# Greenville
# Intermodal Transportation Center
# Feasibility Study

# Final Report


Prepared for the City of Greenville
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# Greenville Intermodal Transportation Center Feasibility Study

## Executive Summary

The Greenville Intermodal Transportation Center Feasibility Study was established to determine the needs for, and feasibility of, a transportation center in Greenville. This would be a central point for transportation within the city, offering easy access to services and making connections under one roof. The center could potentially serve buses, taxis, limousines, package express, private car parking, bicycles and pedestrians, as well as possible future rail service. Such a center was a recommendation from the 2003 Regional Transit Feasibility Study.


A review of existing transportation centers confirmed that Greenville's reasons for considering a center are in line with those of many other cities which have built them – particularly the desire to improve service quality for transit riders, to make it easier to transfer between services, and to contribute to downtown revitalization. These other centers have generally been successful, and specific lessons for Greenville are drawn out in the report.

Transportation operators were interviewed to establish whether they would be interested in using a center in Greenville, and their requirements for its specification. Citizens' and civic stakeholders' views and aspirations were also sought. There was strong support for a transportation center, particularly in view of the city's continuing growth, and there was a broad consensus that it should be in downtown or the tobacco district.

Guidelines were therefore drawn up for what services would use the center, and what facilities the center would contain. The study also took into account the possibility of passenger rail service returning to Greenville in the future. Ideally the station would be located at the transportation center, although this may not be possible.

### Which Transportation Services Would Use the Center?

Greenville Area Transit (GREAT) would definitely use the center as its downtown hub for transfers. GREAT wants to give its riders a higher level of amenities – including a comfortable waiting area and restrooms – and to provide better facilities for drivers. The center would also become the base for GREAT's management.

Trailways (part of the Greyhound system) would definitely use the center as its Greenville depot, instead of the existing depot which is no longer attractive to riders. Trailways has been involved in transportation centers in other cities, and has found that they work well.

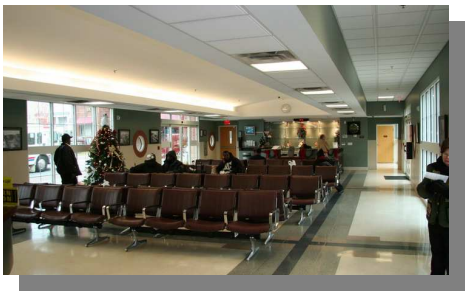
ECU Student Transit Authority (ECUSTA) would use the center, so that staff, students and visitors would be able to connect to campus from other services. It would be especially useful for people commuting to campus who are not served by ECUSTA, and for students using Trailways to travel between ECU and home.

Pitt Area Transit System (PATS), which provides transit in Pitt County, would be able to drop people at the center or collect them from there – for example, to connect with a GREAT or Trailways bus. This would not affect people who are going to other destinations as clients of human service agencies – their trips would still be direct. In the future, if enhanced Rural General Public (RGP) service is provided, the center could also become a hub for that service. Other van or shuttle services could also use the center (such as vans from other Counties, or a potential shuttle to the airport).

A taxi stand would also be provided, with space for one or more taxi company offices. Ideally a car rental firm would also be attracted to the center. Finally, if the chosen site is on a railroad, space would be reserved for it to become a station as well in future.

### What Would the Center Contain?

The main building would include a waiting area for riders, with room to expand as demand grows; a ticket/ information desk; a Trailways ticket/baggage desk, baggage room and office; restrooms; vending machines; a security office (which could be used by security staff or as a police substation); space for a taxi office, shuttle/limousine office and a car rental office; management offices for GREAT, and a break room and restroom for bus drivers.



The center would have two bays for Trailways buses and at least seven (ideally twelve) bays for GREAT and ECU buses. The extra bays would allow for future service expansion, and could be added later. There would also be parking spaces, and a drop-off zone, a taxi stand, and bike racks and lockers.

There would also be space in the building for other facilities aimed at riders. The amount would depend on the site layout, budget and likelihood of attracting tenants. For planning purposes, space has been assumed for a café, a news-stand, a 'bike station' (where people could leave their bikes to be serviced) and another useful shop, such as a florist or barber.

Ideally, there would be space to be leased out for other activities, such as offices or shops. Some existing transportation centers include a bank branch or a child-care center. Alternatively, there could be community facilities such as a meeting room. Again, this would depend on the location, site layout, budget and likelihood of attracting tenants, so this space has not been specified in detail at this stage. The goal is to have as much activity as possible in and around the center, to enhance security and the viability of any retail services.

There is a consensus among stakeholders that the center should be a high-quality public building. Architecturally, it should reflect the city's aspirations and design standards. The Sheppard Memorial Library Extension and the new City Hall are examples of this level of quality. Inside, it should be comfortable and attractive. Security and upkeep will also be important.

Overall, the functions listed above could require an ultimate building size of up to about 14,000 square feet, or 16,000 square feet if space is provided for future rail service. This includes allowances for ridership growth and for the other facilities aimed at riders, but these need not all be built initially. Any space to be leased out for other activities would be in addition to this (perhaps on a second level).

The entire site might need to be between two and five acres, depending on whether provision is made for rail and whether parking is satisfied on-site or in other parking facilities nearby. The precise layout of the center will depend on the size and shape of the chosen site, and on whether space is reserved for a future rail station.

## How the Center's Feasibility was Assessed

The study evaluated the feasibility of a center for Greenville, based on four important questions:

- Would the center support the city and regional travel needs?
- Would the center be useful to stakeholders?
- Would the center have public support?
- Would the center be cost-effective?

## Would the Center Support the City and Regional Travel Needs?

A Transportation Center located in or near downtown would fit in well with Greenville's travel needs, both now and in the future. The main reasons are:

- Downtown is the hub of not only the city, but the whole region, and there are plans to revitalize and strengthen the downtown area.
- Having the ECU campus nearby makes downtown particularly important.
- The center would improve connections with long-distance services.
- The center would improve access to ECU, which is a major destination for citizens and visitors.
- Many GREAT riders would pass through downtown anyway – for example, traveling from one side of the Tar River to another.
- The center would directly benefit the estimated 300 daily GREAT transfers downtown, plus other riders who may need to use the facilities before continuing their trip, and also 40 Trailways riders to/from Greenville each day.
- The center could be a springboard for other transit improvements.
- Finally, the center could improve the viability of any future passenger rail proposal.

However, the center would not solve all of the transportation needs:

- It would not directly serve the medical district, which is an important destination. As GREAT expands in the future, it is intended to provide suburban routes that run directly to/from the medical district without going through downtown. A future possibility is to have an express shuttle between the center and the Medical District.

- The center does not specifically address the need for more bus routes, running more often. However, it could provide greater impetus for these improvements.

Overall, the study concluded that the center does fit with people's travel needs, although it will be most effective as part of a wider package of improvements.

### Would the Center be Useful to Stakeholders?

The transportation operators were positive about the center. GREAT and Trailways would definitely make it their downtown base. ECUSTA and PATS would also connect to the center, and taxi firms were interested in using the facility.

The other civic stakeholders were also generally positive. Representatives of Pitt County, the Public Transportation and Parking Commission, the Redevelopment Commission, Pitt County Memorial Hospital, and ECU staff and students all thought the center was a good idea. Their reasons included the benefits to riders, the potential boost to revitalization efforts, and the need to provide Greenville's community with better options for getting around. Many stakeholders felt that it was the sort of facility that a city like Greenville needed, particularly as it grows and needs to tackle congestion and mobility issues.

Some of the County's social service agencies said that their main problem was the limited public transportation available to the general public outside the City, and that the center would not directly address this issue. But other stakeholders suggested that the center would give impetus to improving county-wide service levels, and that when this happens the center will become a useful hub for the whole County as well as for the City. In addition, the center would facilitate transfers for people traveling to medical and other services.

### Would the Center have Public Support?

Two public meetings were held as part of this study. At the first meeting, citizens were told about the study, were shown some examples of centers in other cities, and were asked for feedback on whether a center would be useful. The second, toward the end of the process, reported back to citizens and sought further feedback on the emerging concept.

Most citizens supported the idea of a transportation center. They felt it would help people get around Greenville, particularly as the city grows. Some citizens supported the center on condition that it did not divert funds from other improvements to transportation services. Very few people at the meetings were against the idea.

### Would the Center be Cost-Effective and Fundable?

Many factors will affect the construction cost – whether the City needs to buy land, the cost of site clearance and clean-up, and the amount of space that is built for other functions as part of the center. These will not be known until a specific site is chosen and the design is finalized. The total cost is estimated to be between $6 million and $8 million, depending on these factors. This is broadly in line with similar centers elsewhere. The estimate includes the space for future transit growth and ancillary functions; these could be omitted to reduce the cost, but land should be reserved to add them later as necessary. The cost of any space to be leased out for other activities would be in addition to this.

There would also be an ongoing operational cost. This is mostly staffing – a building manager, ticket/information staff and security staff. There would also be maintenance and utility costs. Again, it depends on the final design, but it could be up to $450,000 per year. This is relatively expensive, but it reflects stakeholders' preference for a well-kept, well-staffed center.

Construction of a transportation center is typically funded 80% from Federal grants, 10% from State funds and 10% locally. The City has already been allocated enough Federal funds to cover design work, and there is a good likelihood of receiving Federal funds for construction as well. The State works to secure Federal funds and would be able to provide its own share. The local share could come from city reserves, from the bonds recently authorized by voters, or by contributing land or other resources instead of cash.

Each service provider could pay a share of the ongoing operational cost, although this would need to be negotiated. Leasing income (from a cafe or other facilities) could cover some of the costs, although experience suggests this should not be relied upon to make the financial case.

Transportation centers are not usually expected to be 'profitable' or even to break even. The benefits are mostly non-financial – to riders, government, citizens and other stakeholders – as listed in Table ES-2, on the next page. The study concluded that the benefits do justify the costs.

## Conclusion: the Center is Feasible

The study concluded that a transportation center is indeed feasible for Greenville, and recommends that the City moves forward with the idea. Table ES-1 summarizes the reasons for building the center.

### Table ES-1: Summary of Reasons to Build a Transportation Center

| Why build a transportation center? |
|---|
| • GREAT, Trailways and ECUSTA would all use the center and all see benefits for their riders<br>• Trailways needs a new depot anyway<br>• Existing GREAT and Trailways riders need better transfer conditions and will benefit directly<br>• Improves access to/from ECU<br>• Improves trips to downtown for transit riders<br>• Could improve access to/from the medical district, in conjunction with shuttle and Tenth Street Connector<br>• Could provide more options for PATS riders, while potentially reducing PATS costs<br>• Improves image and visibility of transit<br>• Springboard for service enhancements as city and region grow<br>• Potential options to locate alongside rail line<br>• Potential to assist downtown revitalization<br>• Represents forward-planning to meet the challenges of City growth<br>• Consistent with City and County planning policies and objectives |
| **Why not?** |
| • Opportunity cost of site<br>• Opportunity cost of money |

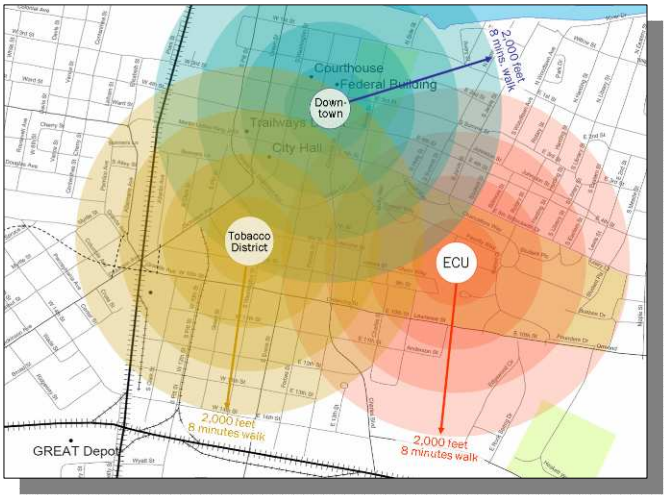
| Stakeholder | GREAT | Trailways | PATS | Hospital | ECU Community | Taxi operators | NCDOT Rail | Community and Government | Riders |
|---|---|---|---|---|---|---|---|---|---|
| **Pros** ✓ | • Improved passenger service and amenities – especially as a comfortable transfer facility<br>• Convenient Information / ticketing point for public<br>• Much-needed amenities for drivers<br>• Easy transfers between modes for riders<br>• Operational synergies (e.g., shared ticket sales)<br>• Opportunity to work more closely with ECU<br>• Springboard for increasing service levels & ridership | • Improved passenger environment<br>• Potential increase in ridership<br>• Avoids major maintenance costs on existing building<br>• Supports policy of downtown locations<br>• Supports preference for leasing space in intermodal centers | • Good place to drop/collect riders downtown<br>• Easy, safe transfers to/from other modes for riders<br>• Potential for safe layover area<br>• Potential for van-to-van/bus transfers, for efficiency<br>• Safe transfers to/from GREAT for any future RGP service<br>• Springboard for any future fixed-routes | • Improved service for patients and staff who use transit<br>• Springboard for possible future Hospital-Downtown shuttle | • Improved student access to Trailways (for start and end of semester, weekend trips)<br>• Improved access to campus for students on GREAT routes – particularly remote apartments<br>• Potential synergies with ECU downtown facilities<br>• Potential synergies with Main Campus – Medical School axis | • Improved visibility and image of taxis<br>• Stand is convenient for visitors arriving<br>• Office space if required<br>• Stand serves as layover area | • Improves Trailways connection to Amtrak (even without rail at the center)<br>• Springboard for future Greenville rail service (if location supports rail) | • Improved visibility and image of transit<br>• Improved quality of service<br>• Springboard for improving transit service levels<br>• Springboard for managing city growth more sustainably<br>• Assisting downtown revitalization<br>• Potential for synergies with other developments<br>• Improves case for rail service (if location supports rail) | • Directly benefits ~300 existing GREAT trips daily<br>• Directly benefits ~40 Trailways riders daily<br>• Improved links to long-distance travel<br>• High-quality, safe place to wait/transfer<br>• Information point<br>• Convenience of kiosks while waiting or on arrival |
| **Cons** ! | • Initial cost<br>• Operating cost | | • Potential share of operating costs | • Potential share of operating costs if shuttle is hospital-run | • Potential operating fee for bus slip(s) used by ECUSTA | • Cost of office space<br>• Potential fee for using stand | • Location choice at this stage may restrict rail options (but options are limited anyway) | • Initial cost<br>• Operating cost | |
| **Comments and Caveats** ✗ | • Must accommodate growth in system and ridership<br>• Center must be seen as part of overall step-change in service | • Operational cost will depend on negotiations, but will likely be similar to existing cost | • Some agency customers see severe RGP needs as critical issue<br>• Potential depends on agencies' and PATS' future service strategy | | • Increasing student use of GREAT also involves other issues | • Possible loss of business (due to easier transit) is balanced by improved visibility and image of taxis | • Needs care not to compromise city transit function to serve rail | • Downtown revitalization effects must be seen as part of wider efforts | • Some see improving service levels as a higher priority |

## Table ES-2: Summary of Costs and Benefits for Stakeholders and the Community

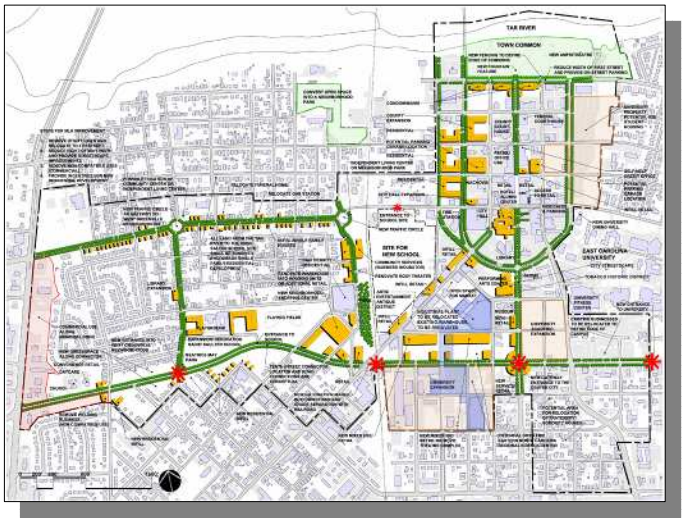
## Site Selection Criteria

Because the next step would be to select a site, the study also developed some criteria to be used in a future site selection study. These are listed in Table ES-3, on the next page.

It will probably not be possible to find a site that is ideal on each of the criteria. Stakeholders will need to decide which of the possible sites will be the best overall. In particular, the best site for bus riders (which will likely mean being as close as possible to downtown and ECU) may not be alongside a railroad line. Allowing for a future rail station on site is less important than finding the best site for existing bus services and riders. This is because the bus services are definite and will be the center's core role. Any future train service would probably only run once or twice a day. If necessary, a dedicated shuttle could run between the Center and the station to connect with train arrivals and departures.




*The ideal site would be close to Downtown, ECU and the Tobacco District. It would also be good to have a site on a railroad line, to allow for future passenger trains, but this may conflict with the other requirements.*



*The ideal site would support the City's revitalization efforts, as seen in this diagram from the Center City - West Greenville Revitalization Plan.*

Another issue is how much the center could do to help revitalize downtown and the tobacco district. The Center alone, on an isolated site, would not be a strong magnet for revitalization. Instead, the Center is seen as part of a range of projects that will collectively lead the revitalization efforts. The ideal site would therefore be close to existing and near-term centers of activity (for example, the proposed ECU alumni center), helping to gradually extend the areas of vitality. Other aspects include the potential for adaptive re-use of historic buildings and for streetscape improvements.

## Table ES-3: Summary of Site Selection Criteria

| |
|---|
| **Layout and site impacts**<br>• Big enough to accommodate the required functions, including an allowance for future expansion<br>• Will have a safe, convenient site layout<br>• Buses can get to the site easily<br>• Acceptable impacts on traffic flow and safety in the surrounding streets (including for pedestrians and cyclists) |
| **Impacts on transportation operators and users**<br>• Convenient for GREAT, Trailways and ECUSTA routes<br>• Convenient for riders, taxi users, etc.<br>• Convenient access on foot and by bicycle<br>• Allows for future rail service (see text)<br>• Assists travel to/from the Medical District<br>• People will feel safe there<br>• Improves the overall visibility and image of public transportation |
| **Location and city planning**<br>• Close to downtown<br>• Close to ECU main campus and future ECU expansion<br>• Helps downtown / tobacco district revitalization efforts<br>• Compatible with neighboring land uses<br>• Maintains or improves the streetscape and urban design |
| **Finance and implementation**<br>• Low purchase, clearance and remediation costs<br>• Acceptable impact on environmental, community or historical resources<br>• Potential for revenue from leased space, or for joint development<br>• No 'roadblock' issues that would hold up the project |

*The study was carried out by transportation planners from Martin/Alexiou/Bryson, PLLC, on behalf of the City of Greenville and other local partners.*

*March, 2006*

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# Tables

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# 1 Introduction

The City of Greenville and Pitt County have been experiencing strong growth in recent years, spurred in particular by the development of a diverse post-tobacco industrial base. This includes not only manufacturing industry but also the growth of East Carolina University and the medical facilities.

The governments and other local stakeholders now want to provide improved mobility throughout the area. The Regional Transit Feasibility Study[1] in 2003 concluded that a more consolidated or coordinated system is needed if improved mobility is to be provided efficiently. That study also recommended that locations be identified for potential transit or intermodal centers. ('Transit Center', 'Intermodal Center', 'Multi-Modal Center' and 'Transportation Center' all mean broadly the same thing.)

The purpose of the Greenville Intermodal Transportation Center Feasibility Study is therefore to determine the feasibility of, needs for, and benefits of an intermodal transportation center. The center could potentially serve buses, taxis, limousines, delivery, baggage and package express, private car parking, bicycles and pedestrians, as well as possible future rail service. In addition, the study provides criteria to help identify an appropriate location for the center.

## 1.1 Study Process

The study was carried out by a project team from Martin/Alexiou/Bryson, PLLC. The team reported to a Steering Committee that included representatives of the City of Greenville, Pitt County, East Carolina University (ECU), the North Carolina Department of Transportation (NCDOT) and the Greenville Public Transportation & Parking Commission.

The key steps in the process were to:

- Collect information on existing transportation centers, to understand their lessons for Greenville, and to promote feedback on possible concepts and designs. *(Described in Section 2 of this report)*
- Review background information and previous studies, and identify current and future travel patterns and problems within the city and region, in order to understand the needs that the transportation center should support. *(Sections 3 to 7)*
- Interview transportation operators and civic stakeholders, to understand their views, potential requirements and aspirations. *(Section 8)*
- Solicit public opinion and feedback, through two public meetings and other means of outreach. *(Section 8)*
- Develop the specific functional requirements and space needs for the center, based on stakeholders' requirements, best practice and design standards. Develop generic layouts to show how the center might be laid out, and its approximate site area requirements. *(Section 9)*

[1] *Regional Transit Feasibility Study,* Wilbur Smith and Associates for the City of Greenville et al, 2003.

- Understand the cost implications, how the costs could be met, the benefits, and the potential for a mixed-use development. *(Sections 10-13)*

- Evaluate the feasibility of the center, based on the information gathered and the specification developed. This evaluation focuses on four questions: *(Section 14)*
    - Would the center support the city and regional travel needs?
    - Would the center be useful to stakeholders?
    - Would the center have public support?
    - Would the center be cost-effective?

- Following the conclusion that the center was indeed feasible, site selection criteria were developed. These would be used in any future site selection study. *(Section 15)*

# 2 Review of Existing Transportation Centers

This section summarizes the results of a review of existing transportation centers, which was undertaken at the start of the study process. The review looked at:

- some existing comparative studies, and
- the transportation centers in a range of comparable cities selected for this study.

This was a very useful exercise. Details of the centers in comparable cities were presented to the Steering Committee and at the first Public Meeting. As well as highlighting lessons for Greenville, this generated feedback on preferred designs and desirable facilities.

The full results of the review are given in Annex 1, and the conclusions are repeated below.

## 2.1 Conclusions from the Review

The most common objectives for transportation centers are to improve transfers (between buses and/or between different modes) and to assist downtown revitalization efforts. Most centers reported these objectives. Typically, before a center was built, transfers between city buses were made on-street with no more than bus shelters for facilities – the same situation as in Greenville.

Other reported objectives included providing rest areas for drivers, enhancing the public image of transit, reducing accident risks, and (more generally) improving transit service quality or convenience. Increased ridership is sometimes an objective, but not always. Operational objectives are rare – the focus is mainly on improving the passenger experience.

In cities with existing rail service, the rail station mostly (but not always) becomes the site of the transfer center (Spartanburg, SC is one of the exceptions). In the two cities studied with potential future rail service, both have chosen sites that better served the existing bus riders to/from downtown.

The scale of the facilities can match the scale of the service. A center can be relatively small (such as Cary) or relatively large (such as Greensboro). However, centers should be planned with future service expansion in mind. Two of the transit systems studied have outgrown their centers, just a few years after opening.

A variety of site layouts are in use. Some centers have 'all-in-one' facilities, with rail in the same building as other modes. Others have split layouts, with separate buildings for rail and bus services (such as Greensboro and Wilson). Vehicular circulation needs careful planning, to minimize conflicts with pedestrians and conflicts between cars and buses.

Many, but not all, centers include a ticketing/information desk, a news-stand and a café. Some centers have a particularly wide range of facilities. Shared use on-site is helpful in providing busyness, security and income. Indeed, there is potential synergy with other facilities that a community might need. These may range from simply a community meeting room to a full set of non-transit facilities (one center has a bank, a day care center and other users), making the transportation center very much a community resource.

The centers usually 'work', and few operational problems have been reported. However, there is a very clear difference between the most attractive and welcoming centers and those which are less so. In particular, placing facilities underneath a parking deck is undesirable. 'Lightness' and quality pay dividends for attractiveness. Re-using a historic building presents costs and challenges for construction, but can provide a particularly attractive center for passengers.

Staff presence, security and upkeep are also important in keeping the center attractive and in improving passenger satisfaction. It is common to have either a police sub-station on-site or dedicated security staff. The presence of non-transit-users, such as local youths or homeless people, has sometimes been reported as a problem, but active management can generally avoid this.

The centers' objectives are usually reported to be achieved – particularly the objectives of improving the quality and convenience of transit services. Existing riders generally appreciate the improved quality of service offered by a center. However, ridership does not always increase.

Finally, staff interviewed for this study and in the previous comparative studies have reported that neighborhood issues are rarely a problem, and that communities appear to have welcomed their new Centers.

## 2.2 Implications for Greenville

The review showed that Greenville is broadly in line with other comparable cities that have built transportation centers – for example, with city bus riders making transfers on-street, and with aspirations for downtown revitalization. It is also clear that the centers have generally been successful. These are promising results for Greenville.

Interestingly, when some of these case studies were presented at the first public meeting, the SPARTA Passenger Center in Spartanburg, SC was the one that attracted the most positive comments. The attractive style of the building, the concept of additional leasing space on the second floor, and the presence of the police substation all caught the public eye.

# 3 City and County Overview

This sections describes the regional, demographic and travel-pattern context for Greenville. It reviews the population trends and travel patterns in the city, the other municipalities in Pitt County, and the County as a whole.

## 3.1 City and County Structure

Greenville is the state's third-largest city east of I-95, after Wilmington and Jacksonville, and sees itself as the regional center for the north-eastern part of the state. It is the seat of Pitt County, and its population of 66,000 (in 2003) represents almost half of the county's 139,000 population. Figure 3.1 shows Greenville in relation to Pitt County, and Figure 3.2 shows the city in more detail. Figure 3.3 shows Central Greenville.

The city lies on the Tar River, with most of the residential suburbs on the south side. The downtown is immediately south of the river, and retains municipal and federal buildings. The main shopping malls, major discount retailers and Convention Center are located in the southern suburbs along the orbital Greenville Boulevard SE and SW. Pitt Community College is located just outside the city limits to the south. Pitt-Greenville Airport is north of the river, and further out to the north-east are some major industrial employers along the US-264 by-pass (Greenville Boulevard NE). Indeed, much of the city's industry is concentrated in the north-east sector. An unofficial City policy has been to avoid annexing these industrial areas in order to retain and attract industry there.

Importantly, Greenville is home to East Carolina University (ECU), part of the University of North Carolina (UNC) system. ECU is the third-largest of the state's four-year colleges, with around 17,500 undergraduates, 5,000 graduate students and 4,300 faculty and staff[2]. (The student numbers are the equivalent of about one-third of the city's population.) The main campus is immediately south-east of downtown, extending eastwards with academic buildings and residence halls and then southwards to residence halls and athletic facilities. About one-third of the students are housed on-campus. The city's eastern suburbs, extending out from the campus, have a strong concentration of student apartments.

Greenville is also the location of Pitt County Memorial Hospital, in the western suburbs (shown on Figure 3.3). This is the major hospital for the north-eastern part of the state; about two-thirds of patients come from outside the County. It has around 5,600 employees. The hospital estimates that in 2000 it had 36,000 inpatient visits and 235,000 outpatient visits[3]. Alongside the hospital is ECU's Brody School of Medicine and (under construction) its School of Nursing and Allied Health. An extensive 'medical district' of health-related businesses has also been developing around the hospital.

Immediately south of downtown is the 'tobacco district'. Bounded approximately by Tenth Street to the south, Evans Street to the east, downtown to the north and the railroad to the west, this historically-interesting area includes former tobacco warehouses, an active chemical plant,

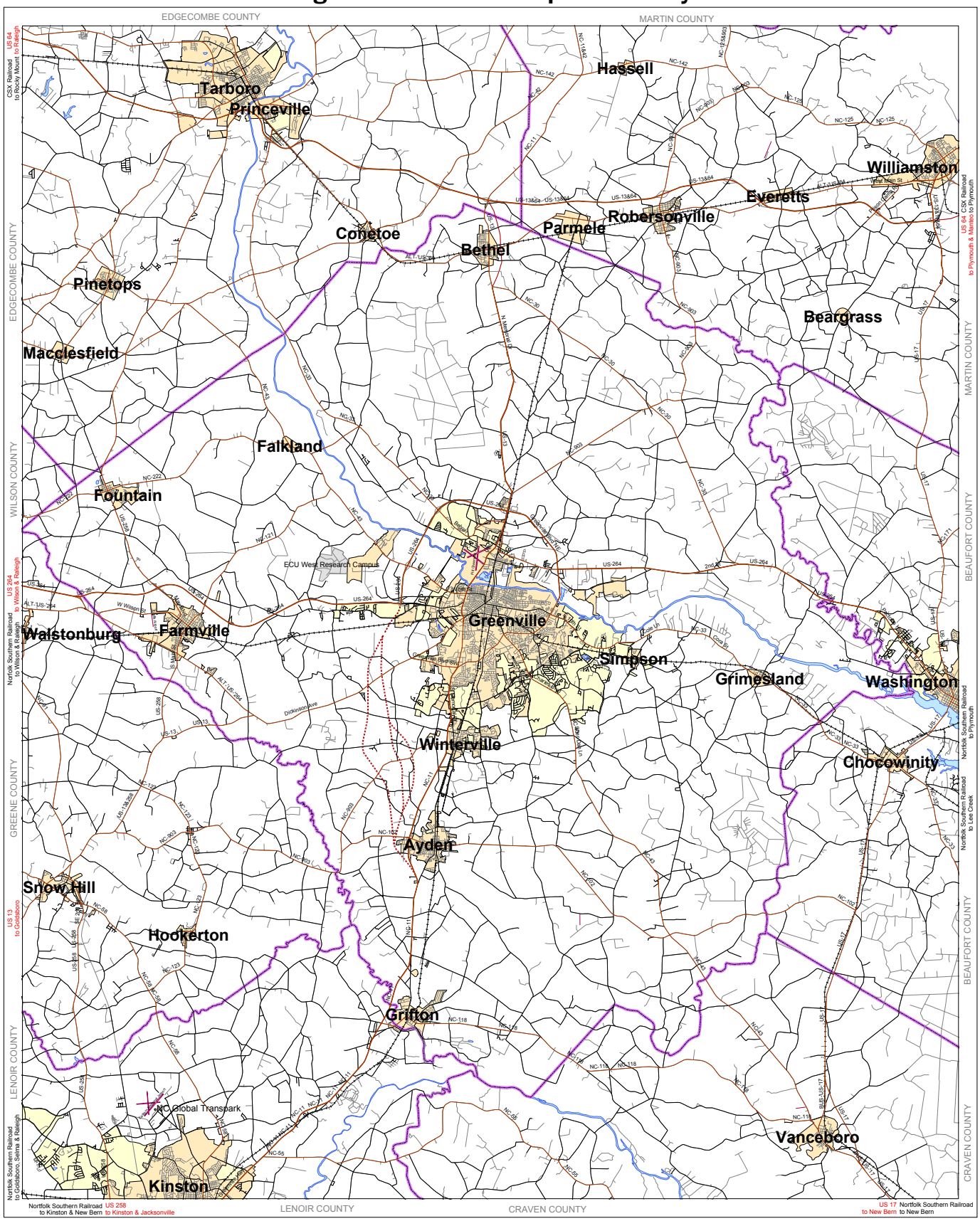
[2] www.ecu.edu/cs-admin/mktg/points-east-quick-facts.cfm (accessed on February 16, 2006)

[3] *Regional Transit Feasibility Study*, September 2003, Page 3-2.

and housing, with shops along Dickinson Avenue. It is a focus of revitalization efforts, as described later in the report.

The county includes nine other municipal areas. The three largest of these, with populations around 5,000, are Winterville (adjoining Greenville, south of the city), Ayden (south of Winterville) and Farmville (to the west). The remaining municipalities have fewer than 2,000 residents, with the smallest at just over 100. Overall, around 60% of the county's residents live in municipal areas.

# Figure 3.1: Location Map: Pitt County




**Greenville and Pitt County**

0 5 Miles

0 5 10 Kilometers

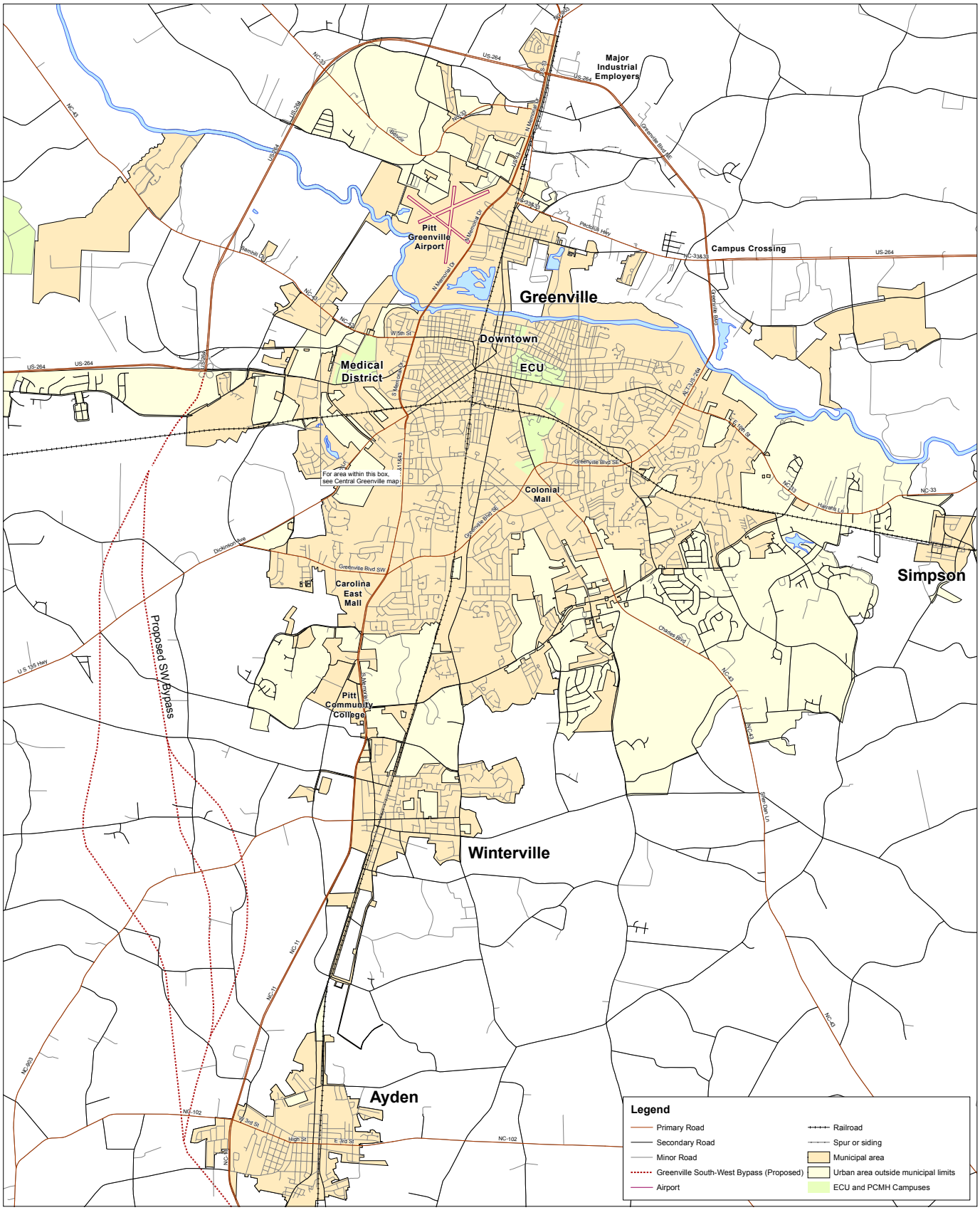
1:80,000 at size E plot

N

Primary Road
Secondary Road
Minor Road
Greenville S-W Bypass (Proposed)
Railroad
Airport
County boundary
Municipal area
Urban area outside municipal limits

GIS File: County map v5 February 2006

# Figure 3.2: Location Map: Greenville and Winterville




**Greenville and Winterville**

0 1 2 3 Miles

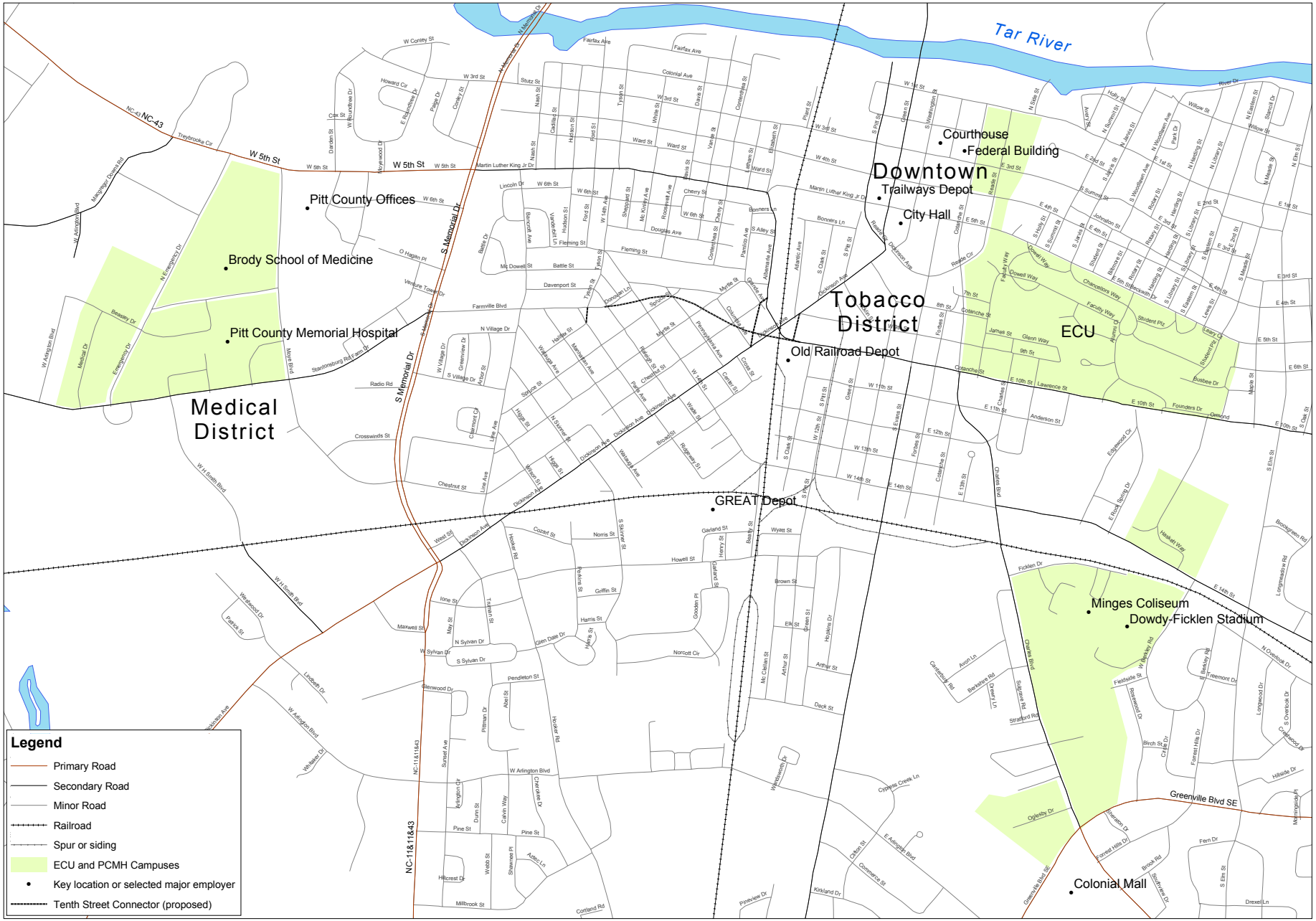
0 1 2 3 4 5 Kilometers

1:25,000 at size E plot

N

GIS File: City map v5a

February 2006




**Central Greenville**

0 0.5 1 Mile

0 0.5 1 Kilometer

1:5,000 at size E plot

N

GIS File: Central Greenville Map v6

February 2006

**Figure 3.3: Location Map: Central Greenville**

## 3.2 City and County Population and Trends

Table 3.1 shows the population data for the city and each town, along with their trends in recent decades. Table 3.2 shows similar data, but in terms of townships (i.e., sectors of the County). Table 3.3 shows a longer period of data for Greenville.

The County population grew by over 50% between 1980 and 2003. Two-thirds of this growth was in Greenville and Winterville, which grew at the fastest rates in the County. Winterville has expanded particularly strongly from a small base to become the largest of the county's towns. Together, Greenville and Winterville almost doubled in population in less than a quarter of a century. Note that the towns' growth figures include people incorporated by annexation (i.e., the expansion of the city limits), as well as new residents, but this still reflects real growth trends.

Other towns have had mixed fortunes, with some gaining population but others losing slightly. The towns losing population include Farmville, despite its well-connected location on the US-264 corridor.

Driven by the growth in Greenville, the municipal areas have overall been growing faster than the unincorporated areas, although the latter have still grown by 38% since 1980. Some of this growth will have been in the areas around city boundaries, particularly around Greenville, which explains some of the more dramatic increases shown in Table 3.2.

The City's *Horizons Plan*[4] reports that the primary growth trend in Greenville since 1990 has been to the south, while areas north of the Tar River have experienced relatively little growth. Notably, multifamily units have been developed along and south of Greenville Boulevard. The current level of construction activity in this area shows that this trend is continuing today.

[4] *Horizons: Greenville's Community Plan* [Comprehensive Plan Update]. Adopted by Greenville City Council February 12, 2004.

## Table 3.1: Population and Historic Trends, by Municipality

**Population Growth: Pitt County and Incorporated Municipalities**

| | 1980 Census | 1990 Census | 2000 Census | 2003 Estimate | 1990-2000 % Change | 2000-2003 % Change | 1990-2003 % Change | 1980-2003 % Change |
|---|---|---|---|---|---|---|---|---|
| Greenville [city] | 35,740 | 46,305 | 60,476 | 65,799 | 30.6% | 8.8% | 42.1% | 84.1% |
| Winterville | 2,052 | 3,069 | 4,791 | 5,850 | 56.1% | 22.1% | 90.6% | 185.1% |
| *Greenville + Winterville* | *37,792* | *49,374* | *65,267* | *71,649* | *32.2%* | *9.8%* | *45.1%* | *89.6%* |
| Ayden | 4,361 | 4,883 | 4,622 | 4,642 | -5.3% | 0.4% | -4.9% | 6.4% |
| Farmville | 4,707 | 4,446 | 4,302 | 4,591 | -3.2% | 6.7% | 3.3% | -2.5% |
| Grifton | 1,840 | 2,140 | 1,889 | 2,126 | -11.7% | 12.5% | -0.7% | 15.5% |
| Bethel | 1,825 | 1,842 | 1,681 | 1,749 | -8.7% | 4.0% | -5.0% | -4.2% |
| Fountain | 424 | 445 | 533 | 538 | 19.8% | 0.9% | 20.9% | 26.9% |
| Simpson | 407 | 432 | 464 | 464 | 7.4% | 0.0% | 7.4% | 14.0% |
| Grimesland | 453 | 469 | 440 | 438 | -6.2% | -0.5% | -6.6% | -3.3% |
| Falkland | 118 | 108 | 112 | 113 | 3.7% | 0.9% | 4.6% | -4.2% |
| Subtotal - incorporated areas | 51,927 | 64,139 | 79,310 | 86,310 | 23.7% | 8.8% | 34.6% | 66.2% |
| Subtotal - unincorporated areas | 38,219 | 44,341 | 54,488 | 52,697 | 22.9% | -3.3% | 18.8% | 37.9% |
| Pitt County | 90,146 | 108,480 | 133,798 | 139,007 | 23.3% | 3.9% | 28.1% | 54.2% |
| Counties within 45 miles | | 664,010 | 734,730 | 744,348 | 10.7% | 1.3% | 12.1% | |
| North Carolina | | 6,628,637 | 8,049,313 | | 21.4% | | | |
| % in incorporated areas | 57.6% | 59.1% | 59.3% | 62.1% | | | | |

*Source: Pitt County Data & Details 2005 (Pitt County Planning Department)*
*Except: 1980 data from Pitt County Comprehensive Land Use Plan 2002*
*NC 1990 Data from US Census Bureau*

## Table 3.2: Population and Historic Trends, by Township

**Growth by Township [i.e. sector of the county] 1960-2000**

| Township | 1960 | 1970 | 1980 | 1990 | 2000 | % growth 1960-1980 | % growth 1980-2000 | % growth 1960-2000 |
|---|---|---|---|---|---|---|---|---|
| Arthur | 2,112 | 1,812 | 3,058 | 3,989 | 4,951 | 45% | 62% | 134% |
| Ayden | 5,281 | 5,444 | 6,156 | 6,677 | 6,785 | 17% | 10% | 28% |
| Belvoir | 2,319 | 2,376 | 4,597 | 6,768 | 8,389 | 98% | 82% | 262% |
| Bethel | 3,864 | 3,103 | 3,753 | 3,162 | 2,854 | -3% | -24% | -26% |
| Carolina | 2,474 | 1,925 | 1,490 | 1,747 | 1,854 | -40% | 24% | -25% |
| Chicod | 2,567 | 2,614 | 3,232 | 3,680 | 5,300 | 26% | 64% | 106% |
| Falkland | 2,381 | 1,870 | 1,727 | 1,605 | 2,503 | -27% | 45% | 5% |
| Farmville | 6,435 | 6,522 | 6,602 | 6,521 | 6,432 | 3% | -3% | 0% |
| Fountain | 1,756 | 1,443 | 1,369 | 1,300 | 1,411 | -22% | 3% | -20% |
| Greenville | 25,687 | 30,486 | 34,557 | 37,483 | 41,436 | 35% | 20% | 61% |
| Grifton | 3,201 | 3,552 | 3,358 | 4,057 | 4,355 | 5% | 30% | 36% |
| Grimesland | 2,901 | 3,050 | 4,534 | 6,404 | 9,232 | 56% | 104% | 218% |
| Pactolus | 3,149 | 3,215 | 3,451 | 4,621 | 5,661 | 10% | 64% | 80% |
| Swift Creek | 1,180 | 1,076 | 1,171 | 1,252 | 1,402 | -1% | 20% | 19% |
| Winterville | 4,635 | 5,412 | 11,091 | 18,658 | 31,233 | 139% | 182% | 574% |
| Total | 69,942 | 73,900 | 90,146 | 107,924 | 130,947 | 29% | 45% | 87% |

*Source: Pitt County Comprehensive Land Use Plan 2002, Table A-19.*
*These data are not directly comparable with the data for municipalities*

### Table 3.3: Historic Population Trend for Greenville

| Year | Population | Change in period | % change in period | avg annual % change |
|---|---|---|---|---|
| 1950 | 16,724 | -- | -- | |
| 1960 | 22,860 | 6,136 | 36.70% | 3.7% |
| 1970 | 29,063 | 6,203 | 27.10% | 2.7% |
| 1980 | 35,740 | 6,677 | 23.00% | 2.3% |
| 1990 | 44,972 | 9,232 | 25.80% | 2.6% |
| 2000 | 60,476 | 15,504 | 34.50% | 3.5% |

*Source: Horizons: Greeenville's Communty Plan (2004) Appendix 6*
*These populations reflect the city limits at the time, and therefore include people gained by annexation.*

## 3.3 Population Forecasts

Table 3.4 shows the forecast county population. This is expected to continue growing at around 2% per year until 2020, representing little slowdown from the historic trend. The population is expected to reach 160,000 by 2010 and 187,000 by 2020, representing a 72% increase since 1990.

### Table 3.4: Forecast County Population Growth

**Projected county population growth**

| Year | Population | Growth in decade | % Growth in decade | Growth since 1990 | % Growth since 1990 |
|---|---|---|---|---|---|
| 1990 | 108,480 | | | | |
| 2000 | 133,798 | 25,318 | 23.3% | 25,318 | 23.3% |
| 2010 | 160,441 | 26,643 | 19.9% | 51,961 | 47.9% |
| 2020 | 187,000 | 26,559 | 16.6% | 78,520 | 72.4% |

*Source: Pitt County Comprehensive Land Use Plan 2002, Table 1-1*

For Greenville itself, the Horizons Plan forecasts that annexation will continue to be a major force behind Greenville's population growth over the next decade, although this will depend on financial factors and indeed on the rate and location of new development. Another factor will be the growth of student populations at East Carolina University and Pitt Community College. The City population is therefore expected to increase by 22% from 2000 to 2006, reaching about 73,500 people. By 2011, this would increase further, to around 84,900 residents.

The age structure of the population is likely to change over the next two decades, in response to both the growth in student numbers and nationwide trends including an increasing proportion of seniors. Greenville is also becoming a popular location for retirees, in part because of the city's medical facilities and the social and civic activities associated with ECU. The Horizons Plan suggests that these changes will affect development patterns, with increased demand for multifamily units and group quarters close to downtown and areas with easy access to the University. They will also increase the demand for public transportation.

The Plan suggests that the existing trend towards development to the south will continue. To some extent this represents a pattern of 'leapfrog' development, with developers building just outside the corporate limits. The plan also foresees an increasing demand for downtown housing. Since 1989, the policy of restricting residential uses downtown has been reversed, and the changing demographics described above are expected to lead to more housing being demanded downtown.

## 3.4 City and County Employment

Table 3.5 shows the major employers in Pitt County, according to the Pitt County Development Commission. (Municipal, Federal and judicial employees do not appear in this table, but are also significant.) Two key employers dominate: the hospital and the university, with nearly 5,600 and 4,200 employees respectively. Of the other employers, only DSM Pharmaceuticals and NACCO have more than 1,000 employees. Both of these are based at the industrial park on US-264 at the northern edge of Greenville.

