

Thomas Jefferson Planning District Commission Regional Rail Conceptual Study

November 1, 2004



Developed by the
Community Mobility Committee
A subcommittee of the Charlottesville-Albemarle Metropolitan Planning Organization

The Thomas Jefferson Planning District Commission (TJPDC) and Charlottesville Albemarle Metropolitan Planning Organization have developed a Regional Rail Conceptual Study for distribution as an informational item, with the hope that funding will become available for a more in depth study and implementation.



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Preface

The Charlottesville-Albemarle region of Central Virginia, as well as its adjoining counties, is experiencing rapid growth of population, expansion of commercial development, and the associated increase in traffic congestion that has long plagued many larger Virginia municipalities such as Fairfax and Hampton Roads. The addition of highway lanes on US Route 29 just north of Charlottesville in the mid-1990s has allowed the possibility of more vehicular throughput, but has also made the road more dangerous as many motorists try to successfully execute multiple lane changes when threading their way across traffic from an entry point to a left turn position. Unfortunately, the throughput presumably gained by the widening project is usually negated by minutes-long cycles of 4-sequence traffic signals which add to trip time, create motorist frustration, and increase the likelihood of reckless behavior by those trying to arrive somewhere on time. Through traffic on US 29 (approximately 10% of the AADT) is anticipated to grow as overflow traffic from the I-81 construction project will undoubtedly increase road usage on this side of the Blue Ridge. For commuters, through travelers, and shoppers from various regions, what is needed is a means of moving passengers to their destinations at a rate consistent with a reasonable trip time but with minimal hindrance from traffic jams.



Figure 1. Map of the Thomas Jefferson Planning District

Addressing transportation issues effectively is done by examining the options and integrating them in an “intermodal” system. Various transit options are possible for providing improved travel mobility within our region. These include (1) improved bus service using an expanded fleet running at frequent intervals on the existing roadway network such as with the recent service expansions by Charlottesville Transit Service, (2) “Bus Rapid Transit” (BRT) that operates on dedicated highway lanes or separate right-of-way routes (denoted “busways”) that prevent auto congestion from impeding the bus movement, (3) carpool/vanpool options or designated High Occupancy Vehicle (HOV) lanes during designated times of the day, and (4) rail transit (Intercity, Commuter, and Light-rail transit).

A multi-pronged planning process termed the United Jefferson Area Mobility (UnJAM) Plan is underway within the PDC region in order to address land-use and transportation issues for upcoming decades. As a kick-off for this effort, the Thomas Jefferson Planning District Commission (TJPDC) and the Charlottesville-Albemarle Metropolitan Planning Organization (MPO) sponsored a series of hands-on planning workshops to garner public



input for creating a federally-mandated Rural Transportation Plan and the Charlottesville-Albemarle Regional Transportation (CHART) 2025 Plan. As a result of these workshops, there is now an enhanced public awareness of the clear links between land usage, transportation policy, and quality of life. Additionally, at numerous of these UnJAM meetings, both in Charlottesville as well as in rural counties, there is broad-based interest in some sort of rail transport from outlying regions to the Charlottesville area.

Of the four transit options mentioned above, the potential for expanded bus service is addressed more fully in the Transit Development Plan completed by the Charlottesville Transit Service. Bus Rapid Transit is covered (particularly with respect to innovative technologies for busway infrastructure and vehicle design) within the UnJAM Plan document. The UnJAM Plan addressed a broad spectrum of issues such as: (1) coordination of land-use decisions and the choice of suitable transportation mode alternatives, (2) the variety of available transportation alternatives that could potentially be useful in our area, (3) infrastructure options such as on-road or off-road dedicated rights-of-way, and (4) implementation phasing such as express buses now, bus rapid transit in the near term to build ridership in selected corridors, and rail system construction in a future decade.

Given that expanded bus service and the BRT option have been or will be treated in the two separate Plans mentioned above, this Regional Rail Conceptual Study will concentrate upon exploring rail transit options in considerable depth. It is proposed here that a three-radial-route high-capacity system of light-rail trackage be constructed as a potential solution to the efficient movement of commuters and shoppers between Charlottesville and major population or development nodes within about a 20-mile radius of the City. Such a system works best with an isolated right-of-way to achieve immunity from motor vehicle traffic congestion. Some tentative route alignments (for the Rte. 29N, Rte. 250E and Rte. 250W corridors) are presented here along with potential pedestrian-accessible station stops that reflect present or expected near-term patterns of residential clusters, employment centers, and commercial development. This constitutes the Light Rail Proposal beginning on page 13. Any routes depicted on maps herein do not presently designate or guarantee any specific corridor alignment or station location, but are intended to stimulate dialogue leading toward the ultimate realization of an official corridor plan for high-capacity transit.

Rail transportation is one of the most high-capacity modes of transportation for both freight and passengers. At capacity, freight trains can provide up to 6 times the capacity of the equivalent linear lengths of trucks on the highway. For passenger trains, the capacity per vehicle is nearly 6-8 times of that passenger vans, and upwards of 30-50 times that of 2-person personal-vehicle carpools. Numerous transit analysts agree that rail is the best choice for short-intermediate distance journeys up to 500 miles. In addition to its efficiency, rail transportation is increasingly gaining popularity for those who cannot or will not drive a vehicle (i.e. physically-challenged, senior or juvenile persons, urban occupants who cannot afford/choose not to pay costs associated with a vehicle for their limited use).

This TJPDC Regional Rail Conceptual Study suggests light rail, commuter and intercity passenger rail alignments. The latter two options would primarily use existing Norfolk Southern Corporation and CSX Transportation trackage. In addition to hosting numerous freight trains, both are already in use as routes for Amtrak long-distance passenger trains, which provide intercity rail service over 2 routes in our region. For short-intermediate trips, the Commonwealth of Virginia has already recommended a regional passenger rail service called the TransDominion Express (TDX), which would utilize Norfolk Southern trackage in our region. The TDX would cover approximately 400 miles with 19 formal and informal stations and is detailed in the final 1998 Bristol Report.

This Rail Conceptual Study also outlines several proposals for commuter rail services, which include Norfolk Southern (North-South) and CSX (East-West) trackage, both of which are roughly parallel to Virginia state Primary roads in the PDC area that carry significant amounts of automobile traffic to and from growth areas. The commuter rail proposals for CSX rail lines extend outside the PDC area as far west as the City of Staunton and as far east as Richmond. The commuter rail proposals along Norfolk Southern tracks would serve the University of Virginia, downtown Charlottesville and commercial and residential developments along the Rt. 29 corridor.



As passenger rail alignments would utilize the same basic infrastructure of the freight railroads, consideration will need to be given to their operations, fair compensation of their assets, and possible improvements that might benefit both freight and passenger interests mutually. Establishing Public-Private Transportation Agreements (PPTA) could lead to more service and improvement on safety concerns (such as road-railroad grade crossings and elimination of the at-grade CSX-NS “diamond” crossing near Union Station). If light rail or frequent commuter rail/priority transit operations are to be considered for any current alignment, a freight bypass may need to be considered in the future. This is discussed in the “*Proposed Rail Lines*” section of the Conceptual Study. In addition, implementation of service along CSX and Norfolk Southern corridors would require active cooperation, not now under discussion with these corporations.

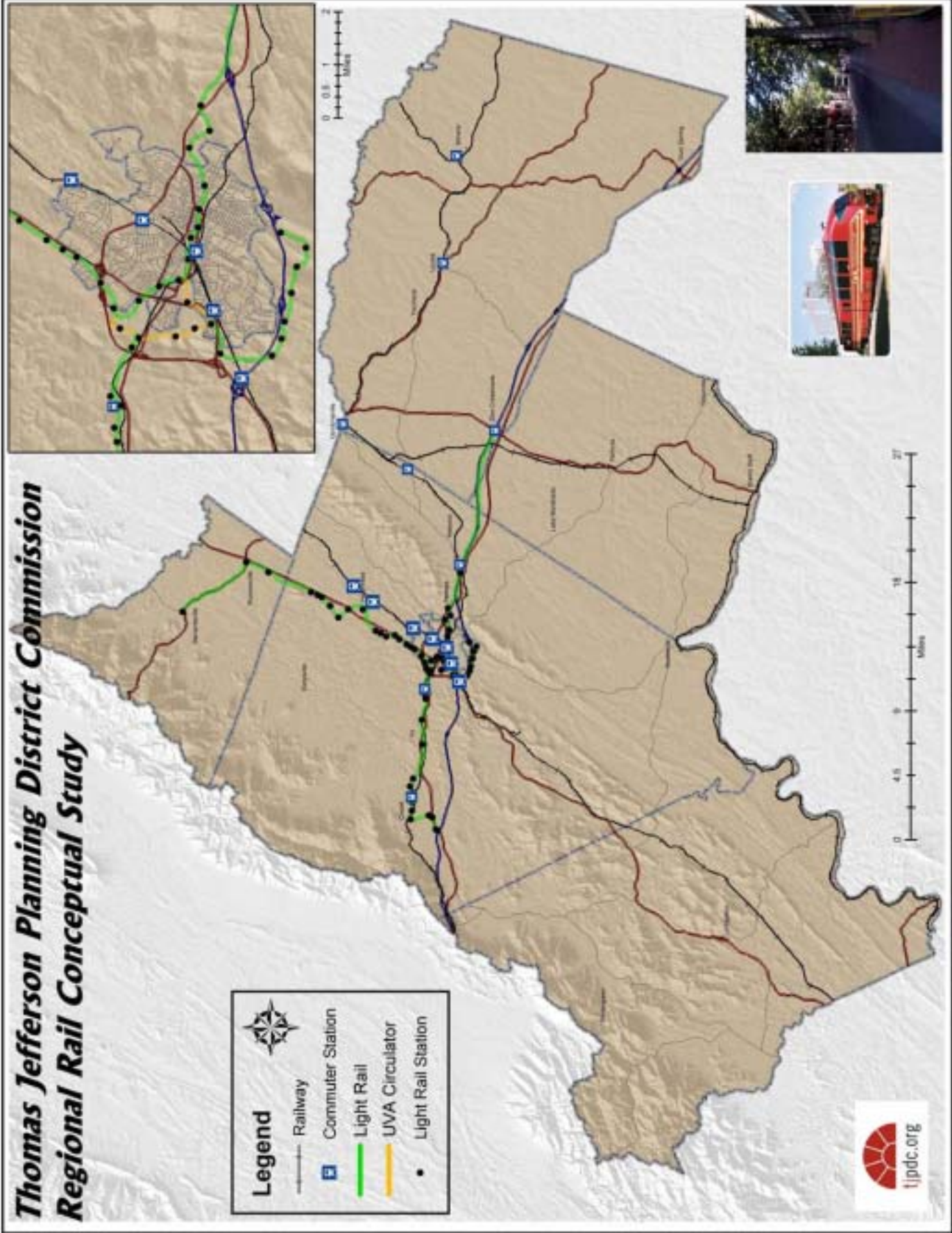
Historically, rail transit options are often implemented when there is already significant traffic congestion along parallel roads and expansion of roads becomes prohibitive due to costs and engineering considerations. Rail passenger service is a solution where high volume throughput is needed and where there is a focused need in transportation (i.e. to/from a central work district). Because it has often been implemented at a later stage, land value is high, and its availability for rail stations, maintenance and storage areas becomes an issue. Therefore, it is an absolute priority that planning begin early, and be done simultaneously when other transportation and land use projects are planned and constructed. Active consideration for rail transit possibilities should be given in new projects. Of paramount importance are these aspects:

- Preservation of rail corridor rights-of-way (both existing and planned)
- Consideration/purchase of land designated for future intermodal station centers and maintenance/storage facilities
- Coordination in PPTA's of regional, state authorities, adjoining MPO's, and corporations in addressing concerns of all interested parties
- Active solicitation of public input in planning for rail transit

As access to transportation is a key part of an ever-increasing mobile society, Transit-Oriented Developments (TOD) are gaining in popularity in many regions. This partners residential, business, and commercial land use planning with transportation concerns. In urban & suburban areas alike (including in our MPO region), many examples of TOD's are under construction, and the rail mode is an attractive, affordable transportation option when the planning is done simultaneously.

With these considerations, this TJPDC Rail Plan begins a discussion for the additional rail transit services in various modes. Figure 2 shows a map of the Planning District with the various rail alignments examined in this report. In several cases, multiple scenarios are discussed where the various proposals may overlap in scope or actual physical space. The Rail Conceptual Study highlights all of the potential options so that comparisons can be made for informed choices.

Thomas Jefferson Planning District Commission Regional Rail Conceptual Study





Introduction

As development and growth continue in the future, rail transport will become more important to move people in a timely manner and reduce the impact on roadways. Intercity passenger and commuter rail services have reemerged as popular and efficient means of regional and long distance travel. Regional rail passenger service can link the Charlottesville urban area to the region's small towns and villages. Light rail, streetcar, regional and commuter rail studies have been developed in the Rail Conceptual Study for the TJPDC area.

This Rail Conceptual Study examines several possible rail transit options; while some of the options vary in scope, they sometimes share several commonalities including rights-of-way and station facilities. Many of the stations also offer the potential for intermodal transportation options. The regional rail Conceptual Study is focused on transportation to/from the central work areas (as opposed to "bypass" transportation around Charlottesville such as the proposed US 29 Western Bypass). As growth continues and land is developed for businesses and residences, special attention should be made to sites, which would be options for stations and associated infrastructure (yards, maintenance base). This needs to be considered in the short term as reacquisition of land and modification of existing buildings and landscapes is costly, time-consuming, and risks alienation of public support.

The MPO's Community Mobility Committee (CMC) developed a study on light rail, "Corridor Concepts for Light Rail Transit for Charlottesville and Environs" which in 2002 identified several areas that could be serviced by an off road, fixed guideway system. The Committee also developed a passenger and commuter rail report for the TJPDC and surrounding area. Currently Norfolk Southern and CSX rail companies own rights-of-way in the TJPDC region and their facilities provide many transportation benefits for both local and state interests. The Thomas Jefferson Planning District Commission (TJPDC) and Charlottesville Albemarle Metropolitan Planning Organization have combined these reports into this Regional Rail Conceptual Study for distribution as an informational item, with the hope that funding will become available for a more in depth study and implementation.

As stated in the UnJAM 2025 long range plan document, rail transport will become more valuable to businesses, institutions, and commuters as support for rail transport continues to grow. By reducing the amount of goods being transported on highways, roads become safer for all users. Enhancing existing rail corridors and restoring train stations can help provide successful TOD projects which develop an increased market for rail transit.

Long Range Plan Rail and Freight Vision for the Year 2025:

- § Railways will reemerge as one of the primary means for transporting goods and commodities throughout the area
- § Residents and visitors will be able to travel via commuter and passenger rail throughout the region
- § Reliable rail will offer an alternative to increasing congestion & delays on area roads.
- § Land-use and growth patterns support rail infrastructure and rail development, thereby revitalizing economies and towns with rail service.
- § Public policy supports enhancing and expanding the rail network, while supporting bicycling and walking with safe railroad crossings and adjacent trails.

Other Rail/Freight Issues Considered for Rail and Freight:

- § Improve Regional Rail passenger service
- § Safe and efficient freight movement
- § Separate freight movements from passenger travel where possible
- § Support on-time delivery needs of business and industry

A major portion of the transportation network is used for movement of goods, which is done via rail, semi-truck, vans, and air freight. Long distance truck and shipping companies prefer traveling on roadways unimpeded by traffic signals and heavy congestion. Motorists, bicyclists, and pedestrians prefer to be separated from truck traffic for safety reasons. Due to these concerns, there has been an increase in the amount of freight being shipped by rail. The shift to rail increases safety for all other modes, reduces air pollution, and protects the environment. While the road-to-rail trend is becoming more apparent throughout the US, it is impossible to move all freight by rail. Businesses still need to get products from rail terminals to stores, and it is more efficient to use trucks to haul freight for short distances.



Current Rail Initiatives and Studies in Virginia

Bristol Rail Passenger Service (TDX) Study: In 1998, the Virginia Department of Rail and Public Transportation (VDRPT) completed a series of studies designed to determine the feasibility of implementing rail passenger service to Southwest Virginia. The study proposes rail service that will connect Bristol with both Richmond and Washington, D.C. and will serve a total of 19 stations, including Roanoke, Lynchburg, Charlottesville, Alexandria and points in between. A map along with additional information on the TDX is located in the Passenger and Commuter Rail section of this Rail Conceptual Study.

State (VDOT/VDRPT) & Southeast High-Speed Rail (SEHSR) Projects: The Commonwealth of Virginia has committed to several projects to enhance rail transportation, especially in Northern Virginia. VDRPT-funded high-priority improvements to rail infrastructure are underway along CSX-owned trackage and will result in increased VRE service and reduction in delays to both freight and passenger trains in the Washington-Richmond corridor. Active planning is being done to examine options into Richmond. Through a joint effort with North Carolina DOT's Rail Division, the Richmond south corridor is a designated part of the SEHSR project, which proposes to connect the D.C. and Northeast area to various cities in the south. The VTRANS 2025 plan has focused on several passenger & freight corridors for improvement including those under discussion here. Virginia Railway Express has also released its strategic plan which includes discussion of expanded service to its south & west.

Planning District 10 (TJPDC) Activities: The Thomas Jefferson Planning District Commission (TJPDC) has been actively planning land use and transportation for its area. The Charlottesville-Albemarle Regional Transportation (CHART) 2021 plan calls for increased rail service in the region. Albemarle County is developing Master plans for the Crozet and Pantops areas, and the Alliance for Community Choice in Transportation (ACCT) sponsored a streetcar study for the Charlottesville urban area. These are discussed further in this report.

Other PDC Studies: There are many rail initiatives being studied throughout the State of Virginia by several Planning Districts. Hampton Roads, Richmond, and Roanoke Valley Regional to name a few, have studied light rail, commuter/passenger, and freight rail systems respectively. Planning District 9 (Rapidan-Rappahannock) is planning for public hearings for expanded VRE service in 2005 and is partnering with this Planning District on the Northern Piedmont Regional Rail Plan. The Hampton Roads PDC has also begun studying light rail service. Richmond Regional Planning District Commission has completed a Richmond Rail Transit Study Feasibility Final Report and Roanoke Valley Regional Planning District held a freight rail forum to discuss reducing the amount of truck traffic and goods on the Interstate 81.

Statewide Rail Transportation Commission & Advocate Groups: Many groups across the Commonwealth strongly advocate passenger rail transport. A state rail commission was recently created to address issues on rail transportation, and the Commonwealth Transportation Board supports rail options in its advisory role. Transportation advocates of passenger rail & professionals from freight rail companies concur vitality and growing need of rail transportation. Internationally-renowned experts such as Hank Dittmar, former CEO of Reconnecting America, have echoed these sentiments in a recent (September, 2004) presentation to the Virginia Conservation Network. Among Mr. Dittmar's interesting statistics for Virginia were the simultaneous completion of additional capacity on roads (about 30%) in the 1990s with yet even additional delays (> 70%) on these expanded roads.

The Victoria Transport Policy Institute: The Victoria Transport Policy Institute is an independent research organization dedicated to developing innovative transportation analysis and problem solving. The VTPI website (www.vtpi.org) has many resources addressing a wide range of transport planning and policy issues.

This Victoria report evaluates rail transit benefits based on a comprehensive analysis of transport system performance in U.S. cities. It discusses best practices for evaluating transit benefits. It finds that cities with larger, well-established rail systems have significantly higher per capita transit ridership, lower average per capita vehicle ownership and mileage, less traffic congestion, lower traffic death rates and lower consumer transportation expenditures than otherwise comparable cities. This indicates that rail transit systems can provide a variety of economic, social and environmental benefits, and benefits tend to increase as a system expands and matures. This analysis indicates that rail investments can be a cost effective way to improve urban transport. Parking, vehicle and congestion cost savings from rail transit are estimated to exceed total U.S. public transit subsidies.



