



EXECUTIVE SUMMARY

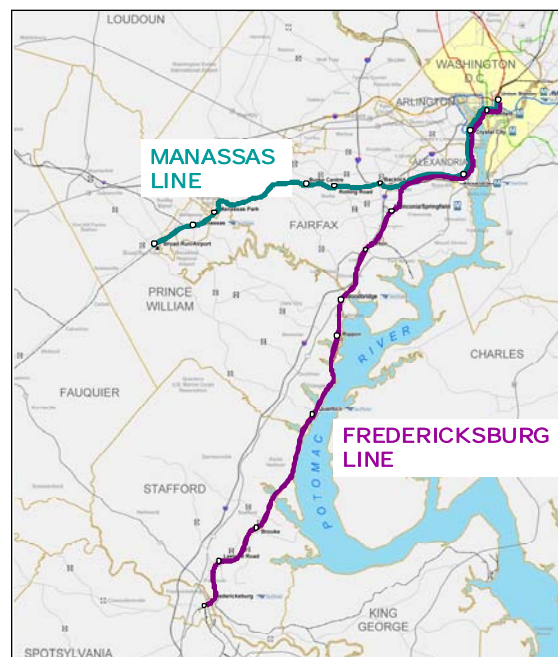
Current State of the Railroad

Today, the Virginia Railway Express (VRE) stands at an important junction: in the typical weekday peak period, many trains and parking lots are full, yet the demand for VRE service continues to grow. The service is “a victim of its success.” All the performance measures—ridership, customer satisfaction, on time performance—indicate a successful operation, yet nine of the 13 station parking lots are full, and ten of the 24 peak trains are crowded to capacity or beyond. Core system requirements are increasing. Station maintenance costs are rising as the system ages. There is an immediate need for new bi-level railcars and locomotives. Parking is inadequate—whether its parking for commuters at the station or parking for the equipment sets in Washington, DC. There is substantial local interest in extensions of VRE service to Spotsylvania and Fauquier Counties and the I-66 corridor to Gainesville and Haymarket, as well as for run-through service at Washington, DC with MARC, the Maryland commuter railroad, yet the available funding is inadequate to meet even the core requirements.

VRE is faced with large capital investment needs at a time when public funds for transportation projects are scarce. By most accounts, VRE continues to deliver a high quality service to its customers. VRE’s greatest challenge moving forward will be obtaining the funding necessary to increase the size of its operation to meet increasing demand while maintaining service quality.

At its founding in 1992, VRE’s vision was to provide a safe, convenient, energy-efficient public transportation alternative to driving congested highways from the Northern Virginia suburbs to the business districts of Alexandria, Crystal City and Washington, DC. Each weekday, VRE now operates 32 trains over two branch lines, covering 90 route miles and serving 18 stations in eight Northern Virginia jurisdictions, and carrying upwards of 15,000 passenger trips.

Organizationally, the Virginia Railway Express is a joint project undertaken by two commissions – the Northern Virginia Transportation Commission (NVTC) and the Potomac and Rappahannock Transportation Commission – which represent the Northern Virginia counties and municipalities in the VRE service area. Members of both entities sit on the VRE Operations Board, which governs VRE. Daily operations and capital projects are financed from a combination of federal, state and local grants, and through the sale of tickets.



The Existing VRE System



The Strategic Planning Process

In 2001, the Commissions authorized the VRE Chief Operating Officer to prepare a Strategic Plan to guide the future growth and development of the VRE system. Specifically, the Strategic Plan was to estimate future ridership demand, identify the extent, quantity and type of service that VRE would need to provide to meet its future market potential, determine the required capital projects and associated costs, and identify potential implementation and funding strategies. The plan was progressed in two steps. The Phase 1 Strategic Plan was completed in May 2002, focusing on the VRE core network and short-term needs through 2010. The VRE Operations Board subsequently directed a more comprehensive Phase 2 analysis to formulate a long-range vision and Strategic Plan for the railroad through 2025. The principal topics and issues addressed in the Phase 2 work effort included:

- Determining the ultimate size and extent of the VRE network, and the frequency and type of train service, that is consistent with regional travel projections through 2025
- Quantifying the magnitude of capital investment required in the core network through 2025 for stations and station parking, rolling stock (coaches and locomotives), train storage and maintenance facilities, and railroad infrastructure.
- Estimating the potential ridership benefits, capital costs and other impacts of potential extensions of VRE service
- Formulating alternative strategies for achieving long-term ridership objectives
- Prioritizing capital investment needs and service expansion options.