### Table 3.5: Major Employers in Pitt County

| Employer | Product | Employment |
|---|---|---|
| Pitt County Memorial Hospital | Health care | 5,628 |
| East Carolina University | Education | 4,184 |
| DSM Pharmaceuticals (Netherlands) | Pharmaceutical mfg. | 1,200 |
| NACCO Materials Handling Group | Lift truck mfg. | 1,100 |
| Collins & Aikman | Knit fabric mfg. | 600 |
| ASMO Greenville (Japan) | Small DC motor mfg. | 550 |
| DIMON International Tobacco | Tobacco processing | 500 |
| Grady-White | Fiberglass boat mfg | 425 |
| Convergys | Customer Service Center | 350 |
| Wachovia Sales/Finance Center | Financial services back office | 330 |
| Overton's, Inc. | Sporting Goods Distribution | 300 |
| Sprint | Telecommunications | 300 |
| Robert Bosch Tool Corp. (Germany) | Cutting tools mfg. | 275 |
| Karastan - 2 plants | Carbet yarn mfg. | 270 |
| Mestek | Unit heaters mfg. | 270 |
| The Roberts Company | Metal fabrication | 260 |
| PaperPak, Inc. | Paper products | 225 |
| Cox Publications | Printing/newspaper | 205 |
| Weyerhaeuser Co. | Pine lumber mfg. | 200 |
| The Hammock Source | Hammocks | 150 |
| Metrics | Pharmaceuticals | 140 |
| Metaldyne Corp. | Auto parts machining | 130 |

*Source: Area Stats 05 - Pitt County Development Commission*

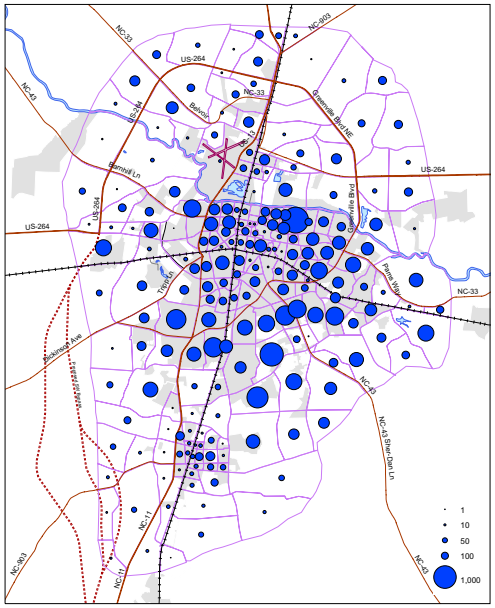
## 3.5 Current and Forecast City Population and Employment Locations

Figure 3.4 shows the distribution of households and jobs in and around Greenville in 1996, and the forecasts for 2025. The data and forecasts, which are based on Traffic Analysis Zones (TAZs), were prepared by the Greenville Area Metropolitan Planning Organization (MPO) and are the most recent forecasts available.

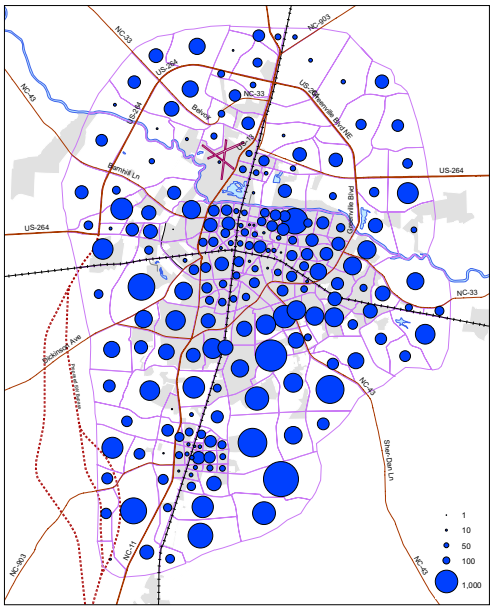
The broad pattern of the 1996 data is still valid today. It shows the locations such as commercial areas and shopping malls where a large number of small employers produce a strong concentration of jobs. The jobs are spread around the city, with concentrations:

- downtown, where City, Federal and judicial employees are joined by commercial businesses;
- around the downtown, in the older commercial districts and on the ECU campus (ECU is split among several TAZs and therefore appears as several smaller circles);
- at the hospital and Medical School, plus surrounding areas (including the County offices);
- in the northern industrial areas, east of Memorial Drive; and
- in the southern suburbs along Greenville Boulevard and the major radial routes, reflecting shopping malls and commercial strips. (The Horizons Plan reports that about 80% of Greenville's retail trade occurs along strip developments.) This includes Pitt Community College, which alone employs around 650 people.

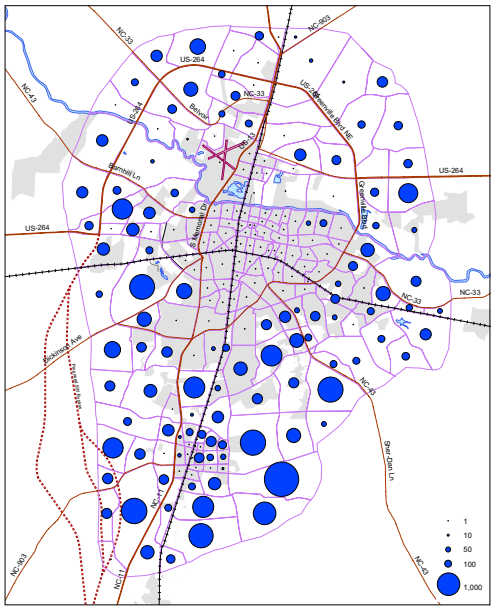
The forecasts for 2025 suggest that the population growth will be dominated by the suburban areas, which is typical for growing cities. For Greenville, this growth will be predominantly south of the Tar River, particularly around Winterville but also to the south-west and south-east of the existing city limits. The strongest employment growth is expected to be in the northern industrial areas, the medical district and the growing southern suburbs. Some growth is expected downtown and at ECU.



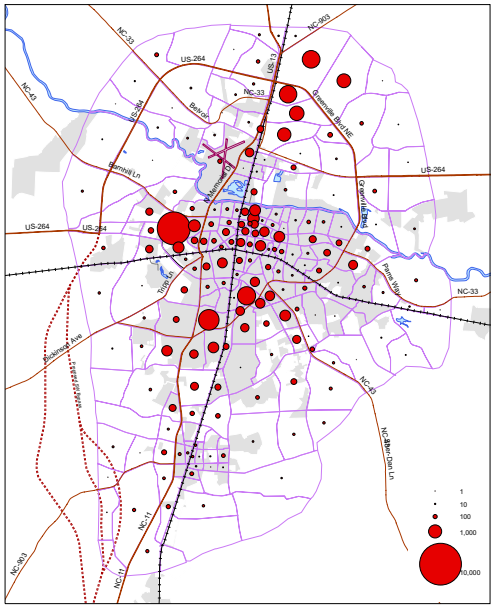

Dwelling Units (1996)



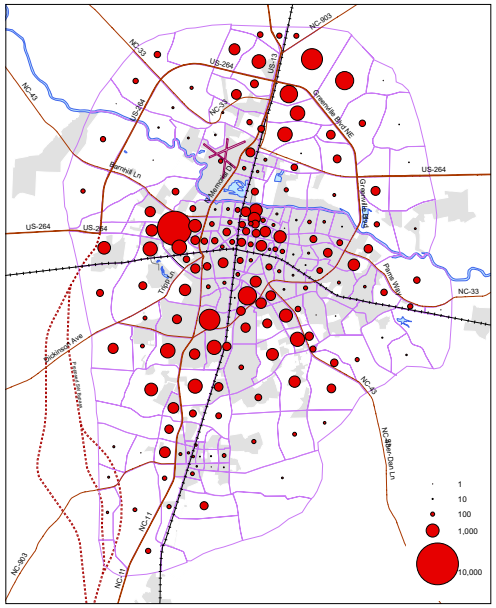

Dwelling Units (2025)



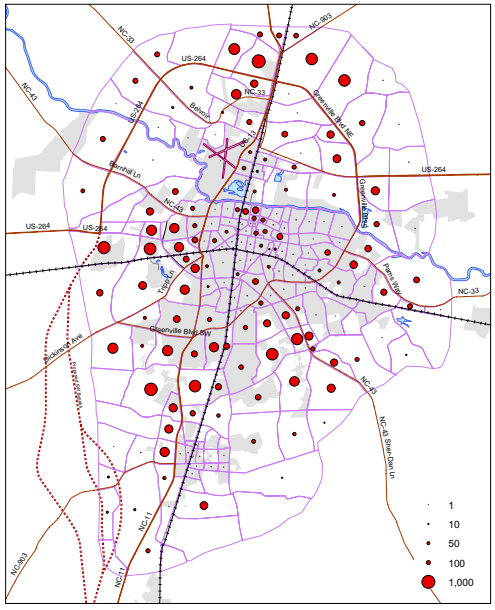

Dwelling Units (Growth)




Employment (1996)




Employment (2025)




Employment (Growth)

**Greenville MPO Area Household and Employment Forecasts by TAZ**

0 1 2 3 Miles

0 1 2 3 4 5 Kilometers

1:65,000 at size E plot

Data supplied by the City of Greenville Cartography by Martin/Alexiou/Bryson November 2005

**Figure 3.4: Greenville area population and employment locations, 1996 and 2025**

## 3.6 Regional Travel Patterns

Table 3.6 shows the journey-to-work flows between Pitt County and other Counties. Column A shows the workplaces of Pitt residents, and Column B shows where people who work in Pitt County live. Overwhelmingly, the County is self-contained in commuting terms, with 86% of residents remaining in the County to work. This is not surprising for a rural County with a strong central city.

Most commuting across the County line is to or from the adjoining Counties, which again is unsurprising. There is slightly more in-commuting (to work in Pitt) than out-commuting (to work outside Pitt), probably reflecting Greenville's size and regional status. The small towns just inside and outside the County line probably account for much of the cross-county flows, the strongest of which is the in-commuting from Beaufort County residents.

### Table 3.6: County-to-County Commuting Flows

**(a) Pitt County Residents**

| Workplace County | Count | % of total |
|---|---|---|
| Pitt | 54,411 | 85.9% |
| Lenoir | 1,872 | 3.0% |
| Beaufort | 1,772 | 2.8% |
| Edgecombe | 826 | 1.3% |
| Craven | 582 | 0.9% |
| Wilson | 561 | 0.9% |
| Martin | 472 | 0.7% |
| Greene | 439 | 0.7% |
| Wake | 356 | 0.6% |
| Nash | 347 | 0.5% |
| Wayne | 194 | 0.3% |
| Johnston | 103 | 0.2% |
| Washington | 81 | 0.1% |
| Bertie | 80 | 0.1% |
| Onslow | 78 | 0.1% |
| Durham | 73 | 0.1% |
| Orange | 54 | 0.1% |
| Duplin | 49 | 0.1% |
| Carteret | 46 | 0.1% |
| Mecklenburg | 45 | 0.1% |
| Cumberland | 42 | 0.1% |
| Halifax | 33 | 0.1% |
| Others | 791 | 1.2% |
| Total | 63,307 | 100.0% |

**(b) People working in Pitt County**

| Residence County | Count | % of total |
|---|---|---|
| Pitt | 54,411 | 81.9% |
| Beaufort | 2,557 | 3.9% |
| Greene | 1,978 | 3.0% |
| Martin | 1,619 | 2.4% |
| Lenoir | 1,420 | 2.1% |
| Edgecombe | 830 | 1.2% |
| Craven | 789 | 1.2% |
| Wilson | 493 | 0.7% |
| Wayne | 353 | 0.5% |
| Nash | 316 | 0.5% |
| Bertie | 125 | 0.2% |
| Wake | 124 | 0.2% |
| Duplin | 104 | 0.2% |
| Washington | 103 | 0.2% |
| Carteret | 97 | 0.1% |
| Onslow | 74 | 0.1% |
| Jones | 73 | 0.1% |
| Halifax | 64 | 0.1% |
| Johnston | 59 | 0.1% |
| Pamlico | 52 | 0.1% |
| Cumberland | 45 | 0.1% |
| Northampton | 45 | 0.1% |
| Pasquotank | 40 | 0.1% |
| Mecklenburg | 39 | 0.1% |
| Franklin | 37 | 0.1% |
| Others | 557 | 0.8% |
| Total | 66,404 | 100.0% |

*Source: Census 2000 sample.*
Downloaded from http://www.census.gov/population/www/cen2000/commuting.html

## 3.7 Implications for the Transportation Center

Strong population and employment growth is expected, and will be particularly noticeable in Greenville, which will see strong suburban development. Travel patterns, at least for commuters, appear to be dominated by travel to/from/within Greenville itself, and this is likely to be reinforced by the expected growth patterns. Depending on the transportation policies adopted and the propensity of the new citizens to use transit, it is possible that the city's transit services could increase greatly from their current level, simply to keep pace with population growth.

These factors are in addition to the long-term energy and environmental issues at the national level, which may also increase citizens' requirements for transit in Greenville as elsewhere.

The currently dispersed pattern of employment, and its relationship with the location of housing, is consistent with the level of transfers made by GREAT riders as described later in this report. The forecasts suggest that there will continue to be a strong role for cross-city travel – particularly from the existing inner areas and the expanding southern suburbs to the medical district and the northern industrial district. Some of this travel demand could be met by direct cross-city routes in an expanded transit system. For example, as the system grows there could be direct routes from the southern suburbs to both the medical district and the northern industrial areas, serving major flows. These routes need not necessarily run through a single central point. However, not all neighborhoods can realistically be connected directly to all the employment areas, so many journeys will likely still require transfers at a central point.

A center could also be a useful focal point for a major rider destination in its own right. This would apply particularly to the downtown/ECU area or the medical district. The northern industrial areas and the southern commercial strips are too spread-out to support this role.

Combining these factors, the expected travel patterns led to consideration of the potential for a transportation center either in the downtown/ECU area or in the medical district. Although transportation centers are usually in downtown locations, the importance of the medical district in Greenville's travel patterns means that it is a potential location for a center. The following sections of the report look at other factors which turned the focus increasingly toward downtown.

# 4 Planning Policy and Development Context

This section reviews the major plans that are guiding future developments in and around Greenville. Brief details of each plan and its background are given, but not a comprehensive description of all the proposals. Only those which might particularly affect a transportation center, or which a transportation center might particularly support, are listed here. The implications for transportation and for the possible role of a transportation center are considered at the end of the section.

## 4.1 Pitt County Comprehensive Land Use Plan

Pitt County adopted its Comprehensive Land Use Plan[5] in April 2002. The population trends and forecasts given in the Plan were described in the previous section. The Plan foresees continued growth in the County, particularly in the main towns, although without giving specific forecasts by location. In particular, it envisages:

- 'suburban residential' land use around Greenville/Winterville/Ayden, and also Farmville and Bethel;
- continued small pockets of commercial/light industrial on the edge of Greenville; and
- continued rural commercial/crossroad communities.

Among the objectives and implementation strategies are to:

- channel development into areas adjoining existing development, to reduce suburban sprawl;
- direct intensive land uses to areas with existing or planned infrastructure;
- encourage mixed-use developments, including large-scale master-planned developments;
- encourage a more balanced pattern of growth throughout the County; and
- identify non-residential development locations based on access and proximity to major transportation routes.

The plan identifies three key developments:

- *The Global TransPark in Kinston*: 'Although the initial projections for fast growth of employment opportunities associated with the GTP have yet to materialize, the GTP concept still holds promise as a long-range influence on the economy of the region.'
- *The East Carolina Medical District:* This is the continuing development of the medical district, centered around the hospital and Medical School, to become 2,000 acres or more of medical research and development, health services and commercial and residential development.

[5] *Pitt County Comprehensive Land Use Plan 2002*. Adopted by the Board of Commissioners April 15, 2002.

- *Voice of America Site C:* ECU is now using this site in the north-west of the county. The existing 25,000 sq ft of buildings are being used for research, and the long-range plan is to make it a research and graduate studies campus.

For transportation, the plan concentrates on highway projects. Among the County's priorities for the Transportation Improvement Plan (TIP) are:

- The Greenville south-western bypass, currently under study;
- A new US 264 to NC 33 connector, bridging the Tar River east of Greenville, downstream from Greenville Boulevard;
- Widening NC 33 from US 264 in Greenville to US 64 at Tarboro; and
- The US 17 Washington Bypass, a freeway running north-south near the eastern edge of Pitt County.

The County is also planning a rail-trail on the abandoned CSX route between Stokes and Pactolus, in the north-east of the County, as part of the Coastal Carolina Trail.

## 4.2 Greenville Horizons Plan

In February 2004 the City Council adopted *Horizons: Greenville's Community Plan*[6]. This is the City's comprehensive long-range plan, and is an update of the previous Horizons Plan.

The plan supports the principles of Smart Growth, including compact building patterns, mixed-use neighborhoods, and environmentally-attractive streets. In particular, walking and cycling are to be promoted by encouraging human-scale design, connective and pedestrian-friendly street systems, and pedestrian-friendly site layouts. The plan also promotes 'the convenience, density and variety of uses necessary to support transit.'

### Future Land Use

Figure 4.1 shows the plan's future land-use map, which will be the framework for zoning decisions. The plan recognizes that the existing commercial strips along Greenville Boulevard and Memorial Drive are likely permanent, and leaves them in place along with the downtown / tobacco district commercial areas in place. Instead of further strip development, additional commercial nodes serving as 'community focus areas' are assumed at strategic locations (Figure 4.2).

For industrial uses, the map reflects the city's objective to locate the majority of industrial development in and around the existing industrial area north of the Tar River. Another industrial area is expected near the South-West Bypass, south of the railroad.

A group of medical and medical-related land uses have been assigned to the area around the hospital, representing continued development of the medical district.

Office, institutional and multi-family (OIM) land uses would be located primarily in areas already developed or areas that require buffering to prevent conflicting land uses (e.g. between industrial

[6] *Horizons: Greenville's Community Plan* [Comprehensive Plan Update]. Adopted by Greenville City Council February 12, 2004.

and low-density uses). In addition, OIM uses have been allocated along major roads, as well as around the medical district. Taken together, this is expected to result in OIM uses spread extensively throughout the city.

Residential uses are expected in many of the remaining areas of the city, with both high-density and medium-density use expected in the existing suburbs as they fill out. Medium-density residential is also expected as development spreads out from the city. Some constrained areas, particularly along floodplains, are planned for low-density uses.

### Vision Areas

The plan divides the city and its planning jurisdiction into nine Vision areas, with specific policies and actions for each. Several of the vision areas specifically mention extension or enhancement of GREAT services as development needs require.

### Mobility Policies

The plan's goal for mobility is "To provide safe, efficient, reliable, environmentally sound, and economically feasible transportation into and within Greenville." Twelve objectives are listed to support this goal, all of which broadly aim to improve the transportation system. Table 4.1 lists some of the most relevant objectives.

**Table 4.1: Selected Mobility Objectives in the Horizons Plan**

| Number | Description |
|---|---|
| M6 | To coordinate the transportation plans of the City, ECU, and the University Medical Center of Eastern Carolina – Pitt County |
| M8 | To facilitate safe, convenient rail service that meets the existing and future needs of industry and the traveling public |
| M9 | To improve the public mass transportation system |
| M10 | To improve transit connections / services between neighborhoods and major activity centers |
| M11 | To improve public transportation for senior citizens |

The policy behind these objectives notes that:

> The City shall ensure that public transport links all areas of the City with major employment and commercial centers as well as the University and major apartment complexes and shall ensure service levels that encourage greater use of public transit. The City shall provide transit service which is accessible to all citizens within the service area, with special provisions for the elderly and handicapped. The City will provide benches and bus shelters for the safety and convenience of transit users. The City will adopt policies that support land use patterns that promote the use of public transportation.

### Economic Policies

The plan's economic policies aim to provide a healthy, diversified, expanding economy. This particularly includes developing the manufacturing, cultural and medical sectors, and a revitalized downtown. Table 4.2 lists the economic objectives that particularly relate to transportation.

### Table 4.2: Selected Economic Objectives in the Horizons Plan

| Number | Description |
|---|---|
| E5 | To accommodate increased demand for air travel by ensuring first-class access to the national air transportation system. |
| E6 | To ensure a rail transportation system that meets freight and passenger needs. |

## Other Policies

The plan contains a wide range of other objectives, many of which reflect Smart Growth principles and other sustainability approaches, and support the transportation objectives.

The Policy Statement on Transportation Corridors comments that:

> The overall street pattern for major routes should be in the form of an "expanded grid." Corridors which radiate from the center of the City should be the most intensely developed, and should serve as future transit corridors. Cross-town, connecting thoroughfares should link these radial roads into an "expanded grid."

The plan recognizes that land-use planning will not, on its own, guarantee increased use of transit:

> Certainly, changes in land-use patterns will not necessarily result in greater usage of… alternative transportation modes. The decision to use public transit depends on a wide variety of factors including income, car ownership, level and quality of transit service and transit fares.

## Downtown

Downtown Greenville was once the commercial center of the City, but like many downtowns it has declined in recent decades as strip shopping plazas and malls opened along major thoroughfares. The Horizons Plan accepts that downtown cannot revert fully to its former level of retail activity, but it sees great potential for it to develop as a financial, cultural, and entertainment center. There are particular opportunities arising from its location close to ECU. The plan sees three distinct parts of downtown, with strategies tailored to each:

- *The University area*, near ECU. This would be targeted for diverse uses with 'a village-type atmosphere' including housing. This would tap the ECU market.
- *The Courthouse Area.* Building on its existing financial/institutional character, the strategy would be aimed at adding office/service uses. "Development of a parking deck would allow the consolidation of downtown parking and open the many surface lots up for redevelopment," assisting with the desired intensification of land-use.
- *The Dickinson Avenue Area.* This area, which is essentially the tobacco district, is also targeted for diverse uses, including residential development. The area is strategically located for future residential use by ECU students and faculty. It would also capitalize on the historic nature of Dickinson Avenue.

These strategies complement the revitalization efforts already undertaken, including the reversion of Evans Street Mall to vehicular traffic and other streetscape and façade

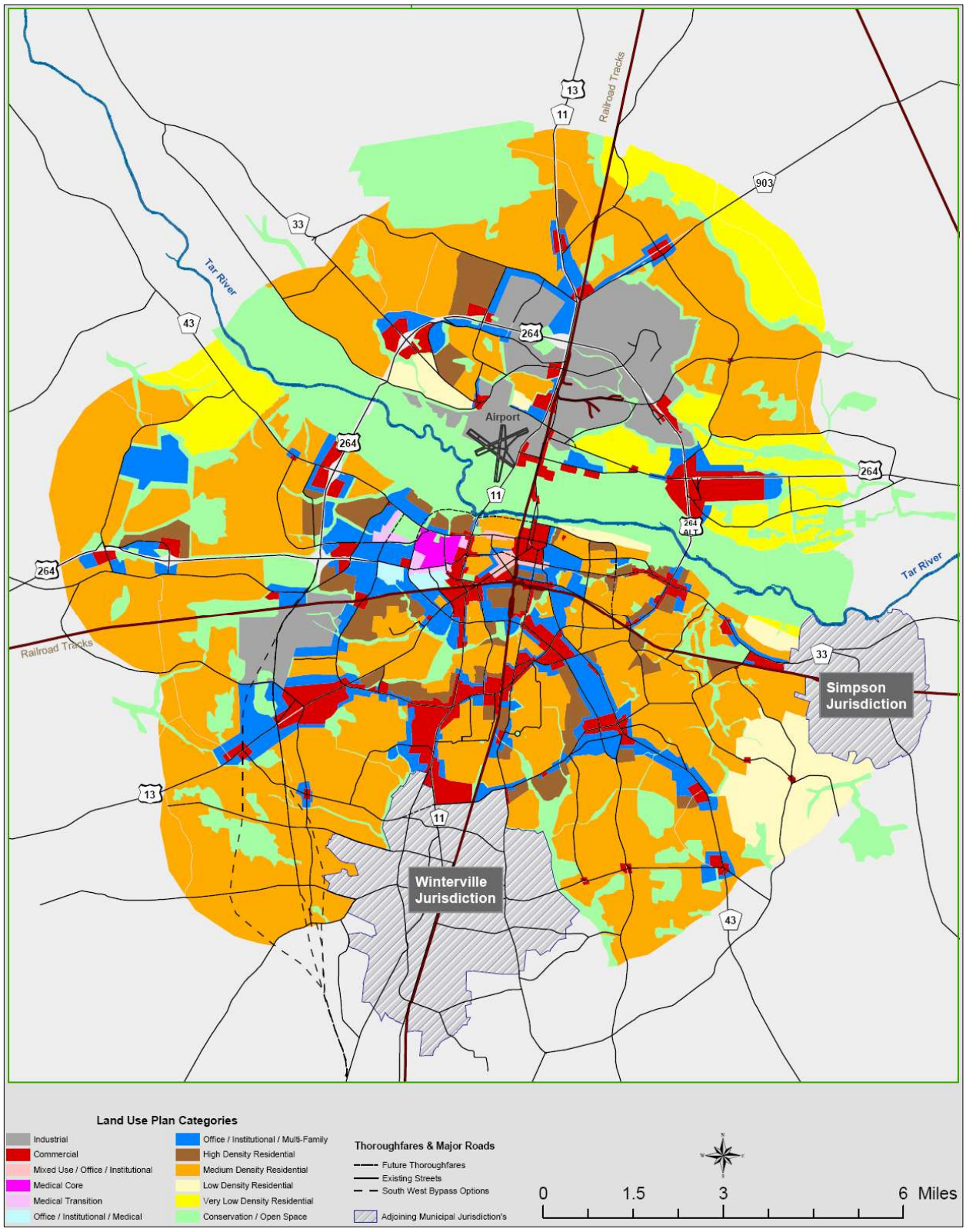
enhancements. Although transit is not a core issue in the downtown plans, the supporting text comments that:

> It is important to the success of downtown redevelopment efforts that access to downtown be increased. Access from the University Medical Center and from the airport is especially important. Innovative marketing and transit alternatives might be considered.

There are also particular Community Character objectives for downtown: to restore its historic character, to encourage new office and service uses there, to promote residential developments as part of mixed-use projects, and to create a closer physical and economic link between ECU and downtown.

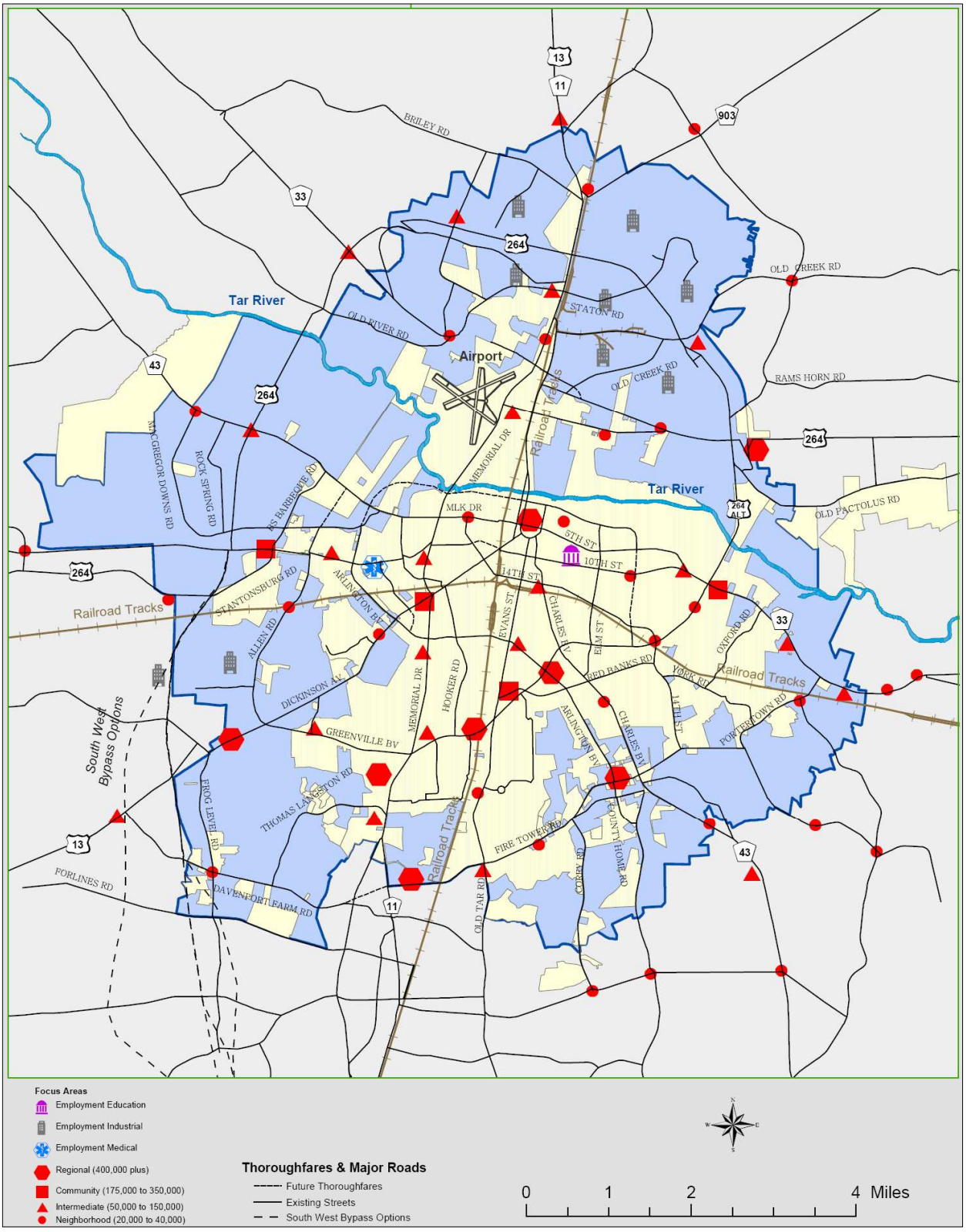
Downtown issues are considered in more detail in the Revitalization Plan, described below.

## Figure 4.1: Future Land Use Plan




*Source:* Horizons: Greenville's Community Plan *(City of Greenville, February 2004)*

## Figure 4.2: Future Land Use Plan: 'Focus Area' Map




*Source:* Horizons: Greenville's Community Plan *(City of Greenville, February 2004)*

## 4.3 Center City – West Greenville Revitalization Plan

The City of Greenville has appointed a Redevelopment Commission to lead the efforts to revitalize the downtown ('center city') and the adjacent West Greenville neighborhoods. The Commission engaged consultants to produce a Revitalization Plan[7]. The Center City element of the plan has been adopted by the City, and the City Council is expected to adopt the West Greenville portion of the Plan shortly. This includes a sub-area (the West Greenville Certified Redevelopment Area) that qualifies as a Blighted Area under State law.

Key elements of the Plan include:

- Planning for new and improved schools.
- Creating and expanding cultural resources.
- Improving employment opportunities, by creating new commercial districts and improving existing districts.
- A partnership approach to improving education, health care and employment in the project area.
- Physical changes to improve safety and livability, including streetscape improvements, design guidelines and recreational amenities.
- Working to develop quality, affordable housing for rental and ownership while maintaining neighborhood identity.

Figure 4.3 summarizes the physical elements and ambitions. The Plan firmly supports the proposed Tenth Street Connector. This would become the primary access to downtown from the west, giving visitors a straight route to the downtown, ECU and points east. It would include a grade-separation at the CSX railroad.

The Plan notes ECU's plan to expand its student enrollment by 25% over the next seven years. As the campus is landlocked to the north, east and south, it is likely to expand to the west over Cotanche Street toward downtown, to the north along the current surface lots along Reade Street, and onto its newly-acquired property south of Tenth Street between Washington Street and the CSX railroad. The Revitalization Plan foresees the current parking lots along Reade Street as the location of new student housing, boosting the 'body heat' for commercial uses downtown, although it acknowledges that this use had not been approved by the university.

Alongside the expanded University, the 'tobacco district' triangle bounded by Dickinson Avenue, Evans Street and Tenth Street would become an arts / cultural / entertainment district, with historic buildings retained and new infill constructed.

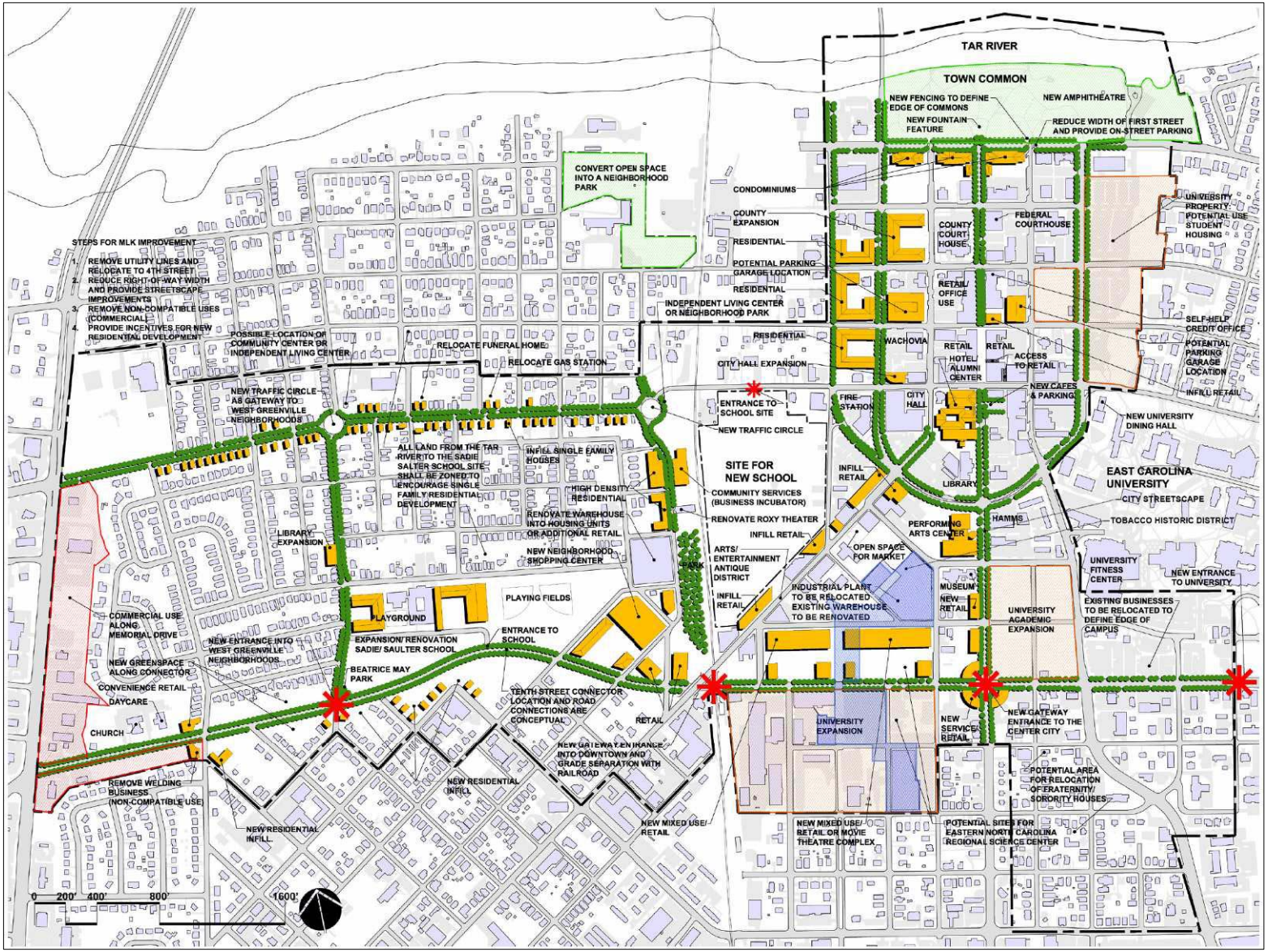
Other parts of the plan area, both downtown and in West Greenville, are earmarked for a range of residential, retail, educational and other community facilities. The Plan also proposes a new County administration building downtown, presumably replacing the existing location near the

[7] *The Center City - West Greenville Revitalization Plan* (Betsch Associates, with Holland Consulting Partners and George Henry George Partners, 2004)

hospital, although the Plan accepts that this has not been approved by the County. The plan envisages an implementation period, as a whole, extending to about 2012.

The Plan is not centrally concerned with transit, but does refer to the proposed transportation center, commenting that it could catalyze economic development if built downtown. The Plan adds:

> Typically, these facilities are located in downtown areas serving as a primary… destination from which pedestrians will walk to their final destination or transfer to an alternative mode of transportation... Currently, GREAT's primary transfer point is located in the downtown area a few blocks from one of ECUSTA's primary transfer points at Mendenhall. Most taxi services and the Greyhound/Carolina Trailways Depot are located in or very near the downtown area. A single facility centrally located in Greenville would offer citizens and visitors an opportunity to access any form of public transportation as they travel throughout Greenville and the region. It also would serve as a means of connecting the East Carolina University campus and the medical school campus at the hospital. With the hope of regaining the passenger rail transportation that once served Greenville, locating the facility adjacent to an existing rail line such as the Seaboard Coast Line Railroad [now CSX] would be preferable.




*Source:* The Center City - West Greenville Revitalization Plan, *Map 3.2*

**Figure 4.3: Revitalization Plan Proposals**

## 4.4 ECU Development Plan

ECU is currently revising its Development Plan. As the Revitalization Plan had suggested, the focus of the new ECU plan will be on expanding westwards from the main campus. This area is expected to see University administrative facilities, institutions such as an Alumni Center and a Science Technology Center, and potentially classrooms. The University has already bought sites in this area.

Meanwhile, the School of Nursing and Allied Health is moving to a site alongside the Medical School, currently under construction. This will increase the level of activity in that area, and is already being reflected in developers' plans for apartment complexes.

## 4.5 Implications for the Transportation Center

The County's land-use plan aims to channel development – particularly intensive development – in ways that support transit rather than car-dependent sprawl. If successful, these policies would improve the viability of transit services and therefore improve the value of a transportation center.

The Horizons plan clearly envisages continued growth of the city. It foresees employment centers and other travel demand attractors in a variety of locations – downtown and elsewhere – around the city, within a large amount of residential development. This is consistent with the forecasts presented in the previous section. In line with its Smart Growth principles, the plan is clear that these travel-intensive locations should be focused and should be served by effective transit within the city. This too represents a positive context for transit development. There is no specific target for the proportion of travel that should be undertaken by transit, but it is implicit that the transit service should expand greatly to meet these developments. Major corridors radiating from the downtown are specifically mentioned as likely transit routes, and this is certainly a reasonable planning assumption.

Downtown redevelopment (including the tobacco district) is a key objective for the city, with ambitious goals supported by an extensive program of public and private investment. Experience from other cities suggests that a transportation center can be a part of these efforts.

Furthermore, the expected role of downtown as a cultural, social and recreational center is important for transit ridership, as it would become not only a commuter destination but also an important destination for non-work trips – in a way that the Medical District (essentially attracting only work trips and personal business trips) would not.

These factors strongly pointed the focus of this study toward the downtown / tobacco district area. The planned westward expansion of ECU is helpful in this respect. A transit center in this area could serve both the campus community and the downtown community. (This would not preclude improved facilities, such as a mini-hub, in the Medical District, but these would need to be taken forward in their own right.)

The Tenth Street Connector proposal will need to be taken into account at the site selection stage. Tenth Street would become a very useful corridor for travel between ECU main campus and the medical district. This axis is likely to be an important component of travel demand in future, and stakeholders are increasingly seeing the extended Tenth Street as also being a key

transit corridor. There may be scope to include bus-priority measures in the design, and there are currently suggestions that the project could include space for future light rail along this axis. Other reasons for taking account of the proposal are that:

- the anticipated environmental improvements on the existing Tenth Street corridor, including the 'gateway' idea at Evans Street, could make sites on this corridor more attractive; and
- access and connectivity at Tenth Street / Dickinson Avenue, near the existing freight depot, would change considerably.

Similarly, the potential role of Dickinson Avenue should also be taken into account. The goal is for Dickinson Avenue to become a busier, more attractive, more pedestrian-friendly environment. If necessary, it could therefore be a useful pedestrian or shuttle/trolley link between a transit center and a future rail station.

# 5 Existing Transportation Services and Ridership

This section reviews the existing transportation services in Greenville.

## 5.1 Greenville Area Transit (GREAT)

### Network Structure, Routes and Fares

Greenville Area Transit (GREAT) is an agency of the City of Greenville. Services run mostly within City limits, although GREAT receives external funding to serve additional areas outside the City. Buses run from 6:30 a.m. to 7:00 p.m. on weekdays and from 9:00 a.m. until 6:00 p.m. on Saturdays. There are no services on Sundays and certain holidays.

The service consists of four routes operating all day Monday through Saturday (Route 4 previously operated Monday through Friday at peak hours only). Each route runs hourly, with one bus on each route. Figure 5.1 shows the routes and Table 5.1 shows the schedules.

The buses connect each hour at the transfer point at Reade Street / Third Street (Figure 5.2). This is on the eastern side of downtown, close to the federal building, and about two blocks from the ECU main campus. ECU parking lots are alongside. Shelters and seating are the only amenities.

The cash fare is $0.75, with transfers costing $0.10. Children six and under travel free (up to two per paying adult). Elderly and disabled individuals can ride for $0.35, with a GREAT Reduced Fare ID Card. These cards are $3.00 at the Public Works Department. There is a proposed fare increase to $1.00 for the regular fare, beginning July 2007, with free transfers, and the elderly and disabled fare would be $0.50.

Multi-ride bus passes can be bought at City Hall, the Public Works Department, or from the bus drivers. The Public Works Department deals with 3-4 transactions per day (including ADA paratransit, regular and reduced-fare pass sales, and ID cards). Driver sales had been introduced as a convenience to passengers. ECU Student Transit Authority (ECUSTA) and GREAT have developed an agreement for students to buy discounted GREAT passes at the ECU Central Ticket Office in Mendenhall Student Center.

GREAT contracts with PATS to provide a demand-responsive paratransit service within a 3/4-mile corridor of the fixed-route services, with the same hours of operation. Riders must be certified as eligible by GREAT. The fare is $1.50 per one-way trip, and exact fare is required. Multi-ride passes are available from the Public Works Department.

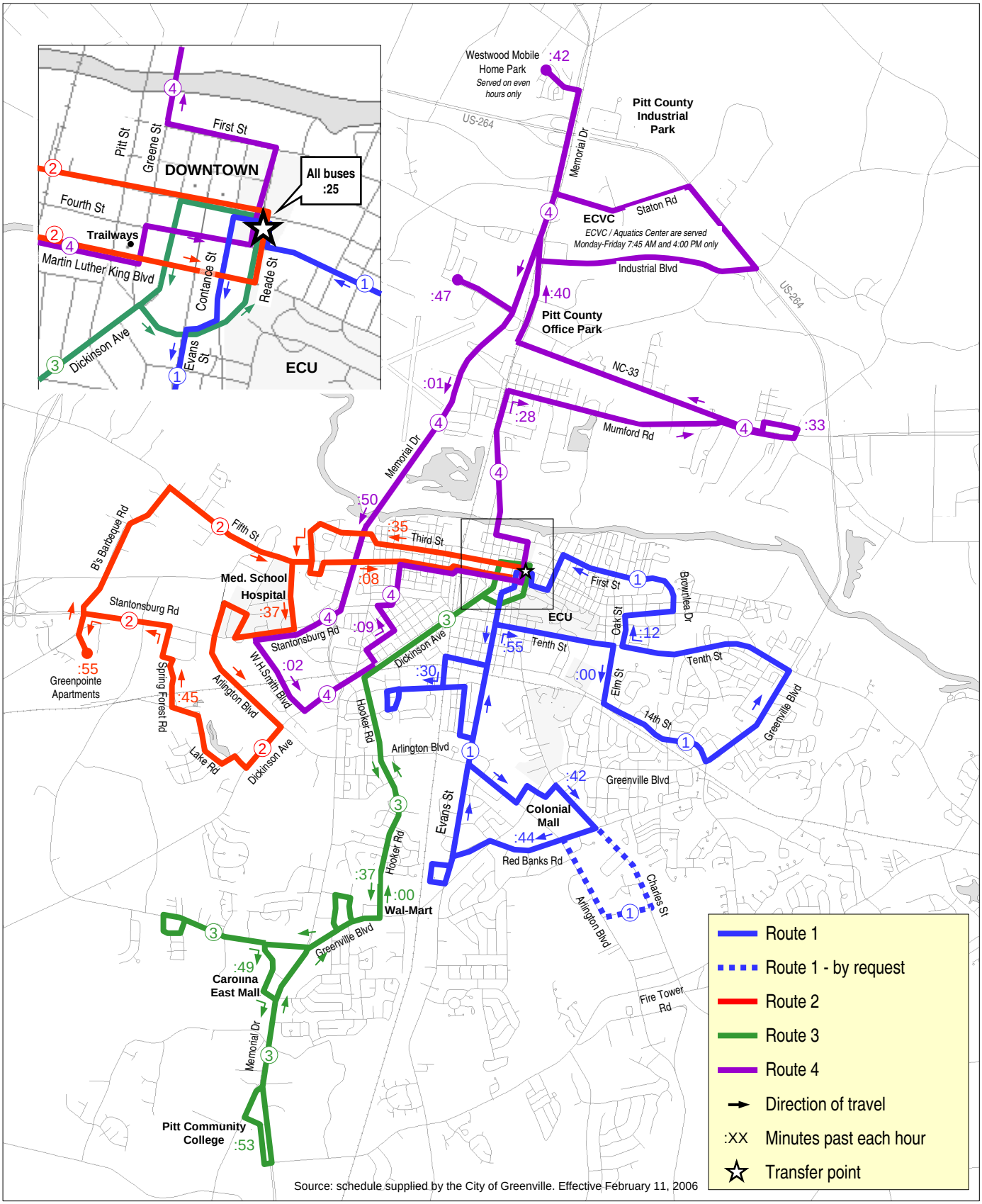



**Figure 5.1 GREAT Route Map**

## Table 5.1: GREAT Schedules

### Route 1 Timetable

| Reade St. | Public Works | Kearney Park | K Mart | Colonial Mall | Red Banks Arlington | South Park | Target | 10th & Evans | Eppes Middle | Peppermint Park | Cherry Ct | 10th & Oak | Reade St. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6:25 AM | 6:30 AM | 6:32 AM | 6:37 AM | 6:42 AM | 6:44 AM | 6:47 AM | 6:50 AM | 6:55 AM | 7:00 AM | 7:04 AM | 7:07 AM | 7:12 AM | 7:20 AM |
| 7:25 AM | 7:30 AM | 7:32 AM | 7:37 AM | 7:42 AM | 7:44 AM | 7:47 AM | 7:50 AM | 7:55 AM | 8:00 AM | 8:04 AM | 8:07 AM | 8:12 AM | 8:20 AM |
| 8:25 AM | 8:30 AM | 8:32 AM | 8:37 AM | 8:42 AM | 8:44 AM | 8:47 AM | 8:50 AM | 8:55 AM | 9:00 AM | 9:04 AM | 9:07 AM | 9:12 AM | 9:20 AM |
| 9:25 AM | 9:30 AM | 9:32 AM | 9:37 AM | 9:42 AM | 9:44 AM | 9:47 AM | 9:50 AM | 9:55 AM | 10:00 AM | 10:04 AM | 10:07 AM | 10:12 AM | 10:20 AM |
| 10:25 AM | 10:30 AM | 10:32 AM | 10:37 AM | 10:42 AM | 10:44 AM | 10:47 AM | 10:50 AM | 10:55 AM | 11:00 AM | 11:04 AM | 11:07 AM | 11:12 AM | 11:20 AM |
| 11:25 AM | 11:30 AM | 11:32 AM | 11:37 AM | 11:42 AM | 11:44 AM | 11:47 AM | 11:50 AM | 11:55 AM | 12:00 PM | 12:04 PM | 12:07 PM | 12:12 PM | 12:20 PM |
| 12:25 PM | 12:30 PM | 12:32 PM | 12:37 PM | 12:42 PM | 12:44 PM | 12:47 PM | 12:50 PM | 12:55 PM | 1:00 PM | 1:04 PM | 1:07 PM | 1:12 PM | 1:20 PM |
| 1:25 PM | 1:30 PM | 1:32 PM | 1:37 PM | 1:42 PM | 1:44 PM | 1:47 PM | 1:50 PM | 1:55 PM | 2:00 PM | 2:04 PM | 2:07 PM | 2:12 PM | 2:20 PM |
| 2:25 PM | 2:30 PM | 2:32 PM | 2:37 PM | 2:42 PM | 2:44 PM | 2:47 PM | 2:50 PM | 2:55 PM | 3:00 PM | 3:04 PM | 3:07 PM | 3:12 PM | 3:20 PM |
| 3:25 PM | 3:30 PM | 3:32 PM | 3:37 PM | 3:42 PM | 3:44 PM | 3:47 PM | 3:50 PM | 3:55 PM | 4:00 PM | 4:04 PM | 4:07 PM | 4:12 PM | 4:20 PM |
| 4:25 PM | 4:30 PM | 4:32 PM | 4:37 PM | 4:42 PM | 4:44 PM | 4:47 PM | 4:50 PM | 4:55 PM | 5:00 PM | 5:04 PM | 5:07 PM | 5:12 PM | 5:20 PM |
| 5:25 PM | 5:30 PM | 5:32 PM | 5:37 PM | 5:42 PM | 5:44 PM | 5:47 PM | 5:50 PM | 5:55 PM | 6:00 PM | 6:04 PM | 6:07 PM | 6:12 PM | 6:20 PM |
| 6:25 PM | 6:30 PM | 6:32 PM | 6:37 PM | 6:42 PM | 6:44 PM | 6:47 PM | 6:50 PM | - | - | - | - | - | - |

### Route 2 Timetable

| Reade St. | Moyewood | Brody Medical | Hospital | Stanton Square | Spring Forest Rd. | Physician's East | Viquest | Green-pointe | Dubber-Laney | ARC | Social Services | MLK JR Drive | Reade St. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6:25 AM | 6:31 AM | 6:36 AM | 6:37 AM | 6:42 AM | 6:45 AM | 6:50 AM | 6:51 AM | 6:55 AM | 7:00 AM | 7:02 AM | - | 7:08 AM | 7:20 AM |
| 7:25 AM | 7:31 AM | 7:36 AM | 7:37 AM | 7:42 AM | 7:45 AM | 7:50 AM | 7:51 AM | 7:55 AM | 8:00 AM | 8:02 AM | 8:05 AM | 8:08 AM | 8:20 AM |
| 8:25 AM | 8:31 AM | 8:36 AM | 8:37 AM | 8:42 AM | 8:45 AM | 8:50 AM | 8:51 AM | 8:55 AM | 9:00 AM | 9:02 AM | 9:05 AM | 9:08 AM | 9:20 AM |
| 9:25 AM | 9:31 AM | 9:36 AM | 9:37 AM | 9:42 AM | 9:45 AM | 9:50 AM | 9:51 AM | 9:55 AM | 10:00 AM | 10:02 AM | 10:05 AM | 10:08 AM | 10:20 AM |
| 10:25 AM | 10:31 AM | 10:36 AM | 10:37 AM | 10:42 AM | 10:45 AM | 10:50 AM | 10:51 AM | 10:55 AM | 11:00 AM | 11:02 AM | 11:05 AM | 11:08 AM | 11:20 AM |
| 11:25 AM | 11:31 AM | 11:36 AM | 11:37 AM | 11:42 AM | 11:45 AM | 11:50 AM | 11:51 AM | 11:55 AM | 12:00 PM | 12:02 PM | 12:05 PM | 12:08 PM | 12:20 PM |
| 12:25 PM | 12:31 PM | 12:36 PM | 12:37 PM | 12:42 PM | 12:45 PM | 12:50 PM | 12:51 PM | 12:55 PM | 1:00 PM | 1:02 PM | 1:05 PM | 1:08 PM | 1:20 PM |
| 1:25 PM | 1:31 PM | 1:36 PM | 1:37 PM | 1:42 PM | 1:45 PM | 1:50 PM | 1:51 PM | 1:55 PM | 2:00 PM | 2:02 PM | 2:05 PM | 2:08 PM | 2:20 PM |
| 2:25 PM | 2:31 PM | 2:36 PM | 2:37 PM | 2:42 PM | 2:45 PM | 2:50 PM | 2:51 PM | 2:55 PM | 3:00 PM | 3:02 PM | 3:05 PM | 3:08 PM | 3:20 PM |
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| 5:25 PM | 5:31 PM | 5:36 PM | 5:37 PM | 5:42 PM | 5:45 PM | 5:50 PM | 5:51 PM | 5:55 PM | 6:00 PM | 6:02 PM | - | 6:08 PM | 6:20 PM |
| 6:25 PM | 6:31 PM | 6:36 PM | 6:37 PM | 6:42 PM | 6:45 PM | 6:50 PM | - | - | - | - | - | - | - |

### Route 3 Timetable

| Reade St. | Greenville Utilities | Piggly Wiggly | Arlington & Hooker | Wal-Mart | ESC | Tobacco Rd. | Carolina East Mall | PCC | Wal-Mart | Piggly Wiggly | Dickinson | Sheppard Library | Reade St. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6:25 AM | 6:27 AM | 6:32 AM | 6:35 AM | 6:37 AM | 6:40 AM | 6:44 AM | 6:49 AM | - | 7:00 AM | 7:05 AM | 7:08 AM | 7:12 AM | 7:20 AM |
| 7:25 AM | 7:27 AM | 7:32 AM | 7:35 AM | 7:37 AM | 7:40 AM | 7:44 AM | 7:49 AM | 7:53 AM | 8:00 AM | 8:05 AM | 8:08 AM | 8:12 AM | 8:20 AM |
| 8:25 AM | 8:27 AM | 8:32 AM | 8:35 AM | 8:37 AM | 8:40 AM | 8:44 AM | 8:49 AM | 8:53 AM | 9:00 AM | 9:05 AM | 9:08 AM | 9:12 AM | 9:20 AM |
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| 10:25 AM | 10:27 AM | 10:32 AM | 10:35 AM | 10:37 AM | 10:40 AM | 10:44 AM | 10:49 AM | 10:53 AM | 11:00 AM | 11:05 AM | 11:08 AM | 11:12 AM | 11:20 AM |
| 11:25 AM | 11:27 AM | 11:32 AM | 11:35 AM | 11:37 AM | 11:40 AM | 11:44 AM | 11:49 AM | 11:53 AM | 12:00 PM | 12:05 PM | 12:08 PM | 12:12 PM | 12:20 PM |
| 12:25 PM | 12:27 PM | 12:32 PM | 12:35 PM | 12:37 PM | 12:40 PM | 12:44 PM | 12:49 PM | 12:53 PM | 1:00 PM | 1:05 PM | 1:08 PM | 1:12 PM | 1:20 PM |
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| 5:25 PM | 5:27 PM | 5:32 PM | 5:35 PM | 5:37 PM | 5:40 PM | 5:44 PM | 5:49 PM | - | 6:00 PM | 6:05 PM | 6:08 PM | 6:12 PM | 6:20 PM |
| 6:25 PM | 6:27 PM | 6:32 PM | 6:35 PM | 6:37 PM | 6:40 PM | 6:44 PM | 6:49 PM | - | 7:00 PM | - | - | - | - |

### Route 4 Timetable

| Reade St. | Greene Dudley | Flora MHP | Pitt Co. Office Park | Westwood MHP | Food Lion | Hop Tyson Rd. | Memorial & 3rd | W. H. Smith | Piggly Wiggly | Myrtle & Manhattan | MLK JR & Sheppard | Greenville Utilities | Reade St. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6:25 AM | 6:28 AM | 6:33 AM | - | 6:42 AM | 6:43 AM | 6:47 AM | 6:50 AM | 7:02 AM | 7:06 AM | 7:09 AM | 7:11 AM | 7:15 AM | 7:20 AM |
| 7:25 AM | 7:28 AM | 7:33 AM | 7:40 AM | - | 7:43 AM | 7:47 AM | 7:50 AM | 8:02 AM | 8:06 AM | 8:09 AM | 8:11 AM | 8:15 AM | 8:20 AM |
| 8:25 AM | 8:28 AM | - | 8:40 AM | 8:42 AM | 8:43 AM | 8:47 AM | 8:50 AM | 9:02 AM | 9:06 AM | 9:09 AM | 9:11 AM | 9:15 AM | 9:20 AM |
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| 6:25 PM | 6:28 PM | - | - | - | 6:43 PM | 6:47 PM | 6:50 PM | - | - | - | | - | - |

**ECVC / Acquatics Center M-F 7:45 AM and 4:00 PM Only**

*Effective February 11, 2006. Source: City of Greenville*

Figure 5.2: GREAT Transfer Point

### Ridership and Travel Patterns

GREAT carries approximately 200,000 riders each year (the actual number fluctuates). In recent months, ridership has grown from about 600 per day to about 900 per day, and the annual ridership is projected to be well over 200,000 in the current fiscal year. The Regional Transit Feasibility Study (RTFS) reported the ridership levels by time of day. It noted that 'the morning peak hour was between 8:30 am and 9:30 am… The relatively low [number of] riders in the hour before would tend to imply that the typical 8-5 worker does not use the GREAT system.'