Rail Transit Benefits Study:

New study finds that cities with rail transit systems have significantly less traffic congestion, lower traffic accident rates, and lower consumer costs

Another study released by the Victoria Transport Policy Institute shows that rail transit systems can significantly improve transportation system performance.

"Comprehensive Evaluation of Rail Transit Benefits" by Todd Litman analyzed the impacts of different types of transit on urban transportation patterns. The study found that cities with large rail transit systems have on average:

- š 400% higher per capita transit ridership.
- š 390% higher transit commute mode split.
- š 36% lower per-capita traffic fatalities.
- š 14% lower per capita consumer transportation expenditures.
- š 19% smaller portion of household budgets devoted to transportation.
- š 21% less per capita motor vehicle mileage.
- š 33% lower transit operating costs per passenger-mile.
- š 58% higher transit service cost recovery.



Existing Rail and Transit Services

AMTRAK (National Railroad Passenger Corporation): Current rail service in the MPO area is provided by Amtrak in the form of long-distance intercity trains, traveling on two routes through Charlottesville (New York-New Orleans, and Washington, D.C.-Chicago). Many of the reserved seats on these Amtrak trains are for long-distance passengers traveling through the region. AMTRAK does offer connecting bus service to passengers connecting to/from passenger trains from Charlottesville. This service is only available to AMTRAK passengers making these connections and cannot be used for local travel between Charlottesville and Richmond.

Virginia Railway Express (VRE) – In Northern Virginia (outside the MPO area), Virginia Railway Express operates commuter rail service to Washington, D.C. from Virginia suburbs on two routes. Many of VRE's riders are federal employees and other workers commuting to work. Many trains are at passenger capacity with some additional service pending on track capacity improvements.

Greyhound: Greyhound provides intercity bus services to/from Charlottesville connecting with Washington, D.C., Richmond, Lynchburg and other cities in the Commonwealth. AMTRAK

Charlottesville Transit Service: Public transportation in the Charlottesville and the urban areas of Albemarle County is provided by Charlottesville Transit Service (CTS). CTS operates six days a week with ten daily, fixed routes, one demand response, and six night service routes throughout the urban area. Creating the hub of the public transportation network, bus routes circle around the downtown pedestrian mall before breaking off in the designated direction. Service extends south to Interstate 64, as far up Route 29 North to Wal-Mart, and east to Pantops. A transfer from one bus to another is used to complete a trip that is not a round trip. Transfer information for each route is included under the route timetables. Buses are wheelchair accessible and CTS offers paratransit programs, in conjunction with Jaunt, for riders with disabilities who are unable to use regular route buses. CTS buses are also equipped with bike racks.

University (of Virginia) Transit Service: UTS offers transportation and charter services to students, employees, and visitors to the University of Virginia. It operates twenty fixed routes throughout the calendar year, with a focus on the academic year. UTS has three types of service: full, holiday, and commuter. Transfers can be made between CTS and UTS buses.

Greene County Transit: Greene County Transit provides fixed-route service from Stanardsville and Ruckersville to Charlottesville, as well as intra-county service. Door to door, demand response service in specific locations is available for Greene County residents between 7:30 AM and 4:00 PM, Monday through Friday.

JAUNT: JAUNT, Inc. is a regional transportation system providing fixed-route and demand-response service to the citizens of Charlottesville, Albemarle, Fluvanna, Louisa, and Nelson Counties. The eighty-vehicle fleet carries the general public, agency clients, the elderly and people with disabilities throughout Central Virginia. Mobile Data Computers have been installed in all of JAUNT's vehicles and new, sophisticated scheduling software handles all 1,200 scheduled trips per day. Reservationists can quickly find the most effective vehicle for each trip, dispatchers know exactly where each vehicle is, and operators access their trip information directly from their on-board computer. Fixed route services primarily connect outlying communities to the urban area, but routes to less populated centers are available as well. Weekday transit routes operate on most primary roads: Route 29 North and South, Route 20 South, Route 250 East and West, and Interstate Route 64.

In Charlottesville, JAUNT provides demand response service to people with disabilities and this service is also available on weekends in Charlottesville and Albemarle.

Routes in Albemarle County originate in various communities including Scottsville, Covesville, North Garden, Keswick, Advance Mills, Earlysville and Slate Hill.

JAUNT service in Fluvanna County connects citizens in the Fork Union, Palmyra, Lake Monticello and Zion Crossroads areas to the urban area. Two routes originate in Fork Union: one heads to Charlottesville via Route 53 and the other travels to Route 15 at Zion Crossroads before turning west onto Interstate Route 64. Midday service to Charlottesville is available Mondays and Thursdays, while intracounty service is available Tuesday, Wednesday, and Thursday.



Routes in Louisa County include a commuter service to Charlottesville, originating in the Town of Mineral, with stops in Louisa, Trevilians, and The Park and Ride facility in Zion Crossroads. Midday service is available to residents in all areas of Louisa County traveling to destinations within the County and in the City of Charlottesville. JAUNT also provides service for residents in all areas of the County traveling to destinations in and around the Towns of Louisa and Mineral.

In Nelson County, JAUNT has weekday commuter routes to Charlottesville as well as midday services to Charlottesville three days a week and to Lynchburg once a week. Commuter service to Wintergreen is available seven days a week and intracounty service is available every weekday.

JAUNT service to rural areas is critical to link jobs, businesses, families, and communities. New onboard computers will improve service delivery and scheduling.

There are also numerous private shuttle/bus services operating in the region. Some hotels, apartment complexes, and retirement facilities operate their own bus services for clients. Also available to the region is a van shuttle service servicing the Charlottesville-Albemarle, Richmond International, and Dulles airports. The University of Virginia also provides information on a private bus service catered to students, offering transportation from Charlottesville to popular destinations such as Richmond and the Northern Virginia area.



Light Rail

In July of 1999 the Thomas Jefferson Planning District Commission (TJPDC), in concert with the Charlottesville-Albemarle Metropolitan Planning Organization (MPO), sponsored a public forum entitled “Mobility for the New Millenium - The Future of Rail and Public Transit in the Jefferson Area”. This forum was the first major project of the MPO’s then newly formed Advisory Committee on Single-Occupancy-Vehicle (SOV) Alternatives. This SOV Alternatives committee (now renamed in mid-2001 as the Community Mobility Committee - CMC) was charged with finding strategies to reduce auto trips by encouraging transit ridership or carpooling, and was directed to study the potential for light-rail transit (LRT) and other transportation modes in the Charlottesville-Albemarle area. At the 1999 forum, several distinguished speakers, holding current or former executive positions in the railroad and transit arenas, highlighted the distinct advantages of passenger rail transportation. This document is intended to expand upon that expository baseline by proposing specific LRT corridor concepts for the Rte. 29 North, Rte. 250 East, and Rte. 250 West entryways into the city of Charlottesville.

The MPO’s recent Eastern Planning Initiative (EPI) project (concluded in 2001) identified transportation needs in regions to the North and East of Charlottesville. An ongoing study (as yet incomplete) is addressing similar issues to the West of Charlottesville in the Crozet community. Growth of population, employment centers, and commercial areas in these regions requires efficient means of moving large numbers of people who are commuting to work or school, going on shopping trips, or traveling in the evening to entertainment centers, in order to avoid a never-ending cycle of road-building and widening projects. The Eastern Planning Initiative provided a preliminary estimate of potential transit ridership and costs, but did not address any specific route alignments within the above corridors. Given some recent ad hoc study of existing and foreseeable land development trends, it is now possible to focus more precisely upon potential corridor alignments for a light-rail system, which the EPI recommended as a potential means of achieving increased transit capacity when the need becomes apparent.

Given that this light rail proposal here following has been prepared informally by an ad-hoc CMC subcommittee with resource constraints, it is hoped that the transport concept presented here will be considered as a goal to shoot for (after some refinement of the routing), rather than as a target to shoot at. Any omissions herein (for instance, any discussion of capital requirements, funding sources, or project phasing during implementation is beyond the scope of this concept-only document) should be considered as potential subjects for a subsequent iteration of this study and not as fatal flaws to justify dismissal of the entire concept. The group of citizens (one with decades of experience in ridership and engineering aspects of light-rail systems) who generated the corridor concept discussed in the following pages are multi-decade residents of the Central Virginia region and are keenly interested in the improved local quality of life that a regional light-rail transit (LRT) system would offer in reduced traffic congestion, diminished air pollution, and a more relaxed travel experience when coming to Charlottesville from outlying suburbs and navigating among destinations within the urban area. In crafting these recommendations, the Committee utilized the existing land-use conditions within and around the corridors, striving to improve transportation connections to these uses by proposing effective rail route alignments that could be factored into the regional 2025 transportation plan.



What's So Good About Light Rail Transport?

The term "light rail" arises because steel rails for this type of transit system are of considerably lighter weight per yard than those for mainline railroads (where rails weighing 132 pounds per yard are the norm). This lessens the cost of materials needed for constructing the trackage, since there is no necessity to support high-tonnage freight loads. The vehicles are electrically-powered cars, similar to a bus in size and seating configuration, that can operate singly or (in some cases) as multiple-unit trains when passenger load demands. The cars are designed so that passengers may board from city street level or from high-level station platforms (if the latter are installed at some places along the route). Light rail systems have numerous other advantages, such as permanence, all-weather capability, rapid acceleration, and low pollution, as will be discussed further below.

Rail transit service has a physical presence that appeals to riders -- the tracks are visible and thus potential riders easily get to know where the route goes. A bus route is essentially invisible -- until a bus appears -- but even then one must have a route map or be able to recognize the destination displayed to know where the bus will be going. Rail trackage (sometimes in the street) along a light-rail transit route provides physical evidence of a firm municipal commitment to transit, thus encouraging developers to invest in property along the rail route or around stations and to create high-value multi-use urban developments of walkable scale. A rail transit system has a great advantage for developers since they will reap many times the gain from properties situated near stations along a light-rail line than if the same property was developed in the usual manner with detached houses served by an expensive maze of winding streets. This encourages developers to participate in public-private partnerships such as proffering transit corridor right-of-way in return for higher-density zoning.

A transit system, to be effective in achieving high capacity, must be insulated from travel time delays caused by motor-vehicle traffic congestion. This rules out the use of the usual bus system that shares a roadway with other vehicles and is thus at the mercy of variable traffic density and roadway conditions. A light-rail system can be built on a narrow right-of-way that is separate from a roadway and can inexpensively bridge over or under crossing motorway routes. The ability to construct rights-of-way with higher grades and sharper curves offer light rail a distinct advantage over traditional heavy-rail routes which have greater restrictions in design. Thus rail riders can look out the window and take satisfaction in speeding past the auto commuters stuck in daily traffic congestion or spinning tires on snow-covered hills.

The use of electrically-powered light-rail vehicles offers several advantages over fossil-fuel-powered buses. Transit routes need many stops over the entire route to provide effective service to the municipality, but each intermediate stop has a deleterious effect upon origin-to-destination trip time. Thus it is essential that transit vehicles have good acceleration capability to reduce time lost at stops and thereby minimize overall travel time. With a fossil-fueled bus, the peak torque capacity of the engine imposes an absolute limit on the acceleration capability of the vehicle. The engine is also producing more air pollutants during the acceleration phase, and this effect upon the air quality of our community is multiplied by every bus on the transit system (multiple-source pollution that is not easily nor economically controlled, except perhaps with emerging possibilities such as biodiesel or low-sulfur fuels). However, in the case of an electrically-powered vehicle such as a modern light-rail car, during the acceleration phase the motors can be overloaded to produce much more torque than would normally be allowable by the steady-state power rating of the motor, and thus the LRT vehicle can accelerate considerably more rapidly than a bus (in fact, so rapidly that the available acceleration capability is usually not fully used, to avoid passenger discomfort). Air pollution is confined to the usually distant location of the electrical generating plant that supplies the system, and thus with a single power source for the entire vehicle fleet the pollution is easily controlled via economy of scale.

When ridership warrants, several light-rail vehicles can be coupled into trains, thus maximizing passenger capacity per unit labor cost, since only one operator is required for perhaps hundreds of passengers, unlike a bus system that requires one operator for every 50 or so passengers. Each light-rail vehicle occupies, as does a bus, the space of only two automobiles but can carry passengers equivalent to the content of dozens of autos. There is thus a more than ten-to-one gain in congestion relief (i.e., in roadway occupancy) when passengers travel by transit rather than via their own SOV. Furthermore, new low-floor light-rail vehicle designs provide easy boarding for customers with physical mobility difficulties.

There is historical precedent for use of a light-rail system in Charlottesville. Like many other cities in the U.S., Charlottesville used electric "trolley" cars (so named for the grooved wheel running on an overhead wire supplying power) that began running in the 1890s on rails that had been laid in the previous decade for horsecars plying their way along Main Street



downtown.¹ This line was later extended to Fry's Spring, but, like many other privately-owned transit systems that were financially hobbled by the Great Depression in the 1930s, Charlottesville's streetcars had their last run in 1935. All but seven other cities in the U.S. saw their light-rail "trolley" systems disappear in the two decades after World War II (WWII), from causes such as scrapping by corporate raiders (purchasing undervalued physical assets such as miles of steel rails) or from direct economic losses suffered due to the post-WWII expansion of automobile travel.

Modern light-rail systems are much more technologically advanced than the municipal streetcar systems of yore, and are enjoying a welcome renaissance in nearly two dozen cities across the U.S. Tragically, start-up of many of these new light-rail systems has been beset by years of political difficulties that can cause an unwelcome increase in project costs. However, once opened for business the systems are often overwhelmed with immediate demand and must quickly purchase more cars to support a burgeoning ridership, such as became critical in Denver and Dallas to avoid overcrowding. One reason for the popularity of light-rail transit is that the vehicles are quiet, accelerate rapidly (thus reducing travel time between stops), and do not pollute the air around them. In cases where they run along or within streets, they are often made capable of pre-empting traffic light cycles, thus favoring them with green lights as necessary so that delays are minimized. Furthermore, a light-rail system is compatible with pedestrian-oriented development, thus engaging people in their surroundings and creating a more livable environment via a broader choice of travel modes.

In the following sections we will discuss the possibilities for inserting a light-rail transit system into the transportation planning process for the City of Charlottesville and the counties of Albemarle, Greene, and Fluvanna. These areas are currently auto-dominated and could benefit from a more balanced palette of transportation mode choices for traveling from place to place, thereby mitigating traffic congestion and reducing the overall amount of tailpipe emissions.

¹ For more on the general history of streetcars, see books such as "The Time of the Trolley" and "The Interurban Era" by longtime Charlottesville resident William D. Middleton, widely acknowledged as the dean of present-day railway journalists.



Do We Really Need Light Rail Here?

The City of Charlottesville and its surrounding counties are in the heart of Virginia, an area that is almost exclusively reliant upon the automobile for all sorts of travel purposes. The area's working population has the need for commuting to jobs and the school-age population needs transport to school and extra-curricular activities. For large segments of the population, such as children and some senior citizens, access to a transportation mode that does not require the traveler to also be the operator is a necessity. Via the future provision of facilities for a light-rail transit system, both the City and the adjoining counties can increase mobility for non-drivers, better the quality of life for area residents, improve tourist access to the area's historical and cultural assets, curb environmental degradation, and strengthen the economy.

From a cultural standpoint the expanded use of auto transport in the decades following WWII was considered to be a triumph of "personal freedom". But many travelers and urban planners are coming to realize that personal freedom should include the option of having a travel choice available that does not require the transport vehicle operator to always be oneself (either for personal travel or for chauffeuring children to activities). As taxpayers, we are also coming to see the folly of repeated highway expansions that cost many millions of dollars per lane-mile, create serious traffic safety hazards during construction, and soon become fully recondensed when suburban land development patterns (such as for many miles along Rte. 29 North) produce additional auto trips (what is known in traffic parlance as "induced demand"). The dispersal of residential, employment, shopping, and entertainment destinations by numerous real-estate developers pursuing their own goals can in some places create for the public an all-day Saturday traffic volume exceeding the weekday commuter rush. So the vaunted travel "*independence*" really has become "*automobile dependence*" that in some cases may amount to virtual "house arrest", such as in the case of elderly citizens who become unable or unwilling to brave high-volume daytime traffic or to venture out driving at night where they can encounter challenging conditions such as blinding headlights, dimly-lighted streets, and foolhardy pedestrians darkly garbed.

Expanded local urban transportation is needed that will meet the increasing demand by commuters and that can deliver out-of-town travelers to local business and tourist destinations. For instance, European travelers are accustomed to excellent intercity and urban rail service on their Continent, and their consequent reluctance to rent cars for travel in the US limits their access to our local tourist attractions. If we don't rapidly begin to think of designing transportation systems that provide for all modes, then the Rte. 29 corridor north of Charlottesville will become, like areas north of Lynchburg and Danville, a hindrance to intercity travel. If present trends continue unchanged (e.g., the proliferation of traffic lights to serve high-traffic development nodes), within the current decade it could take DC-bound travelers from Charlottesville an hour just to get to Ruckersville, now less than a half-hour drive.



Where Should the Routes Go?

The following section details potential light-rail route segments in the major corridors (Rte. 29N, Rte. 250E and Rte. 250W) under consideration in this document. The Route 29 North corridor will be considered first and in detail, followed by a review of the physical constraints imposed within the urban boundary of the City of Charlottesville, and the presentation will conclude with a general discussion of a yet to be determined route alignment from Charlottesville eastward toward Zion Crossroads, paralleling Rte. 250 East. Figure 3 shows the overall schematic of these two routes in their geographic context. The Rte. 250 West corridor will also be addressed, since scheduled transit service via JAUNT has recently begun to Charlottesville from the Crozet area, where increased development is beginning to occur.

