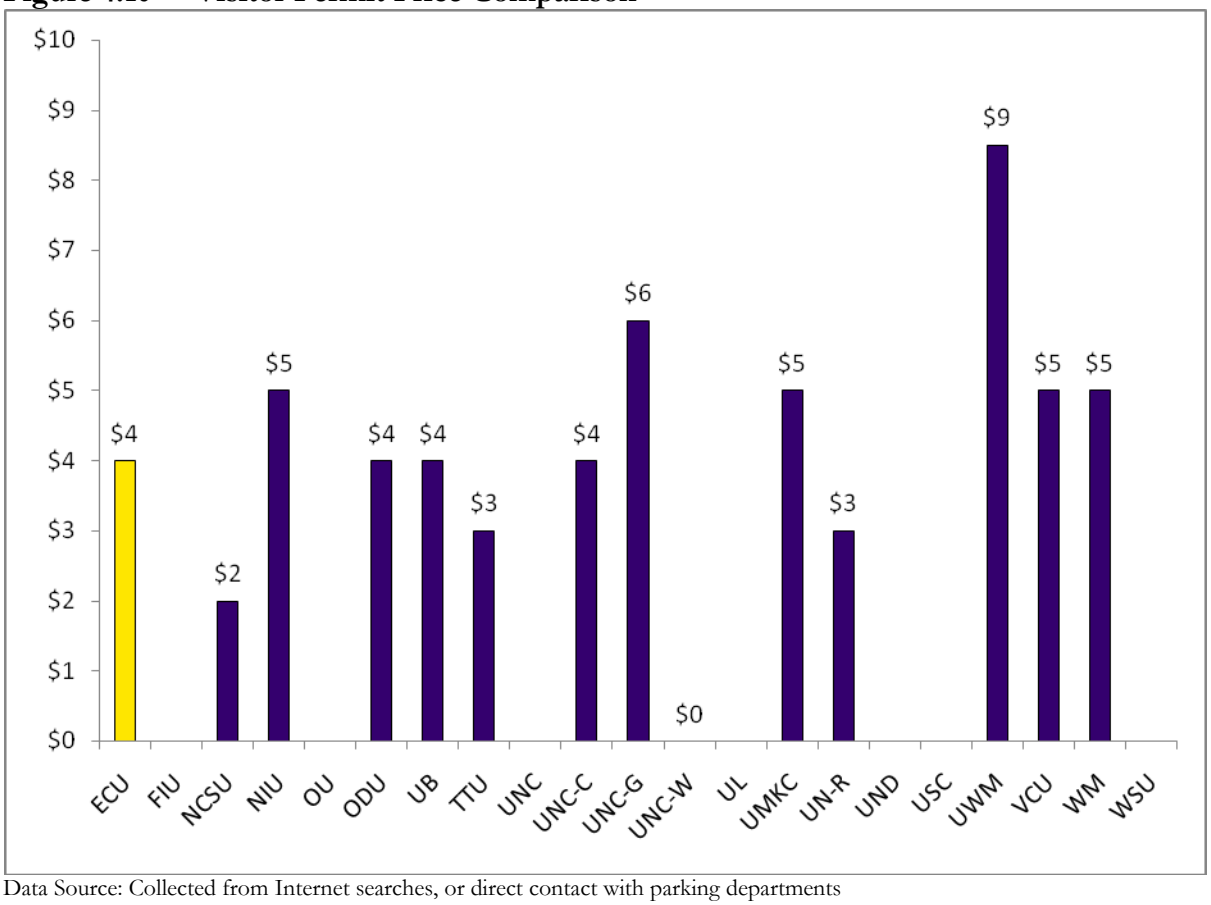
Half of the universities analyzed offer a range of resident student parking permit prices. ECU has a relatively moderate price difference ($112), with five schools above and five below this range. Figure 4.9 clearly displays the five peers with a large permit range (OU, UN-R, USC, UWM, and VCU). However, very small price ranges such as NIU ($38), WM ($40), and WSU ($18) are not visible.

(E) Visitor Parking Price

The final peer comparision category is visitor parking permit price. This does not include metered parking, which is typically used by students and visitors throughout the day. ECU offers daily visitors a permit for $4, which is roughly the same as its peers ($3-6). Only one university reports free visitor parking (UNC-Wilmington), although their website does not specify where their visitor parking is located.

As an alternative to the visitor parking permit, ECU offers a $1 per hour pay lot located on main campus adjacent to the student union, fitness center, and library. The daily visitor parking permit offers the same parking level of service as the proximate B1 (Faculty/Staff) permit, located just outside the perimeter of main campus, across the boundary streets.

Figure 4.10 Visitor Permit Price Comparison



Data Source: Collected from Internet searches, or direct contact with parking departments

4.4 Transit Mode

4.4.1 Role of Transit and Key Differences from Other Campuses

Many campuses would envy ECU's success in building a transit culture among the student body. Transit is acknowledged as part of the way of life for ECU students. This is due to a number of factors, including the sheer amount of service, the student-centered nature of the system, and in the fact that it is part of the off campus residential way of life (major apartment complexes have bought strongly into the transit service).

ECUSTA's mission includes providing transportation between the campus and off campus apartments. This is relatively common for a student-operated campus transportation system. However, two factors make ECUSTA different from a typical system:

- Off campus student housing in Greenville is dominated not by particular areas around the campus, but by specific apartment complexes. These locations migrate relatively rapidly as new complexes are built and old complexes fall out of fashion.
- ECUSTA is unusual in offering dedicated 'express' service to apartment complexes, for a fee.

4.4.2 Background and Organization

The ECU Student Transit Authority (ECUSTA) began in 1969 as a student-run operation, with student drivers and administration. Since then the system has grown in size to a fleet of 38 buses, housed on a 3.8-acre maintenance facility near the Pitt-Greenville Airport, and a full-time administration staff of four. University oversight of the ECUSTA is the responsibility of Student Affairs, which provides accounting and budgeting services.

4.4.3 Routes and Hours of Operation

ECUSTA operates a wide range of routes, serving a variety of travel needs (http://www.ecu.edu/cs-studentlife/transit/). During the academic year, the operating hours are:

- Weekday daytime service: 7 am to 6:30 pm, Monday-Friday. This is fixed-route service.
- Evening service: 6:30 pm to 10 pm, Monday-Thursday. This offers drop-off service only, from campus to any of the daytime bus stops.
- Late Night service: 10 pm to 3 am, Thursday-Saturday nights. This is fixed-route service that broadly corresponds to many of the daytime routes.
- SafeRide van service is also available (see below).

The weekday daytime routes serve campus circulation, shopping tips, and commuting from off campus student residences:

- Three daytime routes (301 Gold, 302 Red and 304 Campus Shuttle) provide campus circulation. Route 301 Gold connects the main campus, College Hill housing and the freshman parking lot on Dickinson Avenue. Route 302 Red connects the main and medical campuses. Route 304 Campus Shuttle runs around the edge of main campus and also serves ECU's downtown facilities.
- One daytime route (304 Blue) connects the main campus with retail areas in southern Greenville, aimed at meeting students' shopping needs.