VRE retained the firm of Parsons Brinckerhoff, Inc. to prepare the Strategic Plan, working cooperatively with VRE Staff and the three operating railroads (CSX, Norfolk Southern, and Amtrak). Woodside Consulting Group, Inc. provided additional assistance, preparing a study of operational and infrastructure requirements to support extension of VRE service beyond Manassas to Bealeton and/or Haymarket.

This report documents the results of Phase 1 and Phase 2 strategic planning efforts. This document was not intended to prescribe budget or policy decisions, but rather to:

- Establish the overall direction in which VRE should head,
- Provide the technical basis on which the VRE Board can make policy decisions about investment priorities,
- Inform the development of VRE's out-year Capital Improvement Plan (CIP) and Six-Year Financial Plan.

Drafts of this report were reviewed by VRE staff and other stakeholders, and a VRE Board workshop was held on February 6, 2004 to discuss the Phase 2 Strategic Plan. Board members indicated that they would like VRE to meet its core needs for 2025, explore potential expansion of VRE service to Gainesville/Haymarket and Spotsylvania, and work with the counties to implement Transit Oriented Development (TOD).



The Strategic Plan is fundamentally market-driven, and shows where regional development and travel patterns are leading VRE over the next 20 to 25 years. The plan recognizes, but is not constrained by, the current federal, state and local municipal budget limitations and the current funding climate in which money for large capital projects is difficult to obtain.

This document is intended to identify and clarify the relevant issues and provide insight to the VRE Board, the staff, and the stakeholders, as they wrestle with the decisions that will determine the direction and vision of VRE in the short term and the years to come. Implementing the plan will require difficult tradeoffs and critical decisions with regard to the specific steps VRE should take to respond to both market forces and fiscal and political realities.

The VRE Ridership Market

In the first half of 2003, VRE ridership grew to a new record of approximately 15,000 riders per day. Over the past four years, ridership growth has averaged 16 per cent per year, and VRE now carries twice as many riders as it did in 1999. VRE's principal market is the journey-to-work or commuter trip from the Northern Virginia suburbs to the central business district (CBD), which is defined as the downtown areas of Washington, DC as well as employment centers in Crystal City and Alexandria.

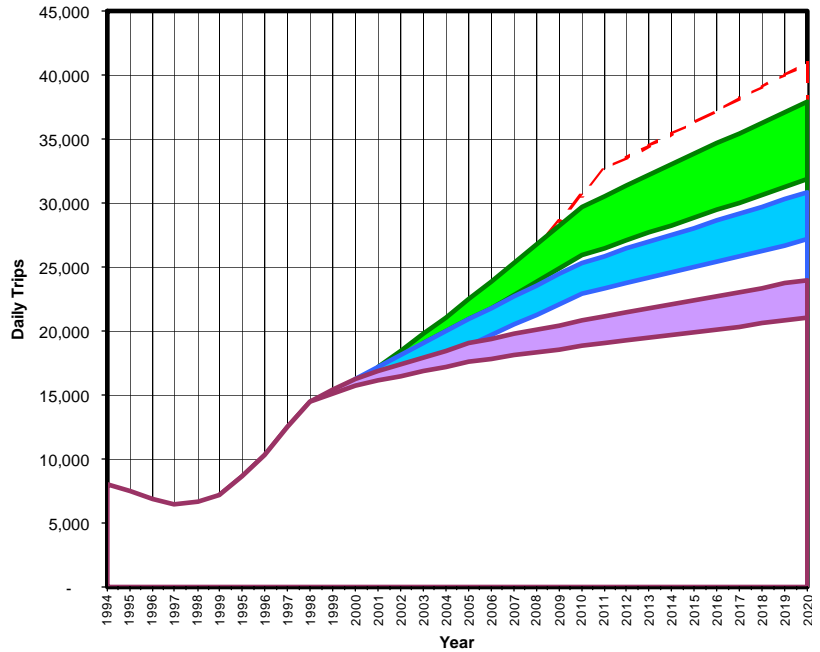
The strategic planning process included an investigation of regional travel patterns and the primary issues that are determining factors for VRE ridership. This includes historical ridership trends, demographic trends and existing and projected future regional travel patterns. The VRE ridership forecasting model, used over the past several years for annual projections of VRE ridership and revenue, was updated and re-calibrated to the most recently available round of regional travel data from the Metropolitan Washington Council of Governments (MWCOCG) and incorporated the factored results of the Fall 2002 VRE survey with respect to trip-making on VRE.