Route 29 North Corridor

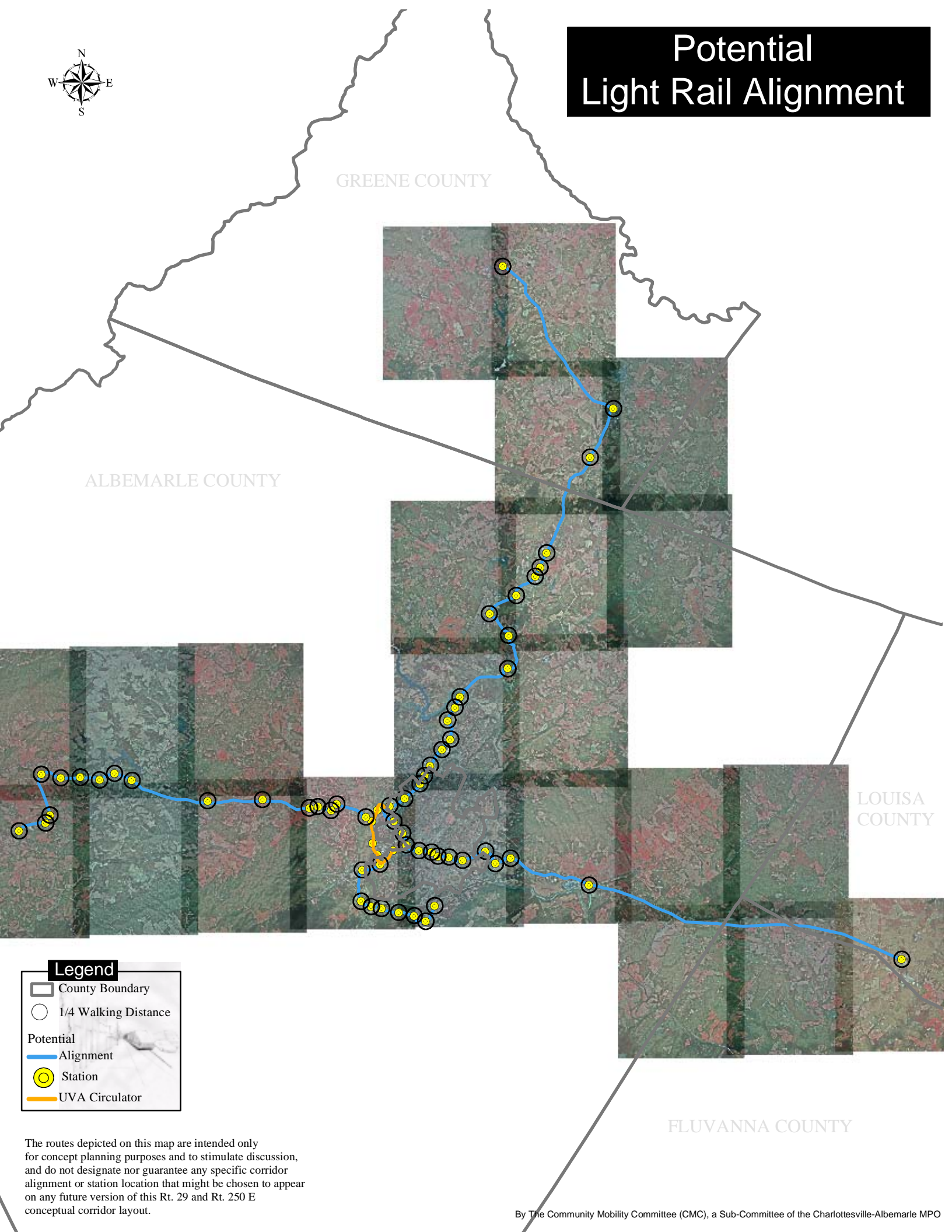
Recent years have witnessed explosive growth of commercial development along this corridor, and employment centers are also expanding within this area. The University of Virginia's newly-opened North Fork Research Park near the Charlottesville-Albemarle Airport already has over 1,000 employees on site, and a buildout to 12,000 personnel is planned. Given that a highway lane can only handle about 1,500 passengers per hour (in single-occupancy vehicles), this means that if all 12,000 people commute up from Charlottesville within the same hour then eight northbound highway lanes are required in the morning and eight southbound lanes in the afternoon. Discussions by several parties with University personnel have not yielded any evidence that the institution has given sufficient consideration to this impact that their research park will have upon traffic congestion along Route 29. Certainly the potential need for a highway sixteen lanes wide is an undesirable outcome of their plan as it is currently understood.

Already a very high percentage (perhaps well over 50%) of Greene County commuters are traveling to the Charlottesville area for employment, taking on average over 30 minutes to do so because of traffic congestion. Though Greene County is trying to expand the number of employment centers in their local area, there will still be many trips made from there to shopping magnets such as Wal-Mart, Lowes, and K-Mart, and to Charlottesville-area entertainment centers. Anyone who travels the Rte. 29N corridor in the early morning hours or on Saturday can attest to the already congested traffic. Planned future commercial expansion in the corridor will only worsen the traffic if other transportation options are not considered.

The most serious problem with the Rte. 29 corridor is the rapid commercial expansion along the roadside, which makes difficult the creation of a right-of-way (as here recommended) for high-capacity transit. Land-use planning in this area should include the preservation of a transit right-of-way from Charlottesville to at least Ruckersville and possibly to Stanardsville. It will be easier to preserve such a right-of-way now, rather than fail to act and then 10 or 20 years hence wish that we would have had more foresight. Thought should also be given to control of residential sprawl, in order that the "catchment area" (usually considered, for walkability to transit stops, to be about a quarter-mile radius) of a transit station will include a sufficiently dense population.



Potential Light Rail Alignment



GREENE COUNTY

ALBEMARLE COUNTY

LOUISA COUNTY

FLUVANNA COUNTY

Legend

- County Boundary
- 1/4 Walking Distance
- Potential
- Alignment
- Station
- UVA Circulator

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In light of the above, we present here a conceptual plan for a Route 29 corridor transit route. We will begin within Greene County and approach Charlottesville, for whose urban area a separate discussion will be presented.

Stanardsville to Ruckersville

This Rte. 33 corridor area, now only minimally developed, offers the greatest potential for right-of-way preservation and route flexibility. Of course this also means that present-day population density may be insufficient to support transit, but this density could increase in the future and should not dissuade us from beginning a potential route plan now. Certainly, high-population employment centers are beginning to appear in this area, and these alone could benefit from transit service. The alignment shown in Figure 4 is thus very tentative and should be made responsive to development trends (though the official designation of a fixed-guideway route can also influence development patterns, especially for areas still lightly developed). Station stops on this segment should serve Stanardsville and Ruckersville at a minimum, and could include others such as Quinque and various schools along Rte. 33.

Ruckersville to Charlottesville-Albemarle (CHO) Airport

This area is witnessing a considerable increase in employment centers and commercial development. During 2001 the U.S. Army's National Ground Intelligence Center (NGIC) has moved some 700 or so employees to its new building in this area, and the aforementioned North Fork Research Park and its potential 12,000 employees will have considerable impact as already described (issues of The Charlottesville Business Journal have often mentioned openings of more new companies at this developing site). A significant commercial development is planned just north of the Greene County line in the area just south of Sheetz at the old Country Store site. This latter development will certainly have an impact upon traffic and any additional traffic signals needed to serve it could impede present bus routes on Route 29. This area will require a transit station, as may Lake Saponi and the Greenlea development, and certainly stations will be needed at GE/Briarwood, NGIC, the Badger plant (across from Camelot), the North Fork Research Park (for which an urban center of some sort is being planned), and the airport. Route alignment, as shown in Figure 5, will mainly parallel Rte. 29 except for potential side excursions to Greenlea, North Fork, and the airport. It will be more cost-efficient to keep the transit alignment on the west side of the highway as much as possible to minimize bridging costs, since less-expensive pedestrian bridges can be used to service sites such as NGIC and Badger. Other constraints on right-of-way alignment may arise if VDOT plans any extension of its widening of Rte. 29N, which for now has been limited to sections south of Airport Road. In addition, major development projects such as the Hollymead Town Center (the HTC is located just to the west of the Rte. 29 – Airport Road intersection) and the North Pointe Development (catty-cornered from the HTC and to the northeast of the same Rte. 29 – Proffit Road intersection) will have an impact on right-of-way and ridership possibilities.

Potential Light Rail Alignment

GREENE

Stanardsville



Legend

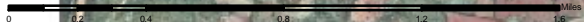
- County Boundary
- 1/4 Walking Distance
- Potential Alignment
- Station
- UVA Circulator

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Rt. 33

ALBEMARLE

Ruckersville



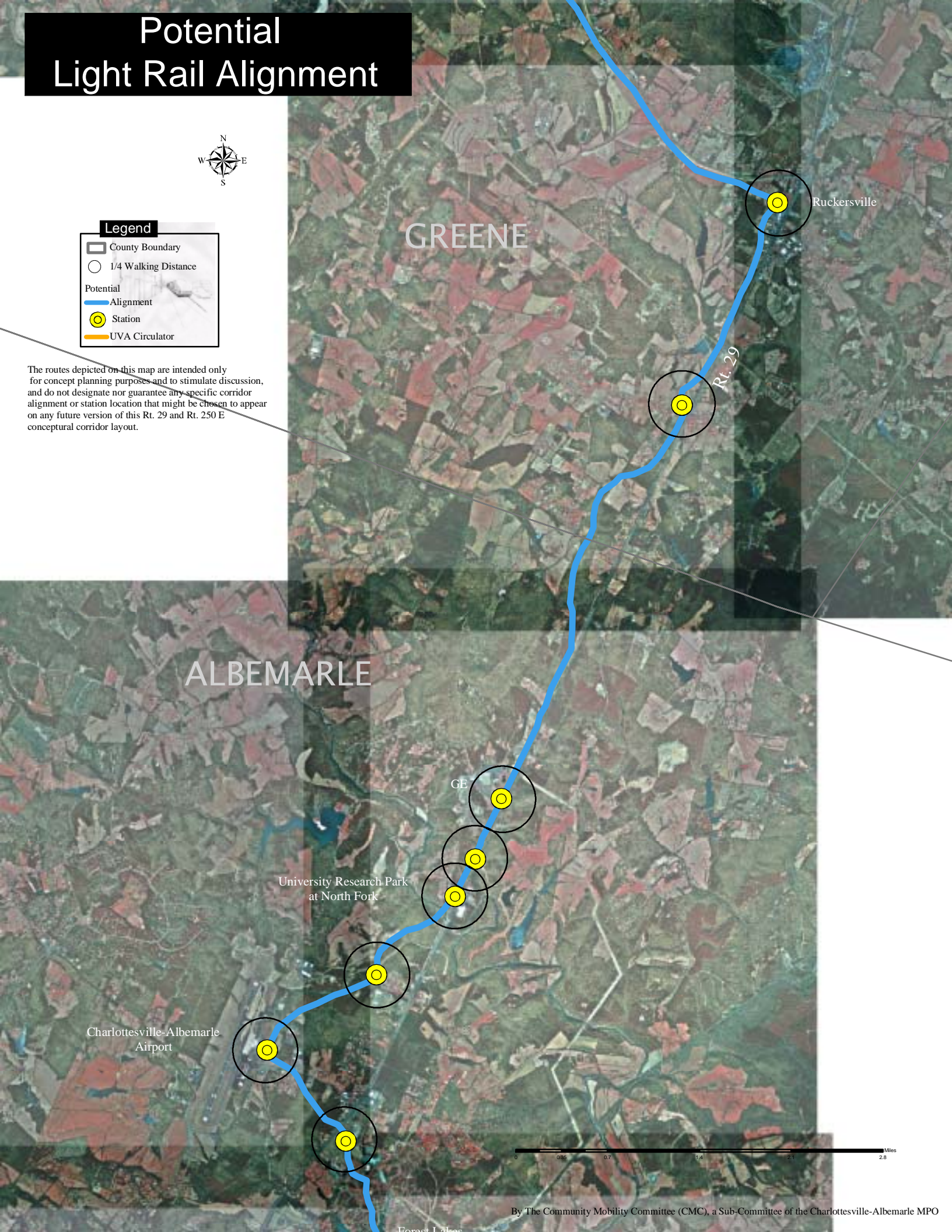
Potential Light Rail Alignment



Legend

- County Boundary
- 1/4 Walking Distance
- Potential
- Alignment
- Station
- UVA Circulator

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CHO Airport to Rio Road

Coming southeast from the airport, potential alignment and station locations could include (after crossing Route 29 at a convenient point) the North Forest Lakes shopping center, two schools (Hollymead Elementary and the Sutherland Middle School), apartments at Forest Lakes South, Doubletree/Sam's (this and the next station could be located close to Berkmar Drive), and after crossing the highway, Wal-Mart, Lowes/Rio Hill (this shopping center has a lot of open space that could accommodate a station), and Albemarle Square. A transit bridge back across Rte. 29 will be needed between the latter two stations, and the Albemarle Square station could be located somewhat centrally near the Outback Steakhouse. Potential route alignment for this section is shown in Figure 6.

Rio Road to Hydraulic Road

As we get closer to Charlottesville the placement of a suitable alignment becomes increasingly more difficult, due to existing development patterns that will constrain where the transit right-of-way can be economically located. What is described here is a first attempt at a right-of-way alignment, shown in Figure 7, that takes advantage of physical land features and tries to minimize impact upon current commercial areas that it is intended to serve.

A tunnel under Rio Road from Albemarle Square to Fashion Square could bring the transitway eventually to the west side of the Fashion Square property, where an embankment along the east side of Rte. 29 exists. This would allow placement of a station across from Shoppers World and also allow bridging above the roadway entrances from Rte. 29 into Fashion Square.

The next station might be at Greenbrier Drive in the area of Branchlands and the Senior Center, and for certain a station should serve Seminole Square and the Albemarle Place Town Center on the Sperry Marine property (the latter via a pedestrian tunnel or bridge). A single station could serve both K-Mart and Kroger, via a transit-only tunnel under Hydraulic Road.

Hydraulic Road to University Hall

It becomes physically more difficult from Kroger southward to discern a suitable alignment that will not require tunneling, bridging, or elevated right-of-way. But after Kroger the next station could possibly serve Barracks Road North and the Federal Executive Institute, with at least one other station serving the southern part of the Barracks Road shopping center and the North Grounds area of UVa. A single station (with planned pedestrian bridge across Emmett St.) can serve both U-Hall and Lambeth Dorms. A potential alignment for this region is shown in Figure 8.

Potential Light Rail Alignment



Legend

- County Boundary
- 1/4 Walking Distance
- Potential
- Alignment
- Station
- UVA Circulator

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University Research Park at North Fork

Charlottesville-Albemarle Airport

Forest Lakes

ALBEMARLE

Rt. 29

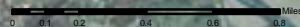
WalMart

Rio Hill Shopping Center

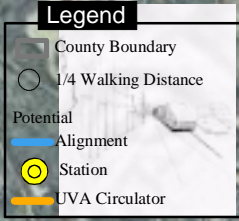
Albemarle Square Shopping Center

Fashion Square Mall

Hydraulic Rd



Potential Light Rail Alignment



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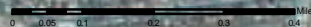
Rio Hill Shopping Center

Albemarle Square Shopping Center

Fashion Square Mall

ALBEMARLE

Seminole Square Shopping Center



Potential Light Rail Alignment



Legend

- County Boundary
- 1/4 Walking Distance
- Potential Alignment
- Station
- JVA Circulator

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Seminole Shopping C

ALBEMARLE

U-Hall

0 0.045 0.09 0.18 0.27 0.36 Miles



Charlottesville Urban Area

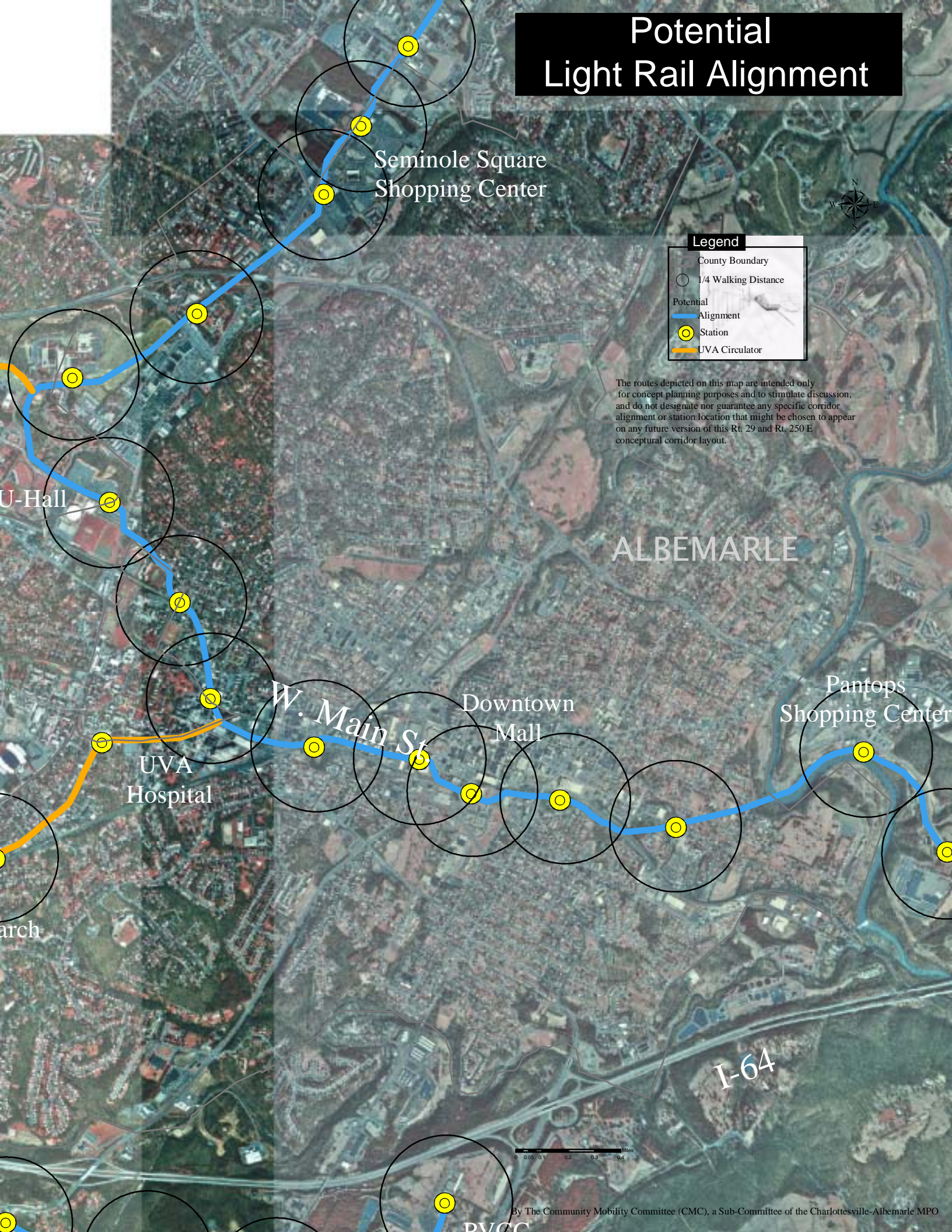
Because of high-value properties in the urbanized area, the only avenue for transit to approach downtown from U-Hall may be along the CSX railroad right-of-way (ROW). This would require ROW widening (and possibly some taking of adjacent property), negotiations with the railroad, and either crash walls between the RR and LRT trackage or some sort of time-separation of operations (a la the Baltimore light-rail system) to fulfill Federal Railroad Administration requirements regarding collision resistance of passenger vehicles in mixed (freight and passenger) rail traffic. (It might also be possible to use some sort of double-decking configuration above the railroad track.) With this in mind, the downtown area could be approached, as shown in Figure 9, via a route behind the Colonnades area of The Grounds and using a tunnel under Rugby Road, with station stops in the Corner area and at the UVA. Hospital. There should be a stop at Union Station: (some sort of flyovers may be required here to avoid the railroad junction of CSX and NS), also at Ridge Street, and in the downtown area approximately at Fourth St. SE plus at the LEXIS building east of the Belmont Bridge. From here the route can proceed eastward to serve the Rt. 250 E corridor, after station stops at Meade Avenue and at the Pantops Shopping Center area as will be discussed in a subsequent paragraph.

A branch line should be considered to serve the Jefferson Park Avenue and Fontaine Research park areas, possibly tied in with some sort of UVA on-Grounds circulator system such as the people mover at West Va. University in Morgantown or the maglev system being built at ODU in Norfolk. (Though UVA. has no present plans for such a system, federal funding might be possible to achieve it.) This branch line, shown in Figure 10, could also serve the apartment developments planned for the Sunset Avenue area, the Redfields development and adjacent apartments (off Old Lynchburg Road), and the Wachovia operations building. The branch line could ultimately also serve the Southwood Mobile Home Park and be extended to Piedmont Virginia Community College (perhaps even to Blue Ridge Hospital and Monticello unless a transit line down south 5th Street or Avon Street Extended is used instead to reach that tourist destination).

Route 250 East Corridor

Stations required here would include Pantops Shopping Center and one or more stations to serve State Farm, Peter Jefferson Place, the planned new Martha Jefferson Hospital, and the Westminster-Canterbury residences. It would be useful to have a station in the Keswick area such as at Stone-Robinson School, and the location of any stations farther east, such as near the Glenmore area (perhaps with commuters using the firehouse parking lot), will require more study based upon present or projected land-use patterns. Certainly Zion Crossroads will be a destination that should ultimately be served, given the growth of development occurring in that area. For the present a very tentative alignment between Rte. 250 and I-64 has been selected, as shown in Figure 11, and this will need some further definition as this concept study progresses. Light rail here may be a good choice even with an abandoned heavy-rail route already present. As a feeder route to Charlottesville, it would be much shorter than the latter alignment, which goes north, and then turns back south. This heavy-rail route is discussed in the east-west (CSX) rail corridor section. The most recent Eastern Planning Initiative document should be consulted for aid in this process of refinement.