- Three daytime routes (401 Purple, 402 Brown and 403 Silver) connect residential areas with the main campus. These are aimed at concentrations of private student housing.
- Eight routes (501 through 508) connect specific apartment complexes with the main campus. These dedicated routes are partly funded by the apartment complexes themselves, and are discussed in more detail below.
- Two routes (610 Minges and 620 Curry Court) are park-and-ride routes serving peripheral parking areas.

Safe Ride (http://www.ecu.edu/cs-studentlife/transit/saferide/index.cfm) is a point to point van service that operates in addition to the bus transit system to provide additional late night service to ECU faculty/staff and students. The service area is limited to ¼ mile from an existing ECU bus stop, and will not pickup/drop off from two different off campus locations. Safe Ride will transport riders from a campus building to the nearest bus stop location that has service to their final destination. In the evening or late night this usually means dropping off at a downtown location in order to transfer onto one of the eight apartment routes.

A limited service operates during the summer months (mid-May through July).

4.4.4 Growth In Service Levels

ECUSTA's service level has been growing steadily in recent years, and has more than doubled since 2002 (Figure 4.9). This is mainly due to an increasing level of dedicated apartment service, as well as increases in other types of service (Figure 4.10), such as late night and commuter service.

Figure 4.11 Hours of Operation, by Type of Hour (2002-2003 through 2008-2009)

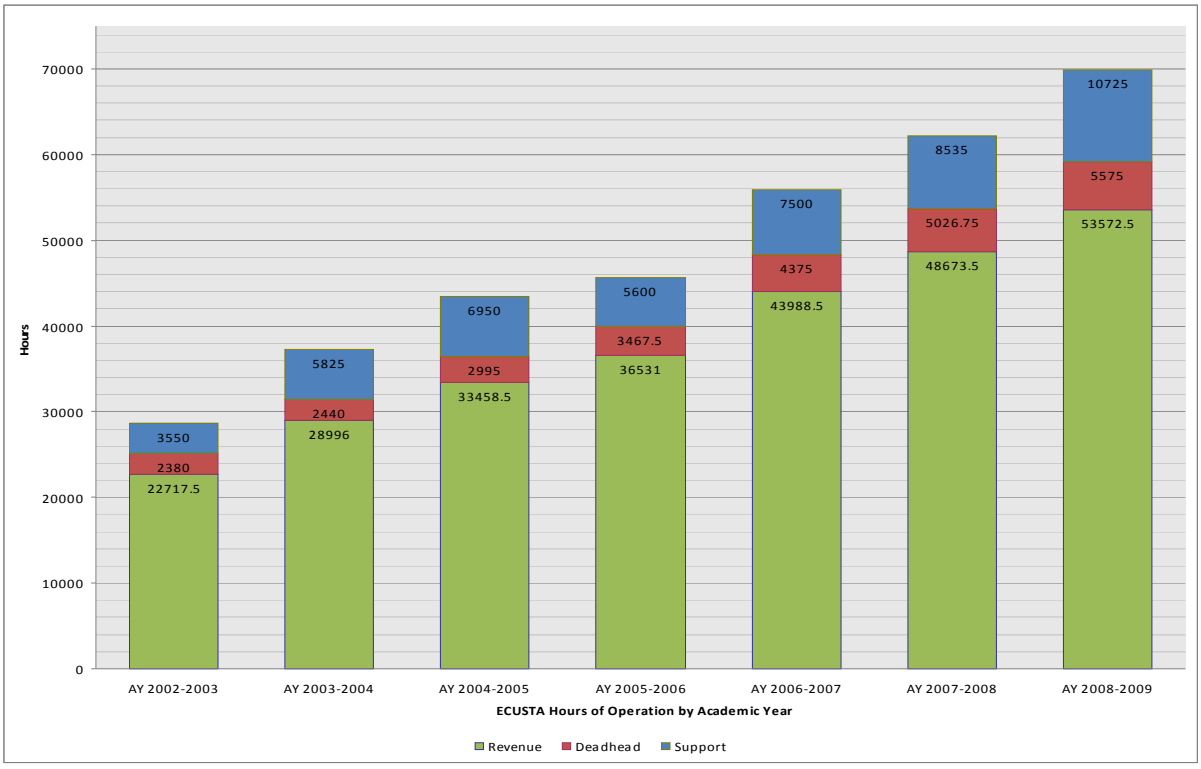
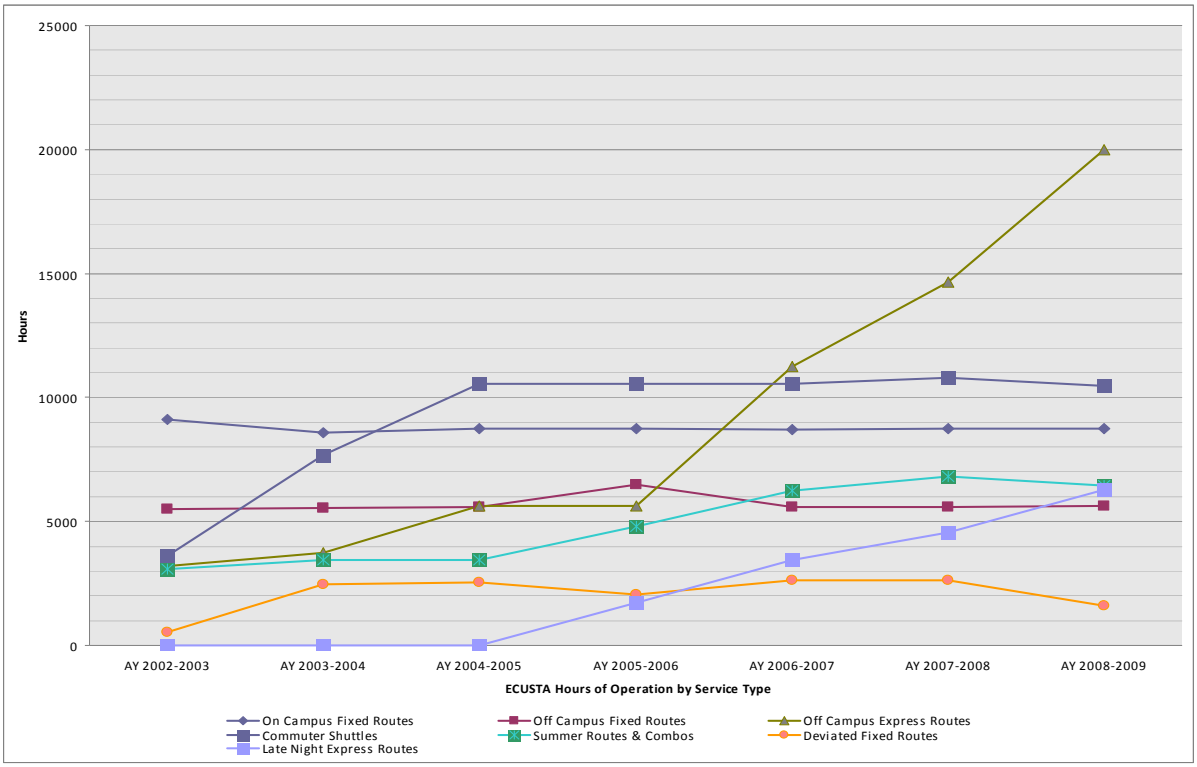


Figure 4.12 Hours of Operation, by Type of Service (2002-2003 through 2008-2009)



4.4.5 Ridership

ECUSTA currently estimates that around 80,000 students ride per week, including late night and weekend service. Table 4.12 shows the ridership on each route and on each category of service. These data are from continuous manual boarding counts by drivers.