The RTFS also reported the ridership levels by ticket-type. About one in four trips involved transfer tickets; this translates to one in three journeys requiring transfer onto a second bus. This has been confirmed by 2005 data, and is typical for this type of city. Assuming that the transfers all, or almost all, take place downtown, this represents a substantial number of existing journeys that would potentially benefit from an improved transfer facility. There may also be some potential journeys ('suppressed demand') that would be encouraged by improved transfers.

The Horizons report points out that addressing the need for handicapped transit services will become a major issue for GREAT in the next decade. As the demand for specialized service grows, so too does the cost of providing it.

## 5.2 ECU Student Transit Authority (ECUSTA)

### Network Structure, Routes and Fares

ECU's extensive transit system is unusual for being operated by the student body rather than University administration. ECU Student Transit Authority (ECUSTA) only operates during the academic year, with no service on holidays, on reading days, or during school breaks. Like most student-oriented transit systems, the most intensive service operates during the Fall and Spring semesters, with a much-reduced service in the summer semester. The service is much lighter at weekends in Fall and Spring, with no weekend service in Summer.

The intensive service (Monday-Friday in Fall and Spring semesters) covers a wide range of roles:

- Several routes link the campus with off-campus housing complexes, at frequencies of two or three buses per hour (bph).
- Two high-frequency routes (6 or 12 bph each) link the main campus with park-and-ride lots near the athletic facilities.
- The Red route (2bph) links the main campus with the Medical School, running via the Freshman parking lot.
- Two routes (3bph each) circulate around the main campus, with one route including the College Hill Drive cluster of residence halls.
- The Blue Route (hourly) links the campus with a range of major shopping locations along Greenville Boulevard, such as Wal-Mart.

Figure 5.3 shows the route pattern for these services.

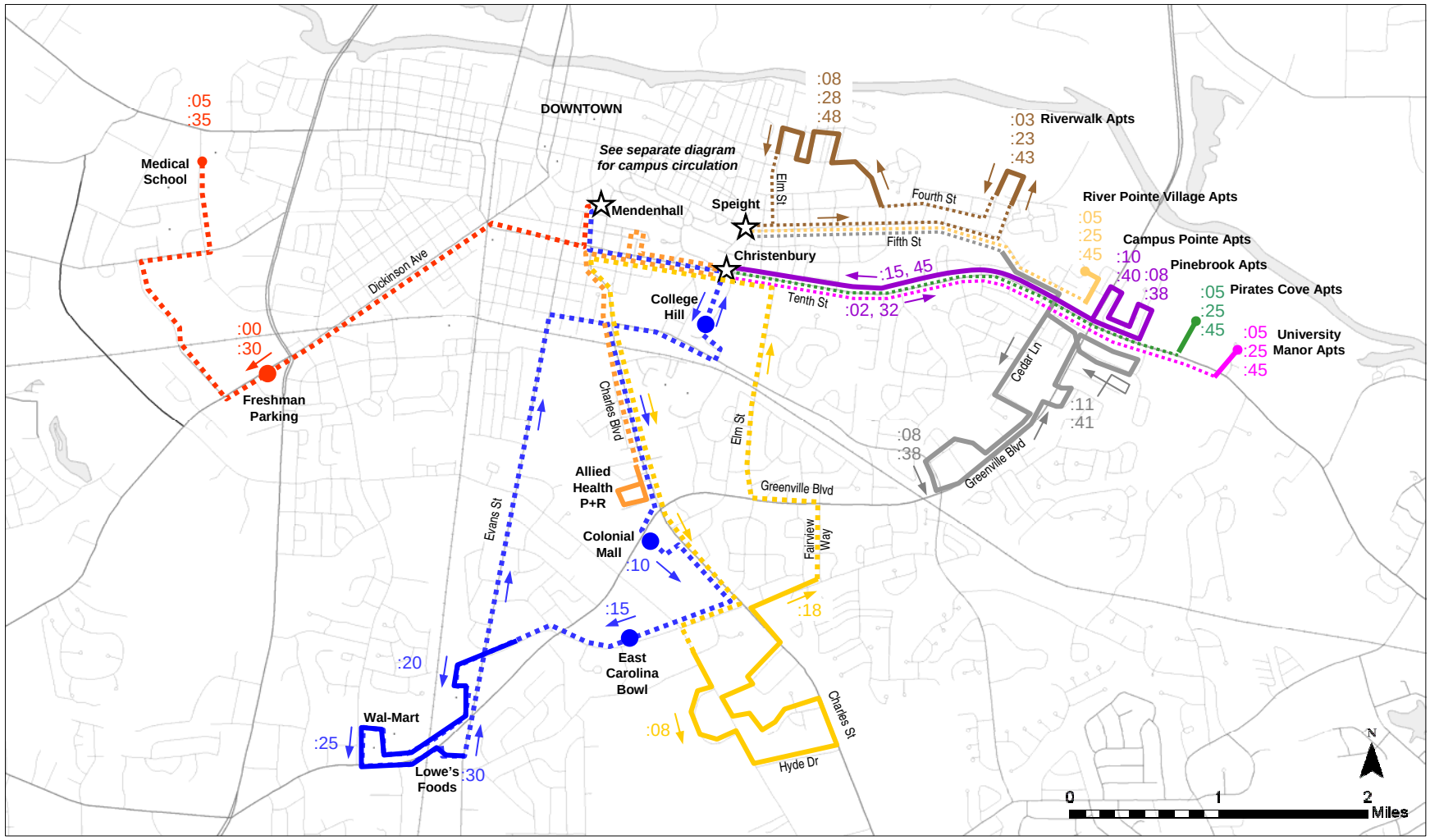
In the evenings and late at night, there is a reduced service, focused on returning students from the campus and downtown to their apartments or park-and-ride. During the summer, a much reduced service operates, reflecting the low numbers of students present. Services run Monday-Friday only, from 7:00 am to 6:00 pm, with an early finish on Fridays at 3:30 pm. The Brown, Silver, Gold and Eastern Express routes operate every 30 minutes, with the park-and-ride lot shuttle every ten minutes and a dial-a-ride service to the Brody School of Medicine.

ECUSTA operates fare-free, but students are charged a transportation fee which provides most of the service's funding. The service is not open to the public, and ECU ID is (theoretically) required.

The full daytime service covers a wide part of the city, and this led to the recommendation in the RTFS that ECUSTA routes should be opened to the public, with some potentially transferred to GREAT operation. This was met with some reluctance from the student body, who felt strongly that the operation should remain exclusive to ECU and had concerns about traveling with city residents.

### Ridership and Travel Patterns

ECUSTA is easily the busiest of Greenville's transportation services. Sample data from September 2005, supplied by ECUSTA for this study, show a daily ridership of around 12,000 for weekdays when classes are in session. This is more than double the levels of a few years ago as reported in the RTFS. Ridership is lower on Fridays and much lower, around 1,100, for the limited service at weekends. About one-third of trips are on the Minges park-and-ride route. Other particularly busy routes are the Allied Health park-and-ride service and the Pirates Cove service to a major private apartment complex. The campus shuttle has the lowest ridership, at little over 100 on weekdays.




# ECUSTA Bus Routes

Weekday daytime routes during semester Fall 2005

Campus circulation and Minges Park-and-Ride route have been omitted for clarity

- Red Route
- Blue Route
- Brown Route
- Silver Route
- Pirates Cove Route
- University Manor Route
- Purple Route
- River Pointe Village Route
- Arlington Corridor Route
- Allied Health P+R Route

- Express section (Stops only as marked)
- Direction of travel
- :XX Minutes past each hour
- Transfer point

MARTIN/ALEXIOU/BRYSON October 2005

**Figure 5.3: ECUSTA Route Map**

## 5.3 Summary of Local Transit Connections in Central Greenville

Figure 5.4 draws together the arrangements for transfers within and between GREAT or ECUSTA services.

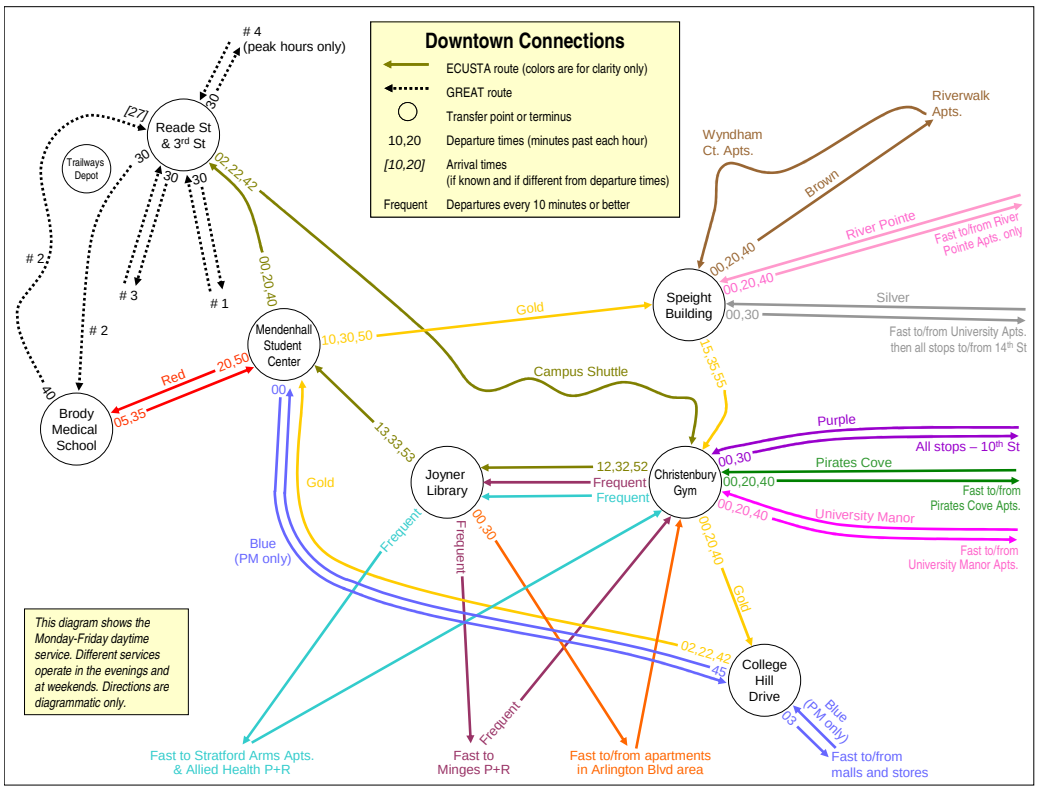
ECUSTA has no single hub, as different routes serve different nodes on campus; these can be thought of as 'mini-hubs'. Off-campus services generally start and finish on the edge of campus, without running through the campus. In particular, services to and from the apartment complexes east of campus, along the Tenth Street and Fifth Street corridors, all terminate on the eastern edge of campus at Christenbury Gym or the Speight Building.

Transfer between the two systems can take place in a variety of ways:

- Some GREAT services run along the edge of campus, creating informal transfer opportunities.
- The campus shuttle, which operates to Reade Street in order to serve University buildings there, gives direct access to the GREAT transfer point. This is itself only two blocks from the edge of the campus.
- The two systems meet elsewhere in the city, such as at the Medical School and at Colonial Mall. However, there are no formal transfer arrangements at any of these locations and schedules are not coordinated for this.

Because ECUSTA operates fare-free, there are no through-ticketing arrangements between the two systems.

### Figure 5.4: Local Transit Connections in Central Greenville



## 5.4 ECUSTA and GREAT Coverage of Student Addresses

The RTFS looked at the extent to which students living off-campus were served by ECUSTA, GREAT or both (Table 5.2). Almost half of the students were within walking distance of both ECUSTA and GREAT routes. Another 20% were served by one or the other. More than one-third of students were served by neither, and would have to rely on PATS for transit service. This, the report commented, reinforced the survey finding that students wanted to see increased ECU service/routes.

### Table 5.2: Off-Campus Student Coverage by ECUSTA and GREAT

| Service | Percent of off-campus students |
|---|---|
| ECUSTA only | 12 |
| GREAT only | 8 |
| PATS only | 37 |
| Both ECUSTA and GREAT | 44 |
| Total ECUSTA (alone or with GREAT) | 55 |
| Total GREAT (alone or with ECUSTA) | 51 |

*Source: Regional Transit Feasibility Study, Exhibit 5-8.*
*Data from 2002, for students living off-campus in Pitt County.*

Figure 5.5 reproduces a map from that study, which compares students' addresses with the bus routes. It shows substantial numbers of students in south-east Greenville without a transit service at that time (although the new Arlington route will serve some of these). The study did not examine faculty and staff addresses in the same way, but there are likely to be similar gaps in the coverage.

These service coverage issues are discussed further in Section 6.2.

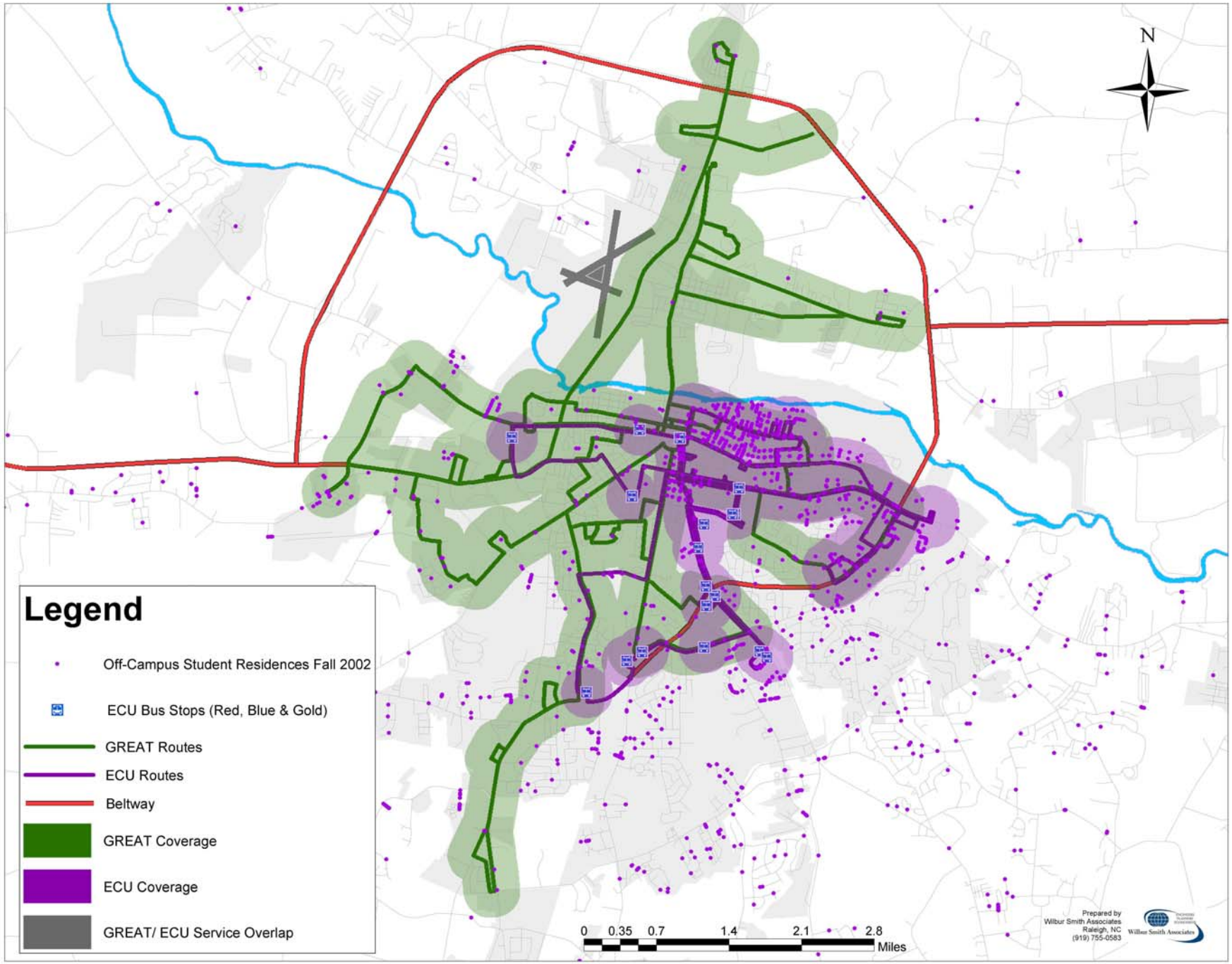



**Figure 5.5: Student Addresses Compared to Transit Network**

*Source: Regional Transit Feasibility Study, Exhibit 5-7*

## 5.5 PATS

### Network Structure, Routes and Fares

Pitt Area Transit System (PATS) is operated by Pitt County, through a private contractor. It is a demand-responsive service and fulfills three roles:

- paratransit for County residents on behalf of human-service agencies;
- ADA paratransit service to City residents, as a contractor for GREAT; and
- Rural General Public (RGP) service for County residents. This role has only begun in the past few years. RGP service is heavily dependent on grant-funding, and currently its availability in Pitt County is very limited.

Service is provided from 5:00 am to 7:00 pm Monday to Friday, with no service on weekends or holidays. Reservations are accepted only between 8:00 am and 12:00 noon on the day before travel. PATS has a common fleet and common scheduling, so paratransit and RGP riders could be traveling together on any particular day. The peak vehicle requirement is for ten vehicles, which is less than in previous years. PATS currently uses conversion vans, and might grow into cutaway vans in future.

Agencies requesting rides for patrons are billed for the cost of the service. The charge remains constant per vehicle mile, but is split among the passengers (that is, their agencies) and so the charge for any one trip can vary. The general public are charged at the same rate as the agencies. The RTFS commented that a general public rider "would not know the fare until the trip was scheduled and the total ridership is known. This uncertainty in fares does not encourage the casual user."

The dispatch and maintenance base is at the Eastern Carolina Vocational Center (ECVC), which is also an important agency customer. The ECVC has therefore become an informal focal point of the service.

### Ridership and Travel Patterns

PATS carries about 100-130 trips each day, of which about 30 are GREAT ADA trips[8]. The average trip is about ten miles long. Many riders have regular trips, which means that in practice the service takes on a quasi-fixed-route character.

Ridership has decreased substantially since the time of the RTFS. Some agencies have recently switched to private van operators instead of PATS, in an attempt to reduce transportation costs.

An analysis for the RTFS of a sample of trips (excluding GREAT ADA riders) found that about half of the identifiable origins, and just under 80% of identifiable destinations, were close to GREAT routes. The destination data in particular are unsurprising, given the concentration of demand among particular agencies' locations in Greenville.

[8] Source: *Summary Billing Statistics, Year to Date* on 11/30/2005.

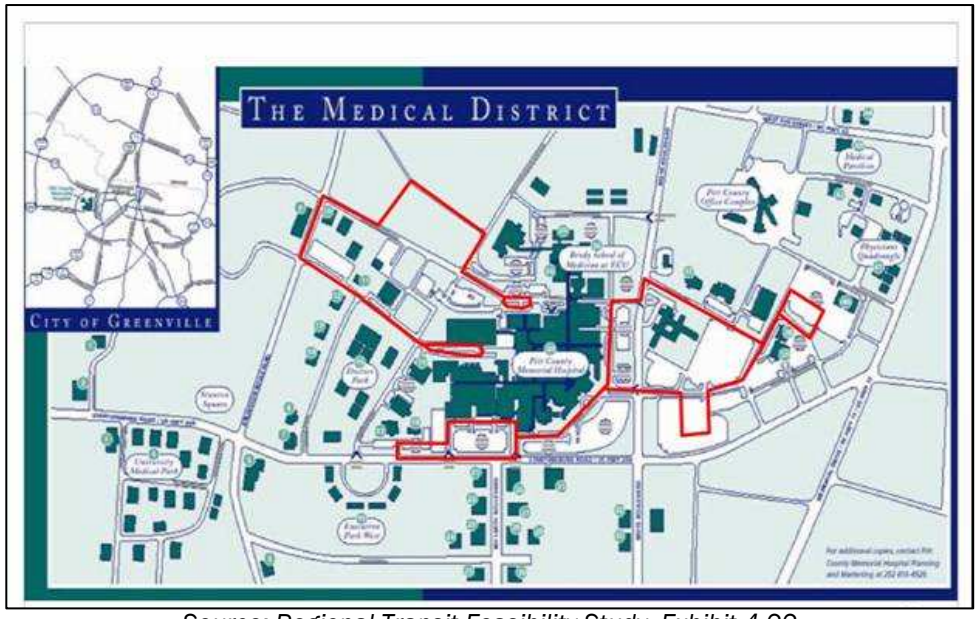
## 5.6 Pitt County Memorial Hospital

### Network Structure, Routes and Fares

Pitt County Memorial Hospital (PCMH) operates two routes on its campus, the self-explanatory Front Route and Rear Route (Figure 5.6). These routes provide internal circulation, take people to their cars, and act as a security presence in the parking lots.

The service operates from 6:00 am to 12:00 midnight on Mondays to Fridays. Each route runs approximately every ten minutes, using small buses, with a peak vehicle requirement of three on the Front Route and two on the Rear Route. The service is fare-free and is open to both staff and visitors.

**Figure 5.6: PCMH Routes**




*Source: Regional Transit Feasibility Study, Exhibit 4-22*

### Ridership and Travel Patterns

Ridership is currently 28,000 people per month, according to the Director of Transportation. This corresponds to an annual ridership of just over 300,000, comparable to the figures reported in the RTFS for recent years. This makes the PCMH system the second busiest in the city, with nearly twice as many trips as on GREAT, although the PCMH trips are all relatively short.

GREAT routes 2 and 4, plus the ECUSTA Red route, also serve this area and informal transfers to/from the PCMH routes are therefore possible.

## 5.7 Trailways

Carolina Trailways, part of the Greyhound group, provides inter-city bus service to Greenville. Buses stop at the Trailways Depot at 310 Martin Luther King Drive. Its opening hours, including the ticket counter, are 9:30 am to 1:00 pm and 5:00 pm to 9:00 pm daily. The depot includes a Greyhound Package Express counter, where packages may be deposited and collected.

The depot has a relatively central location, on the western edge of downtown near the new city offices. On a typical scale for small city depots, it is functional but not particularly attractive, and is unlikely to attract many discretionary riders (Figure 5.7). The depot is leased on a self-renewing annual basis.

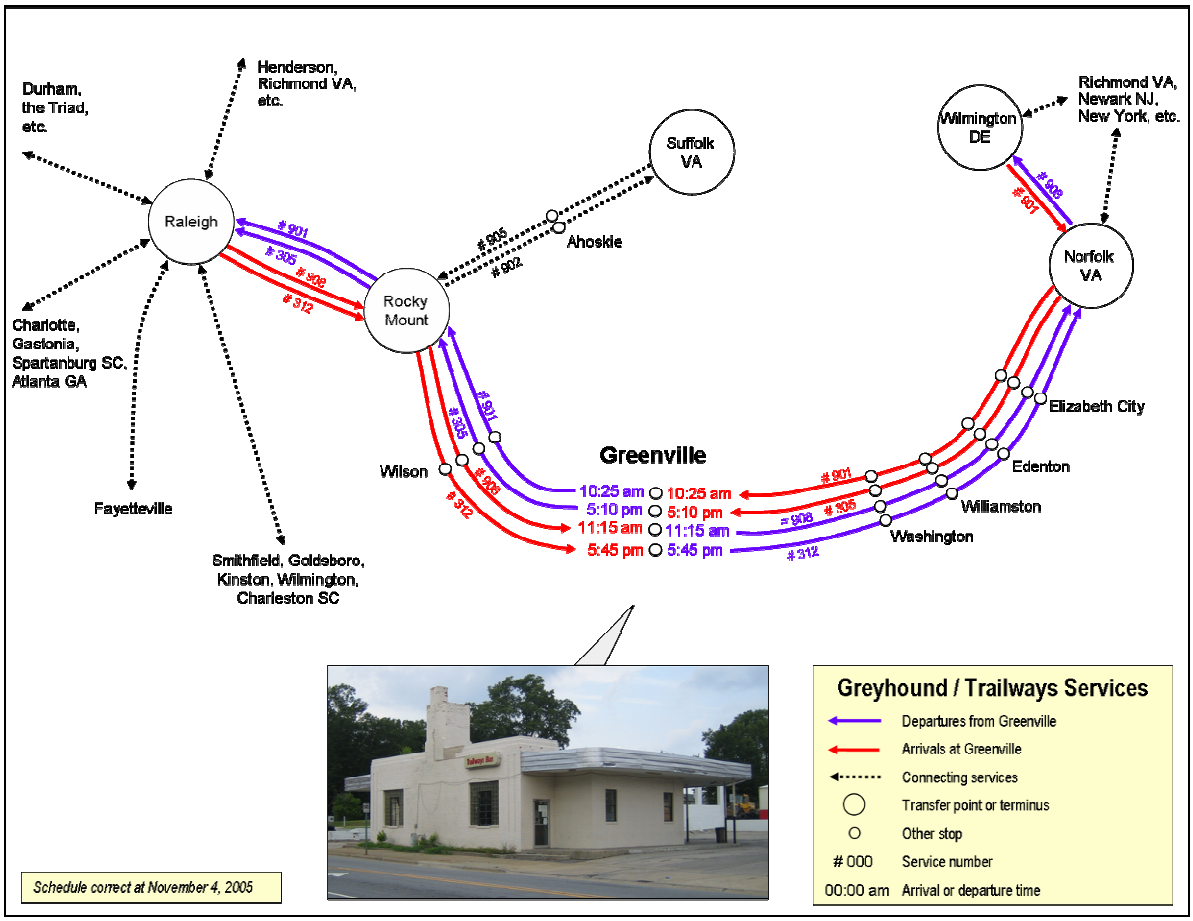
**Figure 5.7: Trailways Depot**

Greenville is now the only Greyhound stop in Pitt County. Until recently, Farmville was a flag stop (i.e., a wayside stop with no facilities), but this was one of 38 small stops eliminated in North Carolina on August 17, 2005. The eliminations were part of a nationwide restructuring of the Greyhound system, aimed at improving journey times and frequencies for the major flows.

Figure 5.8 shows the schedule at Greenville and the connections available. Greenville is a mid-point on a route between Raleigh and Norfolk, Virginia, with two buses daily in each direction. The restructured service pattern uses these as hubs, with connections to the rest of the nation. Trailways reports that travel to/from the north-east of the US is a particularly important market from Greenville.

Just over 14,900 riders boarded or alighted at Greenville in the year from December 2004 to November 2005, representing about 41 riders per day. The peak months were July and August, each having over 1,500 riders per month or about 49 riders per day. Trailways believes that the ridership has grown since the August 2005 schedule changes.

Figure 5.8: Trailways Schedule and Connections




## 5.8 Taxi Companies

Table 5.3 lists the taxi companies licensed to operate in Greenville. Taxi service is generally low-key. There are no taxi stands downtown, although several taxis usually attend Trailways arrivals.

Table 5.3: Taxi Companies in Greenville

| Company | Number of Taxis approved to operate | Number of Taxis currently licensed to operate |
|---|---|---|
| Aladdin Taxi and Transportation | 10 | 5 |
| City Cab Co. | 10 | 5 |
| Courtesy Cab Co. | 12 | 6 |
| Eagle Cab Co. | 3 | 1 |
| Faith Taxicab Service | 1 | 1 |
| Express Taxi Service | 14 | 2 |

*Source: City of Greenville licensing records*

## 5.9 Railroads

Figure 5.10 shows the rail network of eastern North Carolina. Greenville is served by two freight railroads which connect in the City.

Norfolk Southern's (NS) route runs east-west through Pitt County. Westwards from Greenville, the line runs through Farmville and on to Wilson, where it crosses the CSX main line. It continues through Zebulon and Knightdale to Raleigh, where it connects with other routes including the North Carolina Railroad. Eastwards from Greenville, the route runs through Simpson and Grimesland, continuing to Chocowinity, where it splits into branches to New Bern, Lee Creek, and Washington and beyond.

CSX's route runs north-south through Pitt County. Northwards from Greenville, the line runs to Parmele, just over the county line, where it connects with CSX's line from Rocky Mount to Plymouth. Rocky Mount is on CSX's main line along the Atlantic coast corridor. Southwards from Greenville, the line continues through Winterville, Ayden and Grifton, terminating just across the county line at Elmer. The continuation to Kinston (connecting with the North Carolina Railroad) has been abandoned.

The two railroads cross at grade, with connecting curves, south of downtown (Figure 5.9 and Figure 3.3). North of the crossing, at Dickinson Avenue and Tenth Street, is the CSX freight depot and public freight spur (Figure 5.11). The depot was formerly the baggage section of the passenger station, and appears to be the only historic railroad depot in its original location in Greenville[9]. A spur from the NS route into the tobacco district (Figure 5.12) is now used only by the chemical works there.

In addition to the active railroads, there are abandoned corridors from Farmville to Fountain and from Washington to Parmele; the latter is proposed for conversion to a trail.

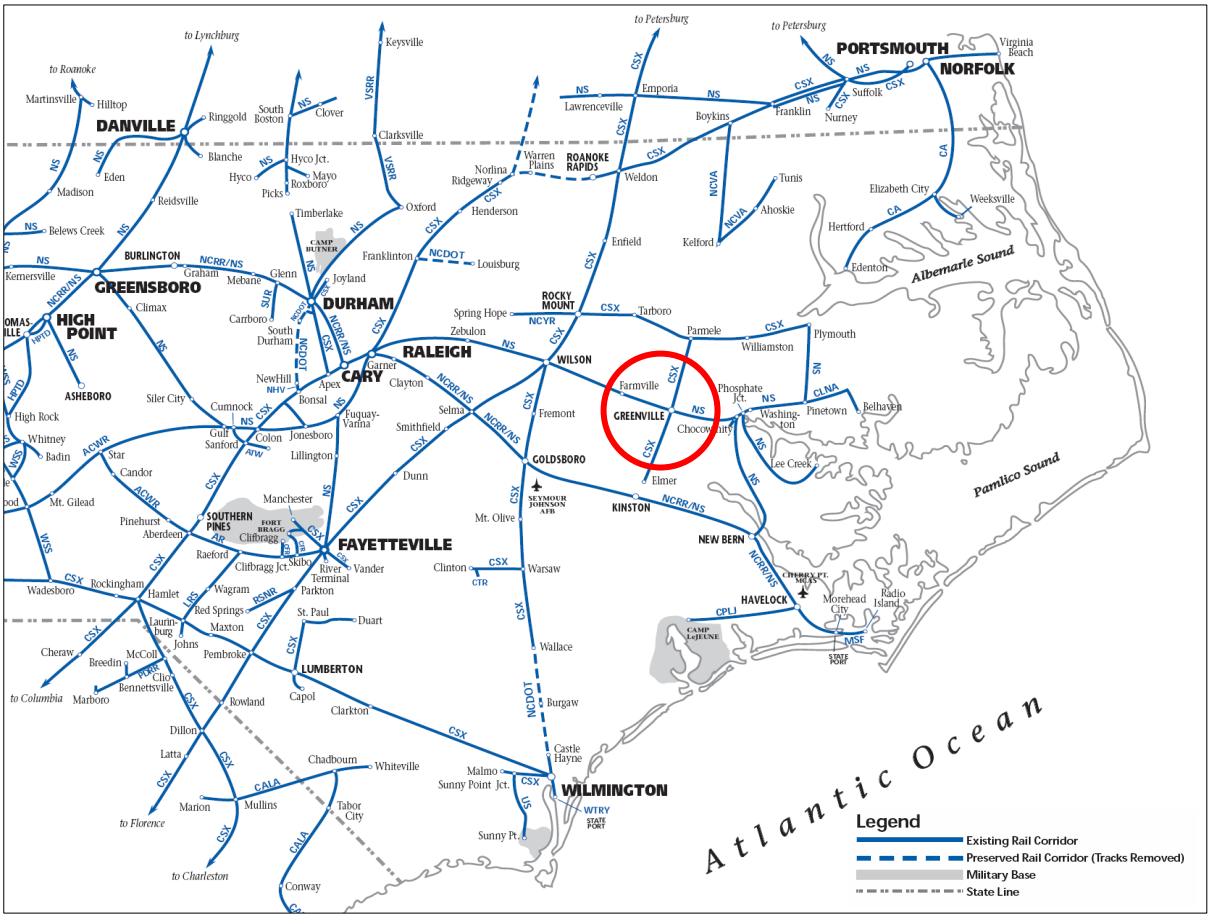
**Figure 5.9: Railroads Crossing South of Downtown**


(a) Crossing, looking east, with CSX line running left-to-right and NS line crossing

(b) Looking north along the CSX line, with the spur from the NS line on the left and the CSX freight depot in the background

[9] Source: Art Peterson, Tony Reevy and William L Dowdy, *A Directory of North Carolina's Railroad Structures*, Second Edition (2002).

## Figure 5.10: Railroads In Eastern North Carolina




*Source: NCDOT Rail Division*

## Figure 5.11: Greenville CSX Freight Depot

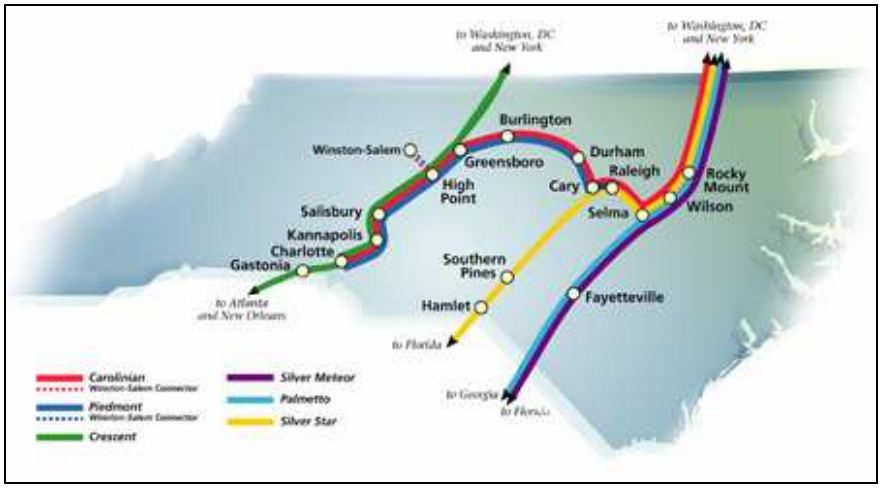
Figure 5.12: Tobacco Spur

## 5.10 Passenger Rail Service

Figure 5.13 summarizes North Carolina's passenger trains. There is currently no service to Greenville, nor are there any plans for the foreseeable future. The nearest service is at Rocky Mount (four trains each way daily), Wilson (two) and Selma (two). Schedules change over time, but direct services are currently available from these stations to not only Raleigh and Charlotte, but also locations as far away as Miami and New York. However, the timings of the long-distance trains (e.g. the Silver Meteor) are geared to the demands of the overall journey, so they may not necessarily be convenient at intermediate stations such as Rocky Mount.

Table 5.4 shows the ridership at these stations, with the other stations in North Carolina shown for comparison. Rocky Mount is the busiest of the three, and indeed in FY 2005 was the third busiest of the State's sixteen stations despite only being a small city. This probably reflects both the concentration of trains and a likely role as a railhead for north-eastern counties. Wilson's figures are particularly respectable given that it only has two trains per day, and again probably reflects a railhead role.

Figure 5.13: Current Passenger Rail Service in North Carolina




*Source: NCDOT Rail Division*

Table 5.4: Amtrak Ridership in North Carolina

| Station | Ridership (FY 2004) | Ridership (FY 2005) |
|---|---|---|
| Raleigh | 110,203 | 115,092 |
| Charlotte | 107,896 | 107,198 |
| ***Rocky Mount*** | ***38,035*** | ***56,817*** |
| Greensboro | 58,274 | 56,051 |
| Fayetteville | 32,910 | 36,290 |
| Durham | 32,556 | 33,934 |
| ***Wilson*** | ***30,071*** | ***29,688*** |
| Salisbury | 16,238 | 17,075 |
| Cary | 15,638 | 15,639 |
| High Point (reopened 12/9/03) | 8,793 | 14,788 |
| Burlington | 11,027 | 11,553 |
| ***Selma-Smithfield*** | ***8,364*** | ***8,619*** |
| Kannapolis | 7,160 | 7,763 |
| Southern Pines | 3,490 | 4,336 |
| Hamlet | 2,981 | 4,152 |
| Gastonia | 1,823 | 1,703 |
| NC Total | 485,459 | 520,698 |

*Source:* Amtrak Fact Sheet FY04: State of North Carolina *and*
Amtrak Fact Sheet FY05: State of North Carolina
*These figures include both boarding and alighting at each station.*
*Amtrak's Fiscal Year ends September 30.*

## 5.11 Pitt Greenville Airport

Pitt Greenville Airport is located off highway NC 11, about ten minutes' drive north-west from downtown. It is a full-service airport, with navigational aids and a longest runway of 6,500 feet. The airport has many of the facilities and amenities typically provided in a transportation center.

Scheduled non-stop passenger flights to and from Charlotte are operated by Piedmont Airways as US Airways Express, which maintains a crew base here. There are seven flights each way on weekdays, with fewer on weekends, spread throughout the day. Table 5.5 lists the arrival and departure times at Greenville. The flights use small Dash 8 aircraft with capacity for 37 or 50 passengers. The business, medical, and University communities make up a significant portion of commercial airline demand. Private corporate aircraft and other general aviation also use the airport. Air cargo service is offered by US Airways, DHL and FedEx. Intermodal connections for air passengers include a 271-space parking lot, taxi and limousine services, and car rental from four major companies.

In 2004, the airport served just under 100,000 passengers (counting arrivals and departures separately). The passenger figures since 1991 have varied between 65,000 and 121,000, due to such factors as changes in flight availability, Hurricane Floyd and the nationwide civil aviation trends since 2001.

The Horizons Plan reports that although the future growth of the airport is limited by its geographic location, the City does not believe this will pose a constraint to the overall development of the Greenville area in the short run. Although the airport currently does not

provide jet service, the existing runways could accommodate service by small jets. The plan considers it highly unlikely that service by large jets would ever be warranted in the foreseeable future. The plan does not recommend relocation of the airport, but states that it should be considered in future planning efforts.

### Table 5.5: Scheduled Flight Arrivals and Departures at Pitt Greenville Airport

(a) Greenville to Charlotte (Departures from Pitt-Greenville)

| Mon | Tue | Wed | Thur | Fri | Sat | Sun |
|---|---|---|---|---|---|---|
| 5:30 AM | 5:30 AM | 5:30 AM | 5:30 AM | 5:30 AM | 5:30 AM | -- |
| -- | -- | -- | -- | -- | -- | 7:20 AM |
| 9:10 AM | 9:10 AM | 9:10 AM | 9:10 AM | 9:10 AM | -- | -- |
| 12:15 PM | 12:15 PM | 12:15 PM | 12:15 PM | 12:15 PM | 12:15 PM | 12:15 PM |
| 2:00 PM | 2:00 PM | 2:00 PM | 2:00 PM | 2:00 PM | 2:00 PM | 2:00 PM |
| 3:30 PM | 3:30 PM | 3:30 PM | 3:30 PM | 3:30 PM | 3:30 PM | 3:30 PM |
| 5:10 PM | 5:10 PM | 5:10 PM | 5:10 PM | 5:10 PM | -- | 5:10 PM |
| 6:55 PM | 6:55 PM | 6:55 PM | 6:55 PM | 6:55 PM | -- | 6:55 PM |

(b) Charlotte to Greenville (Arrivals at Pitt-Greenville)

| Mon | Tue | Wed | Thur | Fri | Sat | Sun |
|---|---|---|---|---|---|---|
| 8:45 AM | 8:45 AM | 8:45 AM | 8:45 AM | 8:45 AM | -- | -- |
| 11:54 AM | 11:54 AM | 11:54 AM | 11:54 AM | 11:54 AM | 11:54 AM | 11:54 AM |
| 1:40 PM | 1:40 PM | 1:40 PM | 1:40 PM | 1:40 PM | 1:40 PM | 1:40 PM |
| 3:05 PM | 3:05 PM | 3:05 PM | 3:05 PM | 3:05 PM | 3:05 PM | 3:05 PM |
| 4:50 PM | 4:50 PM | 4:50 PM | 4:50 PM | 4:50 PM | -- | 4:50 PM |
| 6:30 PM | 6:30 PM | 6:30 PM | 6:30 PM | 6:30 PM | -- | 6:30 PM |
| -- | -- | -- | -- | -- | 8:35 PM | -- |
| 10:35 PM | 10:35 PM | 10:35 PM | 10:35 PM | 10:35 PM | -- | 10:35 PM |

*Source: US Airways online schedule. Schedules change often; the times above are good from August 27, 2005.*

## 5.12 Kinston Regional Jetport

Although outside of Pitt County, the Kinston Regional Jetport provides alternative flight options for Pitt County residents. The airport is part of the NC Global Transpark complex, and has a longest runway of 11,500 feet. It offers scheduled non-stop passenger flights to Atlanta, Georgia, operated by Atlantic Southeast Airlines as a Delta Connection service. This service started in April 2005, with three round trips each day (Table 5.6) using CRJ200 aircraft.

### Table 5.6: Scheduled Flight Arrivals and Departures at Kinston Regional Jetport

To/from Atlanta, Georgia

| Departures from Kinston | Arrivals at Kinston |
|---|---|
| 6:30 AM | 10:28 AM |
| 11:00 AM | 5:07 PM |
| 5:40 PM | 9:39 PM |

*Source: Kinston Regional Jetport (www.jetkinston.com/flights.html, accessed on July 27, 2005.)*

# 6 Planned and Proposed Transportation Projects

This sections reviews the planned and proposed transportation projects in Greenville and selected projects elsewhere in the County. It also reviews proposals for rail service to eastern North Carolina. The implications for the transportation center of each set of proposals are considered.

## 6.1 Transit 2001 Commission

The Transit 2001 Commission was established in 1995 by Governor James B. Hunt to provide recommendations on how to improve the state's public transportation for the 21st Century. Its 1997 report[10], although not an official transportation plan, may be seen as a summary of aspirations and potential issues.

On urban transit, the Commission assessed the level of city transit service that would be needed in order to maintain and increase transit's market share in the face of continuing urban growth. Starting with the (then) statewide average of 0.39 bus-hours per person per year, the Commission saw this potentially increasing to 'modest' (0.5), 'better' (0.75) and 'optimal' (1.0) service levels. Only the 'optimal' service level would maintain transit's market share in the long-term. The Commission did not report data on the individual cities, although in 2003 the Regional Transit Feasibility Study (RTFS)[11] calculated Greenville to be at 0.22. The Commission placed Greenville in a bracket with Gastonia, Hickory, Rocky Mount, Salisbury and Wilson, recommending that these cities should work towards the 'modest' service level of 0.5 bus-hours per person per year. The Commission envisaged these cities coming just below the 'modest' level by 2010, and also proposed a transfer hub for Greenville.

On rural and human service transportation, the Commission gave no recommendations on individual locations. It provided a general list of improvements that would be needed to maintain use of existing services and to expand services to accommodate unmet needs. This included capital investments for replacement and expansion, increased operating assistance for expansion and improved operations and administration.

The Commission made few recommendations for inter-city bus service, except to say that rural public transportation systems should provide feeder services to existing intercity bus routes.

The Commission's recommendations for rail services are discussed separately below.

### Implications for the Transportation Center

The Commission's recommendations support the transportation center concept on two specific points: the hub proposal for Greenville, and the need to provide feeder services to inter-city bus routes. The recommendations also aspire to more than doubling the level of transit service in Greenville (and other cities). If this were to happen, and ridership were to rise correspondingly,

[10] *The Transit 2001 Executive Summary and Technical Report* (NCDOT, 1997)

[11] *Regional Transit Feasibility Study* (Wilbur Smith and Associates for the City of Greenville et al, 2003)

there would be a major increase in the space requirements for the center, compared to today's needs. This potential increase is explored in detail in Section 7 below.

## 6.2 Regional Transit Feasibility Study (RTFS)

The Regional Transit Feasibility Study[12] (RTFS) in 2003 was commissioned by the four local transit providers and NCDOT. It examined the potential for the various transit services in Pitt County to be combined or coordinated. The aim was to identify areas in need of transit and to determine the best way to meet those needs. The RTFS report was reviewed for the present study, and only the main conclusions and other relevant findings are presented here.

### Challenges Identified

The study identified five major challenges facing the region:

1. Increasing population, increasing enrollment at ECU and increasing numbers of patient visits to Pitt County Memorial Hospital (PCMH).
2. Maintaining air quality (Pitt County had been exceeding Federal ozone standards).
3. Providing and paying for additional parking.
4. Providing transit services to meet the City and County's needs. Greenville had a low level of general public service, with none (at the time) in rural Pitt County.
5. Improving service coordination. The report concluded that because each service catered to the majority of its constituents, the service was not seamless and some groups were poorly served:
    - general public riders outside Greenville,
    - general public riders along ECU bus routes,
    - off-campus ECU students beyond walking distance from bus routes, and
    - PCMH employees/patients without cars.