Potential Light Rail Alignment



Seminole Square Shopping Center

U-Hall

ALBEMARLE

W. Main St

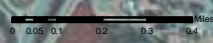
Downtown Mall

Pantops Shopping Center

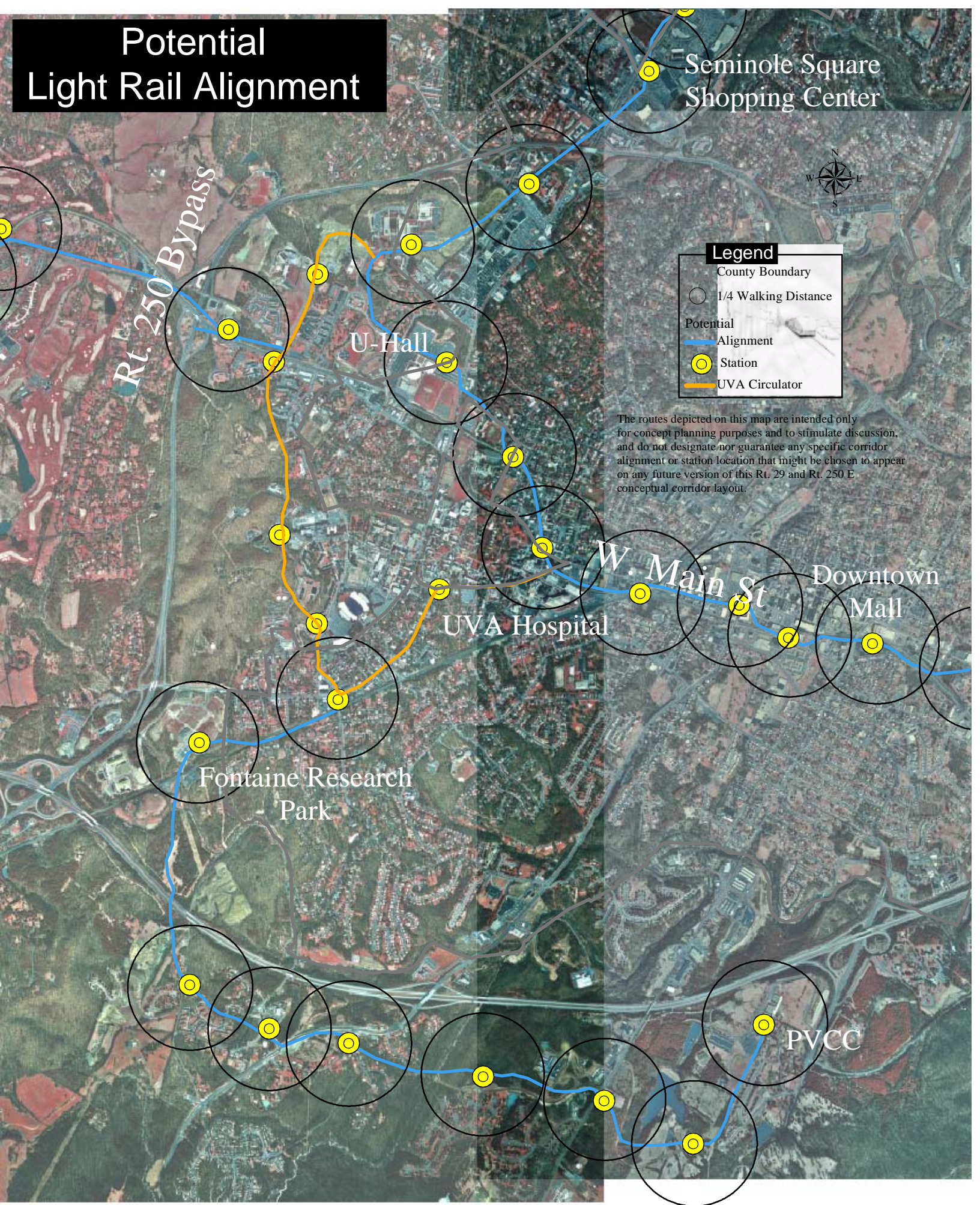
UVA Hospital

Arch

I-64



Potential Light Rail Alignment



Seminole Square Shopping Center



Legend

- County Boundary
- 1/4 Walking Distance
- Potential Alignment
- Station
- UVA Circulator

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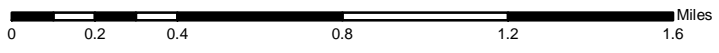
W. Main St

Downtown Mall

UVA Hospital

Fontaine Research Park

PVCC



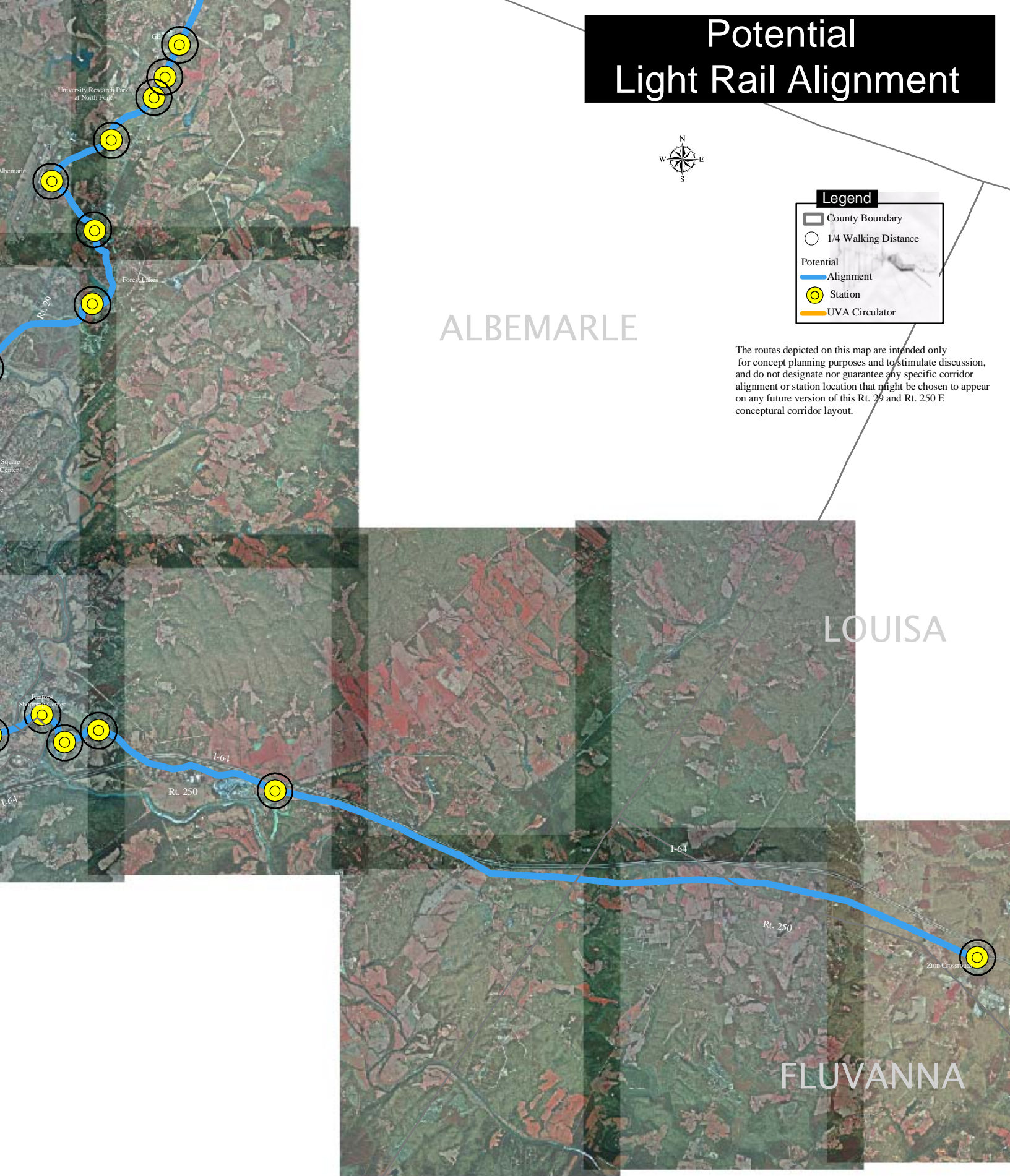
Potential Light Rail Alignment



Legend

- County Boundary
- 1/4 Walking Distance
- Potential Alignment
- Station
- UVA Circulator

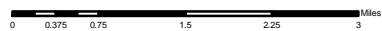
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ALBEMARLE

LOUISA

FLUVANNA





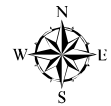
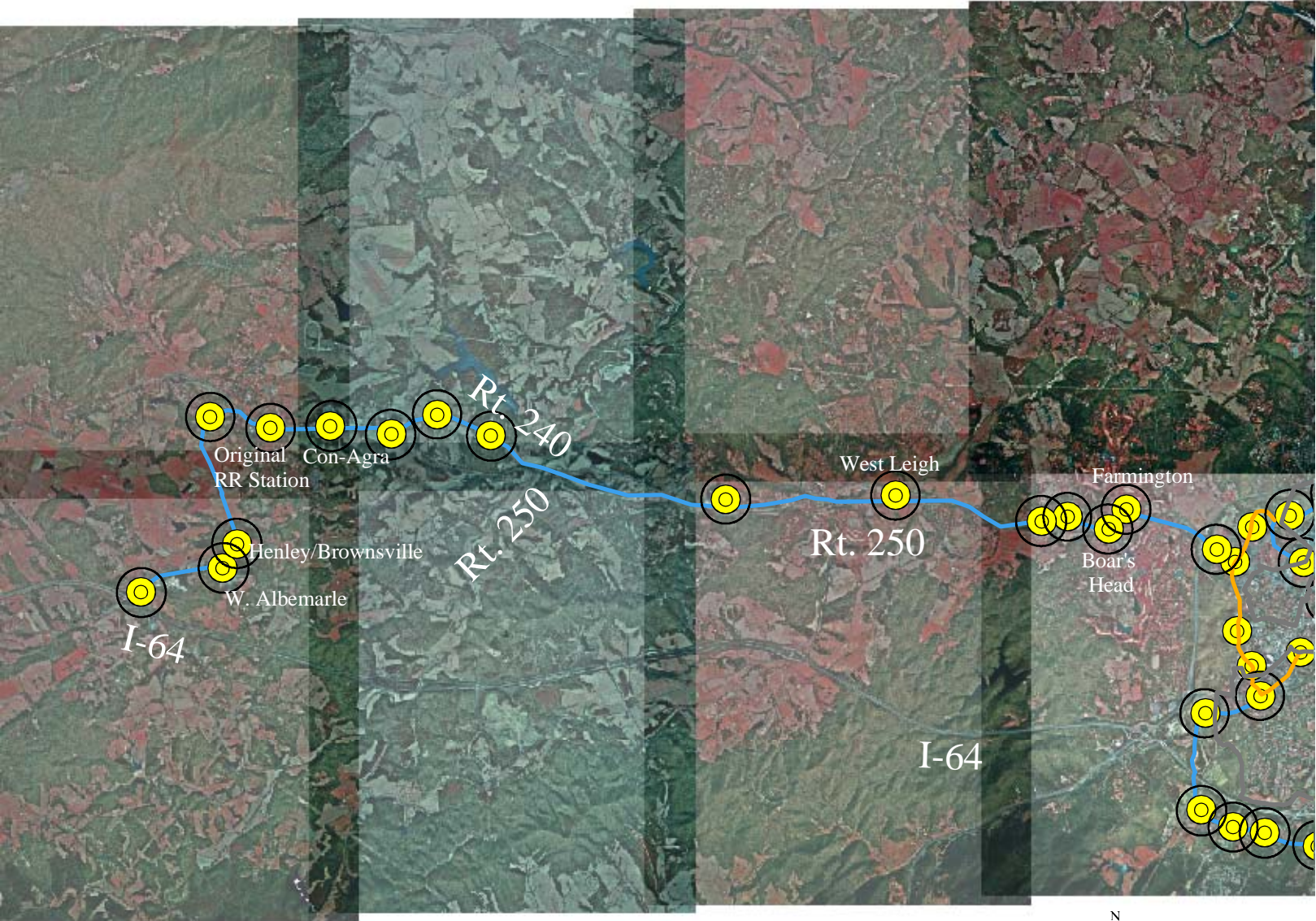
Route 250 West Corridor

This corridor has some interesting possibilities in that it already has existing rail trackage (CSX) along it and it is not nearly as densely developed with commercial properties as is Rte. 29N. It has a suburban population node formed by the town of Crozet and it has numerous residential areas that could provide riders (although feeder buses might be needed for some of the latter because the residential developments are somewhat spread out). Given the recently promulgated Federal Railroad Administration (FRA) regulations restricting the mixing of light-rail vehicles and freight rail traffic on the same trackage (Federal Register 10 JUL 2000, pp. 42525-42553), there are several possibilities to be considered: (1) On the existing CSX trackage, use commuter rail vehicles complying with FRA collision strength standards (such as the recently approved Colorado Railcar or the former Budd Co. rail diesel cars, dubbed RDCs), assuming that the railroad traffic density is sufficiently low that time slots for the commuter vehicles can be obtained. (2) Develop a separate right-of-way for use by light-rail vehicles from Crozet to Charlottesville. (3) Construct a new freight railroad corridor (from Greenwood to Keswick) that bypasses Charlottesville and then use the vacated CSX trackage for a light-rail system into downtown Charlottesville. In the discussion to follow, only the second of these possibilities will be addressed, in order to allow flexibility for the geographic constraints appearing in a given area and to service the somewhat dispersed areas of residential population and travel destinations (e.g., school and commercial). The potential right-of-way alignments and some stations are shown in Figure 12.

Afton, Greenwood, and Brownsville

It is not clear what the optimum starting point should be for a light-rail route from the westernmost part of the Crozet area toward Charlottesville, because minimal residential concentrations exist in this area around the foot of Afton Mountain. Rail from Afton eastward might only be feasible if it were included as part of an interurban light-rail route originating in Waynesboro and possibly utilizing the original Claudius Crozet tunnel (if of sufficient size) through Afton Mountain. But it would certainly be of great future importance to have high-capacity transit available to serve large student population of the primary, middle, and secondary schools co-located in the Brownsville area. The actual terminal station of the line could be a short distance westward at the small residential and industrial areas on Rte. 250 just east of the I-64 interchange for Crozet. The line could start on the south side of Rte. 250 by the industrial area, move due eastward toward a station at Western Albemarle High School, and then curve northward across Rte. 250 to a station serving Brownsville Elementary School and the Henley Middle School. From here the corridor alignment would proceed approximately due north toward the town of Crozet, thus allowing many students from at least the Crozet area (and perhaps Henley and Western Albemarle students from elsewhere) to get to the schools without clogging the highways and narrow byways with school buses that impede auto travelers.

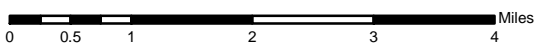
Potential Light Rail Alignment



Legend

- County Boundary
- 1/4 Walking Distance
- Potential**
- Alignment
- Station
- UVA Circulator

The routes depicted on this map are intended only for concept planning purposes and to stimulate discussion, and do not designate nor guarantee any specific corridor alignment or station location that might be chosen to appear on any future version of this Rt. 29 and Rt. 250 E conceptual corridor layout.





Crozet Urban Area

The dispersal of low-density sprawl around the central area of Crozet makes it difficult to serve all residential areas with fixed-route transit (for instance, feeder buses would be presumably be needed to serve Laurel Hills, Crozet School, and the residential areas on the north side of the CSX trackage). A possible rail route connection from the cluster of three schools on Rte. 250 (that were mentioned in the previous paragraph) could have the corridor swing slightly westward on its approach to Crozet, crossing Jarman's Gap Road, so that the Wayland's Grant and Grayrock developments could be provided with a station. The light-rail trackage could then swing eastward toward downtown Crozet, staying on the south side of the CSX railroad trackage and stopping by the original railroad station. Just east of Crozet, the light rail route could stay on the south side of the CSX trackage until just beyond the old Con-Agra plant. A station would be needed at this industrial location if this plant is reactivated with some other industry.

Crozet to Ivy

East of Crozet, the light-rail route could serve a station at the new Stonegate and Western Ridge developments, and then cross the CSX trackage to serve a station at the Beaver Hill Village trailer park and the Highlands development. Proceeding then along the north side of Rte. 240, there are some small residential clusters near Mechums Heights or Church Hill that might need a station before the trackage reaches the junction of Rte. 240 with Rte. 250. At this point the light-rail trackage would be at ground level rather than high in the air as is the CSX trackage on the bridge over Rte. 250 (since maintaining a low gradient of the track profile is much less of an issue with light-rail vehicles that are not carrying heavy tonnage as CSX is). Proceeding toward Ivy, still on the north side of the CSX tracks (but at some point crossing to the south side of Rte. 250), the only significant residential concentration seems to be along Morgantown road east of the Virginia Murray school, so that one or more stations might be used along here. The light-rail line could swing slightly northward to enter Ivy at or near the level of Rte. 250, though not passing under the CSX tracks but passing below the Episcopal Church to come alongside the CSX right-of-way.

Ivy to Charlottesville

In this area it is advantageous to have a separate right-of-way for the light-rail route, so that it can be diverted away from Rte. 250 to serve residential clusters (such as by having a station somewhere in the vicinity of West Leigh). It would then have to somehow rejoin or closely parallel the CSX line to serve residential clusters such as at Broomley Road (e.g., Flordon), plus commercial areas such as the Volvo dealership, UVa's Northridge Health Systems Center, and the Bellair auto service center by the petroleum depot. From topographic considerations, it would probably need to stay north of Rte. 250 as it passes Boar's Head and Ednam Forest, perhaps with a station to serve each. The numerous offices and residences along Old Ivy Road would require the light-rail route to closely parallel this road and the CSX trackage, with one or more stations in this area also. At some point, possibly around the UVa. baseball field, the route should swing northward to connect with the earlier-described urban light-rail trackage in the vicinity of University Hall.



What Do We Do to Get Light Rail in Our Region?

Our first and most important recommendation is that the City of Charlottesville and the adjacent counties, via their respective planning offices, should embark on a cooperative long-range light-rail planning process that incorporates a more detailed analysis by transportation professionals as well as input from regional citizens in the potential service areas. This should include (or lay the groundwork for) an analysis of projected capital costs for right-of-way, civil works, trackage, and stations. Simultaneously, the various political entities in the TJPDC (particularly their planning staffs) should begin discussions regarding the preservation of right-of-way (such as via proffers or otherwise) along potential corridor alignments. Already there are strip commercial sites that have begun springing up in undeveloped areas along the Rte. 29N corridor, and the pressure for large-scale land developments is intensifying in several other locations nearby. The more development density that is allowed to occur along this highway corridor, the more difficult and costly it becomes to create a right-of-way for high-capacity express transport, so we need to begin light-rail planning efforts without delay (before all right-of-way opportunities are lost).

Integrating light-rail planning into today's community transportation systems is a critical part of creating a balanced transportation system that maximizes choices in transportation modes. The direct benefits of light rail are many and its indirect benefits will improve local quality of life. Officials in Charlottesville and Albemarle County should be strongly encouraged to move swiftly to denote and preserve right-of-way (from downtown Charlottesville to destinations such as the CHO airport, UVa North Fork Research Park, and the GE plant at a minimum) for a light-rail system to provide high-capacity express transport along the rapidly developing Route 29N Corridor. The same sort of effort should be conducted in concert with Fluvanna County regarding the Route 250E Corridor.