Table 4.12 Transit Ridership, By Route (Fall 2008 and Spring 2009)

Fall 2008 and Spring 2009 Ridership, By Route

	Route #	Includes Blocks	Route Name	Max # Buses	Annual Ridership	Rank	% of Total Ridership	Annual Revenue Hours	% of Total Revenue Hours	Average Riders per Revenue Hour	Rank
Campus Circulation / Shopping	301		Gold	1	124,204	4	5.8%	2,730	6%	45	8
	302		Red	1	25,228	20	1.2%	1,725	3%	15	28
	303		Blue	1	66,739	12	3.1%	1,905	4%	35	12
	304		Campus Shuttle	1	46,468	15	2.2%	1,725	3%	27	23
Off-Campus Residential	401		Purple	1	66,706	13	3.1%	1,725	3%	39	10
	402	AB	Brown	2	89,722	10	4.2%	1,755	4%	51	5
	403		Silver	1	38,193	16	1.8%	1,725	3%	22	25
Dedicated Apartment Routes	501		Pirate's Cove	1	111,139	7	5.2%	1,725	3%	64	3
	502		University Manor	1	85,158	11	4.0%	1,725	3%	49	6
	503		Sunchase	1	92,633	9	4.4%	1,725	3%	54	4
	504	AB	The Landing	2	97,997	8	4.6%	3,023	6%	32	18
	505	ABC	North Campus Crossing	3	186,262	2	8.7%	3,938	8%	47	7
	506		University Suites	1	58,390	14	2.7%	1,725	3%	34	15
	507		Copper Beach	1	115,998	6	5.4%	1,725	3%	67	2
	508	AB	The Bellamy	2	129,367	3	6.1%	3,023	6%	43	9
			NCC Dining	1	14,661	25	0.7%	446	1%	33	16
			Bellamy Dining	1	14,515	26	0.7%	446	1%	33	17
Park-and-Ride Routes	610	ABCD	Minges Park & Ride	4	458,189	1	21.5%	5,948	12%	77	1
	620	AB	Curry Court	2	118,237	5	5.6%	3,375	7%	35	13
Evening 'Night Dropoff'	801		Night Drop Off	1	8,272	28	0.4%	480	1%	17	27
	802		Night Drop Off	1	8,369	27	0.4%	480	1%	17	26
	803		Night Drop Off	1	6,866	29	0.3%	480	1%	14	29
Late-Night 'Pirate Express' Routes	901	AB	Pirate's Cove / Univ Manor	2	30,697	18	1.4%	1,043	2%	29	21
	903		Sunchase	1	18,993	21	0.9%	540	1%	35	11
	904		The Landing	1	16,864	22	0.8%	540	1%	31	19
	905	AB	North Campus Crossing	2	36,309	17	1.7%	1,043	2%	35	14
	906		University Suites	1	15,815	23	0.7%	525	1%	30	20
	907		Copper Beach	1	15,210	24	0.7%	540	1%	28	22
	908	AB	The Bellamy	1	26,966	19	1.3%	1,058	2%	25	24
	950		College Hill	1	4,750	30	0.2%	540	1%	9	30
			Totals	See note	**2,128,917**		**100%**	**49,380**	**100%**	**43**	

Important note: "Average Riders Per Revenue Hour" shows the average intensity of use of each *bus* on a route. If a route uses more than one bus at once, the route has correspondingly more riders per hour in total.

Summary By Category

Category	Max # Buses	Annual Ridership	% of Total Ridership	Annual Revenue Hours	% of Total Revenue Hours	Average Riders per Revenue Hour
Campus Circulation / Shopping Rou		262,639	12.3%	8,085	16%	32
Off-Campus Residential Routes		194,621	9.1%	5,205	11%	37
Dedicated Apartment Routes	See	906,120	42.6%	19,500	39%	46
Park-and-Ride Routes	note	576,426	27.1%	9,323	19%	62
Evening 'Night Dropoff' Routes		23,507	1.1%	1,440	3%	16
Late-Night 'Pirate Express' Routes		165,604	7.8%	5,828	12%	28
Total	See note	**2,128,917**	**100%**	**49,380**	**100%**	**43**

Notes

1. Summer service is not included in this table. Annual totals in this table refer to the Fall and Spring semesters.
2. "Revenue hours" refers to hours during which the bus is in service to passengers (that is, excluding empty 'deadhead' mileage to or from the depot). This is the correct term, even though revenue is not collected aboard the bus.
3. Some buses serve more than one route during the day. Hence the total number of buses operated at any time is less than the sum of the figures for individual routes. The total (Vehicles Operated in Maximum Service (VOMS)) is 25.

Source: Ridership supplied by ECUSTA. Revenue hours estimated from data supplied by ECUSTA, as shown in more detail in a separate table.

4.4.6 Funding

Figure 4.13 shows ECUSTA's funding sources. The main sources are:

- The student transit fee of $130 per year (currently 69% of total revenue),
- funding from off campus apartments (20%), and
- A transfer from the ECU Parking and Traffic Services department (5%).

The **student transit fee** is the core funding stream. Within this, ECUSTA aims to provide a range of services, including 'commuter' routes, campus circulation, late-night service and other services such as airport shuttles. The fee is approved by the university for each academic year. The fee generally increases when fixed costs for operation increase, such as fuel or maintenance.

For the commuter routes, ECUSTA aims to provide service to the main concentration of student residences within four miles of the campus. In this, it can do as much or as little as the student fee allows. Generally it does this with routes such as the Brown, Silver and Purple, which each serve several stops in different parts of the city. The routes and scheduling of these are entirely under ECUSTA's control.

In addition, ECUSTA offers dedicated (or 'express') service to **apartment complexes** that wish to pay for it. This explains why there are separate routes to some apartment complexes that are actually very close to each other. The ECUSTA sets a minimum threshold of 500 beds in order to qualify for this arrangement. Apartments are offered a menu of service levels, with more or fewer hours of service. Each option is charged per hour, at 75% of ECUSTA's average hourly operating cost. The charge does not, however, include the actual capital cost of purchasing a new bus to be dedicated to these routes.

This 75% factor, along with the fact that the capital cost of buses is not reflected in the charge, represents, at first glance, a subsidy to these apartments. However, the situation is more complex. Because ECUSTA aims to provide service to key apartment areas, in the absence of express service one or both of the following could happen:

- ECUSTA would face pressure to provide service at its own expense (passed onto students through the transportation fee). The dedicated service therefore becomes a way of providing a better-value service through partnership funding.
- The apartment complexes would set up their own van or bus service to the campus (pending city approval). This situation exists on other campuses. Residents would still have their dedicated transit service, albeit no longer part of the ECUSTA system.