### Recommendations of the RTFS

The report went on to suggest guidelines for the future development and organization of transit services (Table 6.1). Importantly, one guideline was that transit services should connect. The report commented:

> Even though PCMH and ECU may continue to operate separate systems, their systems should connect to the general public services. PCMH's shuttles should provide the local distribution for travel within their campus, and riders from ECU and GREAT's routes should be able to transfer to the PCMH shuttles. Similarly, ECU's and GREAT's routes should connect to permit faculty, staff, and students to use GREAT routes to reach the campus and the ECU Transit routes to reach their building.

These guidelines led to a range of short-term and long-term recommendations (Table 6.2). Most of the recommendations related to organizational issues, but transfer facilities were also addressed. In particular, the proposed transit authority should

> work with ECU and PCMH to identify locations for potential transit or intermodal centers. Specific locations have not been identified, but the general areas are the Mendenhall Student Center, downtown

[12] *Regional Transit Feasibility Study* (Wilbur Smith and Associates for the City of Greenville et al, 2003)

Greenville, and the Brody School of Medicine. The 2004 State TIP already includes an intermodal center in Greenville. Transit centers should include shelters, benches, windbreaks, vending machines, and other amenities. Potentially they could include restrooms, either limited for drivers' use only, or open to the general public.

The study did not assess the potential role of transfer facilities in any detail. The recommendations on transfers appear to have emerged from the need for travelers to be able to transfer better between the local systems. The intention seems to have been to develop a set of transfer points (with limited facilities) at key locations, rather than one all-encompassing transfer center.

Some of the study's recommendations were controversial. The ECU Student Transit Authority was opposed to any combination of its services with another body, and there was opposition by some members of the ECU community to the idea of opening ECU service to the public. This and various technical reasons led the study's Steering Committee to decide that merging GREAT and ECUSTA was not a realistic option, and that the two services should simply be better coordinated. However, there appears to have been no opposition to the recommendations for transit centers.

### Table 6.1: Guidelines Suggested by the Regional Transit Feasibility Study

| | |
|---|---|
| 1. | Provide general public service to all residents. |
| 2. | Increase the level of general public service in Greenville, to the statewide average level for small cities. |
| 3. | Avoid providing separate services to areas of general interest. This was seen as reducing the productivity of the system. Duplicated GREAT and ECU services to medical and shopping locations were highlighted. |
| 4. | Internal shuttles on the ECU and PCMH campuses should remain separate and provided by those institutions. |
| 5. | Transit services should connect (see text). |
| 6. | Provide a high-quality transit service. The report highlighted the need for passenger amenities at major transfer locations, without going into detail. |
| 7. | Establish an integrated fare system, including elimination of the separate fee to transfer between PATS and GREAT, and introduction of a UPass program with major employers and ECU. |
| 8. | Establish a new organizational structure. |
| 9. | Provide sufficient funding and staffing. |
| 10. | Fully use Federal and State funding sources. |

### Table 6.2: Recommendations of the Regional Transit Feasibility Study

| Short Term (within two years) |
|---|
| 1. Create a Transit Working Group to develop the implementation plan for the recommendations. |
| 2. Open the PATS service to the general public. |
| 3. Convert the ECU Red and Blue routes to general public services. These routes respectively linked the ECU main campus with PCMH and various shopping destinations. These should be operated by GREAT as 'express' services, running every 30 minutes or better. |
| 4. ECU and PCMH should continue operating their own campus shuttle services. The PCMH shuttles should be open to the public. |
| 5. GREAT and PATS should develop a coordinated vehicle procurement plan, to spread-out purchases. |
| 6. The fare structure should be overhauled, with the transfer fee eliminated and a UPass program introduced for GREAT and ECU services. |
| 7. Maximize the use of Federal and State transit funds. Conversion of the ECU routes to public service would assist with this. |
| 8. Create a new Public Transportation Authority (PTA). This would initially cover GREAT and PATS, and would be an inter-local agency. |
| **Long Term (beyond two years)** |
| 9. Lobby the legislature to allow the PTA to raise its own funds. |
| 10. Expand PTA membership to ECU and PCMH, thus providing the greatest co-ordination of services. |
| 11. Continue service expansion, bringing Greenville up to the peer average of service-hours. |
| 12. Continue capital enhancements, including identifying locations for potential transit or intermodal centers. |

## Student Opinions of Transit

The study included surveys of ECUSTA passengers, which shed some light on attitudes and priorities. Some points to note are:

- When respondents were asked about the importance of various service attributes, punctuality, frequency and safety were seen as most important; however, when asked about performance on the same attributes, these were among the topics on which performance was felt to be worst.

- On the same list, 'destinations served' was middle-ranking in both importance and performance. 'Feeling safe around the other passengers' and 'Bus stops are clean and safe' scored relatively low on importance and relatively high on performance.

- Respondents were also asked for suggestions on how to increase usage of ECUSTA services. The most common single suggestion, among both on-campus and off-campus students, was 'increased service / routes', with 'schedule / reliability' second.

- Only a minority of students had heard of GREAT when prompted, and fewer than 10% of students had ever used GREAT services.

Their reasons for not using GREAT are worth exploring in detail, as this may have a bearing on the value of a transportation center. The survey asked a series of questions aimed at drilling down to this. About two-thirds of students living off-campus had never heard of GREAT (the

figure was higher for students living on-campus but this was to be expected)[13]. More than 90% of students, even those living off-campus, had never used GREAT[14]. The main reasons given for not using GREAT were unfamiliarity, lack of need, or a preference for car travel; respondents did not cite perceptions about the GREAT service[15].

A further survey question explored this further by asking whether students would use a *free* GREAT service that took them where they wanted to go at the right time. The answers were fairly positive, with 57% overall saying they would be somewhat likely or very likely to do so[16]. The study commented that "if the image [of GREAT] was poor, the students would not answer yes under any circumstances…These results imply that the challenge facing GREAT in getting more student riders is a service related challenge and not an image related challenge."

This is reinforced by the detailed reasons given by students for their answers (Table 6.3). Convenience and cheapness were the main attractors, at least among people who were already ECU bus riders. Interestingly, safety concerns about city buses were only raised in significant numbers by students who never used the ECU buses either.

### Table 6.3: Students' Reasons for Potentially Using or Not Using GREAT

| Categorized Reasons | On-Campus Survey | | | Off-Campus Survey | | |
|---|---|---|---|---|---|---|
| | Heavy ECU User | Light ECU User | Never Use ECU System | Heavy ECU User | Light ECU User | Never Use ECU System |
| **Positive** | | | | | | |
| Convenient | 23% | 21% | 9% | 9% | 7% | 6% |
| If it went where I wanted it to go | 18% | 14% | 3% | 2% | 1% | 1% |
| Cheaper | 12% | 15% | 3% | 6% | 7% | 6% |
| **Negative** | | | | | | |
| Prefer to use own car | 9% | 17% | 34% | 26% | 26% | 32% |
| Don't feel safe on city bus | 0% | 2% | 13% | 1% | 3% | 2% |
| No need to use bus | 2% | 3% | 3% | 6% | 8% | 8% |
| **Neutral** | | | | | | |
| It's practical | 1% | 1% | 0% | 1% | 0% | 0% |
| Depends on the schedule and stops | 2% | 1% | 0% | 1% | 3% | 1% |
| Would consider it for no particular reason | 0% | 1% | 3% | 3% | 1% | 3% |
| No Response | 25% | 20% | 13% | 37% | 34% | 33% |

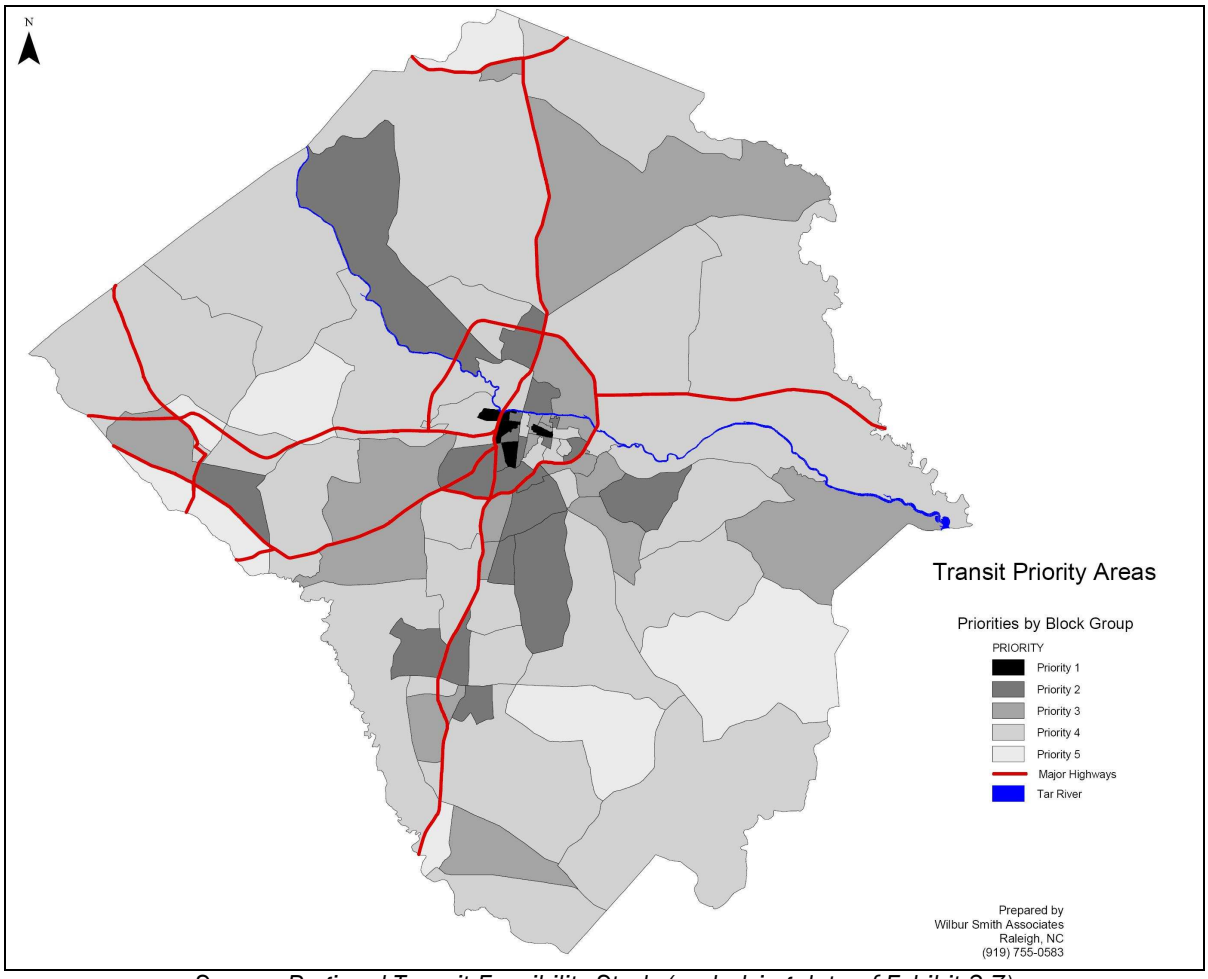
*Source: Regional Transit Feasibility Study, Exhibit 2-14*

[13] RTFS Exhibit 2-10
[14] RTFS Exhibit 2-11
[15] RTFS Exhibit 2-12
[16] RTFS Exhibit 2-13

### Transit Propensity and Recommended Service Expansions

The RTFS used 1990 Census data to identify the locations in Pitt County that were most likely to need and to use transit services, based on the residents' socio-economic characteristics[17]. The end result was a priority score for each Census Block Group (Figure 6.1). The highest-priority areas were inner areas of Greenville, already served to some extent by GREAT. Other high-priority areas were in other parts of the county, including parts of Winterville and Ayden; only one of these areas had existing GREAT service, although all are served by PATS.

**Figure 6.1: Transit Priority Areas Identified in the Regional Transit Feasibility Study**




*Source: Regional Transit Feasibility Study (underlying data of Exhibit 3-7)*

The RTFS also examined initial 2000 Census data, and concluded that the 1990 results remained broadly accurate, with overall demand likely to have increased. Transit potential was likely to have increased in Greenville, Winterville and Simpson (due to their population growth) but to have possibly decreased in Farmville and Ayden.

On the basis of this analysis, the RTFS recommended some priorities for potential additional fixed-route services:

[17] The methodology is explained in the RTFS.

- The top priority would be a route south from Greenville to Winterville and Ayden. This was estimated to potentially serve 170 riders (people, not daily trips), assuming an hourly or twice-hourly service, although this estimate was necessarily a broad one. Continuation south to Grifton was not recommended, but a route that took in the high-priority area in south-east Greenville would be particularly useful.
- The second priority was a route from Greenville to Simpson.

The remaining priority areas outside the city were the Belvoir area and Farmville, but these were seen as difficult to serve productively. Interestingly, the report did not address possible improvements for the priority areas within inner Greenville, which currently receive a basic GREAT service.

### Future Role of ECUSTA Red and Blue Routes

The study's recommendations also included opening the ECUSTA Red and Blue routes to public service, because they served areas of interest to the public (the medical district and shopping areas, respectively). The study saw these as becoming jointly-funded routes, with GREAT taking over operations and ECU students riding for free. They would be half-hourly express routes, with few local stops en route, and would serve both the ECU transfer point at Mendenhall and the GREAT transfer point downtown. They would provide about 40% of the increase in service hours needed to bring Greenville in line with its peer group. However, this recommendation also had some opposition, and was not implemented.

### Implications for the Transportation Center

*The center's role in meeting the challenges and recommendations identified by RTFS:* The transportation center concept would help to meet two of the challenges identified in the study: connecting the services better and improving the quality of facilities at transfer locations. It would also be in line with the specific recommendation on transit centers. The RTFS' intention seems to have been to develop a set of transfer points (with limited facilities) at key locations, but the concept of a landmark central facility is still consistent with this, as it does not preclude improved facilities at other locations such as the hospital.

Nevertheless, there would still be issues related to service-levels, overlapping services, funding and fares. Although the center would not directly assist these, it is possible that the center would provide a springboard for addressing them further.

*The center's role in increasing student use of GREAT:* The previous section reported the RTFS' findings that 8% of students (in 2000) were served only by GREAT and that 37% were served by neither GREAT nor ECUSTA (Table 5.2 and Figure 5.5). This suggests that there is a small market for students to use GREAT, on its current route network, but a large market for students to use GREAT if its network expanded in future – particularly into south-east Greenville.

The survey results suggest that this market could indeed be tapped, if the GREAT service were convenient and cost-effective. The center could contribute to improving the convenience, depending on the extent to which any future GREAT routes would serve the campus directly. For example, future GREAT routes serving south-east Greenville might well run past the campus irrespective of any transit center. Alternatively, a center on or very near main campus would be highly attractive for students traveling to or from any part of the city. Less conveniently, a center that offered connections between GREAT and a campus shuttle (or

similar) could also be valuable. However, whatever the contribution of the center, the other issues such as fares and frequency would still need to be addressed.

*Implications of the Recommended Service Expansions:* The suggested new services to Winterville and Simpson would add to the space requirements for the center. These or similar services, outside the city limits, remain a local aspiration but as yet have not found funding.

*Future Role of ECUSTA Red and Blue Routes:* Although this proposal was not taken forward, it demonstrated that there is potential for public service on these axes and confirms the potential for increased space requirements at the center in future.

## 6.3 Transportation Improvement Program

Table 6.4 lists the main projects planned for Greenville and the rest of Pitt County in the statewide Transportation Improvement Program (TIP). These include the Greenville south-west bypass, currently at the planning stage, and the Tenth Street Connector which was described in Section 4 above. Other widening or relocation projects are planned for US 258, NC 33 and a number of roads in Greenville itself. Other planned projects include greenway sections in Greenville and in the north-east part of the county, additional buses for GREAT, and the transportation center. The funding earmark that has been obtained for the latter two projects is described in Section 12 below.

Other than confirming that the transportation center is in the TIP, the main implications for the center arise from the Tenth Street Connector. These were discussed in Section 4 above.

## Table 6.4: Selected Projects in Pitt County from the 2006-12 STIP

| Location | Description | ID | Schedule |
|---|---|---|---|
| **Highway projects** | | | |
| US-258 (Kinston-Farmville-Tarboro) | Multi-lanes on new location | R-3308 | Post years |
| NC 11-903 Greenville Southwest Bypass (NC11 to Greenville Bypass) | Four-lane divided facility on new location, including bypass of Winterville | R-2250 | Planning/design in progress; construction post-years |
| NC 33 (US 264 in Greenville to US 64 south-east of Tarboro) | Widen to multi-lane | R-3407 | Planning/design in progress; construction post-years |
| Evans St & Old Tar Rd, from Main St Winterville to Greenville Blvd | Widen to multi-lane | U-2817 | Planning/design in progress; construction post-years |
| Tenth St connector (Memorial Dr to Evans St) | Multi-lanes, part on new location, with grade-separation at CSX railroad | U-3315 | Planning/design in progress; construction FFY09 |
| US 264 - NC 33 Connector | Four lane divided freeway on new location with bridge over Tar River | U-3430 | Post years. Unfunded |
| Fire Tower Road (Davenport Farm Road to east of Corey Road) | Widen to a five lane facility, some new locations | U-3613 | Planning/design in progress; construction ffy06 and post years |
| 14th Street | Grade-separation at CSX railroad | U-3839 | Post years. Unfunded |
| **Enhancement projects** | | | |
| Coastal Carolina Trail, Stokes to Pactolus. | Rail trail | E-4703 | Scheduled for feasibility study |
| South Tar River Greenway (south side of Tar River, from Town Commons to Green Mill Run Greenway) | Construct greenway | E-4702 | Planning/design in progress; construction FFY 06 |
| **Transit projects** | | | |
| Greenville | Expansion buses | TA-4773, 4905, 4924, 4925, 4949, 4950 | Each year FFY 06 to FFY 11. FFY 06 is funded |
| Greenville | Replacement buses | TA-4774 | FFY 12. Unfunded |
| Greenville | Intermodal Transportation Center | TD-4716 A/B/C/D | Design & Land Acquisition FFY 06, Construction FFY 07 |
| Greenville | Preventive maintenance and miscellaneous capital items | TG-4765 to 4769, TG-4909, TG-4910 | Each year FFY 06 to FFY 12 |

*Source: NCDOT State Transportation Improvement Program 2006-12. Excludes bridge projects, transit operating/ maintenance assistance, and some minor projects. This table does not show the recent congressional earmarks of $2,979,504 for capital projects in FFY 06 through FFY 09.*

## 6.4 Rail Proposals

The national context for rail is that despite the precarious financial state of Amtrak, many states (including North Carolina) are supporting long-distance rail services and/or developing plans for expanding the network with State support. North Carolina already supports the *Piedmont* and *Carolinian* services.

Figure 6.2 summarizes the existing, proposed and potential rail services in eastern North Carolina. The future of the proposals is heavily dependent on the long-term funding and organizational picture for inter-city rail service, which is currently unclear.

### Richmond-Raleigh-Charlotte Corridor

NCDOT has been gradually improving the infrastructure on the Raleigh-Charlotte corridor, in order to reduce journey times and increase reliability. There are near-term aspirations to increase the daily service level from two round trips to four, with journey time reducing from 3 hours 20 minutes to 2 hours 50 minutes[18].

The federally-designated Southeast High Speed Rail Corridor runs from Washington, DC to Richmond VA, Raleigh and Charlotte, continuing from both Charlotte and Raleigh to South Carolina, Georgia and Florida. Based on existing railroad corridors, the route would be gradually upgraded to allow 110 mph passenger service, linking with the existing North-East Corridor. Planning studies are in progress, with the North Carolina and Virginia elements relatively advanced.

The current intention is that instead of running through Rocky Mount and Wilson (as per the current *Carolinian*), the high-speed corridor would use the partly-abandoned route between Richmond and Raleigh via Henderson. This means Greenville's connection to high-speed services would be at Raleigh, although long-distance services through Rocky Mount and Wilson to South Carolina and beyond would likely remain on that route.

### New Routes

The Transport 2001 Commission envisaged that "expansion of rail passenger service to an eventual intrastate network gives an exciting, high profile backbone for the overall, statewide, public transportation network" that the Commission sought. Several corridors were recommended for study, including Raleigh-Wilson-Greenville.

NCDOT's current plans are focused on the Salisbury-Asheville corridor and the potential routes from Raleigh to Wilmington, both of which have a degree of momentum. The nearest the latter comes to Greenville is at Goldsboro, and there is currently no suggestion that Greenville would be linked to this project.

However, the Eastrans Commuter Rail Alliance has been advocating commuter service on the corridors from Raleigh to Goldsboro and to Wilson. This is relevant to Greenville because a Raleigh-Greenville link, as suggested by the Transport 2001 Commission, would almost certainly use the Raleigh-Wilson corridor. This is the Norfolk Southern route that continues to Greenville and beyond.

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[18] *Amtrak Strategic Plan FY05-09* (June 29,2004), page A-12

The feasibility of Raleigh-Wilson service was assessed by a study[19] in 2004. The study concluded that commuter rail service was feasible in both corridors. Capital costs for the Raleigh–Wilson corridor were estimated at $45m for a low-cost alternative and $165m for a high-cost alternative. The annual operating costs were estimated at $2.4m and $6.3m respectively. The journey time between Raleigh and Wilson was estimated at 70 minutes for the low-cost alternative (starting at West Wilson, with four intermediate stops) and 98 minutes for the high-cost alternative (starting at downtown Wilson, with 11 intermediate stops); the extensive curvature on part of the route contributed to the slow journey-times.

Ridership projections were beyond the scope of that survey, but estimates were made of the ridership necessary for the project to become competitive for federal funds. From Wilson to Raleigh, 100 daily riders (i.e., 200 daily trips) would be required under the low-cost alternative, representing about a 9% market share on that flow. The high-cost alternative required much higher numbers.

The study brought out a number of points that are particularly relevant to the potential for rail service in Greenville:

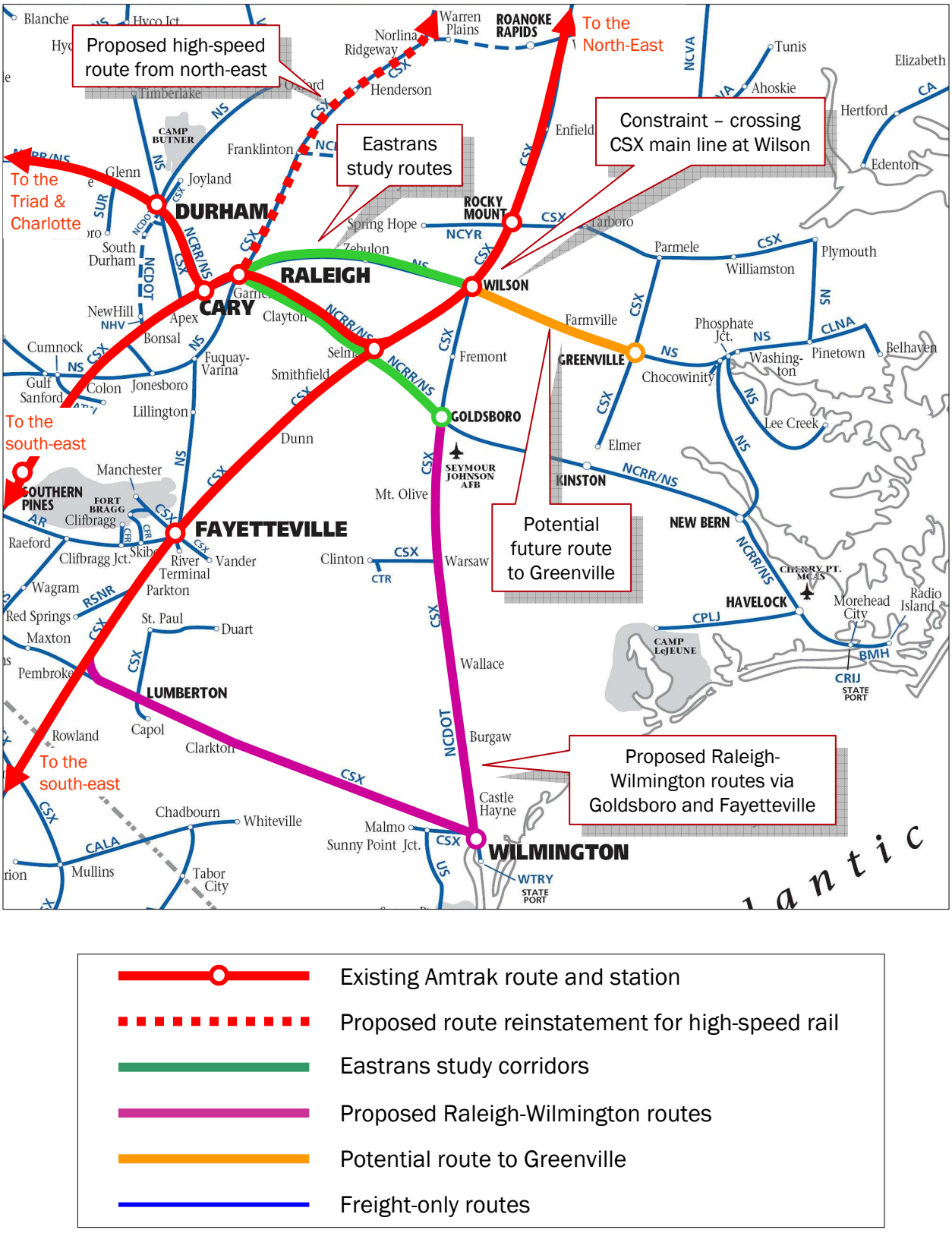
- The railroad corridors are owned and operated by private companies who have freight transport as their core business. They would evaluate any proposal to use their assets in the same manner as any other corporation. The possible impact on freight operations would be crucial, and there would be operational and financial issues to address.
- There would be constraints at Wilson. The downtown station is located on the CSX north-south main line, not the east-west Norfolk Southern route that leads to Greenville. For this reason, the Eastrans report assumed a West Wilson station in the low-cost option, and a new spur track to the downtown station (avoiding use of the CSX main line) in the high-cost option. A further problem for Greenville, apart from the Wilson station location, is that the continuation to Greenville would require crossing the CSX main line at grade (likely unacceptable in operating terms) or major works to avoid this.

### Implications for the Transportation Center

This context suggests that it is reasonable to consider potential passenger rail service when planning the transportation center. The reasons are summarized in Section 7, which also examines the implications for the center's location and design.

[19] *Eastrans Commuter Rail Feasibility Study*, Wilbur Smith Associates for the Town of Knightdale, April 2004. http://www.ci.knightdale.nc.us/government/documents/other/eastrans_final_report.pdf

## Figure 6.2: Existing, Proposed and Potential Passenger Rail Services in Eastern NC



## 6.5 Downtown Parking Study

The *City of Greenville Uptown Parking Study Update*[20] in 2004 examined the current and future adequacy of the downtown parking supply.

The current supply was ample, with around 3,100 off-street spaces (mostly privately-owned) at 53% occupancy and around 400 on-street spaces at 57% occupancy. The likely downtown developments through 2006 were mainly clustered in the four blocks along Evans Street between Third and Fifth Streets. The existing parking supply in these and nearby blocks would accommodate the new demand if the private off-street spaces were made available. However, if only the public parking spaces were available, there would be a shortfall.

The study was specifically asked to examine the potential for additional parking in the center of downtown. This would be achieved, it was concluded, by a new deck at the north-west corner of Fourth Street and Cotanche Street. However, the demand context and the financial structure of downtown parking would make its viability questionable. The study recommended that new developments should attempt to make the best use of existing parking supplies, including existing under-utilized private lots. If this was not successful, the City should look to improving existing lots or adding new surface lots. A new deck should be seen as an option for the future, as it would not be viable today; it would also need to be part of a new, more closely-managed approach to the City's downtown parking.

The study looked at ways of funding a deck. One option was to use tax increment funding, if authorized by the State legislature. Another was to team with a developer, ECU or Pitt County in order to build a multi-use facility. A first-floor retail component was suggested.

Finally, the study suggested that the City should encourage the use of alternative forms of transportation: "Currently there are no disincentives to parking downtown but, in the future increasing parking costs due to parking development could be a factor." There appears to have been no specific analysis behind this recommendation, other than the overall picture revealed by the study.

### Implications for the Transportation Center

The study pointed out the potential for encouraging transit use as (specifically) a means of managing parking demand.

The future deck could be built with the transportation center as part of a multi-use facility, although this could mean building the deck earlier than required, and tying the two projects together would create additional risks for implementation. It is not recommended that the center be placed *underneath* a deck, as in Raleigh and in Greenville SC, for the reasons given in the review of the Greenville SC center, and because that approach would not meet stakeholders' aspirations for a high-quality, attractive facility.

[20] *City of Greenville Uptown Parking Study Update*, Carl Walker Inc, August 2004.

# 7 Accommodating Transit System Expansion and Future Rail Service

This section builds on two key issues described in the previous section – potential expansion of city transit services and possible future rail service – and develops them as key inputs to the transportation center planning process. Firstly, the center's design will need to accommodate future expansion of the city's bus networks, and so the potential extent and shape of this expansion is considered. Secondly, the opportunities and constraints for siting a passenger rail station are discussed, as these will indicate how realistic it is to plan for a rail-served center.

## 7.1 Planning for Expanded Transit Service in Future

To accommodate current service and near-term aspirations, the transit operators have specified a minimum requirement for seven city bus bays (six for GREAT and one for ECUSTA), in addition to the two bays required by Trailways.

However, over the potential life of the center, several factors could lead to an increased level of transit service:

- The City and surrounding areas are growing strongly, potentially doubling in population by 2030. This increase and the accompanying suburbanization would require an increased transit service simply to keep pace with growth.
- Irrespective of growth, the City is keen to expand its transit system to a level that better reflects citizens' needs and city leaders' aspirations. This came through strongly in the stakeholder interviews.
- Similarly, there are aspirations to provide a meaningful level of Rural General Public service to County residents. This could include the center having a hub role, with riders transferring to/from fixed-route services or between vans as operationally necessary from day to day. The same could apply to van service providers from other Counties.
- As ECU expands toward downtown and the tobacco district, the campus bus system will increasingly need to serve that area. This will be particularly important if the expansion includes classrooms, as ECUSTA would need to transport large numbers of students to the area. The transportation center could potentially have a role in this, if it were conveniently located for ECU buildings.
- The various transportation agencies may work increasingly closely for maximum effectiveness, and this may affect the service pattern in future.

It is impossible to directly extrapolate these issues into requirements for space or bus bays at the center, since much will depend on the chosen service pattern. For example, part of GREAT's future expansion would likely include suburban routes to the Medical District that would not pass through downtown. Moreover, a step-change in service levels could be achieved by running more routes on the same pulse (requiring more bus bays) or by doubling the frequency of existing routes (requiring no extra bays, as there would be two pulses each hour instead of one). However, Table 7.1 shows some possible scenarios and their implications for bus bays. The background calculations are given in Annex 5.

Based on these scenarios, it is suggested that the center be planned for a minimum of seven bays (reflecting operators' stated requirements) and ideally for twelve bays. This is in addition to the two Trailways bays. The additional bays could then be used for GREAT, ECUSTA, PATS or other services (such as an airport shuttle or other van operators) as future requirements dictated. Initially, space could be reserved for the additional bays, which would be built when required.

**Table 7.1: Possible Scenarios for Bus Bay Requirements**

| Indicator | Number of bays required |
|---|---|
| Existing GREAT service plus one ECUSTA route | 5 |
| GREAT's short-term aspiration for an additional route | 6 |
| GREAT and ECUSTA minimum requirements (from stakeholder interviews) | 7 |
| In addition to 5 GREAT routes and 1 ECUSTA route, add the aspirations in the Regional Transit Feasibility Study (Shopper Express, Hospital Express, Winterville/Ayden and Simpson routes) | 10 |
| Peer-comparison - similar-sized cities in NC with established transit systems | 6-10 |
| Potential long-term increase in GREAT service-level to peer-average or Transit 2001 levels, allowing for future population growth. Also includes one ECUSTA route. | * 6-13 |

*The two Trailways bays are not included in these figures.*

** Depending on service level and pattern adopted, particularly the relationship between service frequency and number of routes. The range represents various scenarios – see Annex for details.*

## 7.2 Potential Future Transit Ridership at the Center

In the same way that transit service could increase over the life of the center, the number of riders using those services could increase as a result of population increase, service expansion, improved service quality (including the center itself) and downtown revitalization. At this stage, it is only possible to make an allowance for this. The issues are as follows:

- Greenville's population could realistically double in the next 25 to 30 years.
- Even with downtown and inner-area revitalization, the population growth will mainly be in the suburban areas (potentially including annexations). Expansion of services to the new suburbs as they develop, broadly maintaining the existing per capita service level, would capture additional riders. The suburbs would likely be dominated by non-transit-dependent citizens, so ridership would probably not increase in proportion to population growth. However, the growing proportion of seniors in the population and the increasing cost of motoring are two factors that would counterbalance this by increasing the likely use of transit.
- There is a clear consensus that the center should act as a springboard for, and be part of a package that would include, increased bus service levels. Experience from comprehensive service expansions elsewhere suggests that ridership does increase strongly, although the results vary widely[21]. At best, the increase could be in proportion

[21] See TCRP Report 95, Chapter 10: *Traveler Response to Transportation System Changes: Bus Routing and Coverage*, pages 10-7 to 10-9. In technical terms, studies have suggested elasticities varying from +0.6 to +1.0. That is, for every 1% increase in service level, the increase in ridership has been between 0.6% and 1%.

to the increase in service-level. There is evidence that the increases in ridership are stronger in small cities of Greenville's size than in large cities, probably because they are starting from a low level of coverage.

- The Regional Transit Feasibility Study suggested a target of meeting peer-average level of service, representing a near-doubling of the current service. The Transit 2001 report targets were higher still. Further increases would then be necessary in order to keep pace with population growth.
- Conversely, such extensive service expansion would likely involve a shift to two pulses per hour (that is, a half-hourly cycle instead of hourly). By splitting the passengers within the hour, this would reduce the waiting space needs.
- The intended revitalization of downtown and the expansion of ECU into the area would also increase the number of people traveling to or from downtown, many of whom would board or alight at the center.

Reflecting these issues, it is recommended that the passenger facilities be planned for a long-term city bus ridership at 200% to 250% of the current levels. The specification in Section 9 reflects this level of growth. The extra space required could be left vacant for a future extension of the building, or could be built initially and leased-out until required.

## 7.3 Justification for Planning to Accommodate Rail Service

Although passenger rail service to Greenville is not part of the state's formal Rail Plan, it is reasonable to plan for the possibility of future rail service. This is because:

- The nation is experiencing a revitalization of rail travel, and the long-term congestion and energy trends suggest that this will continue.
- The Transit 2001 Commission recommended that service to Greenville be studied.
- If commuter service along the Eastrans corridor went ahead, the incremental cost of extending service to Greenville could be relatively low.
- The development of the South-East High Speed Rail corridor would lead to a demand for feeder services that offer connections to/from places such as Greenville, beyond the corridor.
- There are signs that freight railroads are now recognizing that passenger services on their infrastructure could represent a business opportunity, rather than simply a conflict with their core freight business.[22]
- Although Greenville is not on the Rail Plan, the plan is focused on the two long-standing aspirations for new routes, which have political impetus. There is no fundamental reason why Greenville could not take a similar place in future programs.

The most likely service to Greenville would be from Raleigh via Wilson, along the Norfolk Southern (NS) line heading east to Greenville. NCDOT regards this corridor (and its

[22] As reported in the *Southeastern North Carolina Passenger Rail Study* report (July 2005), page 13, and in recent comments by the company's former CEO. This has already been reflected in its agreement with NCDOT for the proposed Asheville service.

continuation to Chocowinity and New Bern) as strategic, and would seek to preserve the route if it were ever abandoned. NCDOT advised that Greenville would likely be the eastern terminus of any passenger service.

## 7.4 Rail Station Location Issues

The existing railroads through central Greenville were described in Section 5. Figure 7.1 shows this area in detail, including some of the constraints and opportunities.

It is assumed that any future service from Wilson and Raleigh would come in from the west, on the Norfolk Southern (NS) route. The ideal station site would:

- involve minimum conflict with freight trains;
- accommodate trains at a straight platform without blocking grade crossings;
- be close to downtown, the tobacco district and ECU; and
- be co-located with the other transportation services as part of the center, and hence would meet the center's site selection criteria.

Some potential station sites are sketched in Figure 7.2. These are simply possibilities, and their feasibility has not been assessed. However, they show that all the potential sites have pros and cons. In particular, there would be a trade-off between proximity to downtown and operational convenience.

Ideally, the center would allow for a future rail station as part of the facility. The next-best arrangement would allow for a station to be adjacent or across the street (as in Rocky Mount and Wilson respectively). However, the optimum site for the other transportation services may be remote from a railroad track. There is a consensus that the center should not be forced alongside a railroad if this would jeopardize its effectiveness for the other services. This is because:

- the other services are already in existence, whereas rail service is merely a possibility;
- the other services represent the center's core demand; and
- any future train service would be relatively infrequent, perhaps as little as one train per day. If necessary, a dedicated shuttle could run between the center and the station to connect with train arrivals and departures.

NCDOT Rail Division has advised that it examined possible station locations in Greenville some years ago. Its aim was to get the station as close as possible to downtown and ECU, and it therefore favored a station in the tobacco district (similar to option D in Figure 7.2).

NCDOT has also provided advice about the crossing near Beatty Street, where the NS and CSX routes cross at grade (Figure 5.12). In Greenville, both railroads operate under written orders and radio contact with their dispatchers, rather than under signals. The crossing is controlled by Stop Boards. Similar to an all-way stop on a road, trains proceed on a first come, first served basis. All trains must stop at the crossing and contact the dispatchers by radio. If no conflicting movements are occurring on the other track, the train can proceed.

NCDOT considers that this crossing is only a relatively minor obstacle to passenger rail service. Unlike at Wilson, where a busy double-track main line would be crossed, CSX and NS have few trains in Greenville. The current 'stop' rule, in NCDOT's view, would only result in very minor delays to any passenger service. If passenger service did come to Greenville in future, NCDOT would likely pay for signals at this crossing so that trains on the NS line would no longer need to stop if the route was clear.

## 7.5 Rail Ridership Assumptions

The functional specification (section 9) includes an estimate of the incremental space needed for future rail facilities. No ridership estimates have hitherto been prepared for Greenville (although ECU is currently undertaking a survey on potential ridership), so assumptions had to be made on potential ridership and hence the amount of space needed

The space requirements are based on an assumed annual rail ridership of 40,000, representing around 55 passengers arriving and 55 departing daily. This is broadly equivalent to the current ridership at Durham, Fayetteville or Rocky Mount, and reflects Greenville's future growth, its potential railhead role, and the likely service-pattern, and the competition from US-264, as well as potential overall growth in the state's rail use. The background data are listed in Annex 5.

As a worst-case scenario for planning purposes, it is assumed that the riders are on one train per day which arrives and leaves in short succession; this concentrates all daily riders into the station at once.

In the same way as with the space to accommodate transit ridership growth, the space required for rail could be left vacant to be built later, or could be built initially but leased out until required (as in Cary).

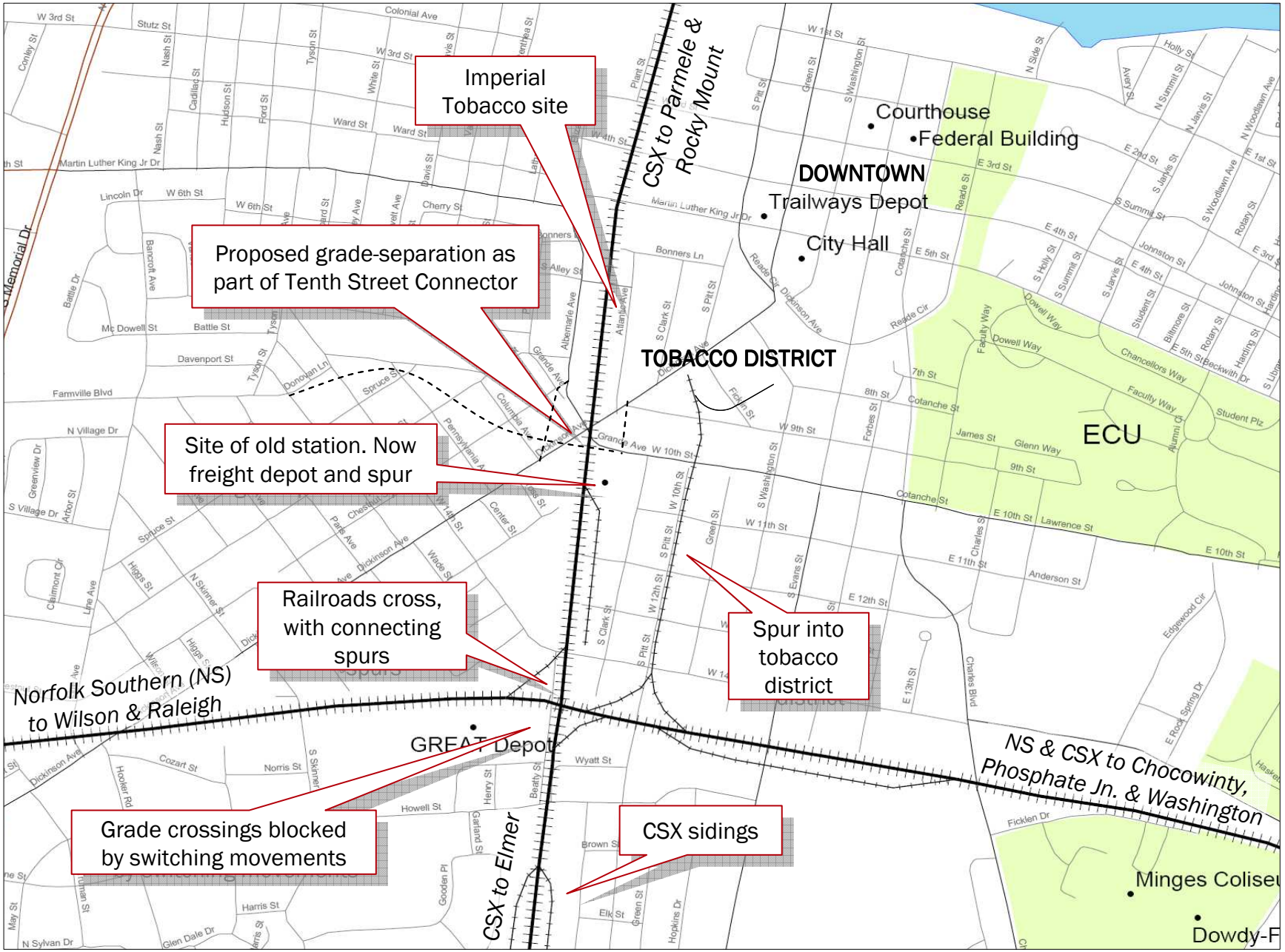
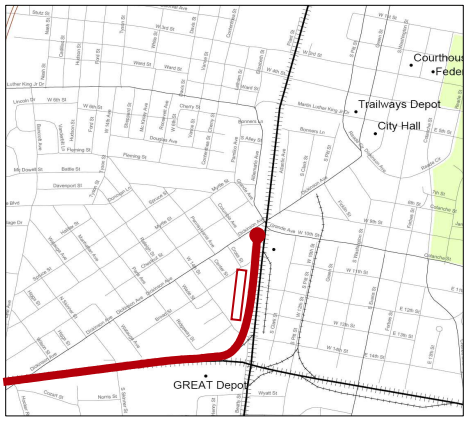



**Figure 7.1: Rail Constraints and Opportunities in Central Greenville**

## Figure 7.2: Potential Station Sites

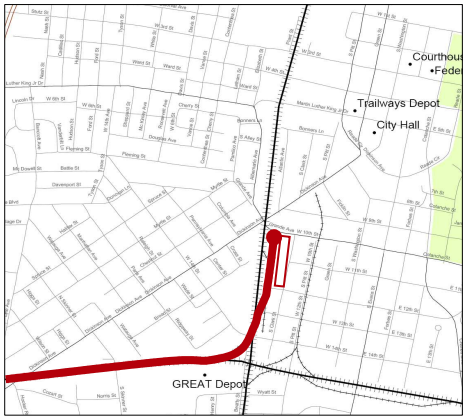
These drawings indicate potential options for a future station location in Greenville. They are intended to assist a future site selection study, by showing how an intermodal center might be able to accommodate future rail service. They do not represent engineering designs or specific proposals, and their feasibility has not been studied. All layouts are indicative only.




**(a) Non-conflicting spur alongside CSX line**

✓ No conflict with CSX services
✓ Can accommodate a full-length platform
✓ Train would stand clear of grade crossings

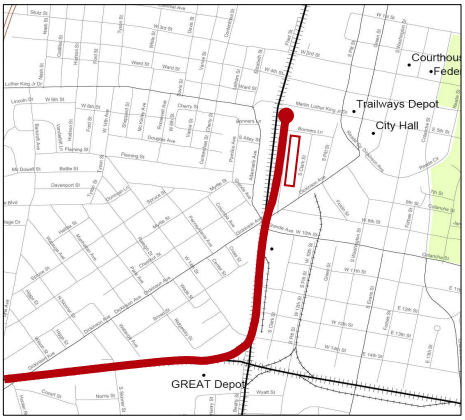
× May require realignment of CSX track to east and/or overhead cables to west
× Platform would be some distance from downtown and on opposite side of track




**(b) Spur off CSX line – station at Freight Depot site**

✓ Avoids blocking CSX services while standing at station
✓ Can accommodate a full-length platform
✓ Train would stand clear of grade crossings
✓ Convenient for tobacco district
✓ 'Gateway' location, especially with Tenth Street Connector

× Movement conflicts with CSX services
× Still not very convenient for downtown




**(c) Spur off CSX line – station at Imperial Tobacco site**

✓ Avoids blocking CSX services while standing at station
✓ Can accommodate a full-length platform
✓ Train would stand clear of grade crossings
✓ Convenient for tobacco district, not far from Downtown

× Movement conflicts with CSX services
× Platform would be some distance from downtown

(continued on next page)

# Figure 7.2: Potential Station Sites (continued)

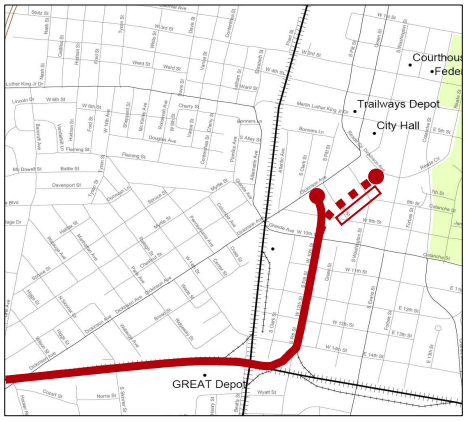



*Diagram shows the existing spur (solid line) and a possible variation for a station closer to downtown (dotted line)*

### (d) Spur into Tobacco District

✓ Avoids blocking CSX services while standing at station
✓ Wye may be useful if train is locomotive-hauled
✓ Train would stand clear of main roads
✓ Convenient for downtown and ECU
✓ Convenient for tobacco district
✓ Potentially high-profile location
✓ Platform length (650' at most) can accommodate likely needs

× Movement conflicts with CSX services
× Impact on neighborhood south of Tenth Street
× Could require property acquisition, maybe street closures
× Ambitious option - potentially difficult and expensive

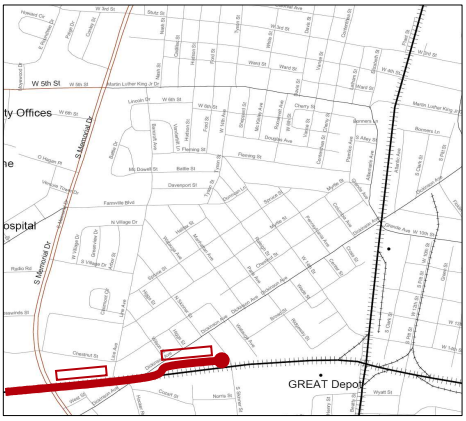



*Diagram shows two potential station locations*

### (e) Station on Dickinson Avenue or Memorial Drive

✓ No conflict with CSX services
✓ Can accommodate a full-length platform
✓ Train would stand clear of grade crossings
✓ Good railhead role – easy access by car

× Not convenient for downtown, ECU or tobacco district - would need bus or trolley connection
× Poor fit with intermodal center concept

# 8 Stakeholder and Public Opinions

This section describes the interviews undertaken with transportation operators and other civic stakeholders. It also describes the views of citizens and members of the ECU community who took part in the study process.

Table 5.4 summarizes the stakeholder interviews. Only a summary of their views are given in this report. The views of citizens and the ECU community are summarized here, but are listed in detail in Annexes 2 to 4.

**Table 8.1: Summary of Stakeholder Interviews**

| Organization | Interviewee Name | Interviewee Title | Interview Method | Interview Date |
|---|---|---|---|---|
| City of Greenville, GREAT and Greenville MPO | Mayor and Council Members | Council Members | Individual Meetings | December 14, 2005 |
| | Wayne Bowers & Bill Richardson | City Manager & Deputy City Manager | Meeting | December 14, 2005 |
| | Merrill Flood | Planning Director | Meeting | December 8, 2005 |
| | Tom Tysinger | Director of Public Works | Meetings | December 8, 2005 and January 20, 2006 |
| | Nancy Harrington | Transit Manager | | |
| | Ron Svejkovsky | Transportation Planner | | |
| Public Transportation and Parking Commission | Bob Thompson | Chair | Meeting | December 8, 2005 |
| | Commission Members | | Presentation at Special Meeting | February 27, 2006 |
| Redevelopment Commission | Merrill Flood | Planning Director, City of Greenville | Meeting | December 8, 2005 |
| Greenville-Pitt County Chamber of Commerce | Suzanne D. Sartelle | President | Phone call | February 16, 2006 |
| Pitt County | John Minges | County Commissioner | Meeting | January 13, 2005 |
| PATS | TBC | TBC | Meeting | January 13, 2005 |
| PATS' Key Agency Customers | Margaret Dixon | Supervisor, Work First | PATS Board Meeting | December 8, 2005 |
| | Marilyn Williams | Director, United Way | | |
| | Billy Ross | Vocational Rehabilitation Supervisor | | |
| | Dan LeRoux | Director, ECVC | Was not at PATS Board Meeting | |
| | Dr Charles Byrd | Director, Pitt County Council on Aging | Phone call | January 6, 2006 |
| ECU Administration | Invited Representatives | | Meeting on Campus | December 8, 2005 |
| ECU Faculty/Staff/Students | | | | |
| ECU Student Transit | | | | |
| PCMH | Charles Mayo | Director of Transportation | Phone call | January 20, 2006 |
| Trailways | Elvis Latiolais | General Manager for NC | Meeting | December 21, 2005 |
| Taxi operators | All operators were invited to the first Public Meeting. Justyn Hunter of Courtesy Cab attended. This is the largest operator. | | | |
| | Israel Fornville | Owner, Courtesy Cab | Phone call | January 6, 2006 |
| Airport | Jim Turcotte | General Manager, Pitt-Greenville Airport Authority | Phone call | January 5, 2006 |
| NCDOT – Transit | Mike Kozak | Asst. Dir. for Metropolitan Transportation | Meeting | August 9, 2005 |
| | Jeff Crouchley | Transportation Planner | | |
| NCDOT – Rail | Pat Simmons | Director, Rail Division | Meeting | August 17, 2005 |
| | Allan Paul | Assistant Director for Operations, Rail Division | Phone call and correspondence | February 13, 2006 |

## 8.1 Transportation Operators

The city's transportation operators were interviewed by the study team. Their views on the transportation center concept are summarized below. The full meeting notes are not reproduced in this report, but their specific functional requirements for the center are discussed in Section 9.