The population and employment trends in VRE's core service area show strong growth through 2010 and long-term growth at a somewhat slower rate through 2025. Currently, the fastest rate of suburban growth is at and beyond the outer edges of the VRE service area – in the counties of Prince William, Stafford, Spotsylvania and Fauquier – as residential construction and population continue to thrust outward.

In VRE's principal travel market—work trips from the Northern Virginia suburbs to destination zones surrounding the four innermost stations—future increases in ridership will be a function of two factors in combination:

- Increasing market size, fueled by population growth in the outlying areas and employment growth in the central business district
- Increasing VRE market share, driven by improvements in the level of service offered by VRE, and the cost of that service, relative to those provided by alternative modes of transportation.

A good general rule of thumb emerging from the Strategic Plan analysis is that VRE ridership has the potential to approximately double between 2004 and 2025, with a program of steady investment in the capacity of the rail system. A target level of 30,000 daily VRE trips by the year 2025 is appropriate as a guide for future planning. With proactive leadership and strong, early investment in the railroad, daily ridership as high as 40,000 trips is achievable, but the level of investment necessary over the next decade may not be financially feasible. If funding remains severely constrained, or if suburban growth in the region happens in a more scattered fashion, then VRE ridership demand might taper off between 20,000 and 25,000 daily trips.



VRE Daily Ridership—Historical and Range of Future Projections

Strategic Plan Scenarios and Recommendations

Using VRE’s future market potential as a guide, the strategic planning process has attempted to define a vision for the railroad in the year 2025 – in terms of its physical extent, the number of trains and the type of schedule operated, and its organizational structure. Three illustrative scenarios were developed for the prioritized staging of service improvements, line extensions and capital investment through 2025, representing the range of potential strategies from a relatively unconstrained, market-driven strategy at the high end (the Aggressive Growth Scenario) to a financially-constrained strategy (the Deferred Growth Scenario) at the low end. The third strategy (the Targeted Growth Scenario) falls in-between, focusing early and medium-term investments on the most productive service improvements and expansions.

A range of ridership estimates were developed that cover the spectrum offered by these three scenarios and also represent the realistic high and low ends of the range of potential future VRE ridership through 2025.

The Strategic Plan study treated the three scenarios equivalently and did not evaluate them against one another or take a position in favor or against any one of them. In effect, each option represents a potentially feasible and rational way to proceed – at three significantly different rates of capital expenditure. The higher cost Aggressive scenario is able to deliver greater benefits sooner. In the lower cost Deferred scenario, commuter rail investment lags behind suburban population growth, resulting in



development patterns that are less favorable with respect to rail travel and a lower overall level of VRE ridership.

However, each of the scenarios has common elements and the same set of near term priorities. The Strategic Plan recommends that VRE's service strategy should have the following three key elements:

1. Develop the core network in order to build up capacity in available parking, station facilities, and railroad infrastructure. Then, capital and operating funds permitting, extend the service beyond the core network
2. Improve the service and expand the coverage within the territory encompassed by VRE's two commissions. Extend the service first in the territory encompassed by the Commissions
3. In coordination with local jurisdictions, proactively seek development partnerships for funding that would enable VRE to grow beyond its boundaries. Such partnerships should support the growth of freight and intercity rail as well as commuter rail in the region.