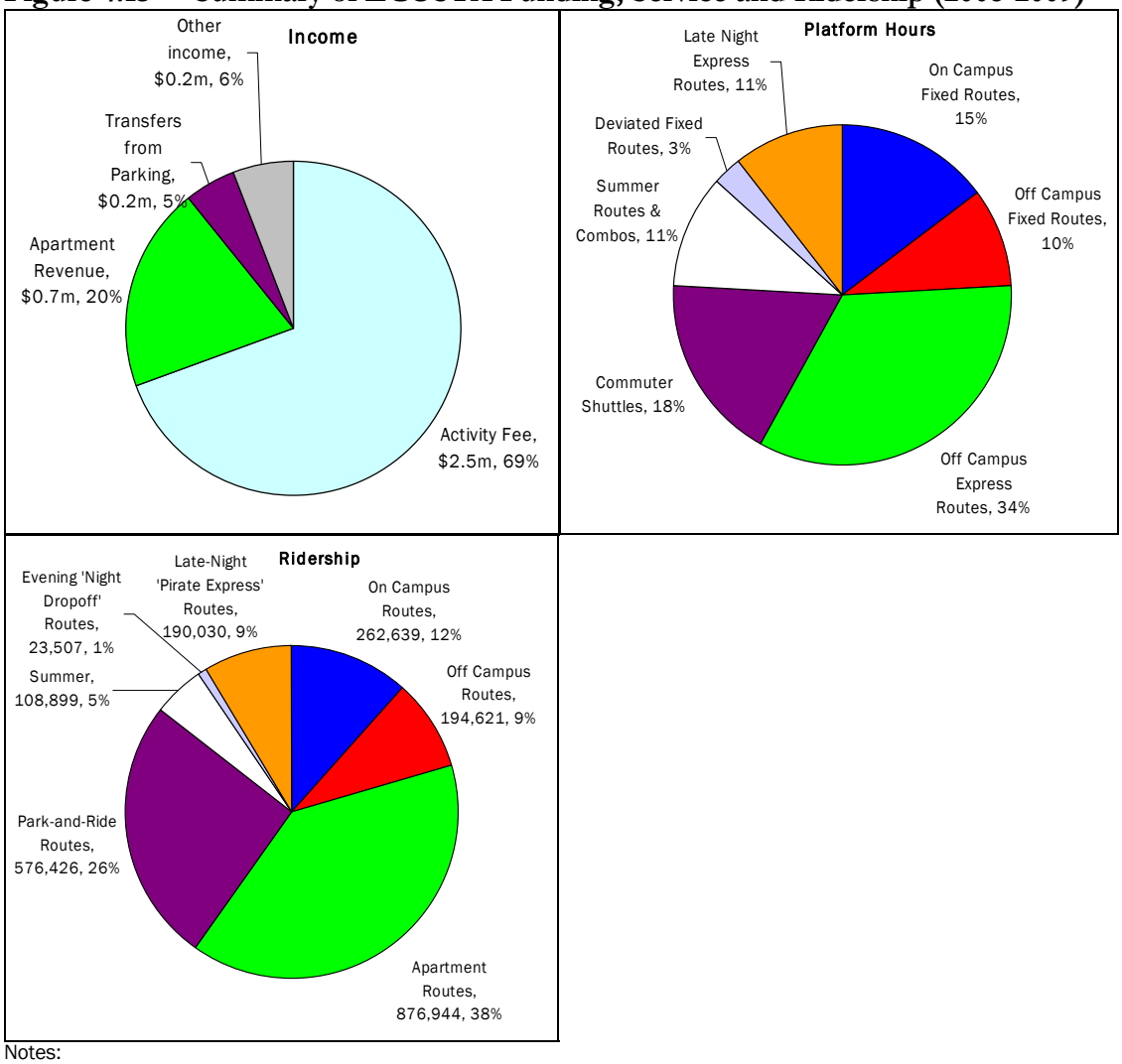
This means that ECUSTA inevitably faces a commercial judgment on these services and the financial offer it makes to the apartment complexes.

The **annual transfer payment from Parking and Traffic Services** is a budgeted line item that will increase by $50,000 each year over the next four years to $450,000 by fiscal year 2012-13. This in turn comes primarily from parking permit revenue. This annual payment represents roughly 12-15% of the Parking and Traffic Services total operating expenses.

Commuting students who live in one of the off campus apartment complexes with dedicated service and yet still choose to purchase a commuting parking permit (at a price of $72/yr) will be

directly (and indirectly) funding the ECUSTA in all three separate ways. Conversely, faculty/staff and visitors to campus will only indirectly be funding the ECUSTA through their parking permit sale.

Figure 4.13 Summary of ECUSTA Funding, Service and Ridership (2008-2009)



Notes:

Income chart refers to the 2008-2009 financial year.

Platform Hours chart relates to the 2008-2009 academic year. 'Platform hours' includes time spent in service ('revenue hours') and time running empty to or from the depot ('deadhead hours'). These figures will therefore differ from figures shown elsewhere that only cover revenue hours and/or exclude summer service.

Ridership chart refers to Summer and Fall 2008 and Spring 2009. This is the most recent year's data available at the time of compiling this report;

4.4.7 Recent reviews of transit system

Several internal and external reviews of the transit system have recently taken place.

- **Business Students' Case Report**: In March 2009, a group of ECU business students reported on the transit system. They benchmarked ECUSTA against other campuses in the UNC system, and assessed the cost-efficiency of each individual ECUSTA route. They concluded that ECUSTA provides "an excellent service at an industry-leading operating cost-per-hour." They made a number of specific recommendations, addressing the efficient allocation of buses, the University community's perception of the system's efficiency, and the payroll validation system.

- **Bodenhamer review**: in April 2009, William Bodenhamer, a trustee and also Chairman/CEO of USA Transportation, reviewed the ECU transit budget for the Chancellor. Mr Bodenhamer recommended investigating a number of potential changes, including budget-planning issues, potential service reductions to save money, and potential increases in some income categories. This appears to have been a limited review based mainly on budget data. He recommended that ECU transit be mandated to reduce its operating budget 14% for 2010; he also recommended that the parking department should no longer provide funds to the transit service, although it is not immediately clear if that was intended to directly correspond to the recommended 14% budget reduction. He also recommended that the transit system develop a five-year business plan.

- **Wortman review**: In 2009, Kim Wortman, Director of Campus Services at Ohio University, conducted an external review of the transit system. Mr Wortman is responsible for transit at that university, which is one of ECU's official peers. His review was less about detailed budget issues than Mr Bodenhamer's review, and more about overall strengths, weaknesses and recommendations for improvement. His report (undated) concluded that the ECU Transit Authority "certainly meets its overall mission," has many strengths, and indeed "is a model for other schools." However, he also made several recommendations aimed at improving operations. These included addressing the aging fleet of buses, the need for data and outreach to understand ridership levels and address the perception of under-utilized buses, and a number of other operational issues. He also pointed to the need to develop a five-year transit plan. This should focus on understanding what the core mission of the transit system should be, and whether continued growth of service to off campus locations is financially sustainable. He also pointed to a concern regarding the working relationship between parking and transit.