In summary, the following are the specific recommendations of this study:

- (1) Initiate a cooperative light-rail corridor planning process among the planning staffs of the City of Charlottesville, and the counties of Albemarle, Greene, and Fluvanna, as a minimum, with involvement or coordination by the Thomas Jefferson Planning District staff.
- (2) Develop criteria for preservation of right-of-way for a light rail system, and incorporate these into the process of reviewing proposed development projects along the Rte. 29N, Rte. 250E and Rte. 250W corridors.
- (3) Gain support of political officials in the various jurisdictions for supporting the near-term preservation of right-of-way, in order to avoid higher acquisition costs in the out-years.

In addition to the above corridor development recommendations, other near-term actions can be taken to begin building transit ridership along these corridors during the interim while a rail right-of-way plan becomes more closely focused upon some specific alignment. Although this concept report has been oriented toward the ultimate development of several light-rail transit corridors, the rail transit service, in its ultimate configuration, should not be expected to operate in isolation but must function as part of a larger integrated transit system that quite likely will include "feeder" buses to serve off-corridor sources of ridership. In neighborhoods with sufficient residential density, circulator bus routes (similar to the CTS Main Street "trolley") can be established to collect riders for local commercial, educational, or recreational destinations, and also to feed a commuter bus service (serving for the interim) along a "backbone" corridor such as Rte. 29. The "reach" of the system can be expanded when coupled with accommodations for bicyclists such as bike lockers at transit stops and bike racks on the buses. The interim bus service and its feeders will provide flexibility to adjust to ridership patterns as they develop due to changes in major land uses along the corridor route, and configuring the feeder routes to handle a sufficiently diverse set of destinations will strengthen the overall transit system by making it less dependent economically upon any specific ridership source or destination (e.g., the daily timeline of ridership population might vary among commuters, school students, shoppers, lunchers, shoppers, students, sports players, commuters, and moviegoers). Thus, a properly designed bus route system would make transit moderately time-competitive with the automobile and would help build the ridership core for a future light-rail corridor. With feeder routes fewer stops would be needed along the corridor route, thus making the corridor route more attractive in terms of adherence to schedule and minimizing origin-to-destination time.

In conclusion, the two most important aspects of the initiative to develop light-rail service in the Central Virginia region are the need to identify, protect, and develop a private right-of-way corridor for transit, and for the interim to begin developing a network of suburban corridor and circulator transit routes that can become the "skeleton" for an ultimate integrated system of rail vehicles serving a commuter corridor and feeder buses serving adjoining neighborhoods.



Regional and Commuter Rail

Introduction

Dependence upon the rail infrastructure in the United States to transport freight and people has been increasing over the last decade. Because of new technology in freight transport and in particular, passenger rail, the popularity of rail has reemerged from a half-century of dominance by the automobile in this country. Many countries outside of the U.S., especially in Europe and Asia already have a heavy dependence on rail transport for passengers. One heavy-rail commuter train at 75% capacity could remove about 450 cars from roadways. The Virginia Department of Rail and Public Transportation (VDRPT) and local governments are also responsible for the renewal of rail transportation.

Regional & commuter rail hosts a wide variety of ridership including business travelers (long & short distance), leisure travelers (tourists & sports fans), and students. These trains often have a mix of these riders. A majority of the east and west coast states and some Midwest states have state-wide rail services, offering intra-state travel as well as connections to Amtrak trains for longer distance trips. Many more states are studying/implementing rail service to enhance their citizens' transportation options.

Passenger trains operating over heavy-rail trackage, are often classified into 3 categories – commuter, regional and long-distance trains, with the last two sometimes combined into a single category. A commuter train's primary purpose is the transport of commuters to/from an urban hub, usually within 1-2 hour's travel time of the hub. A regional train connects areas which are usually within several hundred miles, but usually provides fewer stops than commuter trains. A long-distance train is usually classified as travel over a net distances of greater than 500 miles. Commuter trains are often run by transportation commissions or authorities while most intercity and long-distance passenger trains in this country are run by the National Railroad Passenger Corporation, otherwise known as Amtrak. In the Commonwealth, Virginia Railway Express (VRE), operates commuter trains in northern Virginia as a conduit for workers traveling between D.C. and its outlying suburbs. VRE is joint a partnership by the Potomac and Rappahannock Transportation Commission (PRTC) and the Northern Virginia Transportation Commission (NVTC).

While passenger trains operators do own some of their own trackage, most of the heavy rail passenger mileage occurs on trackage owned by private, for-profit companies. The majority of the rail infrastructure in the Commonwealth is owned by two of the "Class 1" publicly-traded freight railroad companies – Norfolk Southern Corporation (NS) and CSX Transportation (CSX). Both companies emphasize freight transportation as that is the source of their revenue. Passenger trains operate over NS and CSX trackage by contracts negotiated between the passenger rail operator and the freight railroad. Amtrak operates intercity and long-distance trains over routes owned by both these freight railroads as does VRE with its commuter trains.

The use of privately-owned rights-of-way for passenger trains is compensated by the passenger rail operator, depending on the individual contract. For freight railroads, this is one of the three key topics to be negotiated when a new passenger rail system is to be implemented. The other two are liability and improvements to existing rail infrastructure to accommodate the new passenger trains. For the former, an effective tool has been the negotiation of safety projects that would benefit those the host railroad, such as the closing of redundant crossings in the area or other safety improvements along the right-of-way such as fencing. For the latter, a recent trend has been to negotiate PPTA's (Public-Private Transportation Agreements) for new capacity for passenger trains as well as freight trains (as an alternative to building additional lanes of roadway). VRE and VDOT have completed several projects with CSX and NS (including the rebuilding of "AF" interlocking near Alexandria, VA for additional and higher-speed operation of passenger trains, and several other projects are being constructed (i.e. new bridge over Quantico Creek that will have additional tracks to reduce delays caused by the present single-track bridge). Future projects include more tracks in the Crystal City area and infrastructure improvements to the L'Enfant Station area in D.C. These infrastructure improvements, as detailed in an agreement between VDRPT and CSX would allow additional passenger service in this critical northern connection to D.C. and the northeast.

As rail projects may provide benefits locally as well as over a larger area, joint efforts to study the feasibility and benefits of passenger rail projects are of interest to MPOs. The TransDominion Express (TDX) project is one such collaborative effort between both state and local agencies. As detailed in the 1998 Bristol Report, The TDX is a proposed rail system that would connect southwest Virginia with both Washington, D.C. and Richmond via Lynchburg. The attached map, figure 13 shows the proposed routes, mostly on NS trackage. The TDX would cover approximately 400 miles and has nineteen formal and informal proposed stations. VDRPT found that "creation of TDX would decrease traffic congestion on highways



and interstates, reduce air traffic pollution, increase safety, stimulate tourism and commerce and provide an efficient alternative to automobile travel.



Figure 13. Map of the TransDominion Express. A copy of the Bristol Report can be found online at the VDRPT website (www.drpt.state.va.us.)

Using the TDX example as a springboard, the CMC developed a proposal for regional and commuter rail services along east-west and north-south routes. Each route is detailed in the subsequent sections, equipment is discussed, and proposed stations localities are identified. In addition, several possible new routes & alignments are identified.

A major road project will be taking place on the nearby I-81 corridor which will certainly have ripple traffic patterns (both road & rail) in our region. If substantial trucks traffic is rerouted onto US 29, there could be serious implications on its throughput ability. The rail system will also likely see some increased freight traffic through some diversion of truck traffic as construction progresses. Depending on the ultimate decision for the I-81 transportation corridor, freight traffic could increase significantly in the north-south route discussed here which could affect TDX service. As such, a PPTA might be attractive to address passenger rail needs as well as freight traffic needs.

As this a preliminary study of passenger and commuter rail for the TJPDC area, some preliminary costs are given, but the report does not get in depth on these and potential funding sources. CMC recommends that a more in-depth analysis will have be undertaken to determine the feasibility of this proposal. When available, examples of some estimated costs for various systems are shown in tables in the "Implementation strategies/Next steps" section.



Methodology

During the Spring of 2002, the Charlottesville-Albemarle MPO, along with the Thomas Jefferson Planning District Commission, underwent an extensive public involvement process for the update of the long-range transportation plan. Residents in both the urban and rural localities of the Planning District suggested a mass transit system that would connect the City Charlottesville and the City of Richmond. The CMC began studying the feasibility of passenger and commuter rail service between the two cities. As a parallel to the completed TDX study, the north-south route was also examined for its feasibility for commuter service.

After the workshops, CMC staff assembled all comments relating to transit and reviewed them with members of the Committee. During January 2003, CMC staff attended a VDRPT sponsored informational session on the TDX in Lynchburg, Virginia. Incorporating some work done initially by VDRPT with the TDX & other projects, VDOT on roads planning and on information gathered from the various sources, the CMC and staff worked together to develop the Proposed Passenger and Commuter Rail Alignments for the Thomas Jefferson Planning District Area.

Various sources were used for the statistics here including local sources, U.S. Census data, Rand-McNally reports, American Association of Railroads, Federal Railroad Administration, VDRPT/VDOT, and personal work done by members of the CMC. Examination of and emphasis on existing infrastructure was done since land costs are high, and most projects could utilize existing rights-of-way with infrastructure improvements. Other studies (completed & ongoing) were examined, and their goals are similar to those in this study.

Examination of travel patterns for the regional rail proposal was done by looking at ridership of Amtrak & intercity bus passengers. The proposal for commuter rail was determined by observing traffic patterns and examining population growth densities matched with growth in work areas. By looking at these growth areas and developmental patterns in the PDC as well as overall growth trends in the state, Geographical Informational System (GIS) was used to plot several proposed alignments and station locations. To assist in the development of this report, the CMC completed a six-month preliminary study of the feasibility of light rail in the Charlottesville Area (September 2002).

The following sections show the potential east-west and north-south regional and commuter rail alignments through the TJPDC area and gives general recommendations for jurisdictions outside the Planning District.



Regional Rail Routes

Within the TJPDC area, there are two rail routes which are being examined for potential passenger (commuter and regional/TDX) rail service. The first is a north-south route, owned by NS, and would connect the region with northern Virginia and D.C. to the north, and Lynchburg and Danville to the south. The second is an east-west route, currently owned by CSX, and would connect western cities such as Staunton and Waynesboro to Charlottesville, and continue east toward Richmond. A summary of the routes is shown in table 1 (for the route from Charlottesville to Orange) with current operations and some additional details about each of the routes shown below:

1) North-South Route: Norfolk Southern trackage (“Piedmont Division, Washington District” in figure 14) from Charlottesville, runs in a general north-northeasterly direction, heading through northern Albemarle County into Orange County. The route runs through Proffit, Barboursville, Somerset, Montpelier and into the town of Orange. North of Orange, the route continues through Culpeper, Manassas, and junctions with the Washington-Richmond corridor just south of Alexandria, where trackage continues north for about another 8 miles to D.C. South of Charlottesville, the route travels through small, mostly unincorporated area, reaching Lynchburg after crossing the James River. At Lynchburg, several rail lines meet with routes continuing south to Danville through North Carolina, and into Charlotte, Atlanta, and eventually New Orleans. Historically, predecessor Southern Railway ran up to 8 passenger trains daily on this route, and its alignment has been the preferred route from the Northeast/mid-Atlantic to Atlanta, Georgia. Other routes reach from Lynchburg eastward to Richmond and Norfolk, and westward to Roanoke and Bristol with the latter being discussed in the TDX report.

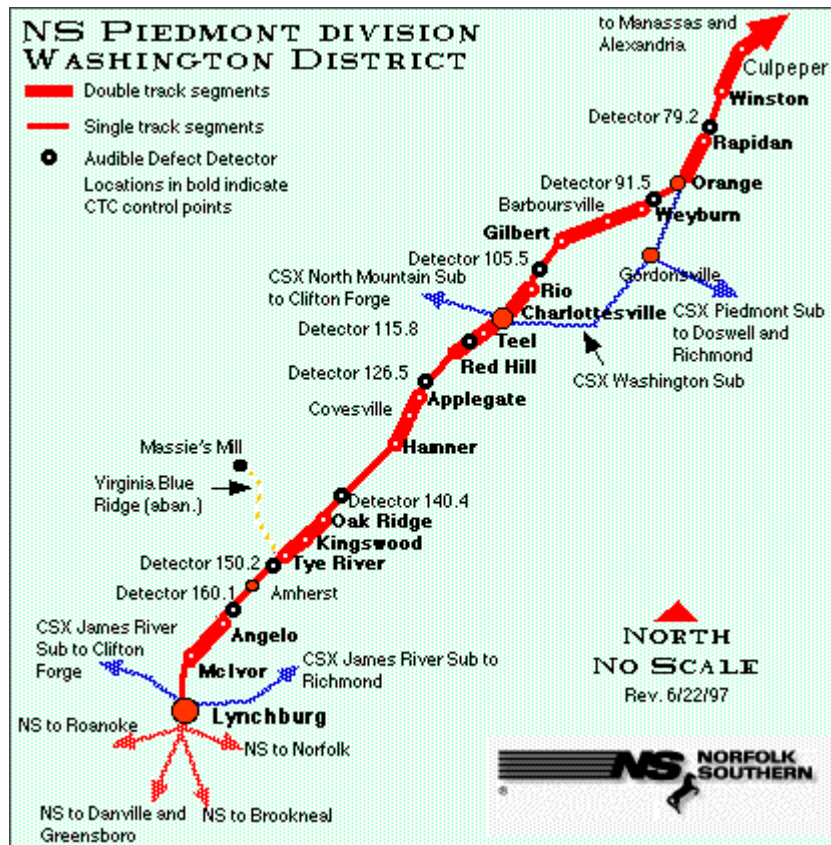


Figure 14. Map of north-south rail route along Norfolk Southern lines



Much of this route is already detailed in the TDX report, and the capacity infrastructure has remained nearly the same. As an update for current operations, the route is becoming increasingly important for freight intermodal trains, especially between the Northeast and Atlanta. Over the next few years, it is anticipated that freight traffic will continue to grow with additional traffic (some possibly diverted from I-81 construction work and a new Maersk container terminal scheduled to open in the Norfolk area). Although the capacity exists now to handle the current freight traffic, this may not continue to hold true. As such, increased capacity (additional tracks) would definitely be a prerequisite to additional passenger service.

From Charlottesville to Orange, a distance about 30 miles, regional trains have an option of 2 different routes between those points – Norfolk Southern mainline trackage and a combination of CSXT main & secondary trackage. In the case of the former, the primary advantages of this route are that it is well-maintained and would be definitely be the quicker of the two (compared with the combination of CSXT route and branch from Gordonsville-Orange). Trackage on the NS route is FRA Class 4, and active stations north of Lynchburg are at Alexandria, Manassas, Culpeper, and Charlottesville. Amtrak's New York-New Orleans *Crescent* already runs via this route with a passenger train speed limit of 79 MPH with some speed restrictions due to track structure and proximity to urban areas (Charlottesville and Orange). Between Charlottesville and Manassas, the average speed is 55 MPH. A disadvantage is that this line already carries 14 to 18 high-priority NS freights per day, and would require significant infrastructure improvements to render additional passenger service as close to "transparent" to freight operations as possible. The estimated capital infrastructure costs would be about \$40-50M (for the track improvements north of Charlottesville).

The second potential route (for north-south regional trains) is along CSXT's "Washington Subdivision" eastward out of Charlottesville to reach Orange, as shown in figure 15. CSXT trackage between Charlottesville and Orange is slightly longer than the NS route and has average speeds which are slower (about 40 MPH overall). This provides an alternate route for northward trains out of Charlottesville via Gordonsville to reach Northern Virginia and D.C. Discussion of the route between Charlottesville and Gordonsville appears in the "East-West Route" section below. At Gordonsville, Washington D.C.-bound trains would leave the main route to enter the Orange Branch. The Orange branch roughly parallels US Route 15 for about 9.2 miles to its namesake town. Here, the trackage junctions with the NS mainline route described above, to reach northern Virginia and D.C.



Figure 15. CSXT Washington subdivision & Orange Branch, Charlottesville-Orange

Amtrak's New York-Chicago *Cardinal* currently runs triweekly in each direction using this trackage and the CSXT east-west route through Charlottesville. Overall, this route basically has the inverse advantages and disadvantages to the above NS route; the primary advantage for this lane is the minimal impact on freight operations while the main disadvantage is that the route is slower (both due to length and current track infrastructure). While minimal new infrastructure would be needed here, repairs to the current track would definitely need to be made to maintain a timely journey (estimated to be about \$20M). In addition, this route provides the potential of a station stop in Gordonsville and overall, this route should be seriously considered. A side-by-side comparison of the two routes is shown below in table 1.



Comparison of Routes: Charlottesville-Orange	NS route (via Barboursville, Montpelier)	CSXT route (via Shadwell, Gordonsville)
Corridor Length (mi)	27.5	31.1
FRA Class of trackage (current speed limit for passenger trains)	4 (79 mph)	3 – mainline; 2 – branch (60 mph on main; 30 mph on branch)
Current daily traffic (freight + passenger = total)	18 + 2 = 20	8 + 1 = 9
%age double track (or with sidings)	44 %	6.5 %
Current travel time for passenger trains (minutes)	33	55
Estimated cost for needed track improvements	\$40-50M	\$20M

Table 1. Summary of options for North-South Routes (Orange-Charlottesville) under Consideration for Regional Rail Conceptual Study

2) East-West Route: Possible alignments for east-west routes are shown in figure 16 below. There are 2 east-west routes through the Planning District, both of which are currently owned by CSXT. Together, they act in concert as a coal conduit for Appalachian-mined coal to power plants and grain shipments to poultry industries in Virginia and the Southeast as well as for the transloading of coal to ships in Newport News. Operating in a similar fashion to one-way streets, loaded coal trains travel exclusively along the line east from Clifton Forge, following the James River and its associated twists & turns. The southernmost of these 2 lines, which are composed of CSXT's "James River" and "Rivanna" subdivisions travels along the southern portion of Nelson, Albemarle, and Fluvanna Counties at the south border of the Planning District. East of Richmond, the Richmond Regional Planning District (RRPDC) and the Hampton Roads MPO are actively planning for rail passenger services along CSXT east-west routes, especially the latter for commuter and light-rail services.

Along Alignment 2 (in "green") of figure 16, there are several small towns along CSXT's "James River" subdivision, including Gladstone, Howardsville, Wingina, Columbia, and Brema Bluff. There is some development near the Scottsville area, but generally in this area of the Planning District, growth is sparse and population density is currently low. For regional rail, bigger cities along the route such as Lynchburg or Clifton Forge might be destinations/origins for travelers, however faster alternate routes exist to reach these cities. Given these factors, this route cannot be justified for regional passenger service in the foreseeable future.

Along the northern route (along Alignments 1 & 3) between Richmond and Clifton Forge, composed of CSXT's "North Mountain", "Washington" and "Piedmont" subdivisions, there is a much higher rate of growth and density of population, especially around the greater Charlottesville area. As mentioned earlier, this route also hosts Amtrak's triweekly New York-Chicago Cardinal, making stops in Charlottesville, Staunton, and Clifton Forge before continuing west into West Virginia. Detailed in figure 17, the route heads eastward from Clifton Forge and passes through smaller towns on its climb to the summit at North Mountain before reaching the city of Staunton which is a significant tourist destination. Between Staunton and Waynesboro, the "North Mountain" subdivision parallels US 250 in a corridor which is out of the Planning District, but is seeing significant growth. From Waynesboro, the line crests Afton Mountain and continues east through the growing communities of Crozet and Ivy before entering Charlottesville.