### *City of Greenville / GREAT / Greenville MPO*

GREAT supported the idea of a downtown transit center, which would become its main transfer location. GREAT could well expand substantially in future, but this would probably include some suburban routes which would not need to be accommodated at the center.

GREAT would probably want the center to have a facility manager plus a customer-fronting information/ticketing desk. The latter could deal with all transportation enquiries at the center if required, and could also provide visitor information. The desk would also sell bus passes, replacing on-board sales. GREAT would also like to see leasable space and food available within the center. GREAT also wishes to locate its management offices and driver facilities in the center.

The preferred organizational structure was to have the information/ticketing person reporting to the building manager, with other tenants' staff operating in parallel.

### *Pitt County Memorial Hospital*

The hospital's future plans are centered around the existing campus, but the hospital supports the center. Patients and staff use GREAT to reach the hospital, so improvements for GREAT riders would benefit the hospital community. Hospital shuttles would not use the center. Instead, people would use GREAT to get to the medical campus and hospital buses would have a local distribution role. There is also the possibility of a mini-hub at the hospital, providing easy connections between GREAT buses, ECUSTA buses and hospital shuttles.

### *PATS*

PATS anticipates that its main role in the center would be to transfer Rural General Public (RGP) riders to/from GREAT service. (Alternatively, the transfers could be made at the outer ends of the bus routes.) The volume of PATS riders through the center would therefore depend on the amount of RGP service funded in future by the County and other funders. Van-to-van transfers of RGP riders would be incidental, and would only occur if they were operationally needed on a particular day. The human services trips (for agencies) and ADA trips (for GREAT) would likely remain curb-to-curb. PATS would prefer to keep its administration and dispatch at its existing maintenance site, for practical reasons.

### *Trailways*

Trailways wants to be part of the Greenville transportation center. Its existing Greenville depot is leased and will soon need substantial expenditure. The company is pleased with the centers it already uses in other cities, which have resulted in increased ridership every time. They are also efficient to operate (which is important) and popular with riders.

Trailways' experience suggests downtown locations are generally best. Whenever it had tried moving to an edge-of-town location, ridership had decreased. It prefers to lease its facilities, with the rent usually reflecting the operating cost of its facilities. Experience also suggests that the design should aim to minimize maintenance and operating costs, by having a compact layout and using low-maintenance materials. The most economical arrangement is to have everyone together in one building, sharing facilities.

Trailways usually hires a contractor to sell tickets, on a 'Commission Agency Agreement'. The City could be the agent, with the City transit employee also selling Trailways tickets (this is the arrangement in Kannapolis, MD).

### *ECU Student Transit Authority*

ECUSTA staff support the idea of the center. Although it would not be a hub for their service, they would likely run at least one bus route through the center. This would:

- make it easier to get to campus (by offering a connection from GREAT buses) from the areas that ECUSTSA could not serve itself; and
- make it easier for students to connect with other services, particularly Trailways. Many students currently use Trailways to get to or from home at the start or end of the semester.

ECUSTA sees its main future challenges as:

- Travel between the main campus and the medical district. This would depend in part on how parking at the latter was organized: whether people's permits would allow them to park on both campuses or just on one campus.
- Serving new apartment complexes. The service to North Campus Crossing would open a can of worms; people living in all the new apartments would be wanting ECUSTA service.
- A lack of amenities for riders. Bus shelters were needed. ECUSTA was working with the University's planners to identify areas on campus that could become mini-hubs with better amenities.

In terms of the relationship between ECUSTA and GREAT services, staff felt that:

- Students would appreciate having GREAT service to the outlying areas that ECUSTA could not serve, but only if the service was frequent and ran close to their homes.
- A transportation center would encourage students to use GREAT more, but only if it represented a better service than using their car. Journey time was usually the key factor. Students also needed to be comfortable with the other riders.

These views confirm the suggestions in Sections 5.4 and 6.2 that the center could help to improve access to the campus for the many students and staff who do not live near ECUSTA routes.

### *Taxi Operators*

The City's taxi operators were invited to take part in the public meetings. A representative of Courtesy Cab attended and this was followed-up by the study team. Courtesy Cab supported the idea of the center and would be interested in operating from there. A firm would only need a small dispatch office as its base, in addition to the taxi stand itself.

### *Pitt Greenville Airport*

Pitt Greenville Airport could become an intermodal hub if necessary. It has the passenger amenities already, and is designed for large numbers of people, but is only busy at certain times. However, the airport recognizes the other advantages of a downtown location.

### *NCDOT Rail Division*

The success of the NCDOT-sponsored *Piedmont* service had encouraged NCDOT to develop proposals for additional services. It had also created interest in downtown redevelopment in towns that have or could have active rail stations. In the longer term, improvements in the high-speed rail corridor could make feeder services more popular and feasible. The Eastrans study had found that a Raleigh to Goldsboro service was feasible, but Raleigh to Wilson was problematic. Nevertheless, service onward from Wilson to Greenville could indeed happen in the future. Greenville would probably be the eastern terminus of any passenger service. NCDOT lists the Norfolk Southern (NS) corridor to Wilson, Greenville and the phosphate plant at Aurora as one that it would protect if the corridor were ever to be abandoned.

NCDOT cautioned that even if rail service were provided to Greenville, a train may be at the station for only a few minutes each day. This meant that the center should not necessarily be predicated on, or centered around, the rail service. Rail service to Greenville should therefore be viewed as a possibility, but investment decisions should not assume rail. Experience suggested

that not all functions had to be on one site, but that good connections and circulation are needed for transfers.

### *NCDOT Public Transportation Division*

NCDOT supports the principle of transportation centers, and works with its Washington, DC office and congressional delegations to secure earmarks for these and other projects. NCDOT is willing to promote any serious project if asked. The usual split of funding is 80% Federal Transit Agency (FTA), 10% NCDOT, and 10% local. State funds would also support projects that had not been earmarked. Local funding had to be committed – this was often a stumbling-block for projects. For federal funding, the FTA would simply need to understand the proposal, the functions and the elements for which FTA funds were sought.

In some small cities, a particular building had been identified as a potential site from the start, whereas the real need was to study the issue and determine whether a center was needed and what its size/components should be. Greenville was therefore taking the right approach, in NCDOT's view.

NCDOT has much practical experience with transportation centers. It is important to allow for future growth. Operating costs should not be forgotten, and allowance should be made for fixing teething problems in the first year. A police substation could be useful to provide surveillance and discourage antisocial behavior. Leasable space would also be useful, to provide busy-ness and informal surveillance as well as income. However, achieving this should be regarded as a bonus. The Greensboro Depot had planned ancillary uses but was struggling to achieve them.

More generally, NCDOT sees opportunities for GREAT and ECUSTA to work more closely.

## 8.2 Civic Stakeholders

As with the transportation operators, the views of civic stakeholders are summarized below (the full meeting notes are not reproduced in this report).

### *Mayor of Greenville and City Council Members*

The Mayor and City Council Members, who were interviewed individually, were positive about the center. There was a consensus that Greenville needed to be able to handle its growth, and would need improved transit to do so. They saw the center as one of a range of transportation improvements that could improve the overall level of service and attract discretionary riders. This included attracting students to GREAT, and serving new citizens who were used to a higher level of transit service. They also saw an opportunity, encouraged by the center, for the area's transportation operators to work more closely for mutual benefit. Several Council Members were also keen to see passenger rail service to Greenville.

Two of the Council Members pointed out the importance of people coming to the medical facilities from other counties. They suggested that a transportation center, with a shuttle to/from the medical district, would help these people to spend their waiting time more productively or pleasantly downtown, instead of having to wait all day at the doctor's office or hospital. The hospital's representative confirmed the value of this idea.

The Mayor and Council Members also raised a number of detailed points that are reflected in the functional specification and site selection criteria.

### *City of Greenville – Planning and Community Development (also representing the Redevelopment Commission)*

The City's Planning and Community Development Department supports the idea of the center, seeing it as contributing to its efforts to revitalize the urban core. One of the center's roles would be as an amenity for the growing residential and commercial population in the urban core.

Evans Street is seen as a spine, with the area south of Reade Street becoming an arts district. There is also the possibility of a Science Center (an ECU project) in this area. An ECU Alumni Center and Hotel is still planned, but would likely be east of Evans Street, rather than west as shown on the revitalization plan map.

A commercial center was planned for the area north of the Tenth Street Connector, to serve West Greenville and the western part of downtown. This was one possibility for locating the transportation center, as it would provide mixed-use opportunities. However, they accepted that this was not a convenient location for the ECU community. The planning staff confirmed that ECU's planned expansion into the tobacco district was a realistic expectation.

### *Greenville Public Transportation and Parking Commission*

The Greenville Public Transportation and Parking Commission is an advisory body, with members appointed by the City Council, and covers GREAT and downtown parking issues. The (then) Chair was interviewed initially, and a presentation was given to the Commission later in the study process.

The Commission supports the idea of a transportation center. GREAT riders would benefit greatly from a pleasant and secure place to wait. The center could also have a useful role in which RGP riders would arrive on PATS and connect into GREAT; the facilities would be useful if this involved waiting-time. In addition, although it was unlikely that the PATS operational base would move to the center, allowing PATS vehicles to lay over at the center could potentially save empty mileage and therefore costs. Finally, the center could also stimulate a better relationship between GREAT and ECU in future.

Following the presentation, the Commission resolved to accept the study and to recommend to the City Council that the center should go ahead.

### *Pitt County*

The County representatives interviewed were supportive. They felt that the City and County would continue to grow and that forward-planning was needed to meet the challenges of that growth. The center would be a community asset. They cautioned that the center's design should avoid running out of space as the transit system grew, and that activity levels would need to be high in order to make leasable space attractive to tenants; a downtown location might be better than one in the tobacco district from that point of view.

### *PATS' Key Agency Customers*

The study team interviewed a number of PATS' key agency customers, most of whom were also on the PATS board. These stakeholders held a range of views.

Several felt the pressing issue to be a lack of Rural General Public (RGP) transportation in the County, particularly between Greenville and the towns. PATS had very little money for RGP service, and rationed it very heavily. Transportation was therefore a barrier. For example, there was almost no transportation for people who just wanted to go to the mall. These stakeholders therefore felt the center should be seen as part of a whole strategy, including service-level improvements that would address other problems. There was the risk that an ambitious transportation center proposal could obstruct other improvements to transportation services. However, they acknowledged that a high-quality transportation center could allow easy transfers between PATS and GREAT service.

One of the agency stakeholders, by contrast, very much supported the idea of the center, both for his needs and for the City as a whole. He saw a role for van-to-van transfers at the center in order to provide transportation most economically (his agency currently uses several providers including PATS). Ideally, each agency's dispatch person could be co-located in the center with the transportation operators' staff, for best coordination.

## 8.3 Citizens

The first of the two public meetings, in December 2005, attracted around twenty-five people. Some of the participants identified themselves as municipal officials or as representatives of NCDOT, the Environmental Advisory Commission, Pitt County Memorial Hospital and West Greenville Community Development Corporation.

Display boards described what the transportation center might include, the potential benefits, examples from other cities, some emerging issues, the next steps in the study, and the questions on which public input were sought. These themes were amplified in a presentation by the study team, which led to a very useful discussion. Comment forms were provided, and these asked the specific questions on which input was sought as well as providing an opportunity for other comments. Annex 2 summarizes the discussion and lists the written comments in full.

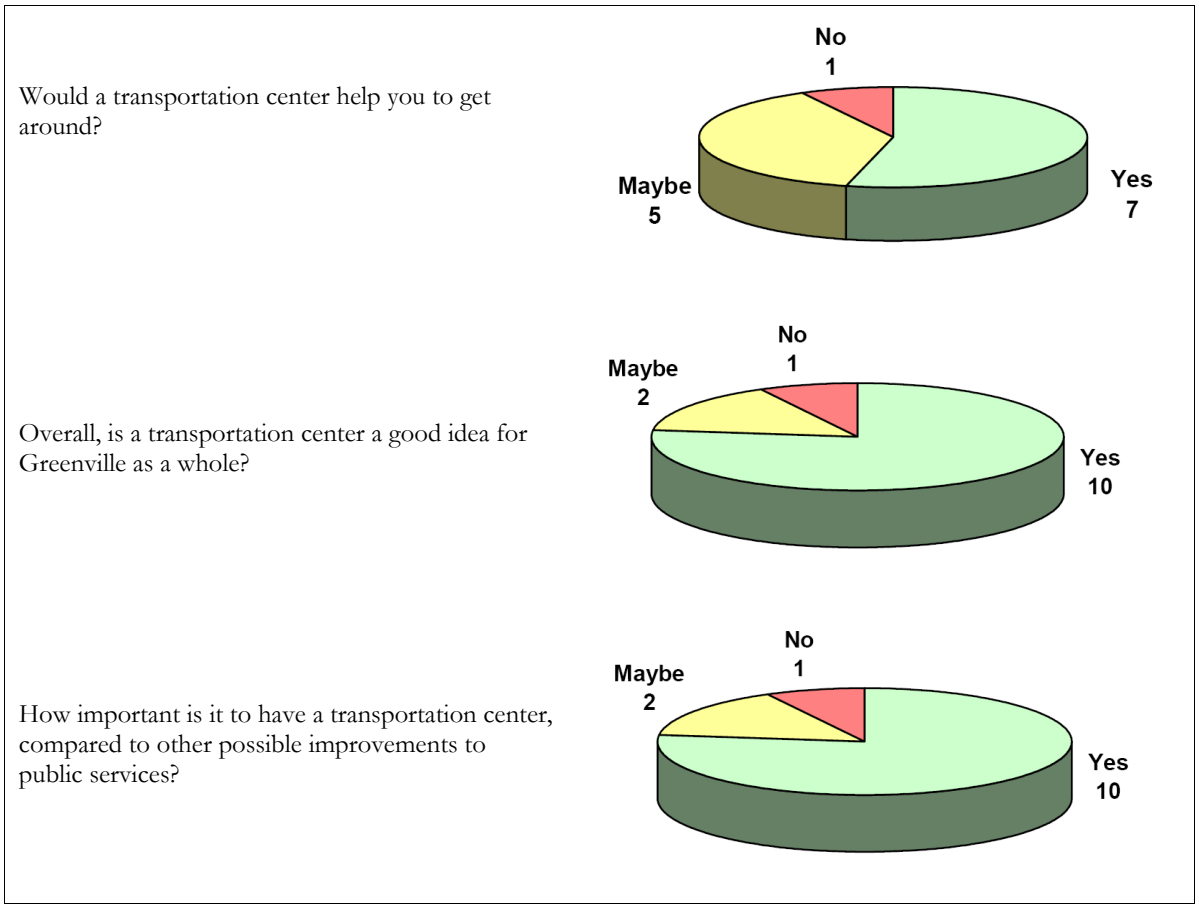
The balance of opinion at the meeting was very positive. Most citizens supported the idea of a transportation center. They felt it would help people get around Greenville, particularly as the city grows. It would make it easier to connect between services and would also make existing transfers more comfortable. Some of the supporters actually felt that increased service levels were a more pressing priority, instancing the hourly headways on GREAT and parts of the city that were not served at all. They would only support the center on condition that it did not divert funds from the other improvements that they wished to see. City staff gave an assurance that the funding streams were separate. Other citizens, agreeing with the need to improve service levels, saw the center as part of a wide-ranging package of improvements to the city's transit system. Citizens were generally looking at both present and future needs; several people regarded the center as planning for the future, as the city's population grew and the transit system expanded. Only one person was against the idea of the center, believing that Greenville was simply not ready for it with its current level of transit.

The comment forms returned after the meeting reflected this range of views. Figure 8.1 summarizes the 'yes/no' answers on the comment forms. The majority thought that a center would help them to get around, and a large majority felt that the center would be good for Greenville as a whole.

A large majority also thought that the center was important compared to other possible improvements to public services. This latter question was deliberately intended to establish whether citizens actually saw the center as an important proposal. Although it was not strictly a fair test of opinion (specific alternative improvements were not given, and the respondents were people with an interest in transportation issues), the only competing priorities listed by citizens were the transit service-level issues that had come up in discussion (nobody suggested that sewer repairs, for example, were more important). Again, citizens commented on the need to plan ahead.

Citizens were also asked about the potential location and facilities. The emerging focus on downtown and the tobacco district was supported. Citizens asked for a safe, attractive center, and listed desirable facilities including restrooms, refreshments and various shops. The example from Spartanburg, SC caught the public eye. Several citizens commented that they liked the 'look and feel' of that center, with the offices above and the police substation to provide security.

**Figure 8.1: Citizens' Responses to the Questions on the Comment Forms**




At the second public meeting, in February 2006, citizens were updated on the emerging conclusions, the outcome of the feasibility assessment, and the emerging design concept. They were asked to consider the proposed facilities and site selection criteria.

The total attendance was 28, including officials. As with the first meeting, display boards were provided and the themes were amplified in a presentation by the study team and subsequent discussion. Trailways and NCDOT representatives were also present and contributed to the discussion. Again, the comment forms asked the specific questions on which input was sought as well as providing an opportunity for other comments. Annex 3 summarizes the discussion and lists the written comments in full.

As with the first meeting, most citizens spoke in favor of the center. Several citizens pointed to the need to expand the city's bus service; some felt that the center would not be useful without this, but others felt that both the center and overall service levels should be addressed. Several citizens commented that existing GREAT and Trailways riders deserved better facilities in any case, and others saw the center as supporting downtown revitalization. There was also a recognition that the expected 80% federal contribution – which was specifically for facilities, not operations – made the center a cost-effective opportunity.

The suggested range of features in the center was broadly supported. Some citizens were entirely happy with the emerging specification, but others commented that the full range of facilities would not be justified immediately. There was support for a center that met current needs but which was planned with future expansion in mind; the level of facilities could grow as necessary. Specific facilities suggested included a police substation, a visitor center, daycare for riders' children, and the ability for the waiting area to serve as a meeting room.

The site selection criteria were broadly supported, and attracted few comments.

## 8.4 The ECU Community

A Campus Meeting was held in December 2005, and was attended by 18 invited representatives of ECU administration, departments, Student Government and ECUSTA.

Annex 4 summarizes the discussion and lists the written comments in full. The balance of opinion was positive. Attendees had mixed views on whether or not the center would benefit them personally, but most felt that the center would be good for the City as a whole. They felt the center would be compatible with the University's future growth and was needed for the City, although the location would determine how much the ECU community would benefit. As with the public meeting, the overall scale of transit in Greenville was also identified as an issue.

# 9 Functional Requirements and Space Needs

This section specifies the center's functional requirements, based on stakeholder and public aspirations and other requirements. The overall design concept is described. The functional requirements are summarized and then listed in detail. Location/access requirements and other design objectives are also listed. Finally, examples of possible layouts are presented, to show how the functional requirements might translate into a design.

## 9.1 Design Concept

Stakeholders have a clear preference for a high-quality center with:

- a climate-controlled main building for the passenger facilities,
- attractive, comfortable and secure indoor waiting areas,
- amenities such as ticketing and restrooms,
- related facilities such as a café,
- sufficient parking space, either on-site or shared with other activities,
- commercial space to provide 'busyness', informal surveillance and income,
- an effective management, information and security presence, and
- low operational and maintenance costs.

Ideally the center should serve all modes of transportation in the same building. It is accepted, however, that the rail station may need to be across the block, or a short walk, from the other facilities, depending on site constraints. It is also accepted that it may not be possible to locate the two facilities so closely at all.

Stakeholders are keen that the center should be seen as part of the community and as part of the urban environment. It should contribute to the area's streetscape, activity levels and sense of place. Likewise, the activities in the surrounding area should contribute to the vitality and attractiveness of the center. The ideal design would reflect this in its layout, its architecture and its connections to adjoining uses.

## 9.2 Summary of Functional Requirements

The functional requirements have been based on this design concept, and include the specific requirements listed by the transportation operators.

### Core Requirements

The core requirements for the center are as follows:

- The operational and passenger/package/baggage facilities required by GREAT and Trailways. This includes bus bays and space within the building.

- Capacity for ECUSTA buses, PATS vans and other van/shuttle services (for example, a future airport shuttle) to drop and collect riders. No other specific facilities are required for these operators, but their riders will count toward the space required for passenger facilities (waiting area, restrooms, etc.).
- A taxi stand plus office space for at least one taxi company.
- Common areas for circulation, restrooms, mechanical and ventilation systems, and building management and security.
- A drop-off area and car parking.
- Provision for passenger rail, even if the rail facilities are not provided initially. This includes a platform and space within the building for waiting, ticketing and baggage-handling.

The space needed for these core requirements is based on the operators' stated requirements and wider design standards. The requirements for rail services assume that rail will share the main site and building, so that common facilities such as restrooms can be shared. If the rail facilities are to be in a separate building, these common facilities will need to be duplicated, but the duplicates would not need to be constructed as part of the initial center.

### Additional Desirable Facilities for Riders

There are additional facilities which are highly desirable in order to make the center most useful and attractive to riders. These are:

- a café and retail space;
- one or more car rental offices and associated parking space; and
- a police substation.

These additional desirable facilities have more flexibility over the amount of space that should be provided. The list of space requirements shows reasonable allowances for typical facilities, but these could be increased or decreased, depending on the size and layout of the site and other opportunities or constraints.

### Other Desirable Functions

It is also desirable to provide other leasable space, whose user need not be connected with transportation. This would provide both activity ('busyness' and informal surveillance) and income to offset operating costs.

These additional desirable facilities have more flexibility over the amount of space that should be provided. The list of space requirements shows a small allowance for small-scale facilities, but these could be increased or decreased, depending on the size and layout of the site and other opportunities or constraints. For example, a floor of office space could be built above the passenger facilities for simply the incremental cost of the extra floor; the space built would depend upon the footprint of the building.

### Room for Expansion

The functional requirements include a realistic allowance for future expansion of service levels and passenger numbers, as described in Section 7. However, the size and layout of the chosen site may constrain the ability to fulfill those requirements, or conversely may make it easy to provide a greater allowance for expansion at little extra cost. Ideally, the building design and site design would allow for incremental expansion of the facilities as necessary, but this may not be possible on all sites. One design concept is to have waiting and baggage-storage areas at the ends of the building, with space left vacant alongside for expansion as necessary; expanding ticketing and other amenities (at the core of the building) is usually less critical.

## 9.3 Detailed Functional Requirements

Table 9.1 (at the end of this section) lists the space requirements. Some are clearly-defined, whereas others are simply allowances that can be adjusted as the site area, layout and budget allow. There is no single set of space standards for transit centers, but there are several sets of standards, guidance and formulas; those used in the space calculations are listed in the table.

The following text amplifies the space requirements and adds some other design requirements.

### GREAT

GREAT's downtown pulses currently involve four 40-foot buses, with an aspiration to add a fifth. GREAT has requested a minimum of six bays for its services, which allows scope for expansion to a sixth route serving downtown. GREAT has also requested provision for further growth if possible, and this is reflected in the expansion bays described above and below. GREAT also requires a ticket/information window for a GREAT agent.

Currently, GREAT serves around 900 riders each weekday, of whom about 1/3 make transfers, mostly downtown. This corresponds to an average of about 25 transfers at each of the twelve daily pulses (with more at the busier times of day). These riders will normally either transfer directly from one bus to another or have to wait just a few minutes (for example, if their next bus is running late). Depending on the layout of the center, they may need to pass through the building. Some riders will take the opportunity to use the restroom, ticket office or other facilities. In addition, some of the remaining riders are boarding or alighting downtown. Some boarding passengers will time their arrival for a few minutes before the bus leaves, but others (such as those arriving by Trailways) could arrive between pulses and be waiting for perhaps half an hour or more. In bad weather or in summer, most or all of the riders would wait inside the building. On the basis of current ridership, it is therefore suggested that the GREAT waiting space be planned for 30-35 people, most of whom would be waiting for only a short period.

Section 7 recommended that the waiting space be planned for 200%-250% of the current estimated requirement. This works out to be 60-90 people. Part of this space could be in the form of space left vacant for an extension of the building as required.

In practice, some or many passengers may wait outside, even in poor weather. Furthermore, in a design where the buses are around a separate island rather than around the building, transferring passengers may never use the building – that is, the island becomes the waiting area for these people. For simplicity, it is conservatively assumed that all people will wait indoors. If an island

design is chosen, the indoor waiting area could be reduced, although the island should itself offer good weather-protection.

GREAT envisages transferring its administrative offices to the center, with requirements including a reception area, conference room, dispatch and staff offices, and a driver break/locker room. Dedicated restrooms for drivers are required. Employee parking would also be required.

### Trailways

Trailways' General Manager listed the company's requirements.

A ticket office and manager's office, each 10 feet by 10 feet, are needed. Although ticket sales would ideally be handled by GREAT staff, there must be space available for a separate Trailways ticket office in case the joint sales arrangement was infeasible or broke down. A baggage room (96 sq ft, alongside the ticket counter) and secure storage (48 sq ft) are also required. Restrooms and a passenger waiting area (twelve seats, 108 sq ft) are required, but these can be common facilities, shared between the operators. Trailways currently requires operating hours (i.e., ticket office opening hours) of 10:00AM to 6:00PM daily.

Trailways requires two bus bays, sized to suit its buses. The bays must be directly alongside the building, at (and visible from) the Trailways offices, so that baggage and parcels can be transferred directly between the building and the bus. The bays should be in echelon formation (i.e., at an angle, with buses backing out). To protect passengers during rain, there should be a canopy (or other cover) above the bus door and extending beyond to cover the first baggage bin on the bus. This needs a 13 foot vertical clearance.

No long-term parking is required. However, three spaces are required for employees, two for short-term parking, and two for drop-off.

### PATS

PATS has not formulated specific requirements for the center. However, PATS vans will sometimes need to pick up and drop off riders at the center (for example, to get to/from a Trailways service). PATS estimates that about five vans might be the maximum at the center at any one time. Depending on the site layout, they could use the drop-off area, an ADA van space or a spare bus bay, so no specific allowance has been made for this in the space requirements. The number of riders involved would be relatively small, and so they are assumed to have a negligible requirement for waiting space.

There is the long-term potential for PATS to provide significant Rural General Public (RGP) service. This may include (for suitable journeys) bringing people from the county into the center for transfer to a GREAT bus to reach their destination, and vice versa. It might also include van-to-van transfer of RGP riders if this was operationally efficient on any particular day. The expansion bays described below would provide for this function (a standard bus bay can accommodate a van).

### ECUSTA

ECUSTA staff advised that they require no specific facilities in the building. Their riders could use the common waiting area and restrooms. The center would likely be served by one route, and one bay would therefore be required.

ECU currently expects that it would use 40-foot buses to serve the center. However, ECUSTA has a number of 60-foot articulated buses in its fleet, and to allow full flexibility in fleet deployment, it is recommended that a 60-foot bay be provided. It is also recommended that the waiting room space should include a nominal allowance for 20 people waiting for the ECUSTA bus.

Flexibility for future service changes – for example, if there were to be new university facilities close to the center which would demand additional service – is covered by the expansion bays described below.

### Expansion Bays

As described in Section 7, the design should ideally allow for a further five local bus bays, making a total of twelve local bays and two Trailways bays. These would allow any of the bus or van services to be expanded in future, and would also allow for potential new services such as a dedicated airport shuttle. The additional bays need not be built at the outset, but space should be reserved for them.

### Rail Facilities

The rail station requirements are based on the standards listed in the *Railroad Station Study – Piedmont High Speed Corridor*, plus additional advice from NCDOT rail division.

Requirements for maintenance and overnight stabling are outside the scope of this study, but the potential implications for the center should be noted. The Eastrans report considered these issues in some detail (in relation to its own corridors). NCDOT has maintenance facilities in Raleigh, and these could likely be used for overnight or mid-day servicing. The train(s) could be stabled overnight at Raleigh or at Greenville. Stabling at Greenville would be more cost-effective, as it would be a better fit with the likely evening and morning travel patterns, but the overnight security and light servicing issues would need to be addressed. If Greenville's rail platform were on a spur track rather than the main line, one train could be stored there overnight; any additional trains (or a platform on the main line) would require additional storage track. It may be possible to provide for this storage as part of the rail station project, when it is built. An alternative strategy would be to provide a dedicated stabling point on a separate site at the Greenville end of the route.

At this stage, the functional specification assumes that the rail station element of the center will simply be a terminal point, with no maintenance, crew base or catering base (these functions would be based at Raleigh). However, it may be worth providing for light servicing, including watering, at Greenville. Advice from Amtrak in previous studies was that a potable water source (for the train) and 480 volt electric supply would be needed.

Straight platforms are ideal; a curved platform should preferably be on the inside of the curve. The standard platform length specified by NCDOT is 800 feet. However, NCDOT has

indicated that the most likely requirement for Greenville would be 400 feet (maximum 600 feet). To put this into perspective, a typical passenger car is 85 feet long. A 400-foot platform would accommodate the existing Piedmont service or a short-haul diesel multiple-unit. It could not accommodate a typical long-distance service, but these are unlikely ever to serve Greenville. NCDOT envisages a locomotive-hauled train of bi-level cars, which would require shorter platforms than a single-level train with the same capacity.

It is recommended that no specific provisions be made for handling bulk mail and express parcels. Amtrak has recently withdrawn from this business, and in any case a Greenville service would probably not have been particularly useful for these functions. The generous allowance for baggage area could cover a limited mail/parcels function if necessary.

For space-planning purposes, it has been conservatively assumed that Greenville would have an annual ridership of 40,000, all of whom would pass through the station in a short period when a daily train arrived and returned.

There is a possibility that future homeland security requirements would involve airport-style screening or other equipment. However, this is very much an unknown, and NCDOT's advice is that it requires no specific space allowance at this stage.

### Taxis, Shuttle / Limousine Services and Car Rental

A taxi stand (open to all taxi companies) and a dispatch office for one company have been specified. Space has also been allocated for a shuttle/limousine firm, with an office and a stand. This would allow for a future shuttle to/from the airport (for example). Office and parking space has also been specified for car rentals, to accommodate one or two firms. These space allocations are flexible and can be adapted to actual needs. For example, if an additional taxi firm office was required, it could use space allocated for one of the other functions.

### Bicycles

Bicycle parking should be provided, for people who cycle to the center, leave their bike and take other modes onwards. Both lockers and ordinary racks should be provided, to suit individual preferences. The numbers should be decided in consultation with stakeholders. It is suggested that a minimum of six lockers and racks for six bikes be provided initially, with space for expansion as needed.

Depending on the popularity of cycling at the time, it may be that a 'bike station' area should be included in the design. This could provide tune-ups, repairs and possibly valet service for commuters, and could also provide bike rental for visitors.

### Building Management and Common Areas

A building manager's office is needed, along with public restrooms to serve all users of the center. A security office should also be provided. It could be a police substation, or a base for security staff, or a combination of both, and would also house any CCTV monitoring equipment that was installed. Other miscellaneous services include:

- a bank of telephones (the actual number to be determined by the phone company);

- vending machines (irrespective of whether or not other food services are present, as the other outlets may not be open during all hours of transportation service);
- passengers' lockers; and
- an ATM.

Sufficient wall space should be available for schedule and other posters, leaflet racks, and possible future real-time information screens.

### Other Spaces

Space will need to be provided for mechanical and electrical systems. Some space, depending on the design, will be taken up by corridors, lobbies, and (in a multi-level design) stairs, elevators and possibly escalators. A substantial allowance has been made for these in the space table, but this could be reduced as the design progresses.

### Leasable Space

The specification includes some leasable space for facilities that contribute to the passenger experience: a café, a news-stand, a 'bike station' as described above, and another unit such as a florist or barber. The areas listed are simply allowances and are flexible. For example, the 1,000 sq ft allowance for a café would accommodate a coffee shop or snack bar with some seating. More space would allow for a full-scale restaurant or cafeteria. The 500 sq ft allowance for a news-stand represents a small shop, but larger or smaller spaces are widely used.

Not all of this space need be built initially. The center could be built with little or no leasable space, but with room to build extra space in future as justified by demand.

### Homeland Security Requirements

Most homeland-security requirements for transportation centers are essentially good-practice points for site layout design[23]. There are no specific space requirements. A major principle is to have 'layered spaces': the more critical a function is, the more it is closed/distant from the public. This should be reflected in the building layout. (The same principle is used for designing cash-handling spaces). The advice is also to avoid locating parking under a transit building or on its rooftop. This reinforces the ambience/maintenance reasons for not having a parking deck above the transit facilities.

## 9.4 Summary of Space Requirements

These requirements lead to an ultimate building size of up to about 14,000 sq ft without rail, or 16,0000 sq ft with rail, for the transportation-related functions (Table 9.1). Any additional leasing space that is not aimed at riders would be in addition to this.

This is a conservative initial estimate, with large allowances for mechanical / electrical space and circulating areas. These allowances could likely be reduced as the design develops. Abut 3,000 sq

[23] *Transit Security Design Considerations: Final Report, November 2004* (USDOT / FTA). FTA report #: FTA-TRI-MA-26-7085-05. DOT Report #: DOT-VNTSC-FTA-05-02

ft is due to the GREAT management offices and driver facilities. The estimate also includes the space to accommodate future ridership growth and a full range of transportation-related facilities such as a café. This space could simply be reserved for future expansion, rather than built initially.

## 9.5 Other Design Objectives

The detailed design will need to take into account the NC Building Code, ADA standards and other requirements. There is also a wide range of detailed design guidance (for example, on signage and materials) and operational and management guidance. These are not discussed here.

However, experience and stakeholder requirements suggest some key design objectives:

- The center (both the building and its landscaping) should present the image of (and be) an important, attractive and safe public facility.
- Similarly, the center should be seen as a full part of city and community life. Although the choice of site will have a major bearing on this (Section 15), the site layout can also contribute – for example, by having pedestrian entrances as part of a busy frontage rather than on an isolated frontage.
- The center should be easy for mobility-impaired passengers to use. This includes not only disabled people, but also frail people, people with heavy luggage, and parents with strollers. The ADA requirements will ensure that the center is accessible to disabled people and these also benefit other mobility-impaired passengers. However, good design choices can make the difference between 'accessible but inconvenient' and 'accessible and convenient'.
- The center should avoid vehicle-pedestrian conflicts as far as possible. Their circulation and site entrances should be kept separate. Similarly, the bus-car conflicts should be minimized.
- Riders should have a short, covered and traffic-free path between buses and to/from the building; how this is achieved will depend on the site dimension. Ideally, the bays would be alongside the building, with a canopy over the boarding area. The next best solution is to have covered walkways to the bays, with no road crossings. A layout in which riders must walk across pavement is least desirable.
- There should be clear pedestrian routes to/from the site, through the site and through the building.
- Buses should not be delayed by other buses waiting to pull into a berth. Each route should have an assigned bay.
- The center should use durable, easy-to-maintain materials.
- The center should allow for future expansion of both passenger space and other spaces.

## 9.6 Locational and Access Requirements

There is broad agreement that the center should be located in or close to downtown (including the tobacco district). In particular, Trailways has indicated a strong preference for a downtown location, to maximize ridership. GREAT has also indicated that a downtown location is the

continued preference for its transfer point. The consensus also reflects the desire to assist downtown revitalization efforts.

An attractive location is needed in order to make the additional leasing space viable (and hence to provide income and activity for the center). The location will also help to determine the balance between transportation and other uses on site – for example, whether the transportation center will be a part of a major mixed-use development or will be the dominant use on its site.

Within the broad area of downtown, there are specific access requirements:

- The site will need to be accessible on foot, by bicycle and by car or taxi. This means that the connections to the city street system must be workable in terms of geometry, traffic management and 'walkability'. (The same will apply to driveways and walkways within the site.)
- In particular, the streets used to reach the center must be suitable for buses (including the large Trailways buses). These have particular geometric requirements, especially when turns are required. The proposed Tenth Street Connector may be helpful in this respect (Section 4.3).
- If the center is to be rail-served, it must be alongside (or very near) a railroad line. Ideally the facilities should be together on a single site, but if necessary the rail facilities can be on a site adjacent to the other services (as at Wilson and as planned for Durham). Even if a particular site is alongside a railroad, the operational feasibility of a station at that site will need to be considered. These issues were described in detail in Section 7.

These access requirements have been reflected in the site selection criteria (Section 15).

## 9.7 Site Area Requirements and Example Layouts

It is not possible at this stage to produce a definite figure for the site area required. This is because each site has its own constraints and opportunities that will affect the site layout and circulation options, and also because some sites may be able to use existing vehicle facilities. For example, on-street parking spaces could be used as drop-off zones or short-stay parking, and some buses could stop on-street, as is the case in Wilson.

To illustrate the potential options, Figure 9.1 shows how the center could be operated on two contrasting sites. These are generic layouts, and do not represent any specific site. The layouts show the complete size of the building and the full number of bus bays, although these need not all be built initially.

Figure 9.1 (a) shows how the center could operate on a small block, which might be an existing block in or near downtown. It is assumed that any rail service would be on a separate site. In urban design terms, it would be desirable to retain (or rebuild) existing retail frontages. Existing curbside or off-street parking could serve part of all of the parking requirements, and this would be desirable in order to provide space for other buildings on the block. One problem is that arranging the access from surrounding streets would need careful design, and (as the Spartanburg case study showed) it may not be possible to effectively eliminate pedestrian / car / bus conflicts.

Figure 9.1 (b) shows how the center could operate on a larger site, incorporating the opportunity for passenger rail service. Potential sites in the tobacco district could follow this pattern. Again, good urban design practice would place the building on the street frontage, and it should be easier with this generous site to separate the movements of pedestrians, cars and buses.

Overall, these generic layouts show that the site area required will be 2 to 5 acres, depending on the layout and design. In particular, the amount of parking needed on-site will be important. If the center can use on-street parking or other off-street parking, then the site area can be at the low end of the range.

The site area could also be reduced by having a multi-level design, at least for the building itself. Bearing in mind that central Greenville has relatively flat relief, the most likely multi-level arrangement would be to have the additional leasable space on the second floor (and possibly higher floors) of the building, with all passenger and vehicular areas at ground level. The GREAT management and driver facilities could be on either floor.

| Function | Building space (sq ft) | Bus Bays (#) | Parking (spaces) | Drop-off / rank (spaces) | Other | Basis of calculation | Notes |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **GREAT** | | | | | | | |
| Ticket / information windows | 200 | | | | | GREAT specification is for 2 counter positions. | To be within a secure area for cash handling |
| Ticket lobby (ie queuing area for ticket window) | 200 | | | | | M/A/B allowance | |
| Waiting area | 900 | | | | | GREAT requests 20 seats. 900 sq ft is M/A/B allowance for long-term, based on 90 people at LOS B/C. | Can be shared with other passengers. Long-term allowance. Need not all be built initially. |
| Offices: Support | 144 | | | | | GREAT specification | |
| Offices: Reception | 1,200 | | | | | GREAT specification | |
| Offices: Conference Area | 300 | | | | | GREAT specification | |
| Offices: Passenger Services | 180 | | | | | GREAT specification | |
| Offices: Administrative | 180 | | | | | GREAT specification | |
| Offices: Dispatch | 80 | | | | | GREAT specification | |
| Driver Break Room | 400 | | | | | GREAT specification | To include 15 driver lockers |
| Employee restrooms | 500 | | | | | GREAT specification M/A/B Allowance | |
| Bus bays | | 6 | | | | GREAT specification. 6 is the mimimum. | This represents 5 for current plans plus 1 for future expansion. See below for additional desirable bays for further expansion. |
| Short-term parking | | | 4 | | | GREAT specification | |
| Long-term parking | | | 0 | | | GREAT specification | |
| Employee parking | | | 18 | | | GREAT specification | Reflecting peak number of employees on site |
| Drop-off | | | | 0 | | GREAT specification | |
| | | | | | | | |
| **Trailways** | | | | | | | |
| Waiting | 108 | | | | | Trailways specification Requirement is for 12 seats, 12' x 9' | Can be shared with other passengers |
| Restrooms | N/A | | | | | Trailways specification | Can use common restrooms |
| Ticket office | 100 | | | | | Trailways specification | 1 counter position. Center needs to include option for this dedicated window, even if GREAT acts as agent. |
| Manager's office | 100 | | | | | Trailways specification | |
| Baggage room | 100 | | | | | Trailways specification | Including Package Express. Includes pick-up by public. |
| Secured storage space (supply closet) | 50 | | | | | Trailways specification | |
| Bus bays | | 2 | | | | Trailways specification | Trailways-bus-sized. Two bays are needed because buses work in tandem at busy times. Should be echelon parking adjoining Trailways part of building. |
| Short-term parking | | | 2 | | | Trailways specification | |
| Long-term parking | | | 0 | | | Trailways specification | Discouraged |
| Employee parking | | | 3 | | | Trailways specification | Reflecting peak number of employees on site |
| Drop-off spaces | | | | 2 | | Trailways specification | |
| | | | | | | | |
| **ECUSTA** | | | | | | | |
| Bus bays | | 1 | | | | ECUSTA requirement | Although 40' bus would likely be used, the ECUSTA fleet has a lot of 60' artics, so it may be worth designing the bay for this. |
| Waiting area | 200 | | | | | M/A/B allowance: 20 people at LOS B/C. | Shared with other passengers. |
| | | | | | | | |
| **Additional bays for future growth** | | | | | | | |
| Bus bays | | 5 | | | | Agreed allowance. | See text for discussion. These bays could be used for additional ECUSTA or GREAT services, or for RGP vans, as requirements dictate. |
| | | | | | | | |
| **Taxis** | | | | | | | |
| Rank | | | | 5 | | M/A/B allowance | |
| Office | 200 | | | | | M/A/B allowance | |

**Table 9.1: Space Requirements**
(sheet 1 of 3)

| Function | Building space (sq ft) | Bus Bays (#) | Parking (spaces) | Drop-off / rank (spaces) | Other | Basis of calculation | Notes |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **Shuttles / limousines** | | | | | | | |
| Rank | | | | 3 | | M/A/B allowance | |
| Office | 100 | | | | | M/A/B allowance, representing office for one firm. | |
| | | | | | | | |
| **Car rental** | | | | | | | |
| Office | 200 | | | | | M/A/B allowance, representing 1 firm office or 2 small desks | Requested by GREAT. |
| Fleet parking | | | 10 | | | M/A/B allowance | For example, one firm with ten cars, or two firms with five cars each |
| | | | | | | | |
| **Facilities for cyclists** | | | | | | | |
| Bike lockers | | | | | 6 lockers | M/A/B allowance | Outside the building. Allow room to expand. |
| Bike racks | | | | | racks for 20 bikes | M/A/B allowance | Outside the building. Allow room to expand. |
| | | | | | | | |
| **Building management and common areas** | | | | | | | |
| Office (building manger / security / admin) | 200 | | | | | M/A/B allowance | |
| Storage | 100 | | | | | M/A/B allowance | |
| Restrooms (including janitorial closet) | 500 | | | | | M/A/B allowance | |
| Alcoves for vending machines / ATM / fountains | 100 | | | | | M/A/B allowance | |
| Alcoves for phones | 50 | | | | | M/A/B allowance | |
| Passengers' lockers | 100 | | | | | M/A/B allowance | |
| Security office / police substation | 320 | | | | | Allowance suggested by GREAT | |
| Police vehicle parking | | | 2 | | | M/A/B allowance | |
| Parking for building manager + cleaning/security staff | | | 3 | | | M/A/B allowance | |
| Service parking | | | 3 | | | M/A/B allowance | |
| | | | | | | | |
| **Other spaces** | | | | | | | |
| Mechanical & electrical systems | 1,500 | | | | | M/A/B allowance | |
| Corridors, stairs, escalators, elevators, etc | 2,000 | | | | | M/A/B allowance | Generous allowance to allow for an airy circulating area, lobby etc. if required by design or aspirations. |
| | | | | | | | |
| **Ancillary functions** | | | | | | | |
| Café, snack bar or similar | 1,000 | | | | | M/A/B allowance | Broadly representing acoffee shop with seating. Full restaurant would need more space (for comparison, Rocky Mount restaurant is ~2000 sq ft.) |
| News-stand or similar | 500 | | | | | M/A/B allowance; assumes reasonable size of kiosk | |
| Bike station | 750 | | | | | M/A/B allowance | |
| One other shop (florist, barber, etc.) | 500 | | | | | M/A/B allowance | Potentially more units if justified by level of activity. |
| | | | | | | | |
| Subtotal - without rail | 13,062 | 14 | 45 | 10 | | | |
| Allowance for exterior and interior walls | 653 | | | | | 5% of the subtotal | |
| **Total - without rail** | **13,715 sq ft** | **14 bays** | **45 spaces** | **10 spaces** | | | |

**Table 9.1: Space Requirements**
(sheet 2 of 3)

| Function | Building space (sq ft) | Bus Bays (#) | Parking (spaces) | Drop-off / rank (spaces) | Other | Basis of calculation | Notes |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **Rail** | | | | | | | |
| Ticket windows | 300 | | | | | NCDOT advice | Includes 2 windows. |
| Offices (cash handling, lockers, etc) | 300 | | | | | Allowance; reflects AREA, Amtrak and Marsolan standards | |
| Storage | 150 | | | | | M/A/B Allowance; also reflects Marsolan standard | |
| Baggage | 400 | | | | | Allowance; reflects AREA, Amtrak and Marsolan standards | Includes checking departing baggage and dispensing arriving baggage; sorting; and storage of unclaimed baggage. The various standards are not consistent. |
| Waiting | 1,400 | | | | | NCDOT advice | |
| Platform | | | | | 1 platform. 400 feet x 17 feet | NCDOT specification and AREA standards. | 600 feet desirable. |
| Servicing | | | | | Water + 480V supply | Amtrak standards | Potable water and electric shore-supply for train servicing. |
| Parking | | | 75 | 2 | | NCDOT advice | Reflects need for about 50 short-stay, 25-30 long-stay |
| | | | | | | | |
| Subtotal - rail | 2,250 | 0 | 75 | 2 | | | |
| Allowance for exterior and interior walls | 113 | | | | | 5% of the subtotal | |
| **Total - rail** | **2,363 sq ft** | **0 bays** | **75 spaces** | **2 spaces** | | | |
| | | | | | | | |
| **Total - all facilities** | **16,078 sq ft** | **14 bays** | **120 spaces** | **12 spaces** | | | |

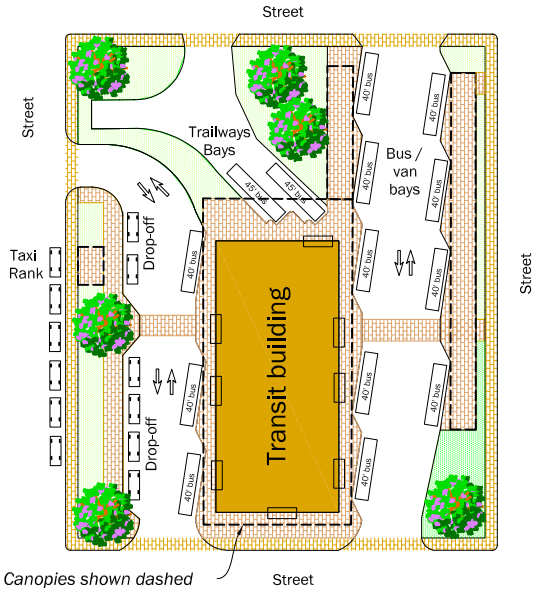
*Notes*

This table is for planning purposes only, and includes allowances for an ideal range of functions. Some spaces may not be built or fitted-out initially.
The table incldues leasing space for passenger amenities (e.g., a café), but excludes additional unrelated leasing space (e.g. offices or retail)

*Space requirements for waiting areas are based on the numbers of passengers and the desired Level of Service, as given in:*
Transit Capacity and Quality of Service Manual: Part 7: Stop, Station and Terminal Capacity (TCRP Report #100).