These three reviews have pointed to a similar range of topics, which are summarized in Table 4.13.

Table 4.13 Summary of Recommendations from Recent Reviews of Transit Service

Topic / recommendation	Rationale	Business Students	Bodenhame review	Wortman review	Notes
Service provision					
Compress some schedules in morning rush	• Provide additional capacity • Reduce operating costs	●			
Re-examine costs and benefits of SafeRide Service	• Review efficiency • Ensure it is a genuine safety service rather than just a convenient taxi service		●	●	
Explore door-to-door service for people with mobility impairments	• Service not currently provided			●	
Discontinue summer service; make parking free in summer	• Saves costs		●		
Discontinue weekend service	• Saves costs		●		
Reduce routes from 28 to 24	• Improved efficiency		●		Report did not show basis for this reduction target
Any future route expansion should be subject to trial for a semester	• Improved efficiency		●		
Evaluate all routes based on cost per passenger	• Improved efficiency		●		
Review night service	• Improved efficiency		●		
Fleet management					
Use smaller vehicles off-peak on some routes	• Better match between supply and demand • More cost-effective (fuel savings potentially exceed capital cost of extra vehicles) • Addresses perceptions of inefficiency	●		●	
Fleet replacement strategy	• Ensure buses are replaced before life cycle is exhausted • Addresses current increases in maintenance and repair costs • Potential to use smaller vehicles to improve efficiency and perception • Improved budgeting		●	●	
Administration					
Implement continuous rider counts	• Improves decisions on how much capacity to provide • Provides evidence base for discussing student fee changes • Supports efforts to dispel community perceptions of inefficiency	●	●	●	Now implemented. Full data available for 2008-2009 academic year.
Automated Payroll Validation	• Liberates ECUSTA staff time for other purposes • Reduces human error	●			At time of recommendation, was expected to be implementable soon
Hire Training and Safety Manager	• Highest standard of safety requires dedicated person			●	
Expand charter bus service	• Generates revenue • Provides advertising for ECU			●	Refers to service to ECU departments/ organizations.

Topic / recommendation	Rationale	Business Students	Bodenhame review	Wortman review	Notes
Invest in operational software	• Improved efficiency			●	
Budgeting and Funding					
Develop a five-year plan	• Discussions are needed about mission and how it can be funded			●	
Improve budgeting of fuel costs	• Improved budgeting		●		
Review charter rates	• Ensure full cost is recovered		●		
Discontinue advertising	• Effort exceeds income		●		
Raise apartment service tariff from 75% to 100%	• Increase income		●		
Eliminate funding from parking department	• Not stated		●		
Marketing and Outreach					
Outreach to campus community	• Addresses perceptions of inefficiency • Improves relationships through improved understanding			●	
Use customer surveys	• Feedback improves customer service • Assists with future planning			●	

● = Recommendation made in that review

4.4.8 Issues For Future Planning Efforts

Strategic

Recognizing parking and transit as two parts of a single system: Transit policy and operations support the parking system, and parking policy and operations support the transit system. For example, transit is an integral part of the parking 'product' for anyone who parks at Minges or Curry Court. Likewise, transit ridership is an important factor in mitigating the need for additional parking construction. There may be opportunities to improve coordination between the parking and transit functions through a closer working relationship.

Recognizing transit as a contributor to campus life: Transit's contribution to managing travel demand has drastically reduced the number of spaces needed by commuter students. This in turn has saved land, debt capacity, traffic volumes and pollution. The transit system also provides other tangible and intangible benefits to ECU life. For example, following an off campus incident in which a student suffered gunshot wounds, the Chancellor was able to point to the late-night transit services as an example of the safety initiatives at ECU (The Chancellor's View, October 26, 2007). The Master Plan process will need to recognize these contributions and consider additional ways in which transit can contribute to campus life.

Future off campus housing patterns. Does ECU expect/prefer off campus student living to follow the current model of private apartments throughout the city? Will the number of students living off campus grow or shrink? This affects the extent of transit's role in student commuting.

Financial and environmental sustainability of the commuter transit service model: Is the commuter transit service model financially beneficial to ECU institutionally and individual students/employees (in particular, compared to the cost of parking that would otherwise be needed)? If so, should it be developed further? If not, should it be scaled back, or should it be retained for the non-financial benefits (land, pollution, sustainability commitments, etc.)?

Budgetary transparency: Currently the relationship between a funding source and what it buys is not always clear to the campus administration. This may be a contributor to some of the perceptions that have been raised by departments outside of the ECUSTA.

External relationships: Currently there is little coordination between ECU and City transit systems. This reflects a range of factors including their different travel markets as well as some historical issues. However, there may still be opportunities to better coordinate. This could include taking full advantage of the proposed Intermodal Transportation Center directly alongside the campus, as well as potentially leveraging local or federal funding sources.

Services

Is transit serving students' needs well? What other needs do students have? What areas need improving? What resources could be reallocated to higher priorities? Are students willing to pay more for more/better service, or would they rather pay less for less/worse service?

Transit's role in employee travel needs: Currently transit at ECU is mainly focused on students' travel needs. Will sustainability efforts require additional focus on employee travel in the future? If so, how should this be reflected in the funding and organization of transit service?

Specific issues identified in reviews: As described above, the recent reviews made a number of recommendations on specific issues.

Facilities and equipment

Fleet composition and replacement policy: these issues were highlighted by the recent reviews.

Maintenance policy and location: Currently ECUSTA uses an outside vendor for maintenance and repair after experiencing difficulties with a shared facility with the city's GREAT system. The Wortman review found that this was a cost-effective arrangement. However, ECUSTA operates out of a leased facility, some distance from the campus. This results in a high level of empty ('deadhead') hours and mileage – around 10% of in-service ('revenue') hours. It may be useful to explore alternative options such as an ECU-owned site closer to campus, or a joint arrangement with the city transit system. This may provide both financial and environmental benefits.

4.4.9 Implications with Parking System

The current parking and transit systems both aim to service the transportation needs of the general campus population, however using differing methods and approaches. Parking is a limited resource on campus and is managed through (a) permit price, (b) proximate location to main campus, and (c) a user group hierarchy from faculty/staff – visitors – resident students – commuting students – freshman students. The premium-priced permit ($312/yr) will grant

access to premium parking locations, which are only offered to a limited number of senior faculty/staff. The more economically-priced permit ($84/yr) will only grant access to more remote parking locations that require transit or an alternative mode (walking or biking) to reach main campus. These permits have little or no limitations on quantity sold because of the large parking supply on the athletic campus and low occupancy rates.