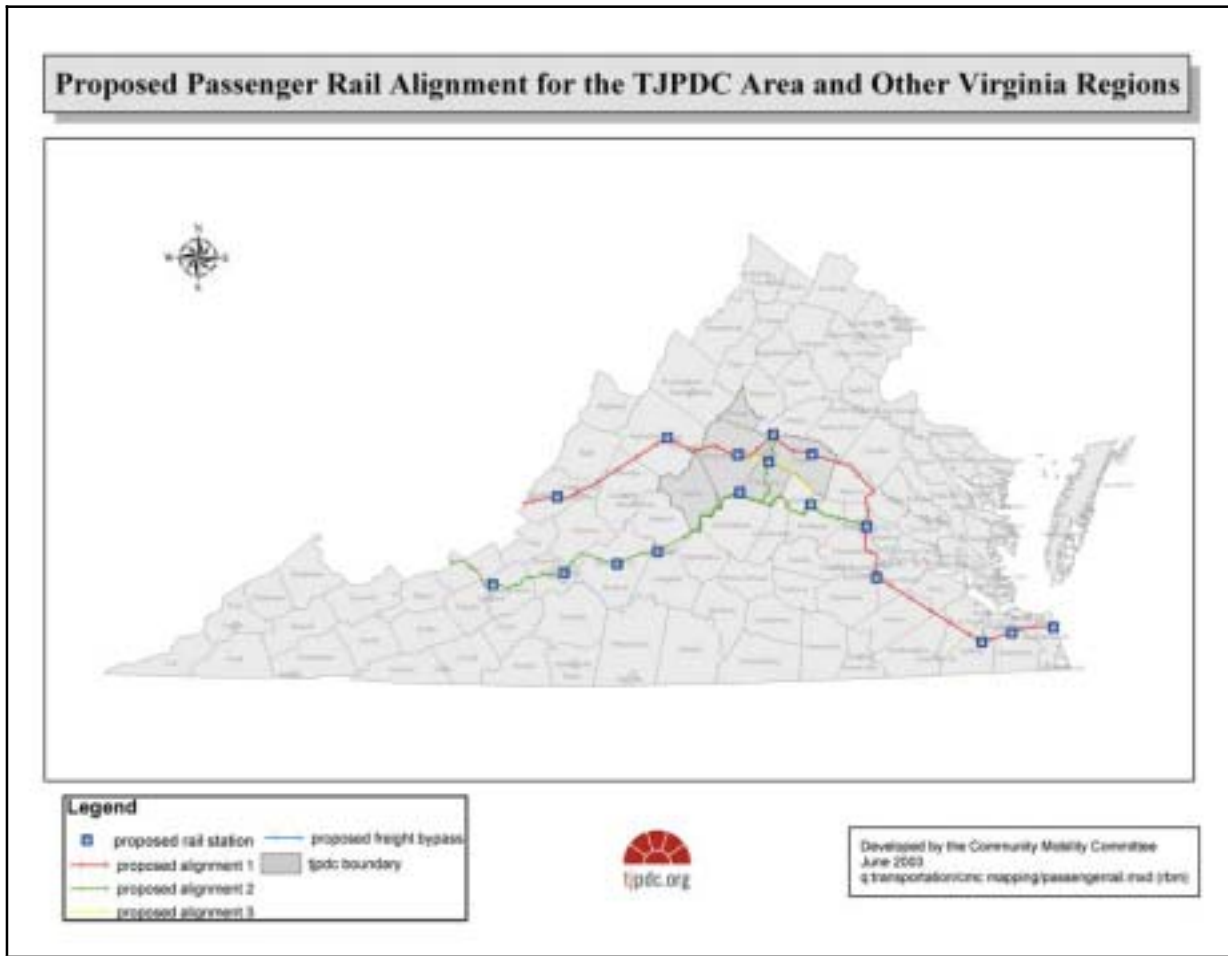


Figure 16. Overview map of east-west rail alignments through the Planning District

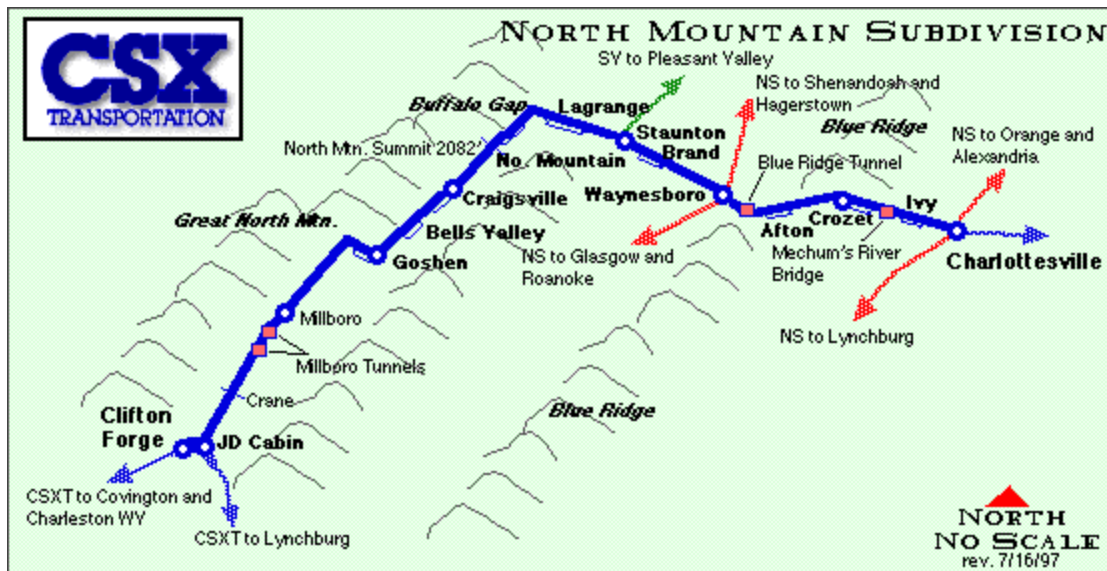


Figure 17. CSXT North Mountain subdivision, Clifton Forge-Charlottesville



Into the mid 1970's, CSXT predecessor, C&O Railroad originated trains from Chicago which split at Charlottesville. One route was service to Northern Virginia and D.C. via Orange, and the other to eastern points such as Richmond, Williamsburg, and Newport News. This was continued for a limited time under Amtrak, but service to eastern Virginia must now go through a train/bus/train mode change or take a roundabout route via Washington, D.C. which requires a change of trains. There is a potential ridership market for direct service between Richmond and Charlottesville as there is a significant commuter presence here. Re-establishment of direct service from Charlottesville east would entail an extensive upgrading of tracks, but would still be slower than a more direct trip via interstate 64.

As introduced in the previous section, east of Charlottesville, the CSXT trackage² becomes the "Washington" subdivision and runs in an eastern direction from Charlottesville to Shadwell and then in a northeast direction through Keswick to Gordonsville. The railroad roughly parallel VA Routes 22 and 231 through Shadwell, Keswick, Cobham, Lindsay and into Gordonsville. At Gordonsville, a junction exists where the primary freight "mainline" route turns southeast toward Richmond and the Orange branch heads north. Gordonsville could have a station rebuilt at the site of the former station (near the "wye" junction of its various routes) to have multifunctional purposes (commuter, intercity, and possible tourist services). In this part of the Planning District, growth is currently focused further east along the US 15 corridor where an abandoned rail grade alignment (the "Virginia Air Line") is located. A potential option exists in partial rebuilding of this alignment (to connect with the existing rail alignment) which is further discussed in the Proposed New Rail Lines/Alignments section.

East of Gordonsville, the "main" route changes name to the "Piedmont" Subdivision and continues to the southeast toward Richmond, passing through Louisa County and the towns of Louisa and Mineral and eventually into Richmond. This was once the mainline of the Chesapeake & Ohio Railroad from the ports near Newport News across the Appalachian Mountains reaching Cincinnati, Ohio. While the route has hosted both passenger and freight trains into the early Amtrak era, most freight traffic was shifted to a parallel route along the James River. With no current passenger service on this segment and scattered freight shippers over the entire 193 mile route, this trackage is often looked upon as having secondary importance and has been the subject of proposed abandonment at times in the past 20 years. With the impending lease to BB, the line's future appears to be somewhat stabilized for the time being.

In the past, the tourist operation Virginia Central Railroad has operated highly-successful trips over most of the western half of the trackage on this east-west route from Charlottesville with Clifton Forge, Staunton, and Gordonsville being tourist destinations. The Virginia Central Railroad has been interested in doing additional trips, but has been unable to obtain an agreement with CSXT. If the lease arrangements between CSXT and BB includes some agreement with Virginia Central, this affords the opportunity to at least maintain or partially upgrade the infrastructure assets by the tourist operation until other passenger service is initiated.

As mentioned earlier in this section, the "mainline" travels southeast, roughly paralleling US Route 33 to Louisa and Mineral. A portion of CSXT's "Piedmont" subdivision is shown in figure 18. Louisa and Mineral have intact stations located centrally in their respective towns, but are currently privately-owned. Population density and growth here is fairly low currently, so any ridership to/from these areas will probably be limited until greater density appears in these areas.

The line continues further east toward Richmond and even though this is outside of the MPO area, it is important to discuss relevant features here since a major goal of this route is east-west through service to Richmond. The line passes through rural areas and the smaller towns of Beaverdam and Doswell. At Doswell, there is an at-grade crossing with the major CSXT north-south route. The north-south route, paralleling the I-95 corridor, is currently under active improvement with several VDRPT-funded project for increased passenger service benefitting both intercity Amtrak trains and VRE commuter trains. Further east, the route turns south and enters Richmond on its east side, continuing down toward renovated Main St. station, the focus of rail service to Richmond. Here a connection can be made to existing through service to/from the Tidewater region and to Washington, D.C. This route is advantageous in that it avoids the congestion of

² CSX Transportation currently owns the trackage as part of their "Piedmont", "Washington", and "North Mountain" subdivisions. CSXT is negotiating for lease of this trackage to shortline operator Buckingham Branch Railroad (BB), although they will remain the owner for the time being. If this route is chosen, negotiation will need to include the new freight operator. The Surface Transportation Board (STB) which is the rail regulatory arm of the U.S. Dept. of Transportation has solicited input for this transaction, and the MPO should consider if any comments should be made regarding the proposed transaction.



a major freight yard, Acca Yard along the north-south route, and is the frequent cause for delays to passenger trains. This is the subject of several proposals by VDRPT and Amtrak for improvement to the Richmond Terminal area.

Depending on the final selection of track improvements at Richmond, there may be secondary effect upon track alignments at Doswell. A proposed track change here may eliminate the at-grade crossing, increasing speed on the north-south route but also severing the east-west route for trains travelling between MPO area and Richmond. If trackage is severed in the future here, a present connection with the north-south route may need to be rebuilt and utilized for access to Richmond. The trains would then run on the same north-south route for the last 20 miles in Richmond, but may be the subject of the terminal delays which the east-west route currently avoids. Alternatively, if continuity is to be preserved, a new overpass/underpass may need to be built here, especially if trains are to avoid the congestion at Acca Yard and continue directly to Richmond's Main St. Station.

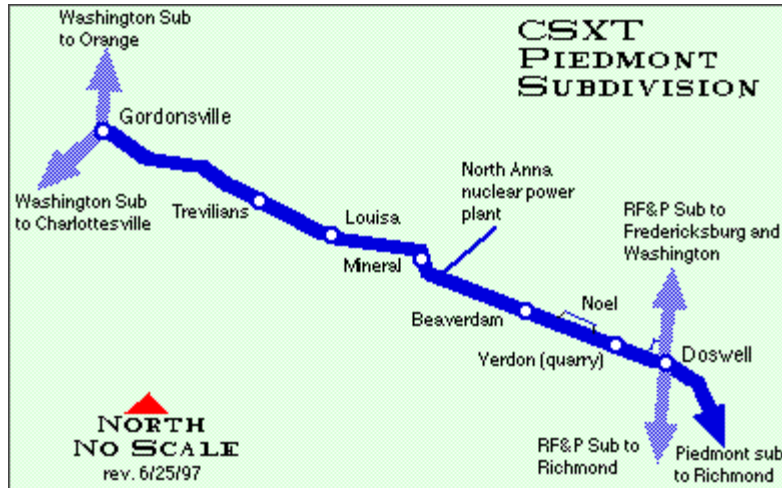


Figure 18. CSXT Piedmont Subdivision, Gordonsville-Richmond



Photos of potential transit stops within the TJPDC area

The pictures below show potential rail stations in the PDC area. The proposed stations and locations are introduced for concept purposes only and have not been endorsed by the localities or by the University of Virginia.



View of downtown Charlottesville and CSX rail line



Potential station location at shopping center in Crozet (Albemarle County)



Railroad crossing in the town of Mineral



Old depot station and post office in Trevilians (Louisa County)

**Examples of informal stations in suburban areas
(Photos from Philadelphia exurbs)**

While not as elaborate as formal rail stations, transit facilities in suburban areas are smaller, relatively inexpensive to construct, and can be easily retrofitted into neighborhoods as shown in the pictures below.



Source: Photographs provided by Jerry Deily



Regional Rail Passenger Scenarios/Recommendations

Several possible scenarios exist for passenger rail on these rights-of-way. An initial regional north-south service, perhaps 1-2 trains daily servicing the Charlottesville area would provide a means to travel to Northern Virginia and D.C. where connections can be made to other routes. The specific goal for the initial service proposed here is to provide the reliable rail option to travel between Charlottesville area and Northern Virginia/D.C., bypassing the road congestion (and subsequent travel/HOV restrictions on several feeder routes). Although Amtrak provides some service here, its main patronage is long-distance travelers which provides limited stops and capacity constraints on its trains. This proposal is further detailed in the Demonstration Commuter Rail Proposal, attached as Appendix B to this report.

Since this proposed service is on the chosen route of the TDX project and has similar objectives, implementation of TDX service would address the objectives of the regional service. If full service is not able to be implemented at the start, a “starter” piece of TDX service should be considered, perhaps as originating in Roanoke or Lynchburg. For the former, an ideal time for service to begin is at the beginning of the complex construction project along the I-81 corridor, probably within the next decade. Because of the shared interest in this service with other Planning Districts, the scope of this proposed regional service should be decided in the initial stages. Depending on the scope of the service, operational support should be shared with other regions, especially Planning District 9 (Gordonsville, Orange) as the regional service would also benefit their region.

Discussions with NS, Amtrak, CSXT, and Buckingham Branch Railroad should begin soon, especially at the state level for operational considerations & scheduling for the regional trains. Additional infrastructure such as a second mainline track will certainly need to be re-installed along the NS tracks, and planning in the engineering & environmental fields should begin as soon as an agreement is reached with host railroads. If Charlottesville is proposed to be the overnight terminus of the train, sites for train storage should be investigated and purchased. On the other end, the state should begin to look for options in additional train storage space in the D.C. area as a mutual benefit for both this proposed regional service and commuter trains. Currently, storage of non-Amtrak trains in the D.C. area is an issue hindering expansion of commuter train service by both VRE and Maryland MTA (MARC). Some work to existing intermediate stations (e.g. Orange) and planned construction for additional stations should begin.

One item that needs to be considered as part of the proposed TDX service is the coordination of other modes of transportation at the regional stations. In most cases, this thought evokes a “bus-meeting-train” picture, but other possibilities include bicycle or even small vehicle rentals at the some of the stations. For through travelers, an “Auto-train”-type service is a possibility which could carry passengers along with their vehicles over longer distances. As an example, Amtrak runs the successful long-distance (Lorton, VA-Sanford, FL) Auto-Train service which caters mostly to tourists. With the scope of such service much wider than the primary focus of this report, this information is mentioned to stimulate dialogue for the addressing the transportation issues associated with travelers who pass through the Planning District and Commonwealth.

As discussed earlier for the proposed regional/TDX starter service, there are two possible routes from Charlottesville to Orange, one on each freight railroad. Coordination between the operators and the track owners should begin soon as to agreements should be in place once the specific route is chosen. Costs associated for equipment, construction for additional track capacity and improvement of station facilities would then need to be discussed. Estimates from the CTB and freight railroads indicate that track infrastructure improvements (second mainline track on NS, possible upgrade to CSXT tracks) would be about \$30-50M. For potential throughput, these costs are a real bargain as compared to the limited length of new roadway lanes that can be obtained for the same costs (and which do not address the additional lanes needed in northern Virginia area). Fortunately, the capital costs for this proposed regional (& commuter) service is not anticipated to be as high as other new start regional/commuter services as a dependable track infrastructure is already in place, as well as primary station facilities and an already-existing VRE commuter service on the northern end of the system.

A permanent schedule for the regional train would need to be studied further, but initial thought of the CMC is to provide a northbound train departing Charlottesville about 6:30 AM, arriving in Washington D.C. about 9 AM. This train could be an extension of an existing VRE train (originating in Charlottesville as opposed to Broad Run/Manassas) if the schedule & equipment usage can be worked out. To maintain a running time of 2:30 or less, this train could become an “express” commuter train on the north end with limited stops at key stations. Depending on this equipment utilization for other trains (and in possible coordination with east-west service, described below), the trainset could be used for other other trains or lay over in the D.C. area until an early evening southbound departure with an arrival back in Charlottesville about 7:30 PM. As



discussed in the Appendix B demonstration proposal, this schedule would initially cater to longer-distance commuters and those passengers which need to make late morning/early afternoon connection to trains in the D.C. area. A potential train with the reverse schedule to this region is discussed below in the east-west section.

Table 2 highlights several of the important short-term recommendations discussed above for the north-south service. In keeping with the salient points mentioned in this study's introduction, inter-agency communication is a key commonality among these points. With the similar objectives of other agencies, VDRPT and/or the newly-created rail commission should act as a unifier and oversee a committee of representatives for implementing this north-south regional service.

Short-term Recommendation	Goal/Comments
Meetings among state, regional, local agencies for decision on scope & funding of regional north-south service	Plan to include entire scope of TDX system; actual service to regions would be contingent upon agreements in contribution to operational funding (seek capital funds under FTA New Starts program)
Discussion with freight railroad owners (NS, CSX), land-use and transportation planners	Establish project list and agreements for track infrastructure improvements and station area (TOD) development
Purchase of equipment for 2 trainsets	Some equipment has already been secured by VDRPT; continue to look at surplus cars (Chicago) and pooling purchases with other passenger rail operators for reduced unit costs (both locomotives and used & new passenger rail cars)
Demonstration project/Public hearings	Discussed in Appendix B; coordinate with Planning District 9 in anticipated public hearings in 2005 for expanded VRE service

Table 2. Short-term recommendations for north-south regional service.

As discussed in Appendix B, the regional rail service would likely commence with 1 or 2 trains. For additional train service, more infrastructure improvements would eventually be needed. Envisioned as longer-term projects, these could include the construction of signaled sidings (as a short segment of third mainline track, similar to the Washington-Richmond corridor) and dedicated station tracks. Signalled sidings in key locations, such in the southern portion of Charlottesville, would allow slower freights to be passed by higher priority passenger & intermodal freight trains. Station tracks allow for passenger trains to have segregated tracks where passenger boardings can occur in a safer manner and free up valuable infrastructure on mainline tracks; these can also serve as storage tracks for overnight if other tracks are not immediately available. Additional space for smaller stations (such as the one in Charlottesville) should be secured and include some kind of weather-protective shelter on the platform. Additional equipment should be purchased & dedicated maintenance facilities should also be studied.

East-west train service by Amtrak is currently only 3 days per week through the Planning District, and only serves the western part of the state (eastern connections to Richmond are made by a bus operation, but only as connections to other trains, and not to downtown Richmond directly). As a key to successful passenger rail is regular, dependable service, consideration should be given to establishing service 7 days per week (by adding the 4 weekly trains) for in-state service. If daily western Virginia service were to be initiated from Washington, D.C. through Charlottesville to Waynesboro/Staunton and possibly terminating in Covington, the western half of the state would benefit from connections to/from trains in D.C. In particular, this would address the growing market of college students as riders who visit family & friends over extended weekends. Among the busiest travel days of the year on Amtrak (including at the Charlottesville station) is before/after academic breaks and on holiday travel days. Service for JMU students or other Harrisonburg-area travelers could be provided with through buses to/from Harrisonburg that could meet the train at Staunton.