*Space requirements for rail facilities are based on NCDOT advice and the following standards or guidance. The standards are not always consistent, and some operational practices have changed since publication. The functional requirements therefore took into accound the likely service pattern, clientele and operational needs at Greenville, and also reflect NCDOT's advice.*
Design Criteria for Railway Passengers Stations *(1985 edition, contained in: 1986-87 Manual for Railway Engineering (Fixed Properties)) (American Railway Engineering Association, c.1986)*
Amtrak Standard Stations Program Executive Summary *(Amtrak, 1978). This includes both space formulas and a range of standard station designs.*
Railroad Station Study – Piedmont High Speed Corridor – Final Report for NCDOT *(Marsolan Associates, 1997). The standards used in this study were in turn influenced by the AREA, Amtrak and other standards.*

**Table 9.1: Space Requirements**
(sheet 3 of 3)

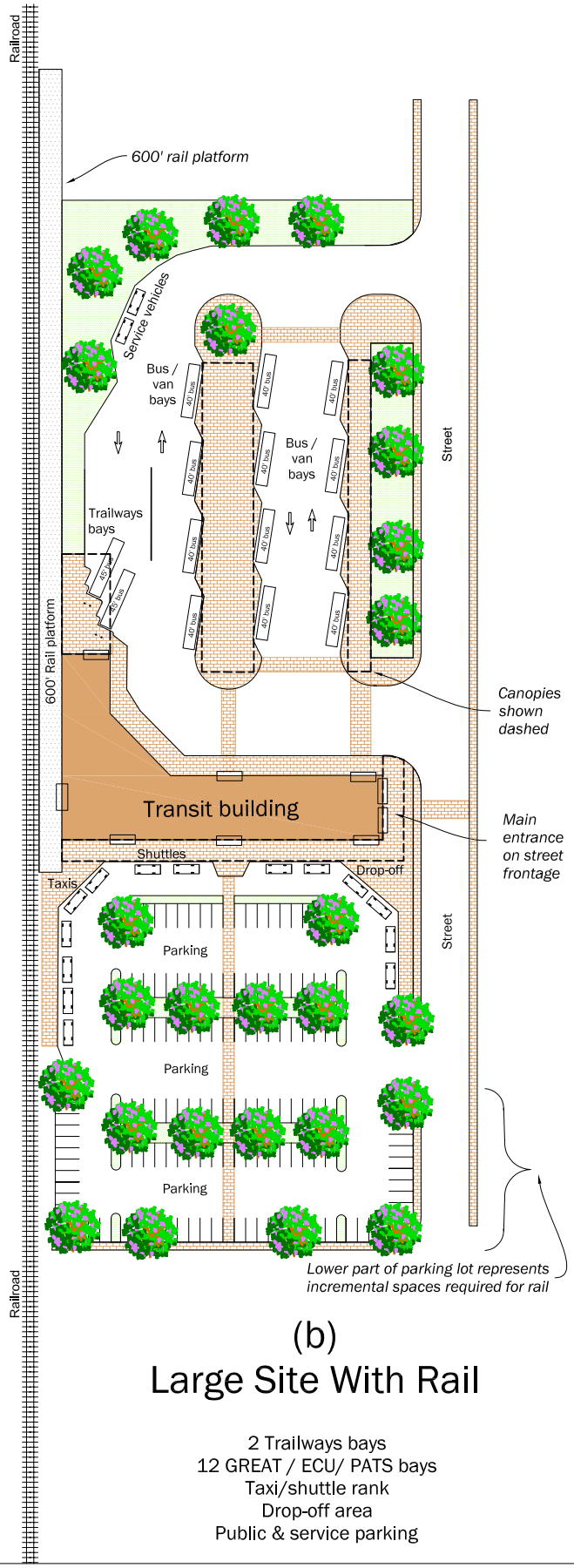



(a)
Small Site Without Rail

Site dimensions correspond to a typical downtown block

2 Trailways bays
12 GREAT / ECU / PATS bays
Drop-off spaces
Taxi rank on-street alongside

Parking would need to be on-street or on an adjacent block




(b)
Large Site With Rail

2 Trailways bays
12 GREAT / ECU/ PATS bays
Taxi/shuttle rank
Drop-off area
Public & service parking

These are generic designs to illustrate potential site configurations. Not to scale.

**Figure 9.1: Example Layouts for Two Contrasting Sites**

# 10 The Potential for Mixed-Uses

This section shows how the transportation center might be part of a mixed-use facility, and considers the potential market for the accompanying facilities.

## 10.1 Mixed-use Concepts

The basic specification for the center (Section 9) includes functions that are aimed at passengers, such as a news-stand and a café. It also includes a small amount of space for additional functions (such as a florist or barber) that are not directly aimed at riders but would contribute to the center's 'busyness' and offset some of the operating costs. However, a much larger element of these additional functions could be included, and this is what is meant by a 'mixed-use' concept for the center.

One option is for the site to be essentially a transportation center but with additional lease space. This could be 'upstairs' office space as in Spartanburg SC, or could be retail street frontage on the first floor. It could also be a community facility such as a visitor center or meeting room.

Another option is for the transportation center to be just one part of a major mixed-use development. This could involve:

- different uses on different parts of the site, physically connected. Typical uses include offices, retail and institutional uses.
- developing the 'air rights' above the transportation facilities. This option always requires particular care in order to preserve the attractiveness and 'airiness' of the transportation facilities. Typical air rights development is for offices, although sometimes it is housing.

In Greenville, a number of landmark new civic/University facilities are planned for downtown and the tobacco district. One of these facilities could be a good partner for a transportation center. This approach would eliminate the need to find commercial tenants, but would complicate project delivery.

As Section 9 described, the location of the center will be an important factor in determining whether mixed-use is appropriate and viable.

## 10.2 Economic Issues

If a 'lease space' model is chosen, with commercial tenants, there needs to be a realistic prospect of attracting tenants, at a rate that covers the incremental cost of providing that space. Lease space that is not related to transportation would not be eligible for federal or state transportation funding, so the income would have to cover the full incremental cost of this part of the center. Although there is a nationwide trend of commercial activities returning to downtowns, the center would be competing against alternative locations both downtown and in the suburbs.

Analysis undertaken for the *Revitalization Plan* indicated the current market for retail space downtown. Despite healthy retail activity throughout Pitt County, the retail vacancy rate downtown was (at the time of the analysis) greater than 50% of the total retail space. The analysis then examined household spending power in the area, and concluded that there was

currently a latent demand for approximately 60,000 sq ft of convenience goods and 70,000 sq ft of comparison goods. Over time, and with the introduction of additional housing in the area, additional space could be supported.

Put more simply, the shoppers are currently going elsewhere, but with a revitalized downtown attracting them back, the market could be big enough to fill the existing vacancies and some additional space. This suggests that under current conditions, the transportation center might only attract retail users for whom the throughput of riders was important, such as a café or news-stand. The center should not therefore rely on lease income as a key part of the concept or its funding. However, the center would both contribute to and benefit from the downtown renaissance, and over time it could become part of a revitalized area. This restores a case for providing additional retail leasing space.

The *Revitalization Plan* did not perform a similar analysis for the office market, but did so for entertainment space (including recreation, restaurants, and specialty retail). It was estimated that the downtown entertainment district had 349,000 sq ft of existing retail space, with demand for 494,000 sq ft, meaning that an additional 144,000 sq ft could be supported.

Overall, the market analysis concluded that:

> The Greenville revitalization area has received very little of the total development occurring in the City of Greenville and Pitt County due to the perception of a poor development climate in the core city. As a result, the dominant land uses in the revitalization area which includes the downtown, are single-family residential, marginal commercial, and vacant land. At the same time, input from meetings with the community suggests that all of the problems facing the revitalization area, especially in the West Greenville neighborhoods, need strategies that are much broader than the limited purview of the market analysis.

The analysis therefore recommended a range of measures aimed at improving the development climate through community development, job generation, employment and training strategies, and some key catalytic projects. In particular, it reached the following conclusions on retail and entertainment's contribution:

> Retail development must be handled skillfully because of the intense competition in the market and the absence of much potential to attract major retail anchors with the possible exception of an additional supermarket. However, not withstanding these limitations, we have come to conclude that there is sufficient market demand to support the following projects:
>
> - New retail infill in the downtown consisting of general merchandise, women' ready to wear, furniture and accessory items, targeted to the university community and nearby downtown residential population not to exceed 20,000-25,000 square feet annually. It should be located primarily on Evans Street between Third and Fifth Streets.
>
> - A new retail complex of approximately 30,000 square feet to be located in the Tenth Street Connector Corridor between Chestnut Street and Myrtle Street. To the maximum extent possible, this facility should be used to relocate viable retail businesses from the Martin Luther King, Jr. Drive corridor.
>
> Eating, drinking and entertainment can bring life and viability to downtown Greenville and to other locations within the revitalization area. In the entertainment demand analysis, four scenarios were outlined that might be implemented, in part or in whole, to expand the entertainment opportunities of the downtown. In this effort, a key objective should be to capture the potential market of University sports fans who come close by the revitalization area to attend these sporting events. A local determination should be made as to which approach would best achieve the local vision of the future of the downtown.

# 11 Cost Estimates

This section describes the potential capital costs and ongoing operating costs for the center, based on the functional specification described above. At this stage, they are simply broad initial estimates rather than detailed costings. They would need to be refined once the location is decided and the design is developed.

## 11.1 Capital Costs

### Land

The center would probably be built on land that the City either owned already or had bought specifically for the center. The City already owns some land in the downtown and tobacco district, and is currently buying more land for revitalization purposes as opportunities allow. However, for cost purposes it should be assumed that a site will need to be bought for the center.

Land prices have a wide range, depending on the location, the value of any existing buildings on the site, and other factors. Based on the City's tax records, it is estimated[24] that the cheapest land (which is broadly the area from Dickinson Avenue to the CSX railroad) in downtown or the tobacco district could cost under $100,000 per acre, but the most expensive land (on prime sites with existing modern buildings) could cost over $1 million per acre. The average is around $500,000 per acre.

It should be noted that ECU has significant land holdings in the area, including the parking lots on the eastern edge of downtown and various sites in the tobacco district. As well as the possibility of buying land from ECU, there may be opportunities for joint developments.

### Detailed Design

The specification for the center would need to be developed into a full design, resulting in architect's fees and other professional fee costs.

### Site Clearance and Remediation

An allowance must be made for site clearance, including demolition of any existing buildings that will not be re-used. In addition, remediation may be needed, particularly if a former warehousing or industrial site is chosen.

### Construction

Table 11.1 shows estimates for construction costs. These estimates assume new-build (renovation of an existing building would have a different cost structure) and they cover the full

[24] Estimates based on the tax values of a sample of 65 parcels in the tobacco district and the southern/eastern parts of downtown. The tax values were established from the City's Spatial Data Explorer (http://map.greenvillenc.gov/index.html). The estimates include a 20% uplift on the tax value, in line with the City's estimating policy.

specification rather than just the minimum initial facilities. They also include the cost of site paving, lighting and landscaping, based on the larger of the generic designs presented in Section 9.

Four estimates are presented. Two are for a single-storey transportation-only building, with and without space for rail facilities. The other two represent the construction of additional lease space, by assuming that a second storey is built – again with or without space for rail facilities. The estimates with rail facilities include the corresponding building-space, but assume that the railroad platform and canopy are not initially constructed as part of the center.

Stakeholders have indicated that the building should be of high quality, particularly in its external appearance, to reflect City policy and in line with the City's recent public buildings. This aspiration is reflected in the estimated structure cost, which is at the upper end of the range. The total construction cost per square foot appears high because it includes a large area of paving and landscaping outside the building and also extensive canopies for the bus bays.

Construction of a single-storey center with the facilities aimed at riders (café, news-stand, etc.) but with no additional lease space is estimated to cost around $4-5 million. The incremental cost of providing building-space for rail (included in this range) is therefore relatively small. A second storey that could be leased out would bring the cost to around $6.5-7.5 million.

As with all building construction projects, variations are possible that would raise or lower the cost. In particular, the initial cost could be reduced by building only for current needs and leaving space for growth. Other options include higher-quality or lower-quality finishes, more generous or less generous spaces, and more or less leasable space. All these issues would be considered further as the design is developed.

# Table 11.1: Construction Cost Estimates

| Item | Unit | Unit cost | Single-story | | | | Second story, containing leasable space * | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Without rail | | With rail | | Without rail | | With rail | | |
| | | | Quantity | Subtotal | Quantity | Subtotal | Quantity | Subtotal | Quantity | Subtotal | |
| Structure (assuming new-build) | square feet | $116 | 13,715 | $1,584,094 | 16,078 | $1,856,963 | 27,430 | $3,168,188 | 32,155 | $3,713,926 | Includes contractor's and architect's fees. Unit cost = $150 (conservative estimate for high-quality building - see note below) x 0.77 location factor for Eastern NC. |
| Paving, drainage and landscaping | lump sum | N/A | | $231,000 | | $303,000 | | $231,000 | | $303,000 | Estimate prepared for generic large site design. The incremental cost of rail is assumed to be the extra parking space required. |
| Site lighting | pole | $2,200 | 50 | $110,000 | 50 | $110,000 | 50 | $110,000 | 50 | $110,000 | Unit cost based on Means BCCD 2006 for 20' poles. Quanity is allowance for large site. |
| Exterior building canopies (over buses etc.) | square feet | $40 | 23,500 | $940,000 | 23,500 | $940,000 | 23,500 | $940,000 | 23,500 | $940,000 | Unit cost based on Means BCCD 2006, uprated to reflect scale of canopies. Area based on generic large site design, which includes large canopy over bus island. |
| Elevators | each | $60,000 | 0 | $0 | 0 | $0 | 2 | $120,000 | 2 | $120,000 | Unit cost based on Means BCCD 2006 for hydraulic 2-floor elevator. |
| Interior furnishing / equipment | square feet | $20 | 13,715 | $274,302 | 16,078 | $321,552 | 13,715 | $274,302 | 16,078 | $321,552 | Allowance to cover fittings not included in the structure cost (ticket counter, benches, poster cabinets. etc.). Furnishing of leasable space is not included. |
| **Subtotal - building costs** | | | | $3,139,396 | | $3,531,515 | | $4,843,490 | | $5,508,478 | |
| Design contingency | pro-rata | 10% | | $313,940 | | $353,151 | | $484,349 | | $550,848 | |
| Price escalation contingency | pro-rata | 5% | | $156,970 | | $176,576 | | $242,175 | | $275,424 | |
| **Subtotal - construction bid cost** | | | | $3,610,305 | | $4,061,242 | | $5,570,014 | | $6,334,749 | |
| Construction contingency | pro-rata | 10% | | $361,031 | | $406,124 | | $557,001 | | $633,475 | |
| **Subtotal - construction cost** | | | | $3,971,336 | | $4,467,366 | | $6,127,015 | | $6,968,224 | |
| Administrative cost (professional fees etc.) | pro-rata | 5% | | $198,567 | | $223,368 | | $306,351 | | $348,411 | Excludes architect's fees, which are included in the structure cost |
| **Total** | | | | **$4,169,903** | | **$4,690,735** | | **$6,433,366** | | **$7,316,635** | |
| ***Per sq ft of building*** | | | | ***$304*** | | ***$292*** | | ***$235*** | | ***$228*** | |

**Notes**

All costs are in 2006 Dollars. Means BCCD = *Means Building Construction Cost Data.*

Costs not included: land acquisition,; demolition, clearance and environmental rectification; renovations to existing buildings; utility diversions; construction management; railroad platform and canopy.

* Leasable space scenarios assume that all transportation facilities are on the first floor and a complete second floor is constructed for office or retail space. This is simply one example of possible designs.

Structure cost: *Means Square Foot Costs 2006* gives the basic square foot cost for a bus terminal as $116. It reports completed project costs ranging from $56 to $135 per square foot.

Means BCCD 2005 reports that public buildings with a similar basic cost have an upper quartile cost (which may include some site and equipment costs) of $140 to $153.

For this table, the upper quartile cost of the public buildings is used to represent the cost of a high-quality building.

### Summary of Capital Cost

Table 11.2 summarizes the estimated capital cost, which includes not just construction costs but also allowances for detailed design, land purchase, site clearance and remediation. The cost of the transportation facilities might be between $6 million and $8 million. The range is wide at this stage because of the uncertainty over potential land and site costs as well as over the building design. Additional lease space (unrelated to transportation) would increase the building cost.

**Table 11.2: Capital Cost Estimate**

| Item | Basis of estimate | Estimated costs ($ millions) |
|---|---|---|
| Detailed design | Allowance as per TIP | $0.5m |
| Land purchase | Range. See text | $0.5m to $1.5m |
| Site clearance and remediation | Allowance | $0.5m to $1.5m |
| Building, paving and landscaping | See detailed table and text | $4.2m to $4.7m |
| **Total** | | **$5.7m to $8.2m** |

*Building, paving and landscaping cost is for the single-story building with/without rail. Additional leasing space is not included.*

## 11.2 Operating Costs

Table 11.3 shows estimates for the annual operating costs of the transportation facilities. The table shows new costs that are associated with the center, but not existing staff or other costs that would be carried through into the center. The estimated annual cost – before allowing for any income – is just over $400,000. The staffing costs, which make up the majority of the operating cost, are based on stakeholders' aspirations for staffing levels. A building manager and a GREAT ticketing/information agent are required. Security officers have also been specified, but these could be reduced or omitted if a police presence were established on-site. The city directly employs cleaning and maintenance staff for public buildings, and the center would likely follow that arrangement.

**Table 11.3: Operating Cost Estimate**

Based on center without rail and without additional leasing space

| Item | Unit | Quantity (without rail) | Unit wage (1) | Unit cost (2) | Subtotal | Notes |
|---|---|---|---|---|---|---|
| Building manager | FTE | 1 | $41,500 | $62,250 | $62,250 | BLS code 43-1011 |
| GREAT Ticketing / info person | FTE | 1.5 | $31,000 | $46,500 | $69,750 | Main person plus weekend/vacation relief. BLS code 43-4181 |
| Security patrol | FTE | 2 | $22,000 | $33,000 | $66,000 | Assume one person on duty at all operating hours. May be reduced or omitted if police presence is available BLS code 33-9032 |
| Trailways ticketing / info person | FTE | 0 | | $0 | $0 | Assume existing arrangements roll over |
| Janitor | FTE | 1 | $18,540 | $27,810 | $27,810 | BLS code 37-2011 |
| Building technician | FTE | 0.5 | $32,270 | $48,405 | $24,203 | BLS code 32-270 |
| **Subtotal - staffing** | | | | | $250,013 | |
| Housekeeping and repair supplies, equipment contracts and utilities | sq ft | 13,715 | - | $5.00 | $68,576 | Conservative estimate, based on comparable data |
| Grounds & platform maintenance | sq ft | 130,680 | - | $0.50 | $65,340 | Quantity assumes a generic 3 acre site. Unit cost based on Marsolan figure of 20c-50c per sq ft. |
| Reserves for replacements | lump sum | - | - | $50,000 | $50,000 | E.g. re-roofing, remodening and repainting. Based on Marsolan recommendation of 1% of capital cost. |
| **Subtotal - utilities, cleaning and maintenance** | | | | | $183,916 | |
| **Total** | | | | | $433,928 | |

*Notes*
*(1) Source: Bureau of Labor Statistics. November 2004 rates for NC. http://www.bls.gov/oes/current/oes_nc.htm*
*(2) Unit cost = 1.5 x wage, to allow for fringe costs*

## 11.3 Comparison of Capital Costs with TIP Estimates

The Transportation Improvement Program (TIP) includes items for detailed design, land acquisition and construction. The detailed design is listed at $500,000 and this figure has been carried forward unaltered into the estimates above. The land acquisition is listed as $1 million, and the estimates above have used a range of $0.5 to $1.5 million. The construction is listed as $6m, and the estimates above (including site clearance/remediation and building) gave a range of $4.7 to $6.2 million.

The estimates for land acquisition and construction are necessarily broad at this stage, but they confirm that the TIP entries for these are broadly realistic for the type of center to which stakeholders aspire.

# 12 Funding Sources

This section describes the most likely ways in which the capital costs (design, land acquisition and construction) and operating costs (operations and maintenance) identified in the previous section could be funded. Importantly, there are opportunities to leverage federal funds for construction, with matching funds generated at the State and local levels. However, the City will need to coordinate closely with the Metropolitan Planning Organization (MPO) and NCDOT to make best use of these opportunities.

## 12.1 Capital Funding

Capital costs for transportation centers are typically funded mainly by federal grants. Up to 80% of the cost can normally be met by federal grants. The remaining 20% must be met from State funds (10%) and local funds (10%). However, this is not the only funding method. For example, the Athens, GA transportation center is being funded entirely by local revenues.

### Federal Funds

A range of transport-related funding programs are administered by the Federal Highway Agency (FHWA) and the Federal Transit Agency (FTA). The funds in many programs are apportioned to States by a formula, and the States then decide how to spend their allocations. Some programs also apportion funds to MPOs. Other programs distribute funds on a competitive basis. In addition, legislators typically earmark funding for a large number of named projects within each year's appropriations. In some cases, the whole of a program's funds are earmarked.

In most capital funding programs, the maximum federal contribution to a project is 80%, and the remaining 20% must be found from a State and/or local contribution. In North Carolina, the State policy is to offer 10% State funding and require 10% local funding.

The 2005 SAFETEA-LU Act, like previous transportation spending Acts, set the policy programs and expected funding levels for the several-years life of the Act. However, funds are actually released by the annual appropriations process, and this means funding levels could go up or down compared to what is stated in the transportation act. In practice, the transportation act's funding levels are usually a floor, with the annual appropriations process often increasing spending, although wider budget pressures in the next few years may change the situation.

Table 12.1 describes the four federal funding programs that are most relevant to the center. In practice, NCDOT acts as a clearing-house for much of the allocation and distribution process.

Greenville has received an earmark[25] for expansion buses and the transportation center, which will provide almost $3m, spread across Fiscal Year (FY) 2006 to FY 2009. City staff expect that this, when matched by the state and local contributions, will be sufficient for land acquisition and some or all design costs.

[25] SAFETEA-LU Section 5309, earmark #154; FY2006 earmark E-2006-BUSP-620

## Table 12.1: Key Federal Funding Programs

| Bus and Bus-Related Facilities Program (Section 5309) (FTA) |
|---|
| The Bus and Bus-Related Facilities Program funds *capital expenditure* on buses and bus-related projects. Transportation centers have typically used earmarked funds under this program. The funding split is 80% Federal, 10% State and 10% Local.<br>The SAFETEA-LU legislation carried this program forward from previous legislation, but with a major increase in the funding authorized. The funds are allocated to projects at the FTA's discretion, subject to earmarks. In previous years, the entire funding had been earmarked by Congress, but under SAFETEA-LU only around half of the funds are earmarked. One of the SAFETEA-LU earmarks is for Greenville. Congress may choose to earmark the remaining funds during each annual appropriations process. In addition, SAFETEA-LU sets aside a portion of the funds specifically for intermodal facilities.<br>The eligibility criteria specifically include transfer facilities, transportation centers and intermodal terminals, as well as bus administrative facilities. It is also worth noting that the FTA guidance confirms that inter-city bus and rail facilities in intermodal terminals are eligible for funding under this program.<br>It is typical for current and earlier transportation center projects in North Carolina and elsewhere to receive earmarks under this program. |
| **Urbanized Area Formula Program (Section 5307) (FTA)** |
| The Urbanized Area Formula Program provides the basic Federal support for transit in urban areas.<br>In areas with populations between 50,000 and 200,000, including Greenville, the funds can be used for *either capital expenditure* (including construction of passenger facilities) *or operating expenditure*. Funds for these areas are allocated to each State, and the State's Governor splits the funds among the relevant areas.<br>The Federal share varies: 80% for capital and planning costs, 50% funding for operating costs, and 90% for projects or portions of projects related to bicycles. |
| **Surface Transportation Program (Section 133) (FHWA)** |
| Originally a highway funding program, but funds can now be used for *capital funding* of other modes, including public transportation and including intercity or city bus terminals. Generally the funds are apportioned to States, which have wide flexibility in distributing them further. |
| **Transportation Enhancements** |
| Part of the Surface Transportation Program funding is set aside for enhancement projects. These projects must relate to surface transportation and must be one of twelve designated activities. These activities do not include transportation centers, but they do include preservation of historic buildings for transportation purposes, and rehabilitation and operation of historic transportation buildings or facilities (whether to be used for transportation or not). All or part of a transportation center project could therefore be funded under one of these headings if a historic building is used. The federal share is 80%.<br>The federal contribution to Rocky Mount's transportation center came under this program – the center was eligible because it involved rehabilitating historic transportation buildings. |

## State Funds

NCDOT works with its Washington, DC office and congressional delegations to secure congressional earmarks for projects. NCDOT has indicated that it is willing to promote any serious project this way, if asked. Funds channeled through the State would also be made available to support suitable projects that had not been earmarked. The State's own 10% contribution would likely be forthcoming for a project in either of those positions.

### Local funds

The local match for construction costs (10% or higher) could be funded in one or more of the following ways:

- By the City donating the land for the center. Effectively the land value is treated as a match.
- From existing city funds (there is currently a general fund balance that has been designated as a capital reserve).
- Through the recently-authorized bonds. These can provide up to $10 million for downtown and West Greenville revitalization projects. The program for these bonds is dependent on requirements and the center could be included.
- By additional bonds (the city has a good bond rating and ample debt capacity).
- From other dedicated local funding sources, imposed for a period of time, as described in Table 12.2. Dedicated sources can provide a stable and reliable source of revenue over a determined period of time. This allows for more comprehensive planning. However, all but the property tax would require enabling legislation at the State level.
- Through financing approaches that are increasingly being used to support revitalization and public works projects, as described in Table 12.3. These approaches – Tax Increment Financing and Business Improvement Districts – are relatively new to North Carolina. They recapture the value of the public investment in the area, but only from taxpayers in that area. They are appropriate to the extent that a transportation center assists downtown revitalization, but they are not related to transportation users. Further financial analysis would be required if this option were to be pursued.

City staff have indicated that land-value, capital reserves and bonds are all realistic options for the local match. The match can probably be fulfilled with one or more of these options, meaning that new funding streams (and their associated implementation processes) would not be required.

## Table 12.2: Possible Dedicated Local Funding Sources

| Retail Sales, Restaurant or Accommodations Tax |
|---|
| A local increase in the retail sales tax provides for a strong and stable revenue source that grows with the economy over time. However, it would require enabling legislation at the State level and is not an easy solution to implement.<br>Mecklenburg County increased its sales tax by 0.5%, generating more than $50 million per year, to part-fund its planned light rail system.<br>An increase in the restaurant or accommodations tax is also possible. Again these would require approval at the State level. The *Revitalization Plan* postulated increases in all three of these taxes as a funding mechanism for downtown projects. A 2% increase in the accommodations tax or restaurant tax would raise $400,000 or $500,000 per year respectively. A 1% increase in the sales tax would raise $4 million per year. |
| **Rental car tax** |
| A rental car tax has the advantage of being related to transportation, but has the disadvantage of placing the burden only on visitors, and the revenue potential is limited.<br>This is one of the local funding methods for the proposed Triangle area commuter rail project. |
| **Vehicle registration or title transfer levy** |
| An increased annual vehicle registration fee or title transfer fee has some revenue potential. However, as a unit fee, it does not keep pace with inflation (it would have to be increased periodically) and it may create incentives for owners to register/transfer their cars in other locations.<br>An additional registration fee is currently funding the Triangle Transit Authority's regional buses, ridesharing program and planning efforts. |
| **Motor fuels retail sales tax** |
| The extension of a retail sales tax to include motor fuels has revenue potential, depending on the incremental tax rate. |
| **Property tax** |
| A property tax has very strong revenue potential, but bears no direct relationship to transportation use. |

### Table 12.3: Possible Innovative Local Funding Sources

| Tax increment funding |
|---|
| A Tax Increment Funding (TIF) District does not impose a new tax. Instead, it uses the incremental additional tax revenues arising from increased real property values within the District. These revenues (the 'tax increment') are earmarked for particular projects of public benefit, rather than contributing to general funds. The City Ordinance which creates the District will also include a plan for the project(s) to be funded. In effect, the projects are funded within the District, rather than by taxpayers throughout the city. In technical terms, the projects are funded by revenue bonds, which in turn are supported by the tax increment, which in turn arises from rising real property values due to the revitalization efforts.<br>The Center City – West Greenville Revitalization Plan suggested the use of a TIF District as one of several fundraising mechanisms for revitalization efforts.<br>In principle, the transportation center project appears to be eligible for TIF funds, particularly for land assembly or site clearance costs. |
| **Business Improvement District** |
| A Business Improvement District (BID) is a special tax district, created with the consent of the district's property-owners. An additional tax is levied, to pay for specific services and improvements that are agreed between the City and the property-owners. The revenue can directly fund projects, or provide support for bonds.<br>BIDs are already in use in some North Carolina downtowns. They are normally used for relatively small-scale activities, such as streetscape works, maintenance or security. However, a BID could still provide some funding for a transportation center, perhaps acting as a local match for federal funds, or it could fund complementary measures. |

## 12.2 Funding for Operating Costs

Typically, operating costs are shared between the users of the facility. For example, Trailways typically leases the areas it uses at a rate that reflects the operating cost of those areas. The precise cost allocations are inevitably subject to decision and negotiation as the project proceeds. For example, the operating cost of common areas could be split among the users or could simply be regarded by the City as a public asset.

For this study, it is assumed that the City would need to cover the cost of GREAT's share of the facilities, a contribution to the common costs, and potentially the whole of the common costs if required by negotiations. These could be funded:

- Entirely locally, through the City's budget process.
- By using local money to leverage additional state or federal funds for operations. The funding sources and formulas are complicated, but in principle there are opportunities to do this. The two main sources available to Greenville are the federal Urbanized Area Formula Program (Section 5307, described in Table 12.1) and NCDOT's State Maintenance Assistance Program (SMAP). The cost of operating a transportation center is considered to be part of the cost of operating a transit service, so these two funds can be used. Although having a transportation center will not in itself increase an area's allocation, increased local funding can leverage a larger grant allocation. In addition, part of the formula is based on ridership, so if the center leads to an increase in GREAT ridership, more grant money will be allocated.
- By leases and other revenues.

The potential leasing and other income sources are:

- Leased space (such as a café or a car rental desk) and other facilities (such as vending machines and an ATM) whose rental values directly relate to passenger numbers. Rail station studies typically assume that these can collectively generate around $0.10 per annual rail passenger, and the revenue per bus passenger is likely to be smaller still. This would add up to a negligible amount in Greenville – only a few thousand dollars per year.
- Other leased space. This income would have to cover the incremental debt (if any) and incremental maintenance/management cost of the space, before it could contribute to the operating expenses for the rest of the center. This will depend on market conditions. Analysis conducted for *The Center City - West Greenville Revitalization Plan* suggested that rental rates for retail in downtown Greenville were $7-$10 per sq ft (in 2003). The rates had been steadily increasing in the previous five years, with average annual growth of 2.5% - 3%. At $7 per sq ft, a 1000 sq ft shop could produce $7,000 per year.
- Advertising space rentals. The loss of ambience is balanced against the income, but the income is probably negligible in this case.
- Parking fees. Given that downtown parking is free and likely to remain so in the near future, no parking fee income should be assumed.

Experience from other locations, and advice from stakeholders, all suggest that lease revenue is possible, but should not be relied upon. Some centers have had difficulty in attracting occupants. The income is less important than the benefits to the center's image and security.

# 13 Benefits of the Center

This section summarizes the expected benefits from the center, based on stakeholder and public responses and other factors. It also discusses the potential economic benefits from the center, as these are not specifically addressed elsewhere in the report.

## 13.1 Summary of Benefits to Stakeholders, Riders and the Community

Table 13.1 summarizes the likely benefits to each stakeholder, to riders, and to government and the community as a whole. It also shows the costs and some important caveats. As the table shows, the study has indicated a wide range of benefits for all these groups. Apart from the construction and operating costs, there are few disadvantages.

## 13.2 Economic Benefits

The range of potential economic impacts from a transportation center is shown in Table 13.2. Estimating the impacts is complex, and beyond the scope of this study. However, an analysis of the statewide economic impacts of recent station revitalization projects in North Carolina[26] provides some pointers to the level of impact that might be expected. It should be borne in mind that these were station revitalization projects with existing rail services, rather than transportation centers with no current rail service.

The analysis concluded that the main impacts were construction impacts and land use impacts. The wage benefits from construction were (unsurprisingly) equivalent to a major part of the construction cost. Far greater economic impacts (mainly wages) occur when surrounding development can be attributed to the center. However, this is subject to the caveats that it is difficult to isolate the incremental impact of any one development and that the impacts can be redistribution as much as growth. The report instanced Salisbury, where the success "reflects the community's sustained effort to coordinate numerous downtown initiatives around the station investment, leveraging benefits across a number of affiliated investments."

Greenville's stakeholders see the center as one of a range of revitalization initiatives, and recognize that the individual initiatives reinforce each other. This approach is fully consistent with experience elsewhere. As well as the direct construction impact, the center can be expected to contribute to the overall impact of the revitalization program.

[26] *Economic and Fiscal Impact Analyses of Station Revitalization*, NCDOT Rail Division, June 2003. www.bytrain.org/quicklinks/reports/StationReport.pdf . The analysis looked at six relatively small projects (Burlington, Hamlet, High Point, Kannapolis, Salisbury and Selma, with construction costs between $2.7m and $9.7m) and one large project (Greensboro at $30.8m) Impacts were measured at the statewide level, not limited to the town in which each project took place, for a 20-year horizon.

| Stakeholder | GREAT | Trailways | PATS | Hospital | ECU Community | Taxi operators | NCDOT Rail | Community and Government | Riders |
|---|---|---|---|---|---|---|---|---|---|
| **Pros** ✓ | • Improved passenger service and amenities – especially as a comfortable transfer facility<br>• Convenient Information / ticketing point for public<br>• Much-needed amenities for drivers<br>• Easy transfers between modes for riders<br>• Operational synergies (e.g., shared ticket sales)<br>• Opportunity to work more closely with ECU<br>• Springboard for increasing service levels & ridership | • Improved passenger environment<br>• Potential increase in ridership<br>• Avoids major maintenance costs on existing building<br>• Supports policy of downtown locations<br>• Supports preference for leasing space in intermodal centers | • Good place to drop/collect riders downtown<br>• Easy, safe transfers to/from other modes for riders<br>• Potential for safe layover area<br>• Potential for van-to-van/bus transfers, for efficiency<br>• Safe transfers to/from GREAT for any future RGP service<br>• Springboard for any future fixed-routes | • Improved service for patients and staff who use transit<br>• Springboard for possible future Hospital-Downtown shuttle | • Improved student access to Trailways (for start and end of semester, weekend trips)<br>• Improved access to campus for students on GREAT routes – particularly remote apartments<br>• Potential synergies with ECU downtown facilities<br>• Potential synergies with Main Campus – Medical School axis | • Improved visibility and image of taxis<br>• Stand is convenient for visitors arriving<br>• Office space if required<br>• Stand serves as layover area | • Improves Trailways connection to Amtrak (even without rail at the center)<br>• Springboard for future Greenville rail service (if location supports rail) | • Improved visibility and image of transit<br>• Improved quality of service<br>• Springboard for improving transit service levels<br>• Springboard for managing city growth more sustainably<br>• Assisting downtown revitalization<br>• Potential for synergies with other developments<br>• Improves case for rail service (if location supports rail) | • Directly benefits ~300 existing GREAT trips daily<br>• Directly benefits ~40 Trailways riders daily<br>• Improved links to long-distance travel<br>• High-quality, safe place to wait/transfer<br>• Information point<br>• Convenience of kiosks while waiting or on arrival |
| **Cons** ! | • Initial cost<br>• Operating cost | | • Potential share of operating costs | • Potential share of operating costs if shuttle is hospital-run | • Potential operating fee for bus slip(s) used by ECUSTA | • Cost of office space<br>• Potential fee for using stand | • Location choice at this stage may restrict rail options (but options are limited anyway) | • Initial cost<br>• Operating cost | |
| **Comments and Caveats** ✗ | • Must accommodate growth in system and ridership<br>• Center must be seen as part of overall step-change in service | • Operational cost will depend on negotiations, but will likely be similar to existing cost | • Some agency customers see severe RGP needs as critical issue<br>• Potential depends on agencies' and PATS' future service strategy | | • Increasing student use of GREAT also involves other issues | • Possible loss of business (due to easier transit) is balanced by improved visibility and image of taxis | • Needs care not to compromise city transit function to serve rail | • Downtown revitalization effects must be seen as part of wider efforts | • Some see improving service levels as a higher priority |

Table 13.1: Summary of Costs and Benefits for Stakeholders and the Community

## Table 13.2: Potential Economic Benefits from Transportation Centers

- **Construction impacts**: There are one-time impacts resulting from the construction work itself.
- **Activities accommodated at the center**: These are recurring activities such as new positions to operate and maintain the center and rents from other users or tenants.
- **Land use impacts**: These are development impacts that occur as the center becomes an activity center for the area and catalyzes other investment nearby, resulting in higher-valued land uses.
- **Tourism impacts**: in some cases, the facility itself may attract visitors by becoming a destination in its own right, often in concert with the surrounding developments. Greenville's center is unlikely to have this result. However, the improved amenities for travelers would enhance the visitor experience.
- **Fiscal impacts**: These are revenues generated by the additional economic activity associated with the center. Examples include the income tax generated from the earnings of newly-hired workers and property taxes derived from increased property values.
- All these impacts may have multiplier effects as they percolate through the local economy. For example, new workers will create additional demands for goods and services.

*Source: Adapted from* Economic and Fiscal Impact Analyses of Station Revitalization*, NCDOT Rail Division, June 2003, www.bytrain.org/quicklinks/reports/StationReport.pdf (last accessed on February 16, 2006).*

# 14 Feasibility Assessment

This section assesses the feasibility of the center against the four criteria that were established at the start of the study:

- Would it support the travel needs of the City, County and region?
- Would it be useful to stakeholders?
- Does it have public support? and
- Is it cost-effective and fundable?

Based on the information and analysis in previous sections, conclusions are drawn on each criterion.

## 14.1 Would it Support the Travel Needs of the City, County and Region?

Sections 3 to 7 identified a range of ways in which the center would support the existing and future travel needs of the City, County and region. There would be benefits to a wide range of existing riders and potentially to those who would make new transit trips as a result of having the center. The center's value would increase as the City's population grows.

It is clear that the City, County and region have a range of transportation needs and aspirations that the center will not meet in its own right – particularly for service levels and frequencies, both within the city and outside. However, there is a strong and realistic consensus that the center could provide impetus for addressing those needs. Addressing those needs would in turn increase the value of the center.

In summary, the center would support the identified travel needs, although (as stakeholders already recognize) it would be most effective as part of a wider strategy that also addressed service levels, frequencies and other travel needs.

There is also a strong equity case for the center (and other transit improvements). The center would have a wide range of users, but the benefits would particularly accrue to GREAT and Trailways riders, many of whom are economically disadvantaged.

## 14.2 Would it be Useful to Stakeholders?

Section 8 listed the stakeholders interviewed and summarized their views. Table 13.1 summarized, for each of the transportation operators and for the community, the potential costs and benefits, other pros and cons, and overall level of benefit that they would expect from the center.

### Transportation Operators

The transportation operators are very positive about the center. GREAT and Trailways would definitely move their transfer point and depot (respectively) to the center. ECUSTA would likely serve it with one route (and potentially more). These three would represent the core of the center's operations, and would in themselves justify the center on this criterion.

There is a role for PATS in the center, but its extent is unclear. Some PATS riders would need to be taken to/from the center in any case, to connect with other services. It could also become a transfer point for future RGP riders (connecting them riders to/from GREAT or transferring between PATS vans for operational efficiency), but this is dependent on the future size of RGP service and its operational strategy.

PCMH expects to continue operating only within its campus, but believes the center would help people to get to its campus by city buses. One taxi operator has also expressed a strong interest in participating. Although the center does not specifically benefit Pitt Greenville Airport, the airport is positive about the concept and the center could serve any future shuttle or van link.

NCDOT transit division supports the concept and is willing to work for funding. NCDOT rail division also supports the concept, even though Greenville does not currently appear in the state's passenger rail plan.

### Other Stakeholders

Other stakeholders, too, support the center. The City of Greenville, the Greenville Public Transportation and Parking Commission, and the Redevelopment Commission all believe that the center would assist with their particular objectives (such as downtown revitalization). The balance of opinion among the ECU consultees was strongly positive.

The agencies who are customers of PATS had mixed views. However, even those that saw little benefit to their clients (and felt that the center would not be addressing their pressing need for RGP service) acknowledged that the center would still benefit City residents and visitors.

### City and County Planning Objectives

The center would be compatible with the City and County planning objectives (Section 4). It is consistent with the high-level objectives to support transit-friendly development patterns and to improve transit services. It would meet some of the specific needs identified in the planning documents. Other transportation needs could only be met as part of a wider strategy, to which the center would contribute as described above. The center would also directly support several of the non-controversial recommendations from the Regional Transit Feasibility Study (particularly for better connections and amenities at transfer points).

### Conclusion

The center would be useful to stakeholders, whether or not it made provision for rail service. There is broad support from both transportation operators and other stakeholders – more than enough for the center to be viable on this criterion.

## 14.3 Does it Have Public Support?

Section 8 described the public comments received, and showed that the center appears to have a good level of public support. Most people supported the center in its own right or as part of a wider package of desired transportation improvements.

The only major concern – expressed by a significant minority of people – was if the center diverted funds from potential GREAT service enhancements. This does not seem likely. The

expected federal and state contributions to construction costs, leveraged by the City's own contribution, are separate from their operational funding streams. The City's share of the center's operating costs would come out of the City budget process in the same way as any expenditure on transportation or other public services; there is no specific conflict with bus operating costs, and the City does recognize that the center and service enhancements should be pursued in tandem rather than as alternatives to each other.

## 14.4 Is it Cost-Effective and Fundable?

Section 11 set out an estimate of the financial costs of the center – both capital costs and ongoing operational costs. The distribution of those costs will depend on negotiations at a later stage. Section 12 set out how the costs could be funded. There is a good prospect of obtaining Federal and State contributions to the capital cost.

There is no expectation that the center must break even. In some centers, revenue from leased space covers all or most of the operating cost, but experience suggests that this should not be relied upon. It is therefore generally accepted that the center will require operating support from City funds, in addition to the local share of the capital cost. This could be up to $400,000 per year, in addition to the potential $0.5 million to $1 million city share of construction cost. City staff have indicated that both sets of costs could likely be met.

These costs must be set against the benefits to stakeholders, to passengers and to the City as a whole, as set out in Section 13. The study has indicated a wide range of benefits for all these groups, with no significant disadvantages. The center therefore appears to be cost-effective and fundable.

## 14.5 Conclusion

The center appears to be feasible.

Table 14.1 summarizes the reasons for and against building the center. The study has suggested that the center would indeed be a reasonable use of public funds, for the reasons given in the table, and that it can realistically be funded. It is up to the funders to decide whether it is the best use of their own resources (the 'opportunity costs').

## Table 14.1: Summary of Reasons to Build a Transportation Center

| Why build a transportation center? |
|---|
| • GREAT, Trailways and ECUSTA would all use the center and all see benefits for their riders<br>• Trailways needs a new depot anyway<br>• Existing GREAT and Trailways riders need better transfer conditions and will benefit directly<br>• Improves access to/from ECU<br>• Improves trips to downtown for transit riders<br>• Could improve access to/from the medical district, in conjunction with shuttle and Tenth Street Connector<br>• Could provide more options for PATS riders, while potentially reducing PATS costs<br>• Improves image and visibility of transit<br>• Springboard for service enhancements as city and region grow<br>• Potential options to locate alongside rail line<br>• Potential to assist downtown revitalization<br>• Represents forward-planning to meet the challenges of City growth<br>• Consistent with City and County planning policies and objectives |
| **Why not?** |
| • Opportunity cost of site<br>• Opportunity cost of money |

# 15 Site Selection Criteria

This section describes the site selection criteria that were developed. These are to be used in a future study that would choose a site for the center. The criteria could be applied:

- qualitatively - by simply describing how well each site meets each criterion;
- quantitatively - by 'scoring' each site against each criterion, to create a points total for each site. Optionally, the more important criteria could be worth more points than the others; or
- using both methods together.

The criteria were developed from stakeholders' requirements and aspirations, from experience with other centers and similar projects, and from review of design standards. The criteria do not assume a downtown or tobacco district location, but in reflecting stakeholders' aspirations and the city's travel patterns, they point strongly to that area.

## 15.1 Selection Criteria: Layout and Site Impacts

### *Can the site accommodate the required functions?*

The site should be large enough to accommodate the required functions, including the space for future expansion. However, this is not a simple 'yes' or 'no'. For example, a site that was slightly too small to accommodate all the bus bays desired for future expansion might still be acceptable if other criteria justified it. Similarly, a site with insufficient parking space might still be acceptable if alternative parking was available on-street or in an adjoining lot.

### *Would the site have a good internal layout?*

The site should be capable of producing a safe and effective internal layout – for example, separating pedestrian movements from buses, minimizing internal walk distances, and avoiding duplication of facilities. This would have to be sketched-out for each site.

### *Is the street geometry suitable for buses?*

Buses should be able to reach the site easily - for example, avoiding narrow streets with difficult turns, or railroad grade crossings that are frequently blocked.

### *Will the impacts on traffic flow and safety in the surrounding streets be acceptable?*

The center will create new accesses to the street system, and potentially increased levels of bus and car traffic. The impacts on safety and traffic flow (including pedestrians and cyclists) should be acceptable. On streets with heavy pedestrian movements, it may not be acceptable for buses to cross sidewalks to access the center. Ideally the center would provide an opportunity to improve on existing conditions.

### *Would the site allow good security practice?*

Although most homeland security strategies relate to detailed design and operations, some may be affected by the choice of site. The ideal site, from this point of view, would have structures set back from roads and parking areas, a minimum number of vehicle entrances, unobstructed

sightlines within and around the site, and critical assets buffered from public or vulnerable areas. Some of these may conflict with other criteria, and stakeholders would need to consider the appropriate weight to be given to this criterion.

## 15.2 Selection Criteria: Impacts on Transportation Operators and Users

*Is the site convenient for Trailways routes? GREAT routes? ECUSTA routes?*

The site should fit well with each operator's route network, and not require buses to go out of their way to serve the center. The ideal site would be on the natural path of as many routes as possible.

*Will the site have a positive impact on GREAT riders and ridership?*

The site should be close to the origins/destinations of GREAT riders, making the center convenient in that role as well as the transfer role.

*Will the site have a positive impact on TRAILWAYS riders and ridership?*

Trailways' experience is that the closer the site is to downtown, the more convenient it is for riders and the higher the resulting ridership.

*Will the site have a positive impact on ECUSTA riders and ridership?*

The site should be well-located for people who might want to use ECUSTA or GREAT-plus-ECUSTA to travel between home and the campus, or between the campus and other modes of transportation.

*Will the site have a positive impact on taxi users and operators?*

The taxi stand should be convenient for people in the area, in addition to its role in providing connections from other services at the center.

*Will the site have convenient access on foot and by bicycle?*

The location should encourage people to walk or cycle to the center, instead of driving. The ideal site would be close to activity centers, with attractive on-street connections, and would link easily into the greenways and bike route network.

*Does the site allow for future rail service?*

The ideal site would allow for a future rail station to share the facility. The next-best arrangement would allow for a station to be adjacent (as in Wilson). The operational practicality of the potential station site would also need to be considered, as described in Section 7.

The Steering Committee accepted that the desirability of providing for rail should not dominate the other criteria. This is because the bus services are already present and represent the center's core role, and because any future train service would be relatively infrequent. If necessary, a dedicated shuttle could run between the center and the station to connect with train arrivals and departures.

*Does the site assist travel to/from the Medical District?*

It is accepted that the center will not directly serve the Medical District, but the routes to/from the Medical District will be important. The ideal site would be convenient for current services or

a possible future express shuttle. This should take into account the planned Tenth Street Connector and potential transit service along that corridor.

### *Will potential users feel secure at the site?*

High-activity, high-visibility centers are usually safer or perceived to be so, particularly at night. The ideal site would have a high degree of busyness and 'informal surveillance', and the site layout would facilitate security-conscious design. Problems can be mitigated by on-site staffing and surveillance, but at a financial cost.

### *Does the site improve the overall visibility and image of public transportation?*

The site should provide a high-profile and attractive image for public transportation, particularly to attract potential users. The ideal location would mark the center out as an important public building, and would be highly visible to pedestrians and vehicles passing by.

## 15.3 Selection Criteria: Location and City Planning

### *Is the site close to downtown?*

The site should be in or close to downtown, as the symbolic heart of the city and region, as a center of activity, and as an origin or destination for the center's users.

### *Is the site close to ECU main campus and its likely areas of expansion?*

The site should be convenient for ECU main campus, as a major center of activity within the city, and as an origin or destination for the center's users. This criterion should take into account the likely expansion of ECU's academic buildings into the tobacco district.

### *How much will the site help downtown / tobacco district revitalization efforts?*

The center should play a part in the efforts to revitalize downtown and the tobacco district. It is accepted that the center alone, on an isolated site, would not be a strong magnet for revitalization. Instead, the center is seen as part of the range of projects that will collectively lead the revitalization efforts. The ideal site would therefore be close to the existing and near-term centers of activity (such as the proposed ECU alumni center), helping to gradually extend the areas of vitality. Other aspects include the potential contributions to adaptive re-use of historic buildings and to streetscape improvements.

### *Is the site compatible with existing and planned neighboring land uses?*

The neighborhood should be suitable for the potential noise, traffic and visual impacts of the center – that is, the center should be an appropriate neighbor. Conversely, unattractive surrounding land-uses may discourage use of the center (although the center might spur revitalization of the area in the longer-term).

### *Will the site maintain or improve the streetscape and urban design?*

The center should maintain, and ideally improve, the streetscape and urban design. For example, a site which required demolition of an attractive existing frontage would score badly. The ideal site would provide opportunities for a street-facing building (for example, reinstating frontages on an open downtown block), for filling-in gaps in existing frontages, or for replacing an eyesore. Similarly, the required vehicular accesses should not unduly interrupt the streetscape.

## 15.4 Selection Criteria: Finance and Implementation

*Does the site have low purchase, clearance and remediation costs?*

Land purchase, clearance and remediation are potentially large costs and sources of delay. The ideal site would be already in public ownership and would have low site-work costs. It may also be cost-effective to buy adjoining land as a reserve for the center's expansion, retaining the existing uses/income until the land is needed.

*Will the impact on environmental, community or historical resources be acceptable?*

The site should have a neutral impact on environmental (e.g., wetlands), community or historical resources. Mitigation measures can often neutralize the impact, but would have a cost. The ideal site would have opportunities to preserve and enhance these resources (e.g., by rehabilitating a historic building).

*Is there realistic potential for joint development or for lease revenue?*

The ideal site would offer opportunities for joint development or leased space that would contribute to meeting the center's operating costs and also contribute to activity levels. The site location (and its size and layout) will determine how realistic this is. An isolated location may offer fewer opportunities than a location close to existing centers of activity.

*Is the site free of 'roadblock' issues?*

Some sites present specific problems with implementation – these can delay or block the process. This criterion also provides an opportunity to record issues or opportunities that do not fit into the other criteria.

# Annexes

*Page*

# Annex 1 Review of Existing Intermodal Centers

This Annex reviews existing intermodal centers. The first part summarizes a number of comparative studies already published. The second part describes the intermodal centers in a range of comparable cities, specially selected for this study, and draws out the lessons for Greenville. Finally, the conclusions from the two parts of the review are drawn together. The conclusions are repeated in Section 2 of the main report.

## A1.1 Comparative Studies: Introduction

The study team undertook an extensive literature review to identify existing studies of intermodal centers, their impacts and the lessons to be learned. This following sections list three key comparative studies and summarizes their lessons for Greenville. (Other studies, which examined individual centers, are not described here.)

## A1.2 Institute of Transportation Engineers Survey

A survey by the Institute of Transportation Engineers[1] tried to establish the effectiveness of downtown transit centers. One of its first conclusions was that few agencies undertook 'before and after' surveys of their projects, and hence that it was not possible to quantify the experience as hoped.

Detailed information was published for ten centers in the US, and basic information for another twenty. The main objectives that were reported for these centers were:

- to provide rest area for drivers;
- to enhance the public image of transit;
- to provide a civic facility;
- to assist downtown revitalization;
- to provide a better waiting environment and protection from the weather;
- to reduce the potential for accidents; and
- to enhance passenger convenience.