The transit system began as a student-run organization that operates its limited resource (available service hours and shared capital funds) in order to satisfy the greatest student demand. Student demand for transit is (a) geographically-based, (b) financially constrained, and (c) independent of parking permit status. Two student groups that represent the greatest demand for transit are (a) commuting students who park in the Minges Park and Ride lot, and (b) commuting students who live in one of the few large off campus student life style apartment complexes. These groups receive the highest level of service (5-10 min frequencies) because they represent the largest concentration of demand. A much lower level of service (30-min frequencies) is provided to a much smaller, but no less important, group of medical campus students who are (a) offered a more expensive parking permit ($156/yr) for the medical campus, and (b) required to attend classes on both main and the medical campuses.

Table 4.14 Sustainable and Non-Sustainable Practices

	Parking & Traffic Department	Student Transit Authority
Sustainable Practice	• "Real-cost" permit sales • Occupancy-based permit sales • "Park once" emphasis • Travel Demand Management programs • Long-range parking strategies	• Service area limitations (off campus) • Formalized bus stop locations and times • Easy transfers to other transit systems • Capital Improvement Plan
Non-Sustainable Practice	• Subsidized parking permit costs • Subsidized parking deck construction • Maximum permit flexibility (drive to meetings) • "Hunting" for parking spaces • Free visitor parking	• Subsidized transit costs to apartment complexes (75% of operating costs) • Demand-responsive route planning • Non-quantifiable decision making
Caveats	• Parking Enforcement program • 5-Year Finances Plan • Departmental outreach program	• Full-time driver safety coordinator • Departmental outreach program

4.4.10 Proposed Intermodal Transportation Center

The City of Greenville is currently making progress in planning an Intermodal Transportation Center. This will be on a site bounded by 8th St / 9th St / Cotanche St / Evans St, which combines two existing city blocks adjacent to the ECU Student Recreation Center (Figure 4.13).

The transportation center aims to bring together a range of transportation services within a single location, improving the quality of service offered to riders and also increasing synergy between the services. The anticipated services are:

- Greenville Area Transit (GREAT)
- East Carolina University Student Transit Authority (ECUSTA)
- Pitt Area Transit Service (PATS)

- Pitt County Memorial Hospital (PCMH)
- Greyhound, and
- Taxi operators.

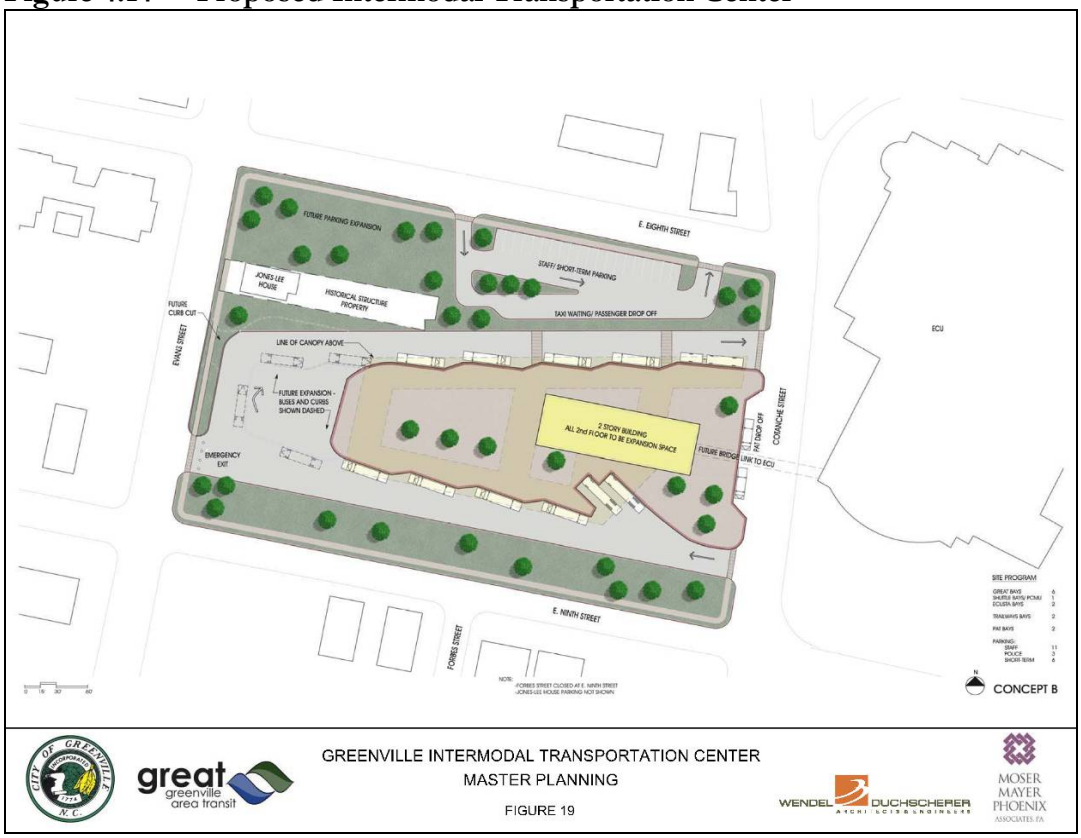
The center will act primarily as the downtown transfer point for Greenville Area Transit (GREAT) and as the city's Greyhound stop. In addition, the center will also be available for ECUSTA, PATS and PCMH to use as appropriate for their own services.

In 2006 a feasibility study concluded that the center was both needed and feasible, and should progress towards the next step. In the spring of 2007 the site selection and conceptual design phase began, with the scope of work to include: gauging public input, determining space needs, site selection, initial design concepts, environmental work, creating of an operating model, and a conceptual project budget. By the fall of 2008 a final site had been selected, and approved by the Greenville City Council, with design concepts for an 8,500 GSF building (2-story) at an estimated total project cost of $11.05 million. The design concept makes provision for a potential footbridge across Cotanche Street, linking the transportation center's building with the ECU Student Recreation Center.

Land acquisition for the proposed center will utilize federal and state funds (90%) to acquire the properties. A city public works survey of the properties is expected to be completed by May of 2009, with final design concepts to be submitted by bidding architecture firms in the latter part of 2009.

The public website for this project may be viewed at: http://www.greatnc.com/ with links to previous studies and reports, conceptual design layouts, meeting minutes, and city council presentations.

Figure 4.14 Proposed Intermodal Transportation Center



Source: City of Greenville

4.5 Pedestrian and Bicycle Mode

4.5.1 Pedestrian Flow to Main Campus

The existing residential areas located within walking distance to main campus include (a) the Tar River – University Neighborhood located to the north of E. Fifth St; (b) apartment complexes along E. Tenth St to the east of campus and connecting to the Green Mill Run greenway; and (c) College Hill residence halls to the south of E. Tenth St.

In the near future, as enrollment increases and further development occurs surrounding the university, the following locations will also be generators of bike/ped flows to main campus: (a) downtown Greenville located to the northwest of campus; and (b) the Intermodal Transportation Center located to the west;.

4.5.2 Safety Issues – Vehicular and Pedestrian

From discussions with the (a) working group on Pedestrian, Transit, Traffic and Parking, as well as discussions with (b) student transit riders, and (c) site observations, the following locations have been identified as potentially hazardous pedestrian/vehicular crossings, grouped by the frequency of which they were identified. Future studies and analysis should be conducted to expand upon this list and make recommendations for systematic improvement according to acceptable design standards.