A potential schedule for this train would have departure from the D.C. in the morning, arriving around 11 AM in the Charlottesville area. A return train could depart the Charlottesville area around 5 PM, allowing for evening connections to other trains at Union Station in Washington, D.C. This timetable would cater to the tourist market which may allow a day-long visit to the Charlottesville or Staunton areas by a mid-late morning arrival in the area with return back to the D.C. in the late afternoon. This service complements the initial north-south service proposed above by providing a reverse-flow train.



For equipment usage, a single trainset could be used for this service (westbound in the morning, eastbound in the afternoon) providing efficient use of the passenger cars.

Table 3 shows some short-term recommendations for east-west service which includes a more in-depth study on demand and potential ridership figures. In particular for Richmond service, additional studies need to be done to evaluate the ridership market. There is an established pattern of travel between Charlottesville and Richmond (and further east), but a specific origin/destination study would give additional information on the travel scope in this corridor. Because of the availability/location of Interstate 64 in this corridor, competitive travel times would be difficult to establish under present travel conditions. Growth around the Richmond & Charlottesville urban areas might lead to eventual establishment of commuter service in each region, as additional access to the CBD of these area is very limited with business growth continuing. If the studies indicate that there would significant benefit from direct Charlottesville-Richmond service, then negotiations should begin with the operator of the line east of Gordonsville for regular passenger service. Overall, for east-west service from Richmond to become a viable option, the eastern trackage will need an extensive upgrade, and with the potential lease to be executed with the Buckingham Branch Railroad, a PPTA would benefit each interest significantly.

Short-term Recommendation	Goal/Comments
In-depth study for feasibility, ridership market, service goals, and costs.	Coordinate with VDRPT on funding for study; generate grassroots support
Meetings among state, regional, local agencies for decision on scope & funding of regional east-west service	Plan with adjacent PDC's on scope/schedule of project; (study availability & sources of capital funds)
Discussion with freight railroad owners (NS, CSX, BB), tourist operators, land-use and transportation planners	Establish projects list and agreements for track infrastructure improvements and station area (TOD) development
Purchase of equipment for 2 trainsets	Some equipment has already been secured by VDRPT; continue to look at surplus cars (Chicago) and pooling purchases with other passenger rail operators for reduced unit costs (both locomotives and used & new passenger rail cars)

Table 3. Short-term recommendations for east-west regional service.



Commuter Rail

The urban area of Charlottesville and the University of Virginia has a high density of work areas, forming a Central Business District (CBD). With limited additional access to the CBD, a commuter rail plan can afford access to the CBD which focuses on on the urban area and CBD as a hub. Commuter trains allow fast, efficient access to the growing CBD while focusing residential stations near their respective growth areas. This would involve the planning for several commuter stops along the way. Based upon the current growth trends, the northern commuter corridor and the east-west corridor would probably be the most likely candidates for commuter rail in this region.

While the light rail section shows stations in close proximity (in some cases, several within a distance of a mile), commuter rail stations are typically placed further apart, usually several miles. Table 4 shows some rail transit systems with average station-to-station distances (as of July, 2004). Many transit system have downtown “urban” stations that may be located close together, especially those that serve various large employment centers. This is for ease of commuters to disembark at the nearest convenient station, but outlying stations in the residential suburbs are often at least several miles apart. Based upon these premises, commuter station locations along the northern and east-west commuter zones could be placed at the locations in Table 5 and 6, respectively. The two commuter routes are further discussed in the following sections.

Transit system (route & mode)	Average inter-station distance (mi)
VRE (Fredericksburg/heavy-rail, commuter)	4.9
VRE (Manassas/heavy-rail, commuter)	4.7
MARC (Camden/heavy-rail, commuter)	3.9
MARC (Brunswick/heavy-rail, commuter)	3.8
MARC (Penn/heavy-rail, commuter)	6.4
WMATA (Washington Metro subway, heavy-rail)	1.1
SEPTA (R-2/heavy-rail, commuter)	2.1
Baltimore light-rail	0.9
Baltimore subway (heavy-rail)	1.1

Table 4. Comparison of average inter-station distances for comparable commuter rail and light-rail systems

Commuter rail often co-exists with other rail transport services including regional passenger trains & freight trains. Scheduling commuter trains as to minimize conflict with these other trains is an important consideration in establishing service. Just as with regional rail, infrastructure improvements can be mutually beneficial to the freight carriers. Also, commuter stations will need to be built adjacent to the right-of-way, so coordination & planning are key to a successful operation.



North-South Commuter Rail Proposal on Norfolk Southern Trackage

Route

With US Route 29 being one of major corridors in the Charlottesville-Albemarle area, a parallel commuter rail system would mitigate the need for additional travel lanes on US 29, as well as foster other multimodal options such as bus transit, bicycling, and walking within the corridor. Among other multimodal options for the corridor, studies such as the Rt. 29 Corridor Study should in general terms address rail possibilities using existing Norfolk Southern trackage. The Virginia Department of Rail and Public Transportation (VDRPT) has studied a passenger rail system, which would connect much of the state using existing Norfolk Southern trackage.

There are roughly 32 miles of Norfolk Southern trackage within the commuter rail system being proposed in this Rail Conceptual Study. The initial system would connect the City of Charlottesville to the town of Orange in Orange County with four localities chosen as potential rail stations. Table 5 shows a list of the stations and distances between them. Many residential neighborhoods such as Forest Lakes, Woodbrook/Carrsbrook, and Rose Hill are also adjacent to the rail corridor, making a commuter system useful for neighborhood residents and their daily travels/commutes. With appropriate transit shuttle, developments such as Hollymead and North Pointe in the northern part of Albemarle County should also foster and promote commuter service. As these developments grow, the vehicle traffic number should increase significantly along US Route 29 North unless multimodal options are seriously considered.

Potential Station Location	Railroad Milepost	Distance from previous station (mi)
Fontaine Park/UVA Hospital	112.8	-----
Union Station, Charlottesville	112.1	0.7
Preston Ave. (downtown gateway)	111.3	0.8
Proffit (Forest Lakes/Hollymeade)	105.8	5.5
Gilbert/Burnley	101.6	4.2
Barboursville	96.0	4.4
Somerset	91.6	4.4
Montpelier	87.7	3.9
Orange	84.8	2.9

Table 5. Possible commuter rail stations along the northern commuter corridor (NS line)

Figure 19 shows the proposed route along Norfolk Southern tracks & several potential station locations. A location for the maintenance & storage area is not yet determined. The commuter stations shown are only possible locations, and further discussion is given below. Initiation of commuter service would likely require the same infrastructure track improvements discussed in the regional section. Also, the proposed system focuses on areas north of Charlottesville. This matches with the current growth trends, although should growth begin in the southern areas of Albemarle County & Nelson County, the service could provide a southern leg into the CBD that serves those riders.

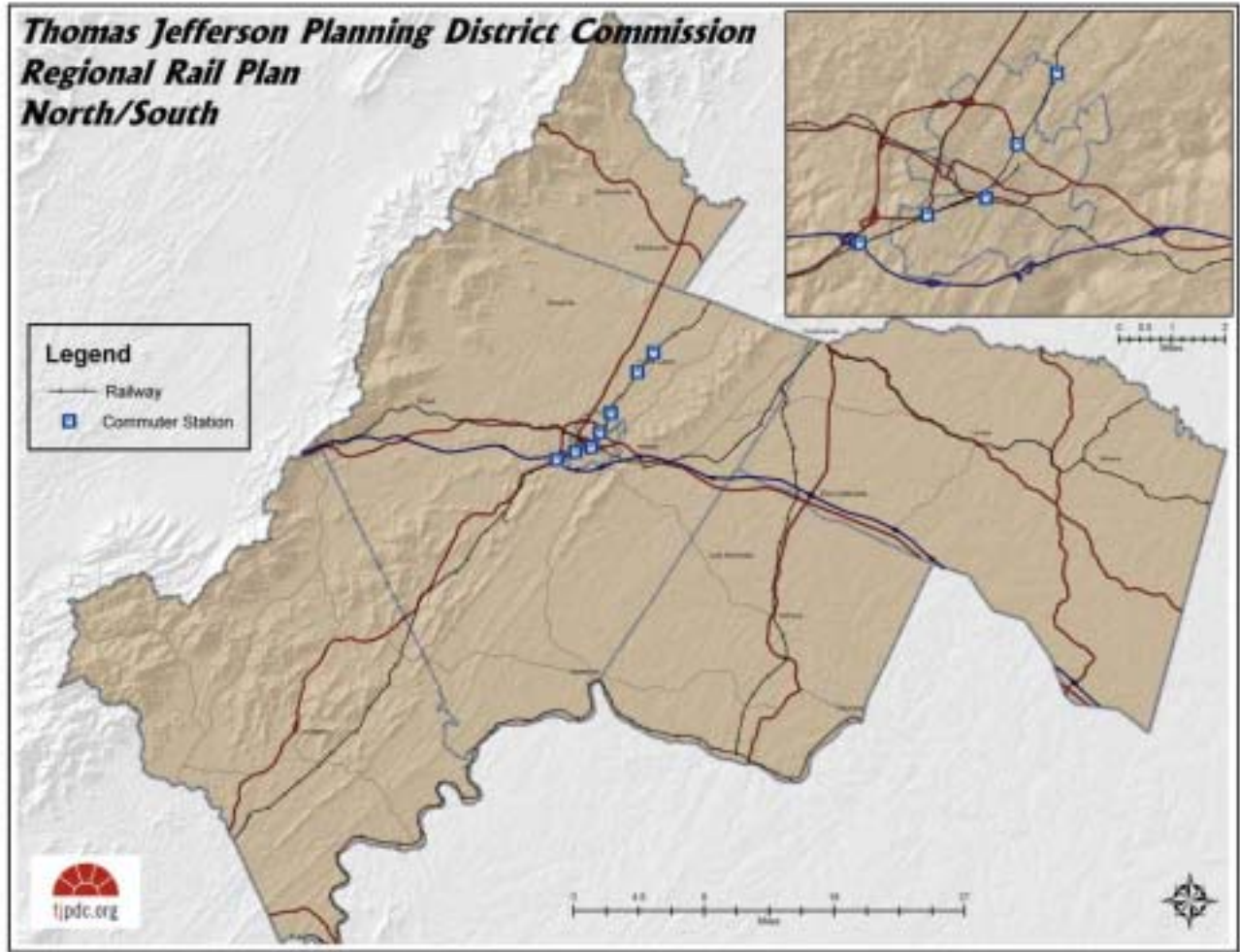


Figure 19. Map of proposed north-south commuter service along Norfolk Southern right-of-way



Recommendation

The initial commuter rail system would primarily serve commuters from the northern part of Albemarle County, destined to work in downtown Charlottesville and University of Virginia. As having too many stops in close proximity would mitigate the advantage of speed, further analysis should be given to which stops should be established for the commuter train (and which others might be included by a streetcar or bus feeder system). The Fontaine Research Park and University of Virginia Hospital are two of the largest employers along the existing line, and a station serving both would be a logical southern terminus. Any expansion or future development would add to the base ridership. Albemarle County, the City of Charlottesville and the University of Virginia are currently studying the transportation network within the general area of UVA hospital, and rail usage should promote the transportation objectives being set by the County, City, and University.

The rail line generally runs northward toward the Main St. corridor where Union Station is located. Union Station is the site where both Amtrak trains stop, and a limited number of Greyhound busses provides service here as well. On the Main St. overpass, CTS has a bus stop which allows access to Union Station via stairs down to track level. Consideration for CTS service to service Union Station directly should be made, especially in coordination with scheduled train times to make Union Station truly intermodal. In addition, pedestrian access to the west should be considered, and this may be possibly by a grade separation of the two rail lines here (see “New Lines” section).

Just north of Union Station, the lines passes through the Preston Avenue district, a commercial and retail district recognized by the City of Charlottesville Economic Study. This station could be a gateway terminus for downtown Charlottesville and Albemarle County office building, coordinated with bus service. Union Station and the Preston Avenue (Downtown) stations are quite close and may be combined (via pedestrian walkway extension along current passenger train platform) to unify and expedite operations. If a unified station exists, intermodalism can be achieved with the proposed West Main Street Streetcar corridor. The station could accommodate visitors to McIntyre Park, the Rose Hill neighborhood and Free State community. A station (with street level access) could be constructed south of Preston Ave. on the east side of the right-of-way. This location is currently occupied partly by a business and negotiations would need to done to secure this property. A second possibility could be combined with potential safety improvements along the track. The closure of one or both of the two grade crossings (with traffic diverted to nearby underpasses) could free up land just north of Preston Avenue for a possible station location. Also, with pedestrian safety a recurring concern in this area, it is recommended that durable fencing be placed on the west side of the tracks to prevent “cutting across the tracks”.

Forest Lakes a rapidly growing residential area in the northern part of Albemarle and the County Comprehensive Plan supports targeted development in that area. The Hollymeade Town Center and North Pointe developments will both be major destination points in the northern half of the proposed commuter rail system as well as the Charlottesville-Albemarle Airport and University Research Park at North Fork. Bus connections to the airport, research park, and residential areas would be key for full functionality of the station. A potential station site could be near the overpass of Proffit Rd (State Route 649). An unimproved road down to track level already exists and would be a logical access to a station site.

Additional stations located further north could be located around former station sites which allow good access to local roads. Somerset and Montpelier still have former stations in place, but are in use for other purposes. The town of Orange, while not in this Planning District, has expressed strong, repeated interest for a passenger train stop at its restored depot, and is a strong candidate for a station along the TDX route. Coordination with PD 9 would be beneficial for commuter rail planning purposes.



View of Norfolk Southern tracks near Preston Ave



Forest Lakes Residential Area adjacent to NS tracks



View of McIntyre Park and Parking Lots near adjacent NS tracks
Source: Photographs provided by Steve Ashby



East-West Commuter Rail Proposal on CSX Trackage

Route

In addition to discussing the aspects of a statewide east-west passenger rail system, the intent of this report is to start discussions of a possible commuter rail service from Staunton to Richmond. As previously stated, CSX Transportation own the east-west rail right-of-way in the TJPDC study area and goes through city of Charlottesville and the counties of Albemarle, Fluvanna, and Louisa. Existing rail rights-of-way extend from Staunton to Richmond and are generally parallel to US 250/I-64 and US 33. From Staunton east to Charlottesville, the right-of-way general parallels I-64 and US 250 and is located in the central urban areas of the towns.

From Charlottesville, the tracks run northeast toward Keswick (Albemarle) and follow Rt. 231/22 to the town of Gordonsville located in Orange County. Within the PDC area, the tracks run southeast from Gordonsville toward the towns of Louisa and Mineral and then to Richmond, as discussed earlier.

US 250 is one of the major east-west thoroughfares in the Planning District and is one of the most heavily used roadways in the region. Commuter studies show a significant amount of travel occurring along this route. Local comprehensive plans call for increased development in Crozet ("Crozet Master Plan"), the Pantops area, and in Zion Crossroads. According to outputs from the VDOT transportation model, the US 250 corridor in the TJPDC area will reach peak-carrying capacity by the year 2025 without transportation investments. CTS currently provides bus service to the Pantops area, located east of Charlottesville, however there is not CTS bus service west of the City. Additional funds are being sought for expanded bus service, and go hand-in-hand with commuter rail service on this under-utilized CSX Transportation corridor.

As discussed in the regional rail section, there are several east-west rail lines that exist throughout Virginia, most of which converge around the Richmond-Petersburg area. These connect the western part of the state to the Tidewater area. One of these corridors is in the Planning District and roughly follows US 250 (and I-64 between Staunton and Charlottesville). Commuter service along this US 250 corridor would offer an expedited trip to the CBD from the areas east & west of Charlottesville. The map in figure 20 shows potential east-west rail connections through the TJPDC area.

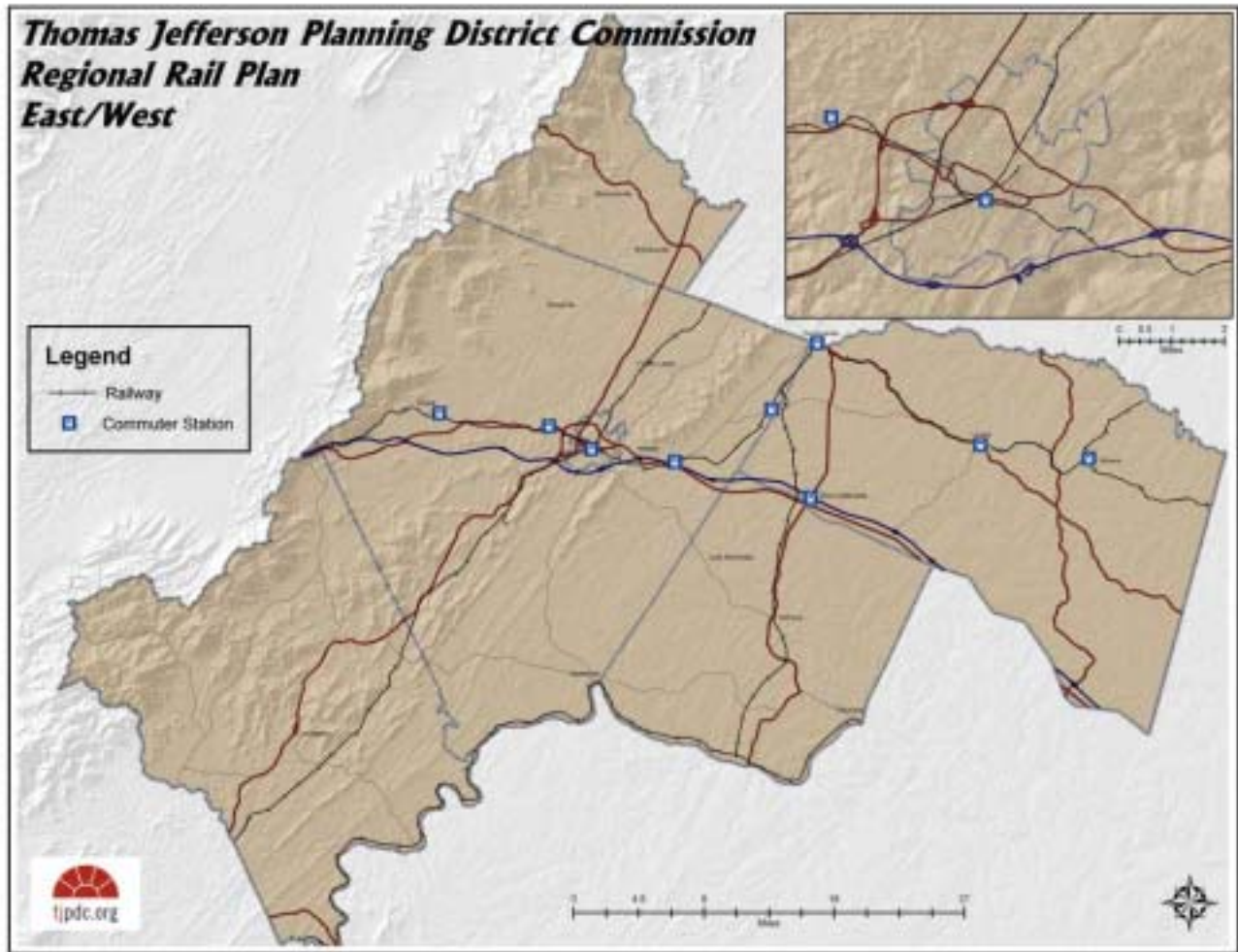


Figure 20. Potential East-West Commuter Rail Alignments

Recommendations

Commuter rail service would be along the CSXT tracks and serve the Charlottesville CBD. Service would begin in Staunton and travel east through Augusta County, making a stop in Fishersville and in Waynesboro. Staunton already has an active rail station, located adjacent to downtown. Fishersville would be a feeder station for the surrounding residential areas (a logical site adjacent to US 250 exists), and in Waynesboro (station located to be determined, although tracks are adjacent to downtown). There are station sites (or former station sites) along the route east to Crozet, and would be collectors of residential areas. There would be three proposed station sites for the UVA area and several east of Charlottesville as listed in Table 6.