Of the ten centers reported in detail, most included weather protection, heating, seating, an information display of some sort, telephones, water and restrooms. About half included a ticketing and/or information desk, and about half had vending machines or a news-stand. The majority had a security presence. Among the wider sample of 20 centers, one center included a restaurant, market and concession kiosks, and another was staffed by senior citizen volunteers who provided information and monitored the restrooms.

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[1] R.J. Hocking [on behalf of ITE Technical Council Committee 6A-40], *Effectiveness of Downtown Transit Centers* (ITE Journal, September 1990, pages 34-38). Also summarized in *Traveler Response to Transportation System Changes: Transit Scheduling and Frequency* (Transit Cooperative Research Program Report 95, Chapter 9), page 9.17.

Only three of the ten indicated that increasing ridership had been an objective. Nevertheless, half of the centers reported that ridership had increased. The other half reported no impact. Almost all reported that the objectives of providing weather-protection and passenger amenities were being met. Respondents also reported community responses to be positive. The common problems identified were:

- non-transit-users, such as local youths or homeless people, using the center; and
- site-specific structural and vehicular circulation problems (such as parking encroachment in bus areas and changes in downtown one-way flows that changed access to the center).

## A1.3 Developing Bus Transfer Facilities for Maximum Transit Agency and Community Benefit

Another study[2] examined some transportation centers that were seen as making a positive contribution to their neighborhoods and to community development. The locations studied were the Charlotte (NC) Transportation Center, transit centers in Corpus Christi (TX), the Cedar Rapids (IA) Ground Transportation Center, and transit centers in Columbus (OH). As well as evaluating the outcome in neighborhood terms, the study includes useful information on the centers' functions, design, operational issues and other lessons. One of the case studies is particularly distinctive, and is reported in detail below. The other case studies are not reproduced here, but the report is available online.

The report came to the following conclusions:

- Transit managers need to expand their self-image beyond being mobility managers to include possibilities to serve as facilitators of community development. They have access to grants that can help pay for improvements and spur new development.
- A new bus transfer facility should serve more than just the needs of transit passengers; it should be consistent with a comprehensive plan and help the surrounding community accomplish its broader development goals. The question to ask is, "What can we do to help our community succeed?"
- Transit centers can be more beneficial to surrounding communities when done in partnership with a broad array of public and private partners who are concerned with positive community development. Additional partners can bring more resources to bear and help generate support for the facility.
- Complete community involvement in the planning of a new transit center is vital to ensure it includes functions deemed important and beneficial by the community, and to help ensure community support for the facility.
- The transit center can accommodate many non-traditional, non-transit purposes and should strongly consider including them if they help gain community acceptance and if they help the prosperity of the surrounding area.

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[2] Joel Volinski and Oliver Page, *Developing Bus Transfer Facilities for Maximum Transit Agency and Community Benefit* (University of South Florida Center for Urban Transportation Research, for Florida DOT, 2004), http://www.nctr.usf.edu/html/527-13.htm or http://www.nctr.usf.edu/pdf/527-13.pdf.

- Thoughtful architectural design that incorporates local cultural characteristics can not only greatly enhance the acceptance of the transfer facility, but can also create the center as a gateway to the community that people will feel proud of. When completed, the facility should look like it has always belonged there.
- There needs to be a no-tolerance stance taken when it comes to crime and vandalism if the center is to be regarded as a community asset. The transit center will not be a community asset unless it invests whatever is necessary to provide top-flight security and maintenance at the facility.
- The transit agency should take steps as quickly as possible to address the issues of bus noise and exhaust. Minimizing these irritants will help gain community acceptance.

### *Case study of a transit center as a neighborhood center*

The Four Corners transit center in Columbus, Ohio has an interesting role as a center for neighborhood facilities as well as transit. Although this is a suburban center, the principle could also apply to downtown or regeneration-area locations. The center, on a main road site in the low-income Linden neighborhood, was aimed at providing not only a suburban transportation hub but also a "one-stop" facility where residents could access day care, health services, job training, postal services, banking services, and transit service all in one community-based center. As the report notes:

> Providing such a center could help the residents of Linden get most of the services they needed to become more job-ready and attractive to employers. The bus service already in place could get them to multiple places of employment, but the residents, many of whom were on welfare or coming off welfare, needed these concentrated complementary services in order to become fully prepared to take advantage of the job opportunities.

The report goes on to describe the facilities in the center:

> The vast majority of the square footage within the Linden Transit Center is used by agencies that provide a variety of vital human services to an area that had long been without them… Mother's Helper Day Care is a privately-owned business that occupies approximately 6,000 square feet of space on the first floor, providing day care for 104 children on an 18-hour-a-day basis. Day care was identified early on by the community as a service that would be needed, particularly for those mothers who were coming off of welfare and joining the workforce for the first time in many years.
>
> Also on the first floor is a branch office of the Fifth Third Bank, a local banking business with branches throughout the city. The 300 square feet of space for the bank is not intended to provide full banking services. The immediate market in Linden was deemed too small to justify establishing a full branch at the center. However, residents and customers can visit with a bank representative at the office to set up loans and accounts. An Automated Teller Machine (ATM) is also available in the building, to allow people automated access to their funds.
>
> COTA [the transit agency] provides almost 400 square feet for transit functions including an office where passes are sold and transit information is provided to passengers through bus route schedules and maps, and through COTA personnel. When a COTA representative is not present, there is a telephone available for customers to directly contact the transit agency's customer service office. The remainder of the area for COTA's direct use is available as a waiting area for passengers… The waiting area has served as a site for job fairs. It is also used as a voting precinct for the community, and as a space to hold community meetings.
>
> The second floor of the transit center is primarily dedicated to the Children's Hospital satellite pediatric clinic and to the Columbus Health Department. The pediatric clinic was at first hesitant to occupy space in the building thinking that there were not enough people in the immediate neighborhood to make the

> investment worthwhile. However, the many bus routes that lead to the center make the location more attractive since residents from many other nearby communities can access the clinic by bus. Representatives of the clinic now regard the services at the Linden Transit Center to be among their best situated in the County. The County Health Department provides services including Planned Parenthood and general health screening. Also on the second floor are offices for St. Stevens Community Homes, a non-profit housing program that helps lower income and first-time home purchasers secure a house with payment plans that they can afford.

As part of the project, a neighborhood circulator bus was introduced, which not only provides convenient access to the Center and its facilities but also links with other community facilities such as the library.

The researchers concluded that

> the center has consolidated a number of the services people need to help complement their ability to access new jobs. For many people, particularly single parents, they can not hope to participate in the workforce unless they have reliable, affordable day care services to tend to their children while they are at work. The neighborhood circulator allows them to access the services at the day care center without needing a car, which also enhances the value of the transit center to the community.

The center also seems to have served as a catalyst for further public and private investment in the neighborhood, including new businesses. Interestingly, however,

> transit ridership has not significantly increased as a result of the Linden Transit Center. One reason is that the economy in Ohio… has not done well since 2001. Another reason that is of some mild irritation... is that once people improve themselves economically through getting a job, one of the first things they often do is purchase an automobile for personal travel. However, COTA can take some of the credit for their improved financial conditions, all of which ultimately help raise a community's quality of life.

## A1.4 Neighborhood Intermodal Transfer Facilities

Another study[3] was focused on neighborhood-scale suburban facilities, but included case studies of two transit centers: Fisher's Landing Transit Center in Vancouver, Canada, and Columbia Station in downtown Wenatchee, Washington. The details are not reproduced here, but the report is available online. The report evaluated these and the other selected facilities, and concluded with a list of desirable design elements and amenities (some of which will be more relevant at the detailed design stage):

- Create a pedestrian-friendly environment by designing connections that stand out and signify priority over automobiles.
- Install functional bicycle racks in visible locations to alert the neighborhood that bicycling is welcome at the facility and that users' bicycles will be safe.
- Ensure the facility is a recognizable feature of the neighborhood through informative and ornate signage.
- Display current route and mode information using a method that allows easy modification in case of schedule or route changes.

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[3] Laurel Land and Chandra Foreman, *Neighborhood Intermodal Transfer Facilities* (University of South Florida Center for Urban Transportation Research, for Florida DOT, 2001), http://www.cutr.usf.edu/index2.htm or http://www.nctr.usf.edu/pdf/Intermodal Facility.pdf

- Install shelters and seating for passengers who are transferring between routes or modes.
- Ensure adequate lighting is placed throughout the facility for the safety and convenience of users.
- Include public art and landscaping to enhance the attractiveness of the neighborhood facility.
- Coordinate fares and schedules of multiple operators.
- Involve the community in the planning, design, and operation of the facility.
- Encourage community partnerships to instill a team approach for the facility's success.

## A1.5 Case Studies: Introduction

A literature review identified data on around 60 intermodal centers or transit centers in use or planned in the US. In addition, further potential comparator centers were identified from local knowledge and/or previous experience. From these options, a set of locations to review in detail was developed, aiming to cover locations that met one or more of the following criteria:

- they broadly shared Greenville's structural, demographic and transit characteristics;
- they potentially represented the best of contemporary practice; and
- they had information easily available and/or could reasonably be visited.

The locations selected were:

- Greensboro, NC;
- Rocky Mount, NC;
- Wilson, NC;
- Winston-Salem, NC;
- Athens, GA;
- Cary, NC;
- Binghamton, NY;
- Spartanburg, SC; and
- Greenville, SC.

Table A1.1 summarizes the characteristics of each location, the successes, and the lessons for Greenville. The following sections describe each case study in more detail. A number of city or transit authority staff were interviewed for this research.

# Table A1.1: Summary of Case Studies

| City | | Greensboro NC | Rocky Mount NC | Winston-Salem, NC | Cary NC | Wilson NC | Athens GA | Greenville SC | Spartanburg SC | Binghamton NY |
|---|---|---|---|---|---|---|---|---|---|---|
| **Center** | | **The Depot** | **Transportation Center** | **Transportation Center** | **Amtrak Station** | **Transportation Center & Amtrak Station** | **Multi Modal Center** | **Central Transit Transfer Facility** | **SPARTA Passenger Center** | **Transit Center** |
| **Status** | | In use | In use | In use | In use | In use | Under construction | In use | In use | In design - Due open 2007 |
| **Comparable size city?** | | Larger | ✓ | Larger | Larger | ✓ | ✓ | ✓ | ✓ | ✓ |
| **College town?** | | ✓ | - | ✓ | - | - | ✓ | ✓ | ✓ | ✓ |
| **Staff Interviewed?** | | ✓ | ✓ | - | - | - | ✓ | Email comments | ✓ | ✓ |
| **Field visit?** | | ✓ | ✓ | ✓ | ✓ | ✓ | - | ✓ | ✓ | - |
| **Modes** | **City Bus** | ✓ | ✓ | ✓ | Starting soon | ✓ | ✓ | ✓ | ✓ | ✓ |
| | **University bus** | Starting soon, will use IMC † | - | - | - | - | Yes, will use IMC | - | - | Yes, may use IMC |
| | **Regional bus** | ✓ | - | ✓ | Yes - TTA | - | - | - | - | - |
| | **Inter-city bus** | ✓ | ✓ | ✓ | - | ✓ | ? | ✓ | ✓ | ✓ |
| | **Amtrak** | ✓ | ✓ | No (bus link) | ✓ | ✓ | - | Separate site | Separate site | Rejected * |
| | **Regional/ local rail** | Planned | - | Planned | Planned | - | Planned | - | - | - |
| | **Taxi office** | - | - | - | - | ✓ | - | - | No - trying to attract one | N/K |
| **Shared uses** | | Model railroad club | Various | Offices above | DMV office | No | No | Deck above | Police substation | N/K |
| **Objectives** | **Improve bus transfers** | ✓ | ✓ | N/K | N/K | N/K | - | N/K | ✓ | ✓ |
| | **Connect with / improve inter-city bus service** | ✓ | ✓ | N/K | N/K | N/K | - | N/K | ✓ | - |
| | **Connect with rail** | ✓ | ✓ | N/K | N/K | N/K | Yes - main reason for site decision | N/K | - | Rejected * |
| | **Increase ridership** | Expected, but not an objective | Expected, but not an objective | N/K | N/K | N/K | - | N/K | - | - |
| | **Other** | - | - | N/K | N/K | N/K | - | N/K | Provide taxi facilities | - |
| **Successes** | | All objectives achieved | All objectives achieved. Especially in leading downtown regeneration | Attractive, feels safe | DMV provides busyness | Attractive Amtrak station | To be seen | N/K | • All objectives achieved, except no taxi office yet.<br>• Passengers happy | To be seen |
| **Lessons** | | • Plan for expansion<br>• Historic structures are a mixed blessing | • Plan circulation carefully<br>• Use tax credits if possible | Quality design and upkeep are needed | Can design for future expansion | Bus station now feels dated | To be seen | Avoid having a deck above | Plan for expansion | To be seen |

** Binghamton considered a rail-connected site that could accommodate future rail service, but rejected it in favor of a site that was better-placed for other modes.*
*† The university-funded services will be operated by the city transit authority as if part of their network*
*Successes and lessons are based on a combination of staff comments and the project team's field visits*
*N/K = Not known*

## A1.6 Greensboro

The City of Greensboro, North Carolina (population 224,000) has an extensive multi-modal center on the edge of downtown. Known as "The Depot", it uses a complex of several former railroad buildings including the landmark historic passenger station building. Figure A1.1 shows an aerial view of the site when it was under construction and some views of the center in 2005.

The site is surrounded by the railroad line, industrial buildings and a social services center. The bus facilities opened in 2003, with rail service returning to the historic depot in October 2005. Previously, Greensboro's station was a 1970s building in the suburban freight yard.

The center is owned and operated by Greensboro Transit Authority (GTA), with space leased to other operators. Construction was funded by the Federal Transit Agency, the North Carolina Department of Transportation (NCDOT) Rail Division and the City. The costs were heavily influenced by the renovation of the historic buildings.

The center serves the following modes:

- city buses – 18 bays in sawtooth layout, under an overall roof;
- PART regional buses;
- Trailways – four bays in diagonal layout; and
- Amtrak.
- A drop-off area and parking meters are provided nearest to the buildings, with extensive free parking at the edge of the site.

The city hopes to bring in a car rental office, seeing the train-plus-rental-car option as analogous to the plane-plus-rental-car option. There is no taxi office. The city has no separate university transit system, but the universities are paying for some new services from Fall 2006, to be operated by GTA but aimed at university needs. There is a long-term proposal for commuter rail service, which would use the Amtrak platforms.

The center effectively has three sets of facilities. One building houses a waiting room, restrooms and information kiosk for local buses. An adjoining building houses the Trailways waiting room, ticket and baggage counters, and restrooms. The historic depot building houses the rail facilities.

There are also security officers with their own office, a dispatch office and drivers' break room and restrooms. A model railroad club occupies one of the leasing units in the building used by Trailways.

Table A1.2 lists the center's objectives. City staff consider it to have been successful. They suggest that the historic depot complex makes for a welcoming and attractive environment, and this may be contributing to the increase in ridership. No neighborliness issues were reported.

### Table A1.2: Objectives of The Depot, Greensboro

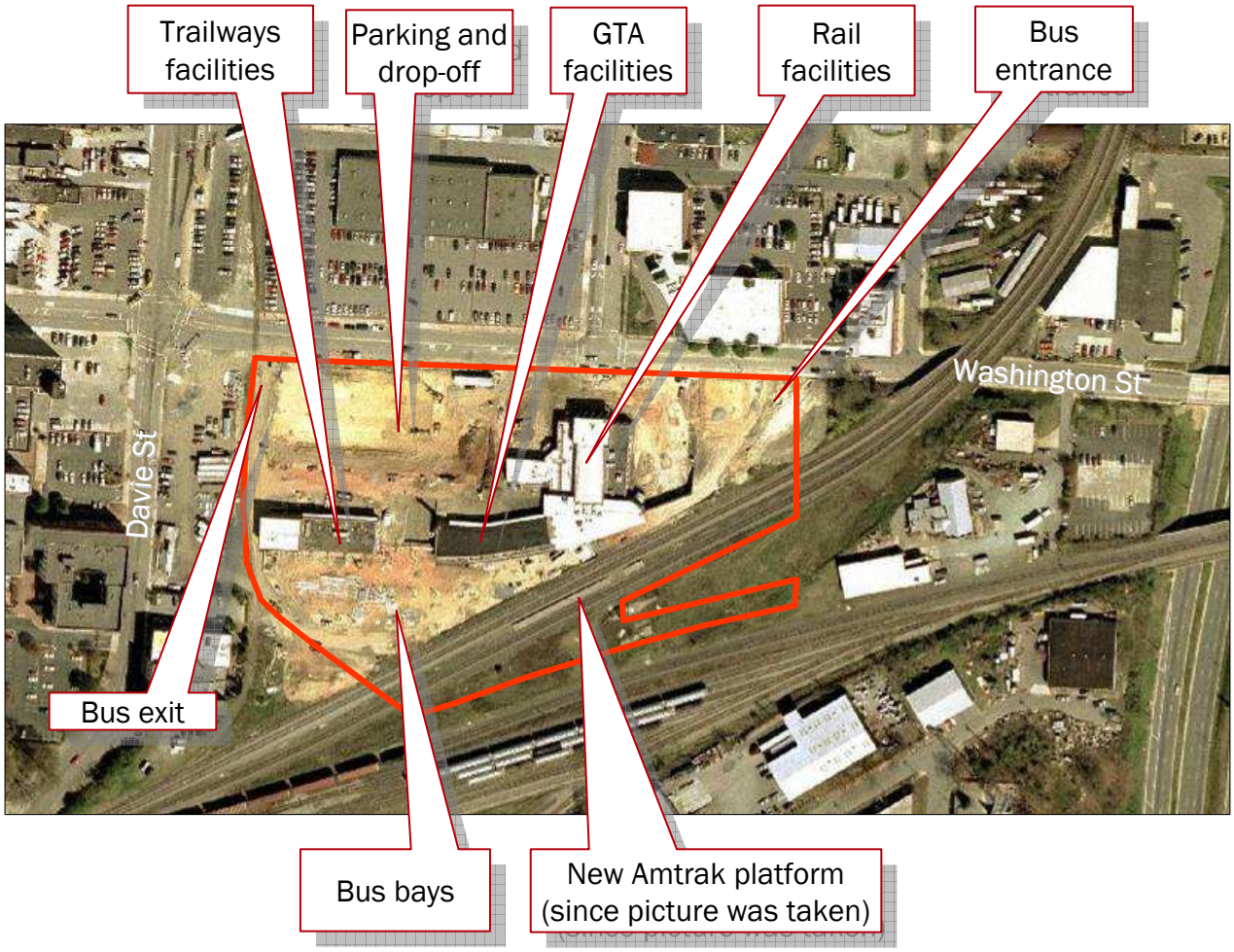
| Objective | Was it achieved? |
|---|---|
| **Improve the transfer experience**. Previously transfers were made at downtown bus stops with no shelter. | Yes. |
| **Integration between modes**, particularly between the various bus systems. | Yes, they are now together in the same facility. People do seem to see the services as complementary. Riders can now depend on getting from one service to another. |
| Both of the above were expected to **increase ridership.** | Ridership has increased, as originally expected or maybe more so. |

When asked about the lessons for Greenville, city staff suggested the following:

- Physical integration of services can be successful in increasing ridership.
- Historic structures are a mixed blessing – challenges, expenses, but potential to attract passengers.
- Take account of potential future demands. Consider future employment patterns, also what services may be added in future. The extra services will help ridership.
- Consider which services are definite from the start, and which might come in later. The design should allow for future expansion (to accommodate the later services) without disrupting the existing ones.
- Make the design fundable. Determine what the funders' requirements are. This includes *potential* funders, and what it would take to meet their requirements in order to get the money.

Site visits to the center have suggested another possible lesson for Greenville: the roof over the bus bays, although functional, is not particularly 'airy' and some of the bays have a relatively dark feel.

**Figure A1.1: The Depot, Greensboro**




(a) Aerial photograph at time of construction. Site boundary marked.

(b) Extensive parking at front of site. Downtown in background

(c) Car drop-off area alongside bus bays

## The Depot, Greensboro (continued)

(d) Bus slips (Trailways in foreground, GTA in background)


(e) GTA slips – waiting area on other side of wall

(f) Trailways waiting room.

(g) Buses have a dedicated entrance (shown here) and exit

(h) Historic depot building

(i) Depot building during rehabilitation to serve as rail station

## A1.7 Rocky Mount

The City of Rocky Mount, North Carolina (population 56,000) has, like Greensboro, a center on the edge of downtown, based on a historic railroad depot. Figure A1.2 gives an aerial view of the center and some views taken in 2005.

The city-owned 2-acre complex is on the edge of downtown, next to the YMCA, adjoining mixed commercial/residential inner areas.

The 25,000 sq ft historic passenger station had been empty since 1984. The City bought it in 1995, and it reopened in 2000, to accommodate Amtrak functions and additional leasing space. There are a variety of tenants including the visitors bureau, the Chamber of Commerce and a Senator's office.

A short walk from the rail station –at the far end of the platform – is the transit center, converted from a former railroad parcels building (REA) (rebuild completed in 1998.) This includes separate areas for local Tar River Transit (TRT) buses and Trailways buses. The site layout effectively separates pedestrian, car and bus circulation.

The total cost (of both the station and the transit center) was $9.445 million. Most of the funding was from Federal enhancement funds ($7.380 million). The local match from the City was used for property acquisition ($860,000) and driveway/street planning/construction ($575,000). Lease revenues fully cover the operational cost of the rail station.

The center serves the following modes:

- Tar River Transit – seven bays in sawtooth layout, for the four regular routes plus "shuttle' routes;
- Trailways – four bays, perpendicular to the building; and
- Amtrak – one platform serving four trains each way daily.
- There is a drop-off area and parking areas.

There are effectively two sets of facilities. The rail station has a waiting room, 24-hour ticket office, baggage counter restrooms, vending machines, and 'The Whistle Stop' newspaper stand / snack bar. The bus building has a waiting room, a Trailways ticket/baggage counter, restrooms, vending machines and the 'All aboard' restaurant. There is no TRT ticket office, but the TRT driver supervisor provides information and there is a token machine for TRT ride tokens. There is also a break-room and restrooms for drivers. TRT's office is located in the rail station.

Table A1.3 lists the center's objectives, as reported by City staff. The center appears to have has achieved the objectives. The following paragraphs amplify some of the issues.

### Table A1.3: Objectives of the Rocky Mount Transportation Center

| Objective | Was it achieved? |
|---|---|
| **Improve quality of transfers between local buses.** Transfers had been made on-street (corner of Tarboro Street & Main Street), with just two bus shelters which were inadequate protection from rain, heat or cold, and no restrooms. Drivers needed restrooms too – they were having to use restrooms in a local restaurant instead. | Yes. |
| **Improve quality of service for Greyhound / Trailways passengers.** See text for details. | Yes. |
| **Improved connections between modes.** This was an important objective for NCDOT in particular. | Yes. |
| **Improved ridership, as a result of all the improvements above.** This was not a specific objective, but the city was expecting ridership to increase. | Probably - other issues such as newer buses also need to be taken into account. |
| **Leading downtown revitalization.** The city saw the historic station renovation as an important sign that downtown was – or could be – on its way back up. It would be the first major renovation there in many years. | Yes, exceeding expectations. See text for details. |

Trailways had operated since the 1950s from a leased building across the tracks from the railroad station (now the 'Old Bus Station Antique Store'). Against a tight financial background, Trailways had been unable to devote resources to the building and it was a poor environment for passengers. It also led to passengers walking across the railroad tracks. Hence one of the city's objectives had been to provide a better facility for Trailways riders. Trailways had welcomed the opportunity to move to the Center for the same rent as the old building. Although this arrangement costs the City and NCDOT in strict financial terms, no-one saw this as a problem or as 'subsidizing Greyhound'; instead it was seen as improving transportation.

The bus station is on split levels, with the Greyhound / Trailways counter at the upper level, a few steps above the Tar River Transit (TRT) waiting area. The City had initially been concerned about the mixing of the two groups of passengers. Most TRT passengers were women, and there was a potential issue about their perceived personal security. In the end, it was decided to address the issue by having a staff presence.

The original plan had been for the Greyhound / Trailways counter to also provide a public face for TRT, selling bus passes and providing TRT passenger information. The City would pay a small fee for this role. However, this plan fell through. Instead, the TRT driver supervisor is now expected to be 'out on the floor' as much as possible, answering public questions and generally supervising the facility. This works, although whenever s/he is called out to an incident on the road, there is no TRT staff presence.

Greyhound / Trailways depots are run under contract by franchisees. Franchisees get commission on ticket sales, but the margin is low and they find extra income by installing video games etc. in the waiting areas. City staff suggested that this can cause clutter, and that the presence of non-passengers, particularly teenagers, can be disquieting to passengers. (The start of the summer vacation is a major time for the teenage presence.) This has been a problem at Rocky Mount, although not a serious one.

The main neighborhood impact has been in leading downtown revitalization. The older population still saw Rocky Mount as a railroad town; many were the children of former railroad shop employees, and the station was the center of their economic life history. Its revitalization galvanized support for downtown regeneration. The City had underestimated its importance in people's perceptions. These perceptions were strengthened by the removal of the buildings which had previously hidden the station frontage from view. The Chamber of Commerce had moved out to the suburbs, but agreed to move into the station. This itself made a positive statement to the business community and wider downtown community.

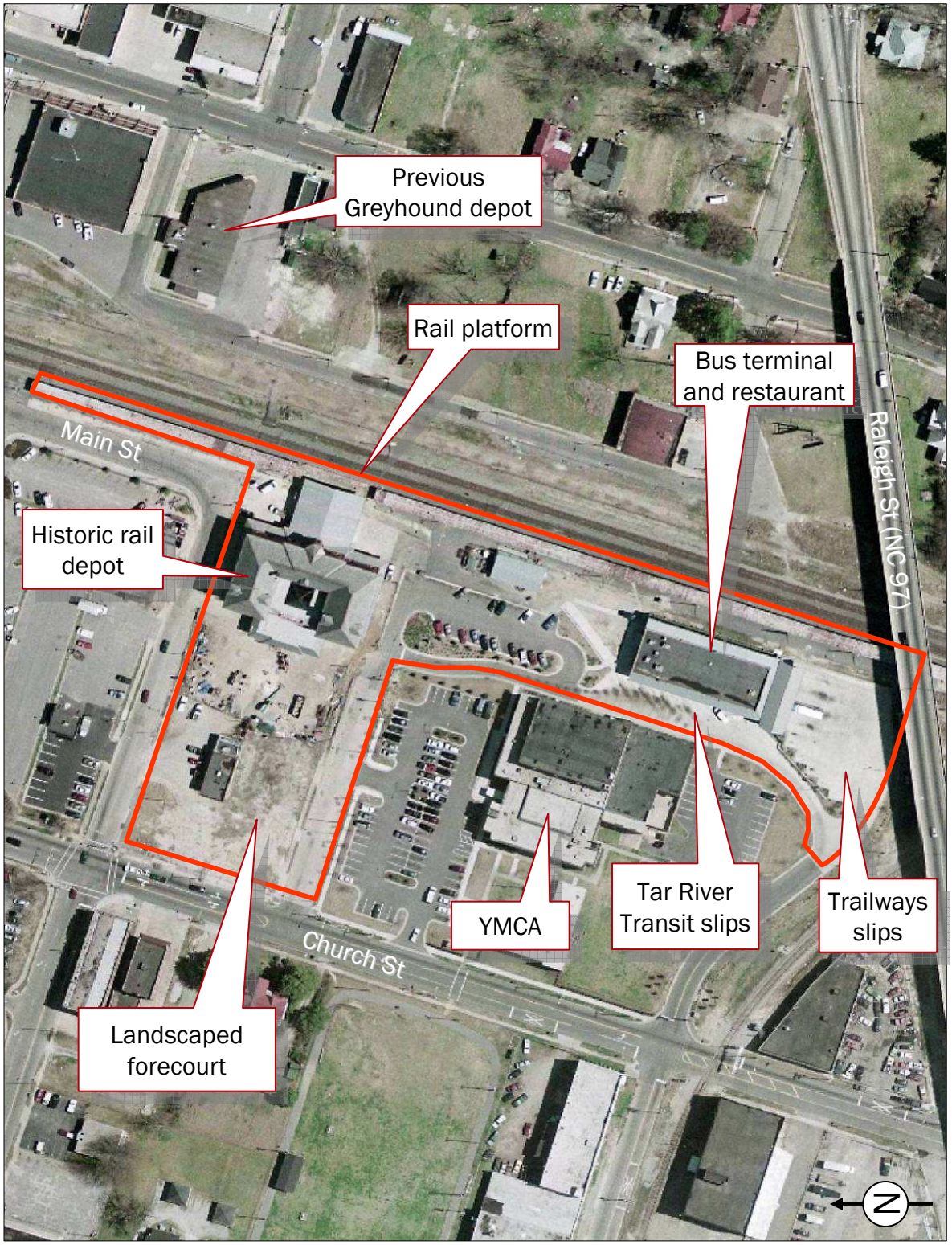
There has also been a benefit to the immediate area. For example a nearby house and old fire station were due to be demolished; now the house has been restored by the owner and the City is restoring the fire station.

Vehicular circulation and conflicts with pedestrians were pitfalls they had successfully avoided. The original plan had been to have the buses directly outside the railway station, and not use the REA building at all. They hired traffic engineers to check this out, and had been advised against, on the basis that large vehicles (i.e. buses, particularly Greyhound ones) were better kept away from cars and pedestrians to avoid conflicts. Although the City had been initially concerned at the extra costs which this implied (by having to use the REA building), it turned out to be very good advice.

When asked about the lessons for Greenville, city staff suggested the following:

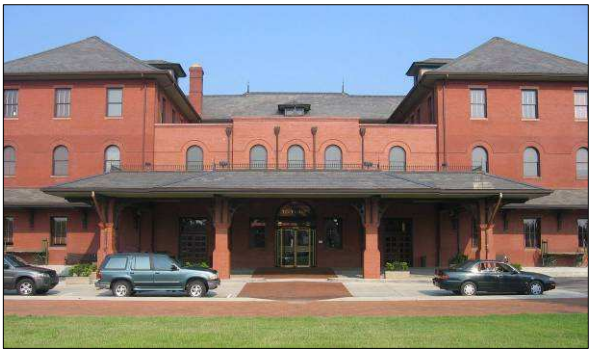
- It is important to select an architect with strong transit center design skills.
- If a historic building is involved, ensure that tax credits are exploited to the full. (At the time, they were not fully aware of the opportunities.)
- Consider vehicular circulation and conflicts carefully.

## Figure A1.2: Rocky Mount Station and Transit Center



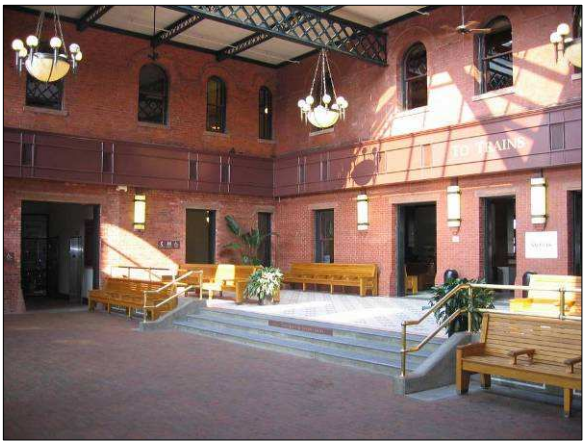

(a) Aerial photograph (taken before landscaping was complete)

## Rocky Mount Station and Transit Center (continued)



(b) Rail station frontage

(c) Rail platform. Bus terminal in background, right



(d) Station lobby

(e) Amtrak ticket office and waiting room


(f) Station tenants

(g) Rail station, seen from bus station

## Rocky Mount Station and Transit Center (continued)

(h) Path between rail and bus stations

(i) Greyhound slips


(j) Tar River Transit slips


(k) Greyhound waiting area, with ticket counter on right

(l) Greyhound waiting area with restrooms in background and link to TRT area on left

(m) Tar River Transit waiting area, with restaurant in background

## A1.8 Winston-Salem

The City of Winston-Salem, North Carolina (population 186,000) has a downtown transit center occupying half a block alongside a parking deck and other downtown uses. It is the hub of an extensive 24-route city bus system, with most routes going through the Center. Trailways also uses the Center.

The City currently has no passenger rail service. An Amtrak Thruways bus (operated by Trailways) connects to/from trains at High Point, although this bus is relegated to the rear of the center. The city's railroad geography would make it difficult to bring rail service to downtown. The historic Union Station, likely to be the station for any future inter-city service, is some distance from downtown. Potential commuter rail service would come closer to downtown, but this would still be a separate site from the transit center as long as the latter is focused on the heart of downtown.

The center serves the following modes:

- City buses and PART regional buses – 16 bays in sawtooth layout;
- Greyhound/Trailways; and
- Amtrak Thruways bus.
- Short-stay parking is provided at the back of the center and on-street. A bike rack is also provided. There is a parking deck across the street.

Figure A1.3 shows some views of the center in 2005. The building is along the southern edge of the site, with an overall roof spanning the bus bays. Buses enter directly from, and leave directly onto, the surrounding streets. This gives the center a very high visibility.

The first floor of the building includes a waiting area, restrooms, vending machines and phones. The large ticket office with two windows (and a manager's office) looks over the waiting area, providing excellent visibility and surveillance. The upper floors have offices. Interestingly, people seem to wait both in the waiting area and outdoors (on stone seating blocks alongside the bays). Security staff are an obvious presence on-site.

The center has a strong element of public art. The floor of the waiting area includes a terrazzo map of the city. Carved panels in the glass wall depict aspects of the city's transportation history. Outside, the pillars of the overall roof are attractively painted.

City staff were not interviewed for this study. However, field visits suggest that the center is an attractive model of design and upkeep. The open and airy layout, the strong staff presence and the glass wall between the waiting area and the bus bays all contribute to a welcoming and safe atmosphere. The busyness of the transit system reinforces that sense, by providing a relatively high level of activity. The location itself is ideal for downtown, which retains a strong commercial role, although there is no prospect of physical integration with any future rail service.

## Figure A1.3: Winston-Salem Transportation Center


(a) Downtown location


(b) Buses enter and leave directly from street

(c) Passenger facilities alongside slips. Offices above.


(d) Short-term parking at rear. Connecting bus to High Point station comes in here.


(e) Departure indicator and public art

(f) Bike rack

# Winston-Salem Transportation Center (continued)

(g) Bus slips, with waiting area behind glass wall. Public art on columns.

(h) Waiting area and ticket office. Glass wall toward bus slips.

(i) Waiting area and vending machines. Restrooms in background.

## A1.9 Cary

The Town of Cary, North Carolina (population 110,000) is rapidly expanding, particularly housing many people who work in Research Triangle Park. The Town has a small rail station which is becoming more of a transit hub. It has a modern building, a block from the heart of the small downtown, near the town hall. The building and its surrounding parking are in the vee of two diverging rail lines. Figure A1.4 shows an aerial view and some ground-level views of the station.

Passenger rail returned to Cary in May 1995, when the North Carolina Department of Transportation (NCDOT) and Amtrak began the *Piedmont* service. Cary's historic station had been demolished in the 1970s. The state funded a 200-foot platform which served as Cary's station for over a year, accommodating the *Piedmont* and also the *Carolinian* service that began in 1996. Subsequently, the building was jointly constructed by the NCDOT, the Town of Cary and the Triangle Transit Authority (TTA) which operates the regional bus service. TTA buses call at the station, although it is only an intermediate stop. In later 2005, the Town started a fixed-route bus service, with two of the three routes calling at the station. Thus it is becoming the de facto transportation hub for Cary, with opportunities to transfer between trains, town buses and regional buses. However, Trailways no longer serves Cary.

The center therefore serves the following modes:

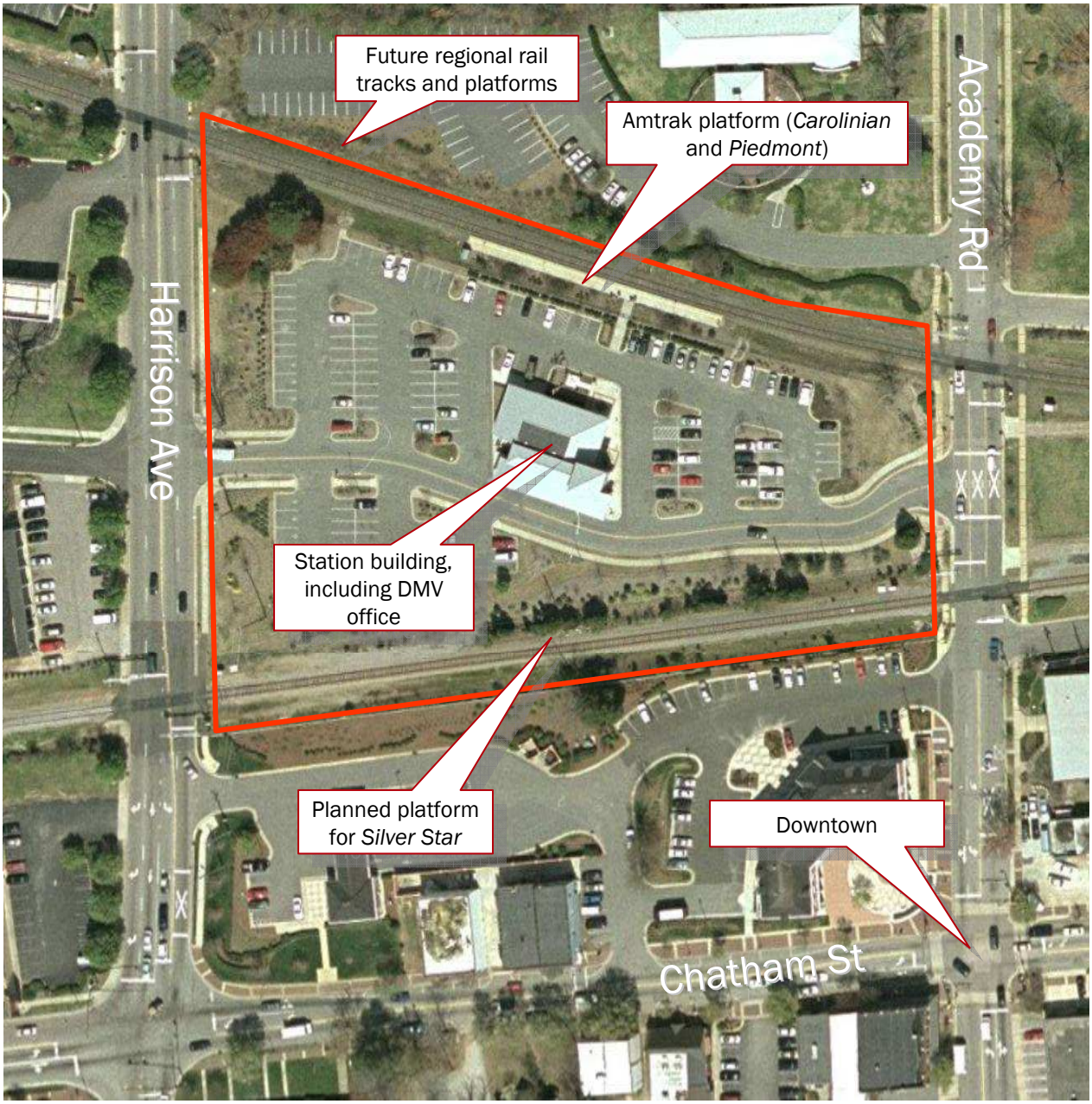
- local buses – two of the three routes;
- TTA regional buses; and
- Amtrak – four trains per day, with a planned new platform to serve another two trains per day that currently do not stop at Cary.
- Free parking is available.

The planned TTA regional rail service would create new tracks and platforms alongside the existing Amtrak platform.

Nevertheless, the center remains very small-scale, and is not an operational base or terminus. There is a waiting room, restrooms and a drinking fountain. There are no transportation staff, but there is a direct "hotline" phone link to Amtrak customer services. Additional space was provided to accommodate a future Amtrak ticket office; in the meantime, the space is leased out as a Driver's License office.

Town staff were not interviewed for this study. However, field visits suggest that it is an attractive facility with good potential to expand its operations if required in future. The presence of the Driver's License office is undoubtedly important. Although there are no transportation staff on-site, it is well-kept and there is a degree of activity, at least during office hours. Although the building is surrounded by parking and has little street presence, its exterior quality, with a clock tower and canopies, is relatively high.

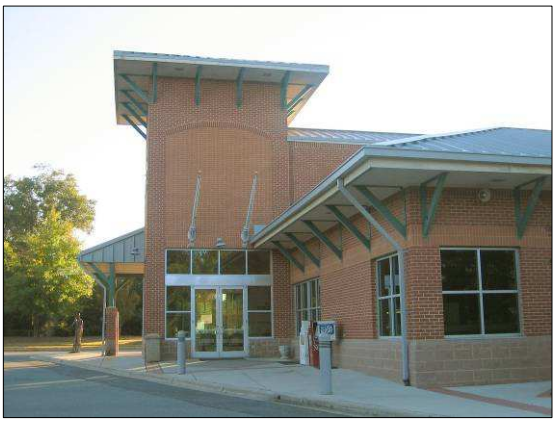
## Figure A1.4: Cary Station




(a) Aerial photo

## Cary Station (Continued)

(b) Station building. TTA bus stop in foreground.



(c) Entrance to waiting room and DMV

(d) Main building. Waiting room under clock

(e) Waiting room. DMV office on right, restrooms in left background. Phone on wall connects to Amtrak Customer Services.

(f) Short platform

## A1.10 Athens, Georgia

Like Greenville, the City of Athens, Georgia (which has a unified City/County government with a population of 100,000) has both City and University transit systems, with a University campus that touches downtown. Athens also has a proposed commuter rail service to Atlanta, which was a major influence on the site for the Multi-Modal Center (MMC) currently under construction.

The MMC is one of many projects that are being funded by a one-cent sales tax (Special Purpose Local Option Sales Tax - SPLOST) in the County. The SPLOST has been approved and continued by voters in a series of referenda, each covering a five-year package, most recently in November 2004.

Figure A1.5 shows a series of plans and artist's impressions. The building is in the center of the site, with a series of pull-in bus bays extending from one side under an overall roof. There is space for another series of bays on the other side in future. The first floor will have a waiting area, ticket window, restrooms and a drivers' room. The second floor will have transit agency offices. The upper levels of the building connect to a pedestrian bridge over the railroad tracks, to a parking deck and onto downtown, making best use of difficult site topography. The center is expected to cost $11.6 million, with an annual operating cost of $133,000.

The University of Georgia's Campus Transit System (CTS) operates 47 buses, and Athens Transit (AT) operates around 20. CTS has fewer routes than AT but runs more frequently. A long-standing student transportation fee has recently been extended to faculty/staff via parking permit fees. These fees pay for CTS and for UPass-type travel on AT. People must swipe their UGa card when boarding an AT bus. UGa pays AT for each ride – based on a 3-year average for student trips and on actual numbers (quarterly) for F/S trips.

According to Ron Hamlin, the Manager of the CTS, the two systems concentrate on their core functions – CTS around the campus area and AT around the city and county. The relationship is good, with a feeling that the systems should and do work together. Students and faculty/staff all use both CTS and AT, and there is a U-Pass arrangement. People do seem to transfer between systems on individual trips, although there are no real figures. A lot of people take AT to campus and then CTS to their workplace.

CTS does not serve the current AT transfer point, which is just off-campus in downtown. The history behind this is unclear, but Mr. Hamlin has received no calls to serve it. There is no formal transfer arrangement between the two systems. As they share stops, and as about half of the AT routes run past campus, people likely just get off one bus and onto another. The main issue is helping people to work out the system. Both CTS and AT have people on-site at the start of the year to help passengers.

The Center may make transfers more complicated, as it is a few large blocks away from downtown, downhill. The decision on its site was dominated by the need to accommodate rail. Although rail is some years off, this was deliberate forward-planning.

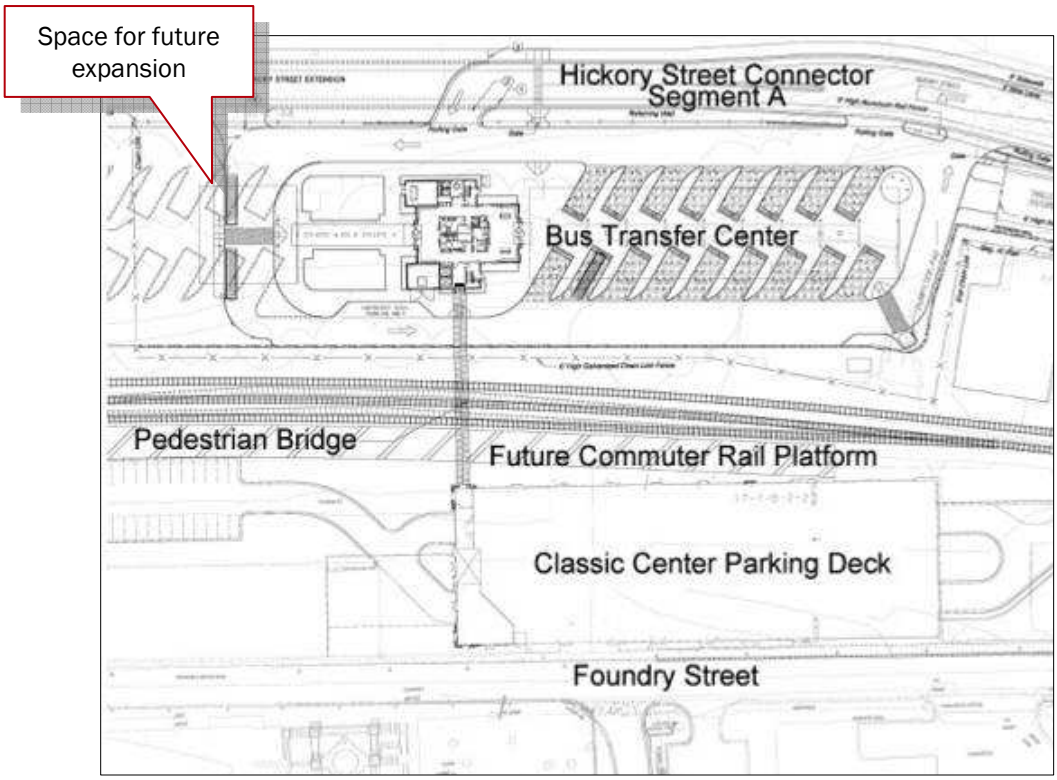
CTS has decided that it will take part in the Center, starting with one route and seeing how it goes from there. This is based on three factors:

- the Center will be the place where connections are made;

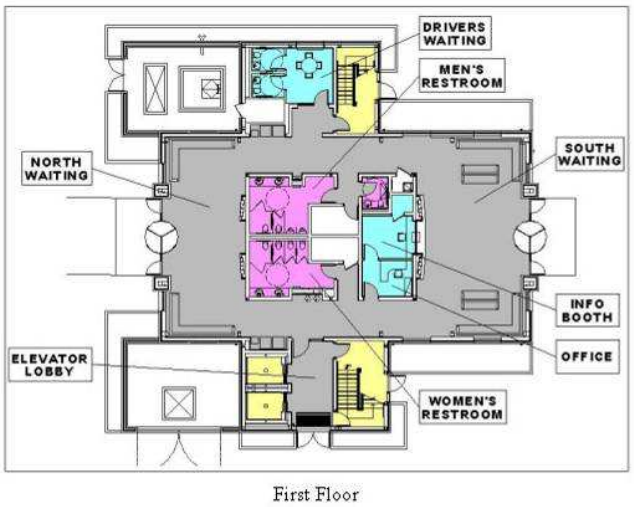
- AT has a long-term aspiration to run fewer routes through the campus, so the MMC will become more important as a link to the campus; and
- a lot of students come from Atlanta or the dormitory towns along the way, so there is hope that students may reverse-commute by rail into Athens in future.

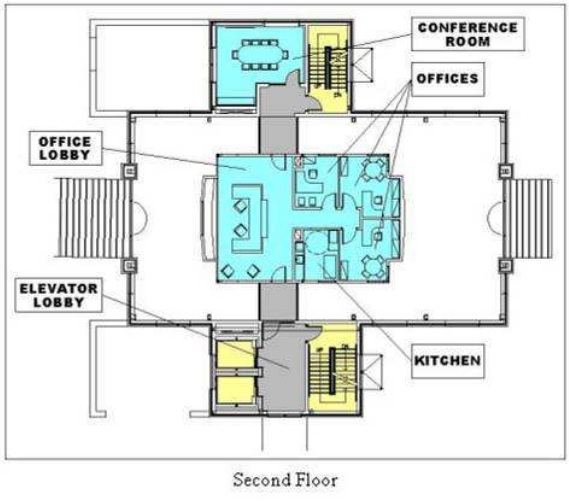
With the center still under construction, there are no specific lessons for Greenville. However, the organizational parallels with Greenville suggest that a Center can be to the mutual advantage of both City and University transit systems.

## Figure A1.5: Athens (GA) Multi-Modal Center




(a) Site Plan




(b) (c) Building layouts (third floor, not shown, is the bridge level)

*Source for this Figure: Athens - Clarke County Government. www.athensclarkecounty.com/ documents/powerpoint/multimodal/index.htm (last accessed on February 16, 2006)*

## Athens (GA) Multi-Modal Center (continued)

(d) (e) (f) Artist's impressions – Exterior and interior

## A1.11 Binghamton, NY

The City of Binghamton, NY (population 47,000, with a metropolitan area population of 251,000) is another example of a planned multi-modal center in a city with both municipal and university transit systems. However, the campus is some distance from downtown.

Binghamton is a manufacturing and college city in Broome County, in upstate New York. As well as a decline in traditional manufacturing industry, the more recent IBM and defense aerospace industries have also been shrinking.

Broome County Transit operates 43 buses on a hub system, with 2.8 million annual trips. Transfers are currently made on-street downtown, in two pulses each hour. The student-owned and -operated Off Campus College Transport operates 11 buses, with 500,000 annual trips. Inter-city services are provided by Coach USA/Shortline, and Greyhound. Adjoining rural counties have paratransit with a small fixed-route element.

According to Steven Gayle of the Binghamton Metropolitan Transportation Study, there is overlap between the BCT and OCCT systems, and people can generally use one or other to make their trip. There is no formal transfer arrangement. The university was peripherally involved in the project development, and had been offered use of 1 or 2 bays; it was not yet clear if they will take this up. However, the University is also opening some downtown facilities near the center (and also due to open in 2007), so there may be a demand for student travel to the area anyway.