Table 4.15 'Perceived' Hazardous Pedestrian Crossings

Severity	Campus	Location
Very High	Main	E 10th St / College Hill Dr Christenbury Gymnasium Transit Area College Hill Dr / stairs to residence halls S Cotanche St / 8th / 9th St (Student Rec)
High	Main and Athletic	14th St / Railroad Tracks / Berkley Rd 14th St / Residential Student Parking Lots Founders Dr / Wright / Bate buildings E 10th St / Retail Development
Moderate	Main and Medical	E 5th St / Campus Perimeter (Neighborhood Apts) S Cotanche St / Future Intermodal Transportation Center Moye Blvd / Future Development

4.5.3 Pedestrian and Bicycle Collisions

Traffic collision data was obtained from the City of Greenville Public Works Department for the years 2006 through 2008. An analysis of these data reported a total of ten (10) pedestrian collisions, and five (5) bicycle collisions during this three year period. East 10th Street near main campus was the location for three pedestrian and one bicycle collisions. One intersection in particular (E. 5th St x Cotanche St) involved more than one collision, 16 months apart. The full list of collisions is shown below.

Table 4.16 Pedestrian and Bicycle Collisions 2006 through 2008

Roadway	Intersection	Heading Toward	Date	Type	Severity
Charles Blvd	E 11th St	E 12th St	1/14/2006	Pedestrian	A – Disabling Injury
E 10th St	Anderson St	College Hill Dr	2/21/2006	Bicycle	O - Property Damage Only
E 10th St	Wendell Smiley Way	Lawrence St	4/5/2006	Pedestrian	C – Possible Injury
Currie Ct	Charles Blvd		4/19/2006	Bicycle	O - Property Damage Only
E 5th St	Cotanche St	Evans St	4/23/2006	Pedestrian	C – Possible Injury
E 5th St	Library St	Eastern St	9/22/2006	Bicycle	O - Property Damage Only
E 10th St	Ormand St	College Hill Dr	11/8/2006	Pedestrian	C – Possible Injury
E 10th St	Cedar Ln	Greenville Blvd	11/22/2006	Pedestrian	C – Possible Injury
E 14th St	Evans St		7/26/2007	Bicycle	B – Evident Injury
Cotanche St	E 5th St	Reade Ci	8/12/2007	Pedestrian	B – Evident Injury
E 5th St	Davis St	Vance St	9/12/2007	Pedestrian	K - Fatality
E 14th St	Myrtle Ave	Farmville Blvd	12/3/2007	Bicycle	B – Evident Injury
Founders	E 10th St		8/27/2008	Pedestrian	O - Property Damage Only
E 10th St	Portertown Rd	Karl Hardee Rd	10/31/2008	Pedestrian	B – Evident Injury
E 14th St	Elm St	Berkeley Rd	11/1/2008	Pedestrian	A – Disabling Injury

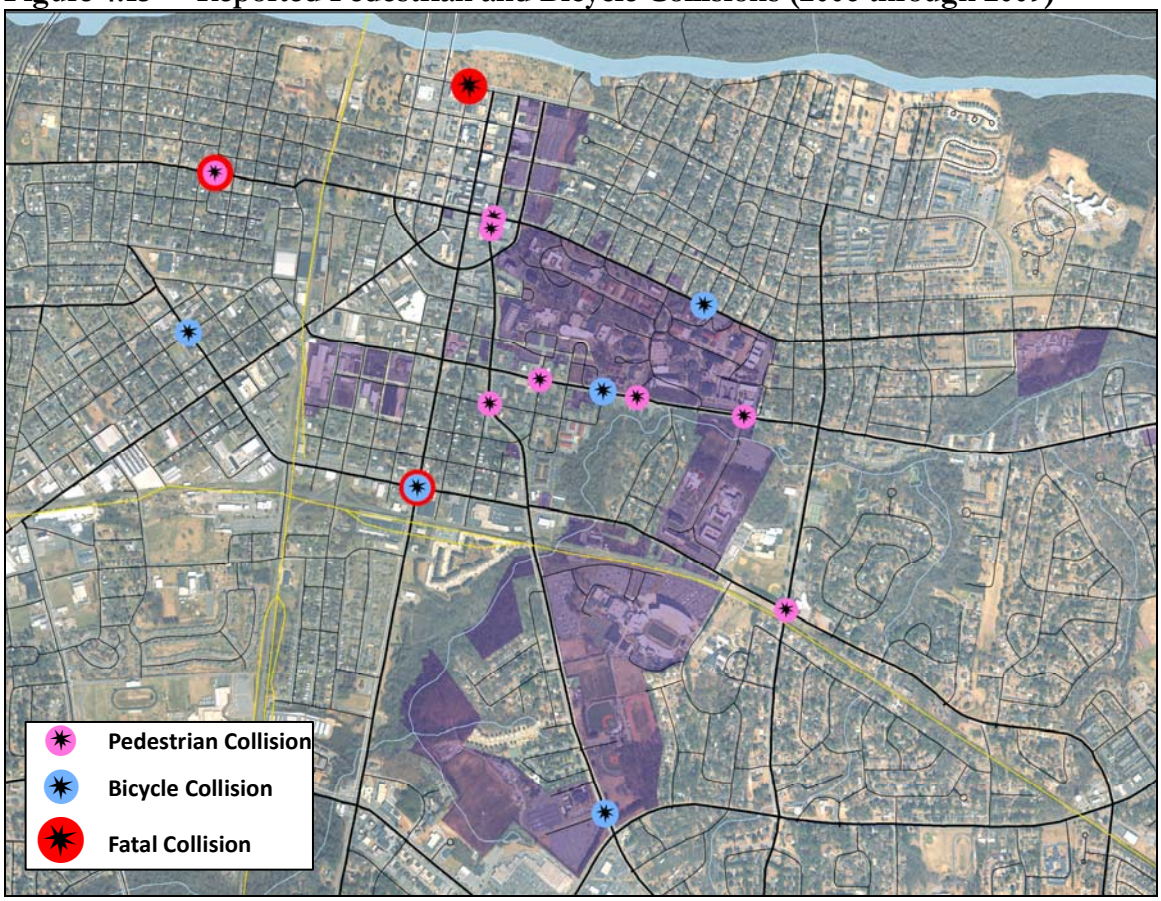
Grey box indicates the same intersection, however, recorded from different directions by police

Unreported collisions are common in all cities, as are near-miss conflicts that are undocumented safety concerns. Three of the reported pedestrian collisions occurred along East Tenth St, the perimeter of main campus. Three additional pedestrian collisions occurred within one city block

of main campus, and a final collision occurred roughly two city blocks away from the football stadium and college hill area. Six of the ten city collisions, in total, were in the immediate vicinity of main campus.

Three of the reported five bicycle collisions occurred near campus as well. The locations were: E 5th St at Library; E 10th St at Anderson St; and Curry Ct at Charles Blvd. Figure 4.14 displays the collisions occurring on or near the ECU campus.