Possible Station Location	Railroad Milepost	Distance from previous station (mi)
Staunton	219.5	-----
Fishersville	213.7	5.8
Waynesboro	209.2	4.5
Afton/Greenwood	203.5	5.7
Crozet	195.0	8.5
Ivy	189.3	5.7
UVA-west (Law School/U-Hall)	184.0	5.3
UVA-central (Hospital/Main St./JPA)	182.6	1.4
Union Station, Charlottesville	182.3	0.3
Downtown Transit Center	181.3	1.0
Charlottesville East (Carleton Rd.)	179.8	1.5
Keswick/Shadwell (Park-and-Ride)	177.0	2.8
Gordonsville	160.4	16.6
Orange	A0.0	9.0

Table 6. Possible commuter rail stations along the east-west commuter corridor (CSX rail line)

Another scenario would involve the use of mixed technology, using light-rail vehicles (and more frequent stations) along the corridors mentioned above. Although not impossible, this would probably prove difficult as LRV's which are not crashworthy (see Equipment section, below) would require a temporal separation from operation of heavy-rail equipment which is an idea that is likely not be welcomed at all from the host railroads. For this primary reason, no further consideration was given to this possibility. However, light rail's feasibility along US 29 mandates that consideration be given to shared (physically-separated by crash barriers) or elevated portions of the light-rail line above the heavy-rail trackage for the portions in the downtown area.

Depending on the market study for ridership and the integrated plan for transit, several commuter trains might run during a rush-hour period, with some providing a "reverse-commute" trip for trips outbound from the central area. In the specific case here, there is already probably be sufficient commuter demand (for travel to northern Virginia and D.C.) that a reverse-commute train would already be running and provide the reverse-commute trip.

Additional Potential locations for stations in the TJPDC area
(formal stops in bold)*

- ##Crozet
- ##Farmington/Boar's Head
- ##University Hall/Ivy Rd Parking Garage
- ##Charlottesville Union Station
- ##Glenmore/Shadwell
- ##Gordonsville (not in the Thomas Jefferson Planning District)
- ##Town of Louisa (or Trevilians)
- ##Town of Mineral

(*) Formal stops are generally located in urban-like areas and where there is the most potential for ridership. Formal stops have more amenities to offer transit riders than informal stops, such as display kiosks and places to eat. Formal stops are usually surrounded by mixed use development and are serviced each transit trip, where as informal stops (usually in suburban areas) may not be. Pictures of types of informal stations are on page 49 of the report.

Other locations for stations should be looked into for the counties of Augusta, Goochland, and Henrico. With an east-west railway connection through its area, the Charlottesville-Albemarle MPO and Thomas Jefferson Planning District and surrounding areas could benefit from a passenger rail service.



Streetcar (Urban) Service –

Recently, the Alliance for Community Choice in Transportation (ACCT) sponsored a study by DMJM Harris Planning in evaluating the feasibility and desirability for streetcar service in the Charlottesville area. The DMJM Harris study is available from ACCT, and only a brief summary is given here.

Their conclusions recommended a West Main St. core route with several alternative alignments at the western end which included a University loop and a branch which linked up to a transit center at University Hall on UVA's campus. The streetcar would share right-of-way with road traffic in many areas and have some limited dedicated right-of-way. Platform for station would be near key intersections, and service would be "fast, frequent, and reliable". Some traffic lights could be programmed for traffic light pre-emption where a streetcar can gain priority in a travel lane.

The history of streetcar service in Charlottesville is discussed in the Light Rail section "What's So Good About Light Rail Transport". Because of the urban density, the streetcar mode is particularly attractive here and would be a good mode for implementation, especially connecting to other modes at proposed transit centers (downtown, University Hall). DMJM Harris emphasized that the service must be *reliable* so that people can depend on it for timely transportation.

Recently, a group of area planners & officials traveled to Portland, Oregon to have a first-hand look at their streetcar system. With much Transit Oriented Development (TOD) occurring around the streetcar system, growth is occurring in urban areas and land prices have increased. Some have commented on the lack of distraction of the catenary (overhead wire) system as was anticipated before the trip.

In agreement with the DMJM study, this report recommends that this mode be an active part of the multimodal network. Integration of the streetcar mode is important in the urban area setting, and planning should begin to include the major trunk line along West Main St. and its inclusion into the downtown transit center being constructed by CTS.

**Proposed new rail lines:***Zion Crossroads/Virginia Air Line –*

The Virginia Air Line once connected the two east-west lines of the C&O Railroad, roughly paralleling US Route 15, reaching from Strathmore, just west of Brems Bluff on the CSX James River line north to Lindsay on the CSX east-west route through Charlottesville. The generally north-south alignment runs near Fork Union, Palmyra, Lake Monticello and comes out just west of Zion Crossroads before continuing north to a once-junction site at Lindsay with the current CSX trackage. Coal trains running north from the southern coal-feeder line once utilized this trackage, but it was downgraded and abandoned in the early 1970's.

Because of its alignment, the Air Line doesn't optimally address the need for east-west service through the Zion Crossroads area, but a part of its route could be utilized to a point where a new alignment would turn west and connect to the CSX trackage, possibly near Campbell. The entire alignment itself is under consideration for trail use, but its transportation potential should be further studied. Shared use of a corridor for trail & rail does currently exist, but is often run at slow speeds due safety concerns. Studies by HDR Engineering are ongoing to determine feasibility. If deemed feasible, preservation of the right-of-way should be done soon as soon as possible, and it is imperative that protection of the land assets be ensured to keep this option viable.

Richmond-Charlottesville new right-of-way

A new, heavy-rail direct right-of-way connecting Richmond (and points east) directly to Charlottesville is desirable, but would be a major engineering project and is probably cost-prohibitive at this point. Due to the lack of funds, VDRPT is upgrading existing rail lines for service rather than constructing new rail lines where possible.

However, a new light rail line alignment which could parallel the more direct I-64 alignment from Zion Crossroads to Charlottesville is possible and would be less expensive. This option should be weighed against the other Zion Crossroads scenarios discussed above.

Scottsville-Charlottesville

Scottsville in southern Albemarle County has seen recent growth which has increased traffic on VA Route 20. This 2-lane road is the subject of several current safety projects, but short of a total rebuild of its alignment, its curvy, hilly nature will probably continue to be of concern as traffic pressures will increase on this road. The northern part of the route near the I-64 interchange is part of the access for several notable destinations, namely Monticello for tourism and Piedmont Virginia Community College. As traffic increases to both of these destinations, the road intersection (Monticello Parkway) in this area will be increasingly congested.

As there is a significant elevation difference here, a light rail mode might be particularly attractive. A new light rail alignment (shown as "Alignment 3" in yellow in figure 16) could be constructed in stages as the need arises. Initially, the route could reach from a central Charlottesville to the Monticello Parkway intersection. If extended further south toward the continuing residential developments and eventually Scottsville, the alignment would likely also be somewhat curvy and hilly where light rail is also well-suited.

Charlottesville (Central Area) Intermodal Improvements & Possible Future Need for Freight Bypass Alignment

With the central Charlottesville area being the focus of moving people to/from proposed key stations, several projects (some short-term to optimize the future rail & expanded transit options) should be considered:

- Plans for platforms/walkways at the CTS downtown transit center along CSX tracks – the MPO should coordinate with CTS to include options for easy expansion of the intermodal transit center to include rail service along the CSX tracks and the possible implementation of streetcar service.



- Modification of CTS/UTS bus service for at-platform service at Union Station – coordination of busses to meet trains should be considered. In the short time, UTS routes might be extended at limited times of the day to meet Amtrak trains at their scheduled times at Union Station to accommodate the significant number of UVA students travelling on Amtrak near break/holiday/weekend periods. For commuter train service, CTS and UTS busses meeting the trains (at multiple stations) will be an essential part of effective service.

- At-grade rail separation near downtown for transit needs/safety improvement – the at-grade intersection of the NS and CSX track just south/west of Union Station presents a potential future limitation in train service both in terms of physical time/space for trains to cross and for proposed modes of transit. Specifically, light rail will have significant constraints to utilize rights-of-way that cross other heavy-rail lines at-grade and therefore might have its feasibility threatened. A project to separate the two rail lines here (possibly as a PPTA with the 2 freight carriers) would enhance safety, maintain the feasibility of the light-rail mode, and possibly open other options (such as a west side passenger platform along NS track near the UVA hospital).

- Consideration of freight-traffic bypass – if the light-rail mode is to be implemented on existing rights-of-way, freight traffic will need to be rerouted (or at the very least, time-restricted, to satisfy FRA requirements). Frequent passenger rail service would probably require that some of the rights-of-way be outright purchased & a new route for freight would be necessary (similar to Lafayette, IN and Los Angeles, CA). Also, freight trains on both NS and CSX routes are currently restricted in the speed with which they pass through the area due to curve alignments, grade crossings, and public interests in the downtown area. A freight bypass might be considered for these reasons, but must be weighed against its high construction costs and its engineering feasibility).



Equipment for Heavy-Rail Passenger Trains

VRE's commuter fleet consists of mostly double-decker (bilevel) commuter coaches with diesel locomotives, operated in a push-pull mode where a specially-equipped "cab control" coach can operate the train in "push" mode with the locomotive pushing or in standard "pull" mode with the locomotive leading. This eliminates the need for the "turning of the train" since the train can be operated from both ends. A typical commuter train consist is usually 3-6 coaches with each coach's capacity ranging from 100-157 people. Currently, most of the trains are at/near capacity which is a strong testament to the success of the service.

Newer types of rail transit vehicle technology has been seen in several recent demonstration projects. Presently, heavy-rail commuter rail service is dominated by the "cookie-cutter, diesel locomotive-pulling-separate-commuter-coaches" picture. Electric multiple unit (EMU) technology is present in the Northeast and in the Chicago area with each car possessing motors to turn electrical current (from overhead catenary or third-rail supply) into tractive effort for motion. This idea has been around since the advent of streetcars and the first commuter rail agencies, however, given the lack of existing electrical infrastructure outside these areas, this mode is not available here. However, electrification of equipment has been a standby option for several commuter agencies if the economics of fossil-fueled transit should change in the future.

Diesel multiple units (DMU's), which are actually a rebirth of a concept from earlier passenger rail travel (1940's-1960's) are now seen in a few modern systems. Colorado Railcar, LLC is conducting tours and demonstration runs of its DMU cars on several transit systems. Its most noteworthy quality is that its single-level DMU is rated compliant to FRA 49 CFR 238 requirements (structural stability for crashworthiness) which has not been achieved by previous DMU or EMU (electric multiple units) technology. This allows Colorado Railcar's DMU to operate along other heavy-rail equipment without special time restrictions or physical barriers needed for parallel LRT and heavy-rail corridors. Colorado Railcar's DMU has been tested by many of bigger transit agencies and is continuing to be compared to other technology. This is a mode which should be considered for this proposal especially given the company's likely cooperation for eager demonstration of their product.

As more and more transit projects progress in other areas, surplus equipment might be available at lower cost than new equipment. This should be considered in the budget process, as there is excess capacity for initial start-up even with the lower capacity of older equipment. However, analysis of the economics and inspection of equipment should be made to ensure that future useful lifespan of the used equipment is sufficiently long until additional equipment is secured.

Examples of potential vehicles

There are many types of vehicles available for rail transport, some more technologically advanced than others. Railcars, similar to the ones shown below, are examples of inexpensive electrically or diesel powered vehicles that could be used as potential light rail or commuter trains.



Source: Photograph Suburban Baltimore LRT trains provided by Jerry Deily



Source: Photograph from Colorado Railcar website: www.coloradorailcar.com



Safety Improvements

With the implementation of new service on any of the existing routes, improvements to safety are always a key part of an agreement for rail passenger service. Grade crossing separations, trespasser abatement, and a higher standard of maintenance are all benefits which could result from PPTA's on new rail passenger service. In downtown Charlottesville, several grade crossings exist in close proximity, and these should be examined to determine which could be closed (through construction of parallel roads to channel traffic to other grade separations or bridges) or newly grade-separated by an underpass or overpass. In addition to safety, this reduces motorist delays and decreases the possibility for a pedestrian to access the right-of-way as a shortcut.

The grade separation of the CSXT and NS trackage near Union Station is discussed above in the *Proposed new rail lines* section. As applied to safety matters, the elimination of the diamond would allow safe train movements simultaneously across the area. The physical separation of the track would eliminate the possibility of a train on route colliding with another, especially if a switching maneuver occurs near Union Station. Occasionally, movements on one railroad will prevent another from going through, slowing or stopping a train on the other route. This causes delay at the grade crossings and sometimes tempts pedestrian trespassers to climb through the cars of the stopped train, especially where the area is unfenced. When the train begins moving again, accidents where the person falls or slips often has horrific consequences. This particular safety concern around the diamond and keeping the trains moving on their separated routes would mitigate the possibility for these events and alleviate vehicle delay at the grade crossings.

New rail passenger service would improve maintenance, especially on the current CSX east-west route and should be a particularly attractive incentive to the freight carrier since most of the current freight traffic is of lower priority on this trackage. Upgraded signal systems would provide better safety and faster speed for train movements as well. However, the new maintenance costs for these improvements should be figured into the cost of maintaining the new service.



Implementation strategies/Next steps

A more detailed study will be needed to determine the feasibility of an east-west passenger and commuter rail connection from the western part of the Commonwealth to the Tidewater area through the Thomas Jefferson Planning District area. This report does not address costs; however, there is some information about passenger and commuter rail cost that can be gleaned from various sources. According to VDRPT, current studies support a liberal state cost estimate for the TDX of up to \$120 million to complete upgrades to the entire line, which is about the same cost as 10 miles of Interstate highway construction. The consultants for the Richmond Regional Planning District are coming up with cost estimates for commuter rail for the Richmond area, which may be useful for the Charlottesville area until a more detail study is done. Consultation with CSX Corporation and the localities listed below will also be needed. Issues with scheduling passenger and freight transport on shared trackage will also need further investigation. In addition, some of the passenger and commuter rail alignments overlap in the report, making this not only a cost consideration but also a scheduling consideration. The CMC could assist in planning efforts if such a study occurs in the Charlottesville-Albemarle MPO area.

Support from residents and local governments will be needed from the following jurisdictions:

Counties:

- ☒ Alleghany County
- ☒ Albemarle County*
- ☒ Amherst County*
- ☒ Augusta County
- ☒ Bath County
- ☒ Bedford County
- ☒ Campbell County
- ☒ Chesterfield County
- ☒ Dinwiddie County
- ☒ Fluvanna County
- ☒ Giles County
- ☒ Goochland County
- ☒ Hanover County
- ☒ Henrico County
- ☒ Louisa County
- ☒ Montgomery County
- ☒ Nelson County
- ☒ Orange County
- ☒ Roanoke County
- ☒ South Hampton County
- ☒ Suffolk County

Cities:

- ☒ City of Bedford
- ☒ City of Charlottesville
- ☒ City of Covington
- ☒ City of Lynchburg
- ☒ City of Petersburg
- ☒ City of Radford
- ☒ City of Roanoke
- ☒ City of Richmond
- ☒ City of Staunton
- ☒ City of Waynesboro

Towns:

- ☒ Town of Bremo Bluff
- ☒ Town of Columbia
- ☒ Town of Louisa
- ☒ Town of Mineral
- ☒ Town of Gordonsville
- ☒ Town of Scottsville

(*) 2001-2002 Endorsements for Expanded Passenger Rail Service

In Appendix A, a proposal for a demonstration project for this MPO area is detailed. The project would primarily focus on north-south regional service to/from D.C. and is a logical extension of VRE service in northern Virginia. There are opportunities for demonstrations on the other alignments as well, possibly testing out various modes. As previously mentioned, this is already part of the commonwealth-recommended TDX project, and is a good "starter" system. Planning District 9 (Rapidan-Rappahannock Region) plan to hold public hearings in 2005 for



extension of VRE service to the Culpeper region, and this demonstration would be a good simultaneous project for both districts. Support of this demonstration project has already been expressed by CTB members and would be a solid first step toward implementation of rail transit options.

With all of these points in mind, there are several key short-term recommendations which can be made:

- Coordinating land use planning with developers, planners, and other transportation/transit systems to ensure preservation of rights-of-way and key locations for future rail stations and maintenance/storage facilities. Of current interest are coordination and input to the Crozet Master Plan and Pantops Master Plan in Albemarle County and proposed streetcar service in Charlottesville. Specifically, the Pantops Master Plan should land preserved for a light rail/streetcar station.

- Beginning dialogue with legislators, railroad freight companies for funding and operational agreements for demonstration project and coordinating this mutual-interest project with Planning District 9 (Rapidan-Rappahannock). Coordination with VDRPT on the use of its newly-acquired passenger cars will be a key part of this demonstration project.

- Beginning public involvement on transportation issues and to generate support for funding legislation. A good method for public involvement would be the rail demonstration project detailed in Appendix A.

- Establishing a local transportation authority for a dedicated source of funding for these projects.

The MPO area is among the top highest-growth regions in the Commonwealth, and concrete planning should begin now for the proposed rail transit options. Rail transit provides safe, efficient, and high-volume transportation of persons. As growth continues in the region, effective land-use planning should include the protection of land adjacent to the rail alignments (current & proposed) for use as new trackage, intermodal stations, maintenance & storage facilities as loss of parcels is costly, time-consuming and is detrimental to an optimal rail transit system. Education of planners, officials, and the public should begin now as grassroots support and legislation for funding takes time to build up.



Appendix A - Background Data for Light Rail Proposal

Our ad-hoc group undertook the following methodology in developing these corridor concepts, relying primarily upon on-site observation of physical constraints, formal and informal interviews, document research, and mapping. Armed with observations and information gleaned from interviews and related documents, the group set out to overlay the City and County corridor areas with our proposed rail alignment. We took aerial photographs and transferred them into GIS. We then digitized the growth boundary of the County, and the area's major employers, shopping centers, schools, and corridors. Such issues as topography, existing residential homes and neighborhoods, and industrial sites were taken into account. To provide connectivity with the other modes of transportation, we tied in CTS transit stops and Rideshare Park and Ride Lots. We then divided the alignment into the corridor segments previously discussed. Within these zones, the group proposed and digitized the recommended alignment based on Comprehensive Plan growth boundaries and existing land uses, major employers within the region, shopping centers as destination points, high-density neighborhoods, and UVA, PVCC and local schools. Finally, the group proposed and digitized recommended rail alignments on the Rte. 29 North, Rte. 250 East and Rte. 250 West entryway corridors providing strategic links into the County. This included digitizing a rail alignment in Greene County at Standardsville/Ruckersville and Zion Crossroads in Fluvanna County. Note that these proposed alignments are general in nature and are not tied to any specific land features or survey control points.

Charlottesville has a population of 45,049 residents with 79,236 residents in the County of Albemarle (2000 U.S Census). Of the 124,000 residents in the area, the elderly make up 12 percent and school children (aged 6 to 18) make up about 19 percent. The City's age structure is significantly younger than that of the State population with a median age of 25.6, compared to the statewide median age of 35.7. This is significant because a younger population would most likely prefer to use the automobile and drive more, rather than use other alternative modes of transportation. However, the County age structure is slightly older than that of the State population with a median age of 37.4. This is also significant because an older population would have greater needs for alternative transportation systems since they may be less likely to drive. Furthermore, if these statistics and assumptions hold true into the future with a growing population in the area, then developing an effective light rail system may enhance the City and County's economy and vitality by having a superior quality of life. This will be especially true for those households that do not have an automobile, of which there were over 5,000 listed in the 1990 census.



Appendix B – Demonstration Project

Insert Powerpoint slides here

Thomas Jefferson Planning District Commission Regional Rail Plan

Legend

- Railway
- Commuter Station
- Light Rail
- UVA Circulator
- Light Rail Station