The center is a County-led project, due to open in Fall 2007. It will be owned and operated by the County, with space leased to the inter-city operators. The construction cost is estimated at $10 million, mainly from FTA funds with a Congressional earmark. Figure A1.6 shows an aerial view of the proposed site, and a site plan.

A key issue in site selection was whether or not to build the center on the rail line, in anticipation of restoring passenger rail service, which had ceased in 1970. The city's Congressman is a particular supporter of rail service, and supported the center being on the rail line. However, that location, although still relatively close to Downtown, would not be ideal for the downtown market, and consultants reported that this was not the best option. The city therefore decided that the priority was to make the center work well as a downtown transit center. However, the chosen site is only a block away from the railroad tracks. A proposed downtown circulator could also link the center with the station if necessary.

The site layout has a terminal building at the corner of the site closest to the heart of downtown. Inter-city buses will have pull-in bays and city buses will have an island of sawtooth bays.

Table A1.4 lists the center's objectives. As it is still under construction, the success cannot be evaluated. Interestingly, increased passenger numbers was not an objective; the aim was to improve the system for existing riders. Nor were there operational objectives - the focus was strongly on passengers.

Table A1.4: Objectives of the Binghamton, NY Multi-Modal Center

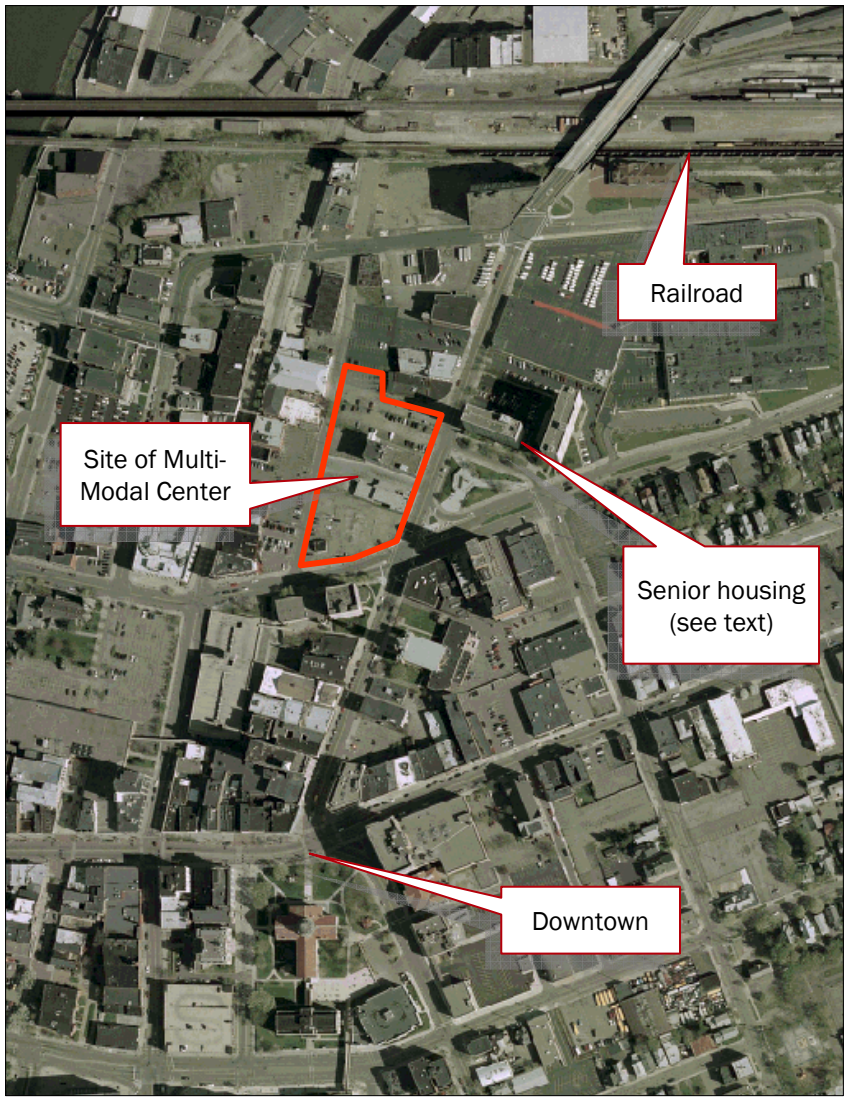
| Objective |
|---|
| **Provide passengers with safe, convenient off-street transfer** instead of current on-street transfer. |
| **Make transfers between city and inter-city buses more convenient**. Currently there are two inter-city bus terminals – one for Coach USA / Shortline, the other for Greyhound, half a block apart. |
| **Assist downtown regeneration**. Terminal seen as an anchor for levering-in private developments to the nearby blocks, providing accessibility and busyness. |

Mr. Gayle reports that the community has been generally supportive. The chosen site is across the street from two high-rise residential buildings for seniors. They recognized the benefits of having transit nearby but were concerned about noise and fumes. In the outreach process, the design consultant made it clear that this would be addressed, by having the buses at the other side of the site and other measures. This seemed to have addressed the concerns.

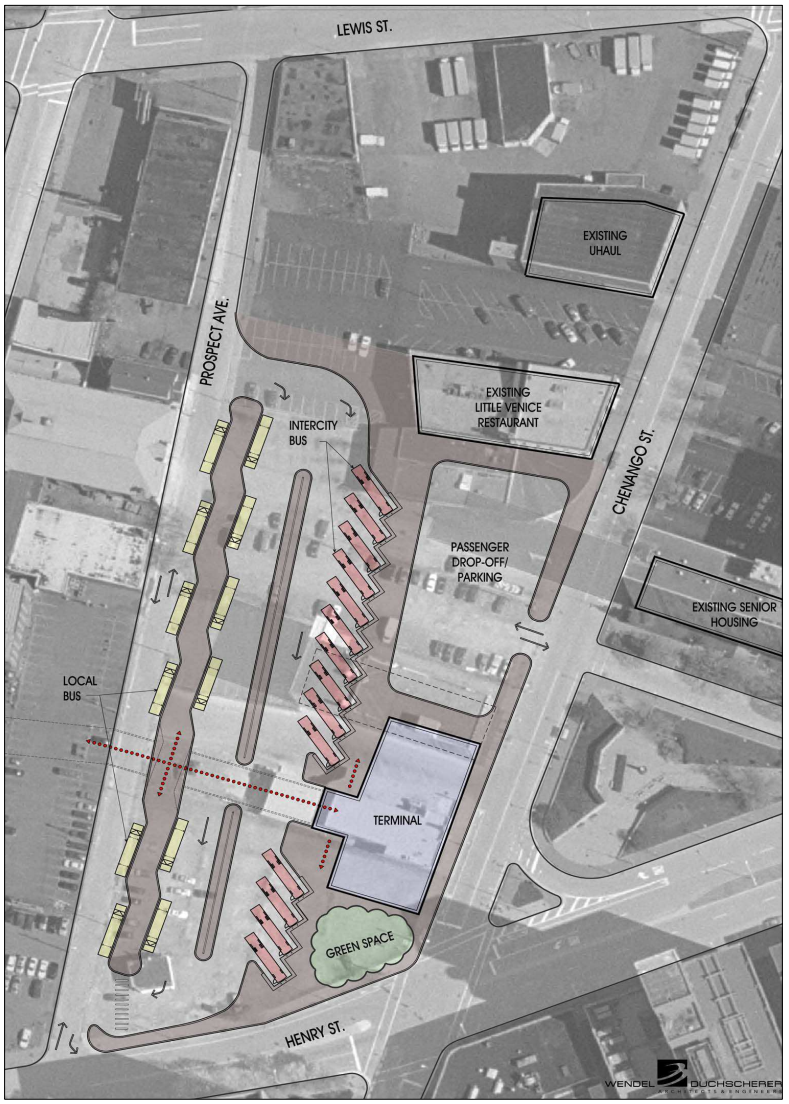
When asked about the lessons for Greenville, the following points were made:

- Continuity of local political support is important. Although the current administration is championing the project, an earlier administration had been supportive but not championing. If the championing had been continuous, the center would have been opened sooner.

- Make sure the City can actually spend any earmarks it is offered. Being unable to do so (e.g. by not having the matching funds, or by needing more money overall) will not win any favors for next time. (Part of the earmark for the Binghamton project was transferred from another project in the State that couldn't spend it.)




(b) Aerial photo




(a) Site plan (courtesy of Steven Gayle, Binghamton Metropolitan Transportation Study)

**Figure A1.6: Binghamton (NY): Proposed Multi-Modal Center**

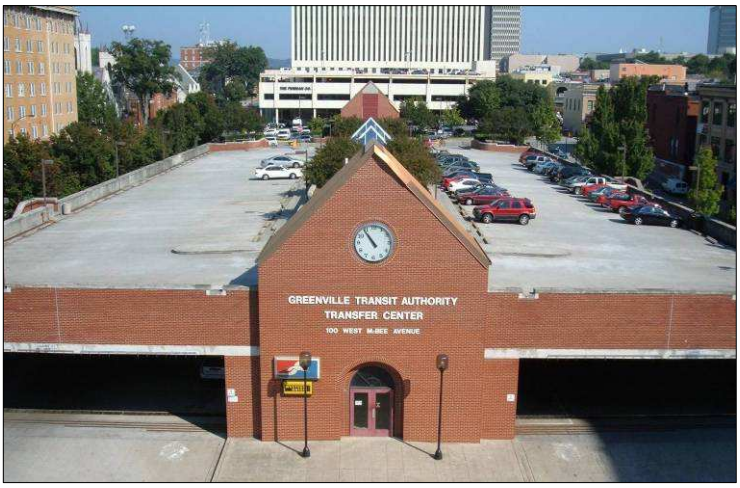
## A1.12 Greenville, SC

The transit center in Greenville, SC (city population 56,000) was opened in 1990. It is the only one of the case studies in which the transit facilities have parking above, although other examples of this approach do exist. Figure A1.7 shows the center.

The city bus system has 13 routes, most of which serve downtown. The center serves these routes and also Greyhound services. The transit facilities are at ground level, with buses circulating in a 'U' around the Trailways office and vending machines. The second level has 130 parking spaces.

Although an efficient use of space, it is not an attractive environment for transit passengers. The General Manager concurs, commenting that parking decks leak, are dark, are difficult to secure and signal a negative message to the public. There are also exhaust fume issues with this design.

## Figure A1.7: Greenville (SC) Transportation Center




(a) Transportation Center



(b) (c) (d) Passenger facilities and waiting areas

## A1.13 Spartanburg SC

Spartanburg, SC (city population 40,000, plus more outside the city limits) is a relatively small city in South Carolina's Piedmont region. The University of South Carolina Upstate is on the edge of the city, with the hospital and smaller colleges nearer the downtown.

City-owned SPARTA (Spartanburg Regional Transit Agency) operates eight routes on a hub-and-spoke system, carrying 500,000 riders annually. The downtown SPARTA Passenger Center, opened in 2002, is the hub and is also the Greyhound stop. SPARTA serves 2-3 of the city's seven colleges, going on-campus in one case. Students do use SPARTA – particularly at Spartanburg Technical College, where the college buys bus passes to sell to the students.

The Center is not on the rail network, and Amtrak trains (one train each way daily, *The Crescent*) stop at the small, recently-restored historic depot a few blocks away. The City owns and maintains the depot, reopened 1999, as a community center which also hosts the Convention Center & Visitors Bureau as well as the Amtrak facilities[4].

Figure A1.8 shows external and internal views of the Center. It is a smart, modern two-storey brick building with passenger facilities downstairs and other facilities upstairs. The bus bays directly surround the building; seven are used by SPARTA and one by Greyhound. There are SPARTA and Greyhound ticket counters at either end of the waiting area, along with restrooms. Space is available for a taxi operator's office, but so far this has not been used. The upper storey has a police substation and a drivers' break room. There remains some vacant space on that level, for which a dispatch office and a conference room are planned.

**Table A1.5: Objectives of the SPARTA Passenger Center, Spartanburg, SC**

| Objective | Was it achieved? |
|---|---|
| **Give passengers a better place to wait when making transfers.** Previously, transfers were made at a street corner. Major reason was to protect people from the weather. Also safety and general quality benefits. | Yes. |
| **Provide a place for Greyhound and taxis.** | Greyhound yes, taxis not yet. |

Table A1.5 lists the center's objectives. SPARTA's General Manager, Marc Keenan, was very positive about the Center, which has been a success on several counts:

- Before/after surveys show that passengers like the facility – it addressed their biggest concern.
- Passengers also appreciate being able to talk to a 'live person' (at the ticket office – the Customer Service Person).
- Having the Police substation above is good for security. If there is a problem, the Customer Service Person can just call upstairs.

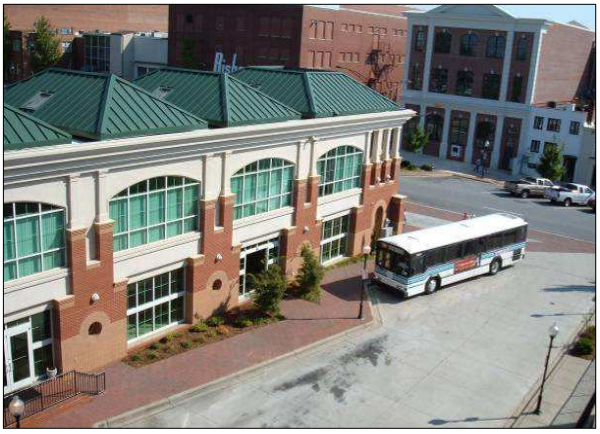
[4] http://www.reconnectingamerica.org/html/revit/spartanburg.htm

There had been no neighborhood issues. The one thing they would do differently next time would be to provide more bays. Greyhound has one of the eight bays, leaving seven for the eight city routes. This has affected scheduling, as they could not have all buses meeting at once (the pulses are at :00 and :30, with some routes at :00 or :30 only). They would also like to be able to offer Greyhound an extra bay.

Interestingly, when some of these case studies were presented at a public meeting for the Greenville study, the Spartanburg center was the one that attracted the most positive comments. The style of building and the presence of the police substation particularly caught the public eye. Field visits by M/A/B and City of Greenville staff have confirmed that it is an attractive center whose level of quality Greenville could usefully emulate.

## Figure A1.8: Spartanburg (SC) Transportation Center

(a) Streetscape. Greyhound bus has arrived.

(b) (c) (d) (e) External layout. Waiting area leads directly to bus slips. Buses pull directly off the street.

## Spartanburg (SC) Transportation Center (continued)

(f) SPARTA information desk

(g) Waiting area (Greyhound ticket counter to left of picture)

*Photos (f) and (g) supplied by Tom Tysinger, City of Greenville*

## A1.14 Wilson

Wilson, North Carolina (population 47,000) has a transportation center (serving buses) on the corner of a downtown block, diagonally across the street from the Amtrak station. Figure A1.9 shows the two sets of facilities.

The city bus system has five routes through downtown, which stop on-street directly outside the transportation center. This is unusual, but not unique, and is operationally very straightforward. The center has several small waiting rooms, one on each street frontage and another alongside the Greyhound bays which are at the side of the center. There is no Greyhound ticket office, but there is a snack bar, and a taxi firm has a small office in the center.

The 1924 railroad station now houses an Amtrak ticket office, waiting room, baggage room and vending area. The station was restored in two phases. In Phase I, the main station building and canopy were rebuilt and modernized while restoring the original architecture. The renovation included restoration of the historic platform and canopy, as well as construction of a new connecting canopy between the station and the platform. Phase 1 cost $1.3 million, with construction beginning in 1996 and the renovated station opening in 1998. In Phase 2, long-term parking facilities were added, and the adjacent REA building was renovated for use as a police substation. This phase cost $1.2 million and was completed in April 2003. Both phases received Federal enhancement funds.

City staff were not interviewed for this study, but a field visit was made. The transportation center, although functional and compact, is not likely to be attracting many discretionary riders. The small waiting areas and interior layout are a contrast to the open and straightforward design seen in Spartanburg. Although the site is very visible, in the heart of downtown, the architectural style is of its era and would perhaps not be the chosen approach today. The Amtrak station, with its more straightforward layout and prominent ticket office, is more attractive and user-friendly.

## Figure A1.9: Wilson Transportation Center and Amtrak Station


(a) Transportation Center


(b) Buses stop on the street. Amtrak station in left background.


(c) Parking at rear

(d) Greyhound bays at side

(e) Amtrak station

(f) Amtrak waiting room and ticket office

## A1.15 Conclusions

The most common objectives for transportation centers are to improve transfers (between buses and/or between different modes) and to assist downtown revitalization efforts. Most centers reported these objectives. Typically, before a center was built, transfers between city buses were made on-street with no more than bus shelters for facilities – the same situation as in Greenville.

Other reported objectives included providing rest areas for drivers, enhancing the public image of transit, reducing accident risks, and (more generally) improving transit service quality or convenience. Increased ridership is sometimes an objective, but not always. Operational objectives are rare – the focus is mainly on improving the passenger experience.

In cities with existing rail service, the rail station mostly (but not always) becomes the site of the transfer center (Spartanburg, SC is one of the exceptions). In the two cities studied with potential future rail service, both have chosen sites that better served the existing bus riders to/from downtown.

The scale of the facilities can match the scale of the service. A center can be relatively small (such as Cary) or relatively large (such as Greensboro). However, centers should be planned with future service expansion in mind. Two of the transit systems studied have outgrown their centers, just a few years after opening.

A variety of site layouts are in use. Some centers have 'all-in-one' facilities, with rail in the same building as other modes. Others have split layouts, with separate buildings for rail and bus services (such as Greensboro and Wilson). Vehicular circulation needs careful planning, to minimize conflicts with pedestrians and conflicts between cars and buses.

Many, but not all, centers include a ticketing/information desk, a news-stand and a café. Some centers have a particularly wide range of facilities. Shared use on-site is helpful in providing busyness, security and income. Indeed, there is potential synergy with other facilities that a community might need. These may range from simply a community meeting room to a full set of non-transit facilities (one center has a bank, a day care center and other users), making the transportation center very much a community resource.

The centers usually 'work', and few operational problems have been reported. However, there is a very clear difference between the most attractive and welcoming centers and those which are less so. In particular, placing facilities underneath a parking deck is undesirable. 'Lightness' and quality pay dividends for attractiveness. Re-using a historic building presents costs and challenges for construction, but can provide a particularly attractive center for passengers.

Staff presence, security and upkeep are also important in keeping the center attractive and in improving passenger satisfaction. It is common to have either a police sub-station on-site or dedicated security staff. The presence of non-transit-users, such as local youths or homeless people, has sometimes been reported as a problem, but active management can generally avoid this.

The centers' objectives are usually reported to be achieved – particularly the objectives of improving the quality and convenience of transit services. Existing riders generally appreciate the improved quality of service offered by a center. However, ridership does not always increase.

Finally, staff interviewed for this study and in the previous comparative studies have reported that neighborhood issues are rarely a problem, and that communities appear to have welcomed their new Centers.

# Annex 2 Comments from Public Meeting #1 (December 8, 2005)

## Attendance

Twenty-three people signed-in. Several participants identified themselves on the sign-in sheet or on a comment form as municipal officials or as representatives of NCDOT, the Environmental Advisory Commission, Pitt County Memorial Hospital and West Greenville Community Development Corporation.

## Presentation and Discussion

George Alexiou and Graham James gave a presentation on what the transportation center might include, the potential benefits, examples from other cities, some emerging issues, the next steps in the study, and the questions on which public input were sought. The following points were raised in the discussion afterwards:

*Points concerning the benefits or relative importance of a transportation center:*

- The energy crisis will make the center worthwhile.
- Greenville is the hub of eastern North Carolina; there will be a hole without the center. People want to come and visit their relatives.
- A center would be a good idea for Greenville.
- A transportation system would be good in the future when Greenville has 75,000 people. I want to leave my car at home, and I look forward to having a train service. But Greenville is not ready for a transportation center at the moment. "I can pass someone waiting for a bus, go shopping, come back and they are still there." GREAT does a good job but is it not useful for the majority of people. Buses are needed for people coming in from the suburbs.
- I really want improved service levels. If the funding sources for services and the center are independent, then I'm in favor of the center.
- The transit center would represent "planning for tomorrow". The transport system would be evolving and needed a plan with all the players involved. The current were problems in the County were a result of waiting until the population had grown, rather than planning ahead.
- Any transit system must have a safe, convenient transfer point, so a transportation center is a good idea. It's right to plan for the future. "By the time you have the problem, it's too late to solve it."
- A transportation center would probably be an impetus for improving the bus service. "I thought the name GREAT bus was because when it arrived, everyone shouted 'great!'""
- When I can get from A to B without waiting an hour, I will be ready for a transportation center. I don't want to wait an hour for a bus.

*Points concerning related transportation planning issues:*

- I know no other college town that lacks pedestrian facilities to the same extent as Greenville.
- There has been progress in making provision for pedestrians and cyclists in the city in recent years.

- There is a problem in overcoming the perception that bus travel is a second-class mode. This needs to be done at an early age, with school buses.
- The Hospital representative was considering a mini-hub at the hospital for GREAT, ECU and hospital buses.
- Student complexes are being built away from Downtown, causing parking problems. Student developments should be walkable and transit-served.

*Points concerning the potential design and location of the center:*

- The center needs to be relaxing and reduce people's anxiety levels; it should include trees and soothing music.
- A police substation [as in the Spartanburg, SC example] would be a good idea. It would avoid problems of drugs and loitering.
- I had been envisaging a small building for the center, but I like the example with the offices above and generating income [Spartanburg, SC].
- The center should be in a strategic location between the University and the Medical School that can be reached on foot from either.

*Other points:*

- Have you looked at the Charlotte center? People come in by bus from surrounding towns and transfer at the center to get to the mall.
- Would the hospital shuttles link up with the center?
- A convenient express service from downtown to the medical district would be good
- Could the center encourage new transit riders?
- Is the study considering park-and-ride into Greenville for people from other towns?

## Comment forms

Thirteen comment forms were returned on the day or mailed-in later (up to Thursday 5 January 2006). The comments are summarized on the following pages.

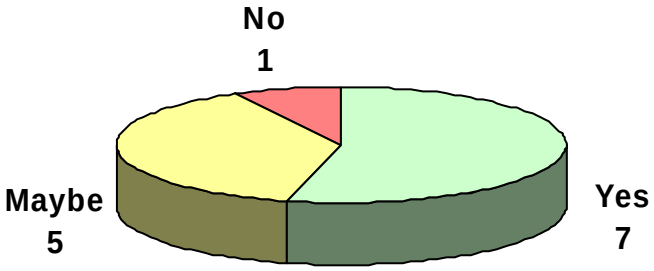
## Additional comments received

One additional person, who could not attend the meeting, subsequently commented:

- I really believe Greenville would benefit greatly from this. I am legally blind, so I would not be able to get to the bus stops, but I communicate with many visually impaired people all over the country who benefit a great deal from their transportation centers. Many towns and cities have them. To have a train service to Greenville would be more than wonderful, a dream come true. I have considered traveling by bus out of town before, but do not feel our station is very safe. Anyway, I hope all goes well. Greenville is a big and growing community that could benefit from this.

## Summary of Comment Forms

*1. Would a transportation center help you to get around?*




*How would it help?*

**'Yes' answers:**

- Would help me to interface with different modes of transport
- Provide a safer place
- Occasional use now, increasingly move later [illegible] besides east access by bus/taxi/private car, easy access and safe storage for bicycles needs to be there, i.e. connections to the Greenways system
- Bus schedule – up to 12PM to Winterville, Ayden, Simpson, Grimesland, Farmville, Grifton etc. to shops, employment, church visitation, visitation etc, Trains to Fayetteville, Wilson, Rocky Mount, Elizabeth City, Wilmington, Raleigh, Charlotte (thereafter, Winston).
- People who depend on mass transit deserve a transportation center that is heated, comfortable, and convenient in the sense of linking various transportation methods in one location.
- Avoid 1.5-hour drive to Raleigh to connect to major transportation (energy crisis). Complement the City of Greenville Revitalization Plan.

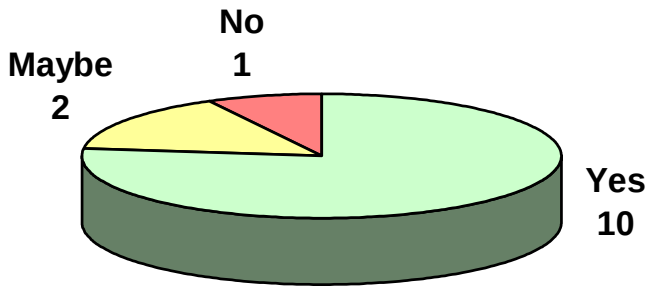
**'Maybe' answers:**

- To avoid bad weather
- With the introduction of train service it would be very helpful. Also if bus (long haul) was expanded
- It would help if the city was developed into a series of interconnected walkable nodes, with the transportation center acting as a secondary means of connection
- If I was no longer able to drive my car and the bus came near my house, it would be nice to ride the bus. With gas at an all time high, it would be cheaper to ride a bus. The bus should try to be on time at the bus stops; so people would not have to wait a long time for a bus.

*2. What would make it a nice place to catch a bus, train or taxi? What facilities would you like to see provided?*

- It would be good to avoid the weather. I would like to see more shelter at more bus stops and they should be a little larger some places.
- Restaurant, bar, entertainment facilities/amenities, restrooms, small retail sales area, nice waiting areas, climate controlled, nice landscaping, open areas internal with plants and natural light. Police substation, tourist info, maps, parking, lease space (office & commercial).
- A 'nice place' could be a pedestrian scale facility overlooking a prominent open space (this could allow people-watching).
- Restrooms, possibly restaurants, shops, etc.
- A controlled environment
- Close to where the railroad tracks cross Dickinson Avenue or along existing railroad tracks between Dickinson and MLK. [Another respondent agreed.] A transportation 'hub', should have an express link to the medical district for both patients and staff. Access for ECU buses. Connect with PCMH buses?
- A beautiful central located facility with amenities i.e. newspaper stand, food court, book stalls, novelties, leather goods, transit items, restaurants, fast foods, etc
- All of the above [i.e. buses, trains and taxis]. I am very interested in the city working toward linking Greenville to Amtrak. Being able to travel to and from Greenville by train to Wilson, Raleigh, etc – and beyond – would be a tremendous plus for our citizens.
- Environmentally safe regarding ozone and fine particulates. Trees to trap particulates, provide beauty and sense of relaxation. Music. Proper ventilation with safe exhaust. Clean restaurant and food services. Police substation to avoid drug traffic and hobos.
- The place should be kept clean at all times. It should be near a train track, if people would be riding them. It would need a place where snacks or food could be served, a ticket window, comfortable straight chairs, clean restrooms, a place to get a taxi, other shops (maybe), and a small police station. It should have a covered area where the city bus system lets the people off. The people should be able to go into the building without getting wet in bad weather. It should be in the uptown area. There should be parking available for people to leave their cars.

*3. Overall, is a transportation center a good idea for Greenville as a whole?*




*Why or why not?*

**'Yes' answers:**

- Serve as a center to promote intermodal transportation.
- Would help to provide a focus for all transportation modes.
- Anything to improve public (mass) transport will decrease congestion, improve air quality.
- Great idea to expand the city's economic base and to increase impact on the total county. This idea could encourage the development of many small businesses in and near the center and the lines. However, private/public partnerships need to be pursued vigorously (business, industry, school system, hospital, University, Community College etc.).
- Anything that would help citizens who depend on mass transit is beneficial. This would also be beneficial to the environment in this day of global warming and higher fuel costs.
- Because Greenville is the hub of eastern North Carolina.
- Greenville is growing and traffic is terrible. We need a safe place where people can wait for a bus or to transfer to another bus. Check to see how many people live in little towns near Greenville, and how many work in Greenville. Would they be interested in parking in their town and riding to Greenville to their jobs? As traffic gets worse at the time they travel, it helps if they do not have to drive. ECU Students who live in towns near Greenville could ride to ECU, and not have to find a place to park. People who work at the hospital and other areas in Greenville could ride the bus and not have to drive.

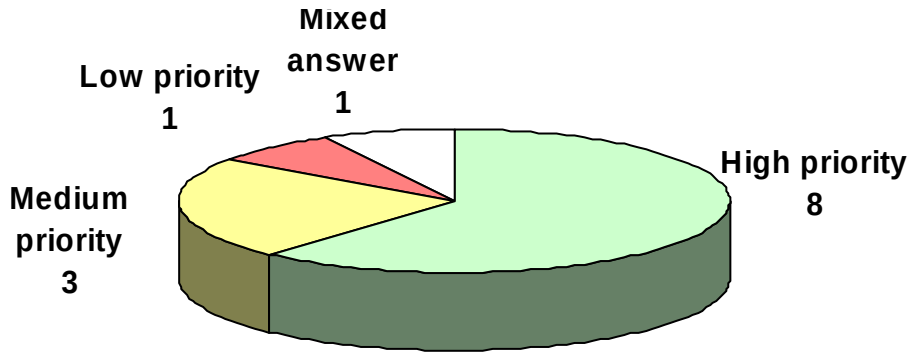
**'Maybe' answers:**

- I think it would if the rest of the system (along the routes) were upgraded.
- Greenville is by no means a centralized city, siting a transportation center could be a tricky proposition esp. if downtown is the target location.

**'No' answer:**

- We do not have the population to support a transportation center. Not enough people ride the buses to even think of a center at this time.

*4. How important is it to have a transportation center, compared to other possible improvements to public services?*




*Why?*

**'High priority' answers:**

- Interconnectivity is critical in continuing life ([illegible]) within the city.
- Properly done, it would be the role model for local transportation to achieve.
- The planning for a transportation center should being now. It will probably take several years to get anything ready to open. Do not wait until it is needed to begin planning for it.

**'Medium priority' answers:**

- I think we should spend some time upgrading and expanding the current system first.
- It should be high on the list of transportation issues but overall probably ranks in the medium range.

**Mixed answer (both high and medium boxes checked):**

- Should be high for planning and reserving/acquiring property. Medium priority to accomplish construction of entire facility.

**'Low priority' answer:**

- We do not have the population to support a transportation center. Not enough people ride the buses to even think of a center at this time.

*Please write any additional comments below.*

- The bus route should be expanded to include Fire Tower Road especially by the theater
- Facility should not only serve multimodal transportation but also diverse occupancy. Also provide space for future expansion and/or surrounding supportive development. May want to consider satellite locations as feeders.
- Greenville would greatly benefit from a central location that offers info and access to many transportation options.
- Public transportation is a vital public service that can help to improve the quality of life of citizens. People need efficient transportation to and from places of work, play and [illegible]. this could help to reduce cost of bussing to public schools; could increase mobility of the aged.
- I think the Imperial Tobacco Company complex might be an ideal adaptive reuse possibility for this center. It is ideally located adjacent to the projected East-West Connector and a rail line. Also, it is a neighborhood in which people who depend on mass transit already live and is convenient to the Central Business District and to ECU.
- Start now by doing a survey of all the towns around Greenville to see if people would be interested in riding the bus to Greenville If so, pick an area in each town where people could park their cars (for free if possible), then build a public transportation center. Work on bus schedules to certain areas of town; they need to be on time. Work with ECU to gave the students that have classes at ECU and the hospital a special bus so they won't be late for class. If it could be done, it would be nice to have a non-stop bus or a one-stop bus. Work on what will be in the building – a small police station (open all the time), taxi stations, parking spaces, leasing to other businesses, etc.

# Annex 3 Comments from Public Meeting #2 (February 27, 2006)

## Attendance

Eighteen people signed-in. The total attendance was 28 plus the M/A/B team. The attendees included Elvis Latiolais (General Manager, Carolina Trailways), Jeff Crouchley (NC Department of Transportation), and two people from the Daily Reflector.

## Presentation and Discussion

George Alexiou gave a presentation. He reminded citizens of the study's objectives, and he updated citizens on progress since the previous public meeting. The presentation included the center's likely roles and its emerging specification, the result of the feasibility assessment, the site selection criteria, and the next steps in the process. He asked for feedback on the specification and facilities, and on the site selection criteria.

The following points were raised in the discussion afterwards:

- Retirees would not benefit from the center – they could not even walk one or two blocks to get to a bus. The center might be fine for 15 years' time, but not now. Where is the land for the center? You cannot use existing parking lots.
- The center would not benefit us in Red Oak – we get no transportation. Provide the transportation first, then look at facilities.
- I had to drop someone off at the Trailways depot recently, and was embarrassed by it.
- We need to think ahead for 15 years' time.
- Is the center too big as planned? Should we go for something smaller/cheaper now and expand later?
- Do any other cities have transportation centers in refurbished historic buildings?
- It's an excellent idea. The Trailways depot has not changed in the last 40 or 50 years. People who already use public transportation need a better service. I can understand the comments about the limitations of the existing service, but the center would be an opportunity/motivation to expand the bus system.
- I think this is a great opportunity. Having 90% funding leveraged from outside the city makes it very cost-effective.
- I think it should be done. People who can't walk very far [to get a bus] can get van service instead.
- The center must be seen in the context of other developments in the city. The Redevelopment Commission is trying to increase the activity in downtown, and this will make it harder to find parking. Building a deck would be costly. A transportation hub would increase the value of downtown, because people could avoid the hassle of parking.

- Many families in inner Greenville have children at schools in the outer areas. Although the children have school buses, the parents would like transportation to get them to the school when necessary.
- Maybe there could be a two-stage process. Immediately invest in more buses/routes – "just more handouts would be great" – and improve the GREAT transfer location. Meanwhile, work toward a nice transportation center as the second stage.
- Is the federal money specific to an intermodal center? Will the money go away if we don't take it? [Staff confirmed that the money was indeed specifically for new facilities, and was not available for operating buses.]
- [A member of the Redevelopment Commission:] We need to improve transportation facilities and routes, but we also need the center as a symbol of revitalization. It would be a symbol for investors.

A citizen asked Elvis Latiolais about the benefits he saw from the center. Another citizen asked what he would do if Greenville did not go ahead with the center. Mr. Latiolais responded:

- His customers liked places where they could transfer easily. They appreciated Trailways locations in intermodal centers, and it also increased his customer base.
- In an intermodal center, Trailways would not need to pay capital costs – only the operating and maintenance costs, which would also be lower as the facilities would be shared among the operators.
- If the center did not go ahead, he would have to spend heavily to upgrade the existing depot, or find a new location to lease.

To round off the discussion, City Council Member Larry Spell added that the Council wanted to hear all strands of opinion, and citizens were welcome to speak at the regular public comment sessions at Council meetings on Thursdays.

### Comment forms

Five comment forms were returned on the day. The comments are summarized below.

## Summary of Comment Forms

### 1. Thinking about facilities for riders, are we planning the right features for the center? Are there any other features you would like to see?

- Yes, you are planning the right features for the center. This is what the people need, it will add a plus to the City.
- Yes, we need an intermodal center that meets the need of current riders, with some sense of future expansion.
- Think long term. In the immediate future there will be little need for restaurants, florists, banks etc. Twenty years from now we could see thousands using a facility such as this. Have plenty of room for expansion so as people wait for their train or bus they would be able to get coffee, food etc.
- Ideas seem fine. Be sure there is a police substation in the area.

### 2. Thinking about other facilities, services or tenants that could be in the center – apart from those aimed at riders – are there any that would be particularly valuable?

- Yes, a travelers aid visitor's center should be a must.
- Daycare for children of riders.
- Work with the 10th Street project from ECU to the hospital.
- Should/could the waiting area serve multiple purposes, i.e., public meeting place?

### 3. Are there any site selection criteria that should be added to our list, or eliminated from the list?

- Should be somewhere close to the rail center. Adequate parking for buses, taxis etc.
- Proximity to downtown and ECU are important. However, major employment centers are ECU, PCMH and the industrial park north of the river. A central location is vital. Shuttles to move to these locations. Over time, major employers will locate within walking distance of the station.
- Mr. Tysinger and Mrs. Harrington [City staff] may have the best idea where they should put this facility.
- Site must have easy connection to pedestrian and bike ways.

### 4. Please write any additional comments below.

- In the area for parking, have low shrubs rather than trees. People can hide in trees, making it not safe to park and leave your car.
- This is for the future. It is the correct way to think and plan, and be integrated into the revitalization plans.
- If there are plans (they are occasionally spoken of) to relocate rail lines out of town to decrease the delays at railroad crossings – this relocation of a rail line away from a transit hub needs to be considered.

# Annex 4 Comments from the ECU Campus Meeting on December 8, 2005

## Attendance

The meeting was for invited representatives of ECU departments, Student Government and Student Transit. Eighteen people signed-in.

## Presentation and Discussion

George Alexiou and Graham James gave a presentation on what the transportation center might include, the potential benefits, examples from other cities, some emerging issues, the next steps in the study, and the questions on which input was sought from the ECU community. The following points were raised in the discussion afterwards:

- Would people travel to Raleigh by Greyhound; surely it's cheaper to fly? *[Post-meeting note: the round-trip Greyhound fare, traveling, out on December 14 and back on January 4, was $44 when checked on December 12.]*
- It was good to have Amtrak in Wilson. There was a lot of revitalization potential.
- Do transportation centers encourage increased ridership?
- Do transportation centers have a crime problem? If so, how is it dealt with?
- The Athletics department was considering satellite parking for the stadium; could the transportation center help with this?
- The problem was a lack of transportation, not a lack of a place to transfer
- The location would be critical for ECU to benefit
- The center was a gift that could be problematic. What would be its impact on other priorities? There was a risk of leaders saying "you've got a transportation center, what do you want now?" A premature center would be a constraint on future evolution of the transit system.

ECU Student Transit's Advisor made the following points:

- Some staff and a few students currently use GREAT. For students, ECU buys passes at full price and sells them at half-price
- The Advisor received calls from parents, asking for travel advice for their children coming home for Christmas. It would be good to have a place to transfer ECUSTA riders to/from other services. This could also spur use by staff.
- ECUSTA carries 12,000 passengers per day. But some students do not live near an ECUSTA route.
- If the center existed today, at least one ECUSTA route would serve it (perhaps a shuttle, or perhaps the Red route, depending on the location). However, it definitely would not become a hub for ECUSTA services.
- Bike storage should be provided.

## Comment forms

The handouts and comment forms (prepared for the public meeting that evening) were circulated for information and as an additional means of providing comment. Four attendees returned the forms. Their comments, which should not be taken in isolation from the verbal discussion, are summarized below.

### *1. Would a transportation center help you to get around? How would it help?*

**'Yes' – one person:**

Promote other transportation opportunities. Bring additional revenue. Greater promotion of services.

**'Maybe' – two people:**

If buses came to my neighborhood

Provide options for those people who do not have or would rather not use drive their cars

**'No' – one person:**

I would not anticipate this benefiting me personally, however, it may benefit those who use public transportation ion a regular basis.

### *2. What would make it a nice place to catch a bus, train or taxi? What facilities would you like to see provided?*

All bus transfers / taxi / rail

Casual dining, visitor's center restaurants, near hotels, safety, easy access, satellite parking

A transportation center where people feel safe and view as multipurpose. Food services / communication services.

### *3. Overall, is a transportation center a good idea for Greenville as a whole? Why or why not?*

**'Yes' – all four people:**

But timing may or may not be right

Centered in an old tobacco factory has much potential

The concept is consistent with the direction, growth, and future planning for the University

Good idea to promote alternatives to the typical car transportation . Provide a relief to city streets.

### *4. How important is it to have a transportation center, compared to other possible improvements to public services? Why?*

**'High priority' – one person:**

Given the cost of fuel, this is a time needed concept.

**'Medium priority' – two people.**

**'Low priority' – none.**

**No answer – one person:**

Good question. Do not have enough overall knowledge of this topic to make an educated opinion.

### *Please write any additional comments below.*

It would be nice to see transportation to and from RDU airport to this site.

Great idea to get public opinion.

# Annex 5 Calculations for Section 7, "Accommodating Transit System Expansion and Future Rail Service"

### Potential service-pattern requirements for the Transportation Center

These background calculations are to assist in estimating the potential future space requirements in the Transportation Center.
They are designed to show the credible range of long-term requirements, and do not necessarily reflect current plans.

#### Potential city population

Assuming 3% annual growth (linearly),in line with the historic trend in the city:

| | | |
|---|---|---|
| 2020 population = | 99,356 | Reality check: this is out of a county population that is forecast to |
| 2030 population = | 119,096 | grow from 134k in 2000 to 187k in 2020. |

#### Method 1:
#### Based on service-hours per capita

This technique assumes that Greenville could gradually increase its level of public transit service, toward peer-average levels and onward to aspirational levels.
This is measured in terms of service-hours per capita:

| Indicator / target | Hours per capita | Notes | Source |
|---|---|---|---|
| Peer Cities excluding Chapel Hill | 0.39 | Range was 0.22-0.62. Cities were High Point, Asheville, Gastonia, Rocky Mount and Wilmington | RTFS |
| Greenville in 2003 | 0.22 | | RTFS |
| Transit 2001 "Current" for NC 16 urban areas | 0.39 | | T2001 report |
| Transit 2001 "Modest" target | 0.50 | T2001 target for Greenville (along with Gastonia, Hickory, RM, Salisbury and Wilson) | T2001 report |
| Transit 2001 "Better" target | 0.75 | | T2001 report |
| Transit 2001 "Optimal" target | 1.00 or more | T2001 ideal for all urban areas | T2001 report |

The scenarios listed on the next page show a number of ways of achieving this, which would have varying implications for the Center's bus bay requirements.
They assume that all GREAT routes would go through downtown. In practice, some of the future expansion would likely involve
suburban routes that did not go through downtown. This would reduce the number of bays needed.
On the basis of these scenarios, it is plausible that GREAT could need around ten bays in the long-term.

#### Method 2:
#### The recommendations from the Regional Transit Feasibility Study

The RTFS recommended that GREAT should run half-hourly limited-stop "Shoppers Express" and "Hospital Express" services (also connecting with the ECU campus)
It also recommended a long-term increase in service, to the statewide average level for peer cities (short-term, to the average for small cities).
One possible way of achieving this was to introduce new routes to Winterville/Ayden and Simpson.

If this were to happen, GREAT's requirements for bus bays would be:

| | |
|---|---|
| Existing + planned | 5 bays |
| Winterville/Ayden Route | 2 |
| Med Center and Shops routes | 2 |
| Total Great needs | 9 |

#### Method 3:
#### Comparison with peer cities

| Rank in NC | City / Town | Population (2004) | Routes in pulse | Notes |
|---|---|---|---|---|
| 6 | Fayetteville | 130,850 | 7 | Plus others that omit the transfer center |
| *7* | *Cary* | *110,028* | | *Unfair comparison - new system, travel pattterns/demographics very different* |
| 8 | Wilmington | 94,718 | 7 | Seven routes through downtown, plus a downtown trolley |
| 9 | High Point | 90,363 | 12 | Not clear if all pass through downtown |
| 10 | Jacksonville | 73,531 | 1 | Appears only to be one service, a big loop |
| 11 | Asheville | 73,239 | 10 | Total 17 routes, split between two pulses. |
| 12 | Gastonia | 68,802 | 9 | |
| 13 | GREENVILLE | 67,499 | 4 | |
| 14 | Concord | 62,291 | 6 | Concord-Kannapolis transit system. Young system, started 2004 |
| 15 | Rocky Mount | 56,309 | 6 | Three buses interline - hence nine routes but six buses |
| *16* | *Chapel Hill* | *51,519* | | *Unfair comparison - special circumstances* |
| - | Spartanburg, SC | 40,000 | 8 | (City population - urban area is larger) |

Comparison with Greenville's peer cities in NC shows a wide variety of service levels and patterns.
However, 8 or 9 routes would be plausible, and potentially up to at least 12 as Greenville grows.

| Scenario | Description | Routes | Hourly pulses | Annual service-hours | % increase from existing | Service-hours per capita in... (Horizon year/population) 2003 65,799 | 2020 99,356 | 2030 119,096 | GREAT bays needed | Notes | Passenger space implications |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | Existing | 4 hourly, one bus each | 1 | 13,696 | - | 0.21 | 0.14 | 0.11 | 4 | | |
| - | Current aspirations: Convert Route 4 to full-time, add new Route 5. | 5 hourly, one bus each | 1 | 18,170 | 33% | 0.28 | 0.18 | 0.15 | 5 | | |
| A | Implement current aspirations, plus increase service to half-hourly on all routes. | 5 half-hourly, two buses each | 2 | 36,340 | 165% | 0.55 | 0.37 | 0.31 | 5 | No extra bays required - only half the buses are downtown at any time. | Volumes split between two pulses |
| B | As Scenario A, but Routes 1, 2 and 4 are split into two half-hour segments, so that each bus on these routes visits downtown every half-hour. | 5 half-hourly, two buses each | 2 | 36,340 | 165% | 0.55 | 0.37 | 0.31 | 8 | Three extra bays because on three of the routes,both buses are downtown together. | Volumes split between two pulses |
| C | Implement current aspirations. Add four new hourly full-time routes. (for example, could be two new routes reaching into the southern suburbs, a Winterville/Ayden Express and a Simpson route). | 9 hourly, one bus each | 1 | 32,706 | 139% | 0.50 | 0.33 | 0.27 | 9 | | |
| D | As scenario C above, but all routes except Winterville and Simpson are increased to run half-hourly. | 7 half-hourly, two buses each<br>2 hourly, one bus each | 2 | 58,144 | 325% | 0.88 | 0.59 | 0.49 | 9 | (One pluse has only 7 buses) | Volumes split between two pulses |
| D variant | Bring in the Winterville and Simpson Routes on opposite pulses | | | | | | | | 8 | | |
| E | As scenario D above, but routes 1, 2 and 4 are split into two half-hour routes, running half-hourly. | 7 half-hourly, two buses each<br>2 hourly, one bus each | 2 | 58,144 | 325% | 0.88 | 0.59 | 0.49 | 12 | Three extra bays because on three of the routes,both buses are downtown together. One pulse has only 10 buses. | Volumes split between two pulses |
| E variant | Bring in the Winterville and Simpson Routes on opposite pulses | | | | | | | | 11 | | |
| F | As scenario C above, but all routes run every 15 mins (Winterville and Simpson every half hour). | 7 every 15 mins, four buses each<br>2 half-hourly, two buses each | 4 | 116,288 | 749% | 1.77 | 1.17 | 0.98 | 12 | No extra bays required | Volumes split between four pulses |
| F variant | Bring in the Winterville and Simpson routes on opposite pulses | | | | | | | | 11 | | |
| G | Hypothetical fully-radial pattern. One route for each of eleven main radial corridors. Additional Winterville/Ayden express. | 12 half-hourly, two buses each | 2 | 87,216 | 537% | 1.33 | 0.88 | 0.73 | 12 | | Volumes split between two pulses |

*Notes*

*Typical annual service-hours per bus for a full-time route are taken to be 3,634, as reported in the Regional Transit Feasibility Study (RTFS)*

*Route 4 currently operates 2,794 hours (source: RTFS)*

*Population growth assumes 3% linear annual growth from 2003, reflecting Greenville's historic trend.*

*Some future routes would likely not run through downtown, reducing the number of bays required from the total shown*

## Estimates of potential rail ridership

**Existing annual ridership in NC, and other related data**

| City | 2004 Amtrak riders (a) | 2004 City population | 2004 Rides per citizen | Notes | 1996(?) ridership (c) | Potential 2015 ridership with HSR(d) | *Notes* |
|---|---|---|---|---|---|---|---|
| Raleigh | 110,203 | 325,213 | 0.34 | | 60,000 | 507,000 | |
| Charlotte | 107,896 | 609,185 | 0.18 | | 40,000 | 488,000 | |
| Greensboro | 58,274 | 233,148 | 0.25 | | 26,000 | 378,000 | |
| Rocky Mount | 38,035 | 56,309 | 0.68 | railhead? | | | |
| Fayetteville | 32,910 | 130,850 | 0.25 | | | | |
| Durham | 32,556 | 204,767 | 0.16 | | 25,000 | 312,000 | |
| Wilson | 30,071 | 47,441 | 0.63 | railhead? | | | |
| Salisbury | 16,238 | 28,215 | 0.58 | railhead? | 10,000 | 34,000 | Plus people using the Asheville train |
| Cary | 15,638 | 110,028 | 0.14 | | 7,000 | 20,000 | |
| Burlington | 11,027 | 47,004 | 0.23 | | 9,000 | 70,000 | |
| High Point | 8,793 | 90,363 | 0.10 | | 6,000 | 34,000 | |
| Selma-Smithfield | 8,364 | 18,578 | 0.45 | railhead? | | | |
| Kannapolis | 7,160 | 39,187 | 0.18 | | 4,000 | 13,500 | |
| Southern Pines | 3,490 | 11,573 | 0.30 | | | | |
| Hamlet | 2,981 | 5,871 | 0.51 | railhead? | | | |
| Gastonia | 1,823 | 68,802 | 0.03 | | | | |
| Total NC Ridership | 485,459 | | | | | | |
| Piedmont corridor stations | 367,785 | | | | 187,000 | 1,856,500 | |

*Sources:*

*(a) Amtrak State Factsheet 2004*

*(c) NC State Demographics website.*
*Selma-Smithfield includes populations of both towns.*

*(c) Marsolan report*

*(d) Potential 2015 HSR ridership as NEC+Piedmond HS Corridor (Marsolan report, figures in turn from KPMG study)*

**Suggested incremental ridership from SE Rail Study**

| *Route* | *Basic* | *Moderate* | *Major* | |
|---|---|---|---|---|
| Wilmington-Goldsboro-Raleigh | 50,100 | 60,800 | 74,100 | |
| Wilmington-Fayetteville-Raleigh | 46,700 | 49,300 | 58,900 | |
| Wilmington-Rocky Mount-Northeast | 25,400 | 27,000 | 32,000 | Not competitive on Raleigh trips (cf US 264 from Greenville) |

*Wilmington is about 90,000 population*

*Study presumably assumed one train daily, although this is not clear.*

**Factors specific to Greenville**

Greenville could potentially grow to 120,000 population by 2030.
Rocky Mount and Wilson are currently railheads for Eastern NC. Greenville will take some of this traffic PLUS trips to Raleigh.
There is potential for overall growth due to high-speed corridor developments generating feeder traffic
Rail's competitiveness on trips to Raleigh is limited, due to US 264. The main market may well be connecting to the north-east or Charlotte.

**Key design volumes that feed into the space formulas:**

Fill in these boxes

| | | |
|---|---|---|
| Annual ridership | 40,000 | |
| Daily Average ridership | 110 | |
| Daily Boarding Passengers | 55 | |
| Peak Hour Boarding Passengers | 55 | *Note the assumptions here:* |
| Peak Hour Alighting Passengers | 55 | Assume a worst-case of one train per day, which turns round within the hour |
| Peak Hour Passengers (Total) | 110 | |
| Peak Hour Visitors - say 1 per 4 passengers | 28 | |