Figure 4.15 Reported Pedestrian and Bicycle Collisions (2006 through 2009)



Source: City of Greenville

4.5.4 Pedestrian Deficiencies

In summary, there are many perceived hazardous pedestrian crossing areas near campus, as well as few documented collisions along the campus perimeter. Each presents a unique opportunity for systematic improvement as part of a comprehensive pedestrian improvement plan. The most effective approach would include (a) further refinement of the goals and objectives of such a plan by university administration, (b) clarification of the intended study area, (c) development of standardized design alternatives to be considered, and (d) prioritized ranking of areas to be improved.

Suggested areas to be considered should initially include the following

- Controlled crossing of E Fifth St to main campus
- Safe crossing of S Cotanche St to student recreation center
- Safe crossing of E Tenth St at College Hill Dr
- Adequate pedestrian connection from Minges Park & Ride to College Hill Dr
- Limited ECU Facility obstruction of campus sidewalks, alleyways, and internal streets
- Lack of direct pedestrian campus pathways once across perimeter roadways

4.5.5 City of Greenville Greenway Master Plan

In March of 2004 the Greenville City Council adopted the 2004 Greenways Master Plan, which is a revision of the original 1991 plan (2004GreenwayMasterPlan.pdf). Specifically identified in the plan is the objective to "Provide linkages between neighborhoods, parks, schools, and ECU." Figure 4.16 shows the existing and proposed greenways.

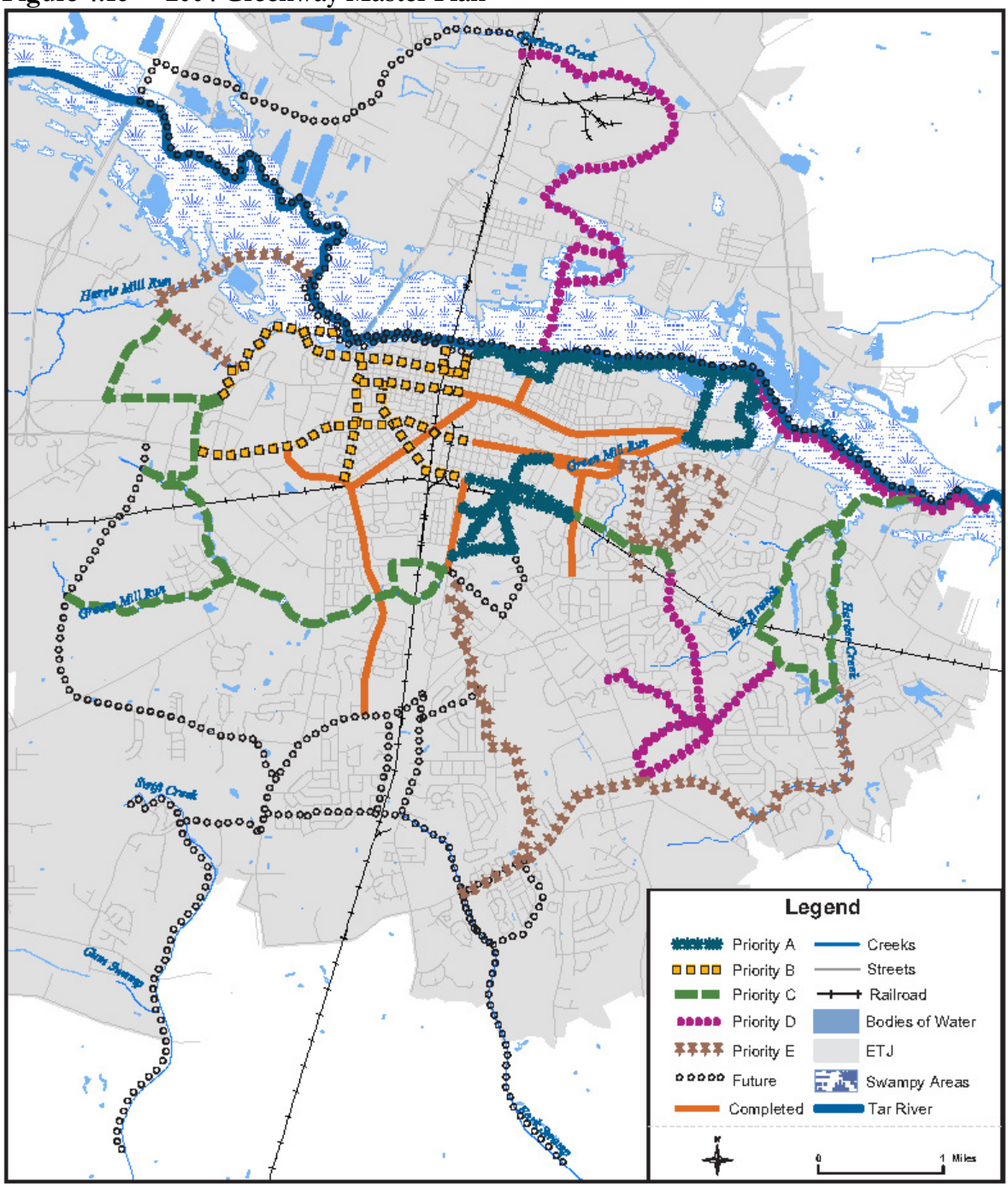
Green Mill Run (GreenMillRunGreenway) is the only existing greenway (excluding sidewalks) within the city, and runs 1.5 miles long from College Hill Drive to East Fifth Street near the ECU main campus. At one location the greenway crosses (at-grade) East Tenth Street, an auto-dominated thoroughfare running along the southern boundary of ECU's main campus.

Phase II of Green Mill Run will add 1.3 miles to the southwest, connecting to the ECU athletics campus, as well as improvements to sidewalks and connections to the trail along the way. The 2004 plan identifies this segment as the highest priority (A), with a range of 1-2 years for implementation.

The Friends of Greenville Greenways (FROGGS) organization (http://www.froggs.org/) is a non-profit organization (NPO) dedicated to building a more comprehensive greenway system within the city of Greenville. Currently this organization is working with the city to allocate the $1.5 million federal grant to construct the South Tar River Greenway, which will eventually connect with the existing Green Mill Run Greenway at East Fifth Street (Figure 4.17). Phase I groundbreaking began on December 12, 2008 (DailyReflectorArticle). This segment was also identified in the 2004 Greenways Master Plan as a Priority-A segment.

As the greenway and sidewalk system becomes more developed within the city of Greenville, walking or bicycling to campus becomes more feasible. Green Mill Run slices across the city from the northeast to the southwest, connecting a densely populated residential area with both the main and athletic campuses. Providing sidewalk and pathway connections to these greenway segments should be given as much emphasis as the actual construction of the trail, because people will not use a greenway if they are forced to travel out of their way to reach it.

Figure 4.16 2004 Greenway Master Plan



Source: City of Greenville

Figure 4.17 South Tar River Greenway

Source: Friends of Greenville Greenways http://www.froggs.org/Tar-River-Greenway9.29.06.gif
The lower panel shows the area near ECU, enlarged for clarity.