Core Network Needs

The principal short-term needs for VRE to keep pace with its ridership growth are in the areas of station parking, rolling stock and train storage and maintenance capacity. These basic needs must be met before serious consideration can be given to increasing the quantity of VRE train service or extending VRE service beyond its current service limits. Capital investments must be made in each of these core areas together, as part of a coordinated program, in order for VRE to continue to deliver a high-quality commuter rail service. Under-investing in any one facet of the core network would create a capacity constraint that could render other elements of the system less than fully usable.

The Strategic Plan recommends the following short-term investments, to address the urgent need for additional system capacity and to replace rolling stock assets

- Immediate procurement of 11 cab cars, using available funding, with delivery in the 2006-2007 timeframe, to replace the Mafersa and Sounder cab cars
- Procurement of 50 additional coaches, including a mix of cab cars and trailer units, with delivery in the 2007-2009 period, to provide for growth and to replace the Sounder and older Gallery coaches
- Procurement of 21 new, high-powered Tier II locomotives to haul longer trainsets more efficiently and with reduced emissions.
- Expansion of mid-day storage capacity for VRE trains in the Washington Terminal area, to permit VRE to run longer trains and/or more trains into Washington
- Development of basic equipment maintenance facilities at the VRE Crossroads and Broad Run yard locations



- Identification and acquisition of property to satisfy medium to long term train storage and maintenance needs in the Manassas-Gainesville-Haymarket corridor
- Continuation of the program to expand station parking and offer improved alternative station access options for VRE riders at locations where parking demand is at or reaching capacity, in cooperation with the affected counties and local municipalities (e.g., Woodbridge, Rippon, Brooke, Fredericksburg, Burke Centre, Manassas and Broad Run)
- Lengthening of station platforms where necessary to accommodate longer trains.

The Strategic Plan also includes the following recommendations with respect to long-range investment in core network facilities through 2025, to support VRE ridership in the range of 25,000 to 40,000 daily trips:

- The addition of 6,000 to 8,000 parking spaces on the Fredericksburg Line and 6,000 to 9,000 spaces on the Manassas Line by 2025.
- Capital improvements at each of the four major CBD stations – The lengthening of existing platforms and improvements to CBD stations in order to accommodate longer trains and increasing passenger loads.
- Staged acquisition of coach equipment, resulting in a total VRE fleet of standardized, modern bi-level coaches that numbers between 110 at the low end and 170 at the high end by the year 2025
- Construction of an intermediate maintenance facility, as well as sufficient yard storage space to accommodate the increased fleet size, both overnight in Northern Virginia yards or mid-day at Washington Terminal, to enable the implementation of more independent, reliable maintenance practices.
- Second side platforms, rail infrastructure improvements and dispatching changes for better operational flexibility.
- In addition to the parking, fleet and storage needs identified in Phase 1, VRE will need to invest in fleet maintenance facilities, because the existing facilities in Washington do not have sufficient capacity to satisfy VRE's needs over the long term, as the size of the fleet grows and mandated fleet maintenance requirements increase.

Potential Network Expansion

The growth of the northern Virginia suburbs and the availability of affordable new housing are pushing the demand for commuter rail service beyond the boundaries of the current VRE network. The Strategic Plan study analyzed potential extensions of VRE service on existing rail freight lines in Virginia – southward from Fredericksburg into Spotsylvania County, southwestward from Manassas into Fauquier County, and westward from Manassas to Gainesville and Haymarket. The table below summarizes the costs and potential ridership associated with each expansion route.

Potential VRE Expansion		
	Capital Cost, including fleet (In Millions of 2003 Dollars)	2025 Ridership Projections (New Riders/Day)
Gainesville	\$54.6 – \$69.6	3,100 – 5,500
Haymarket	\$53.3 – \$68.3	
Fauquier	\$40.6 – \$60.6	1,100 – 2,000
Spotsylvania	\$16.6 – \$19.1	1,000 – 1,500

These are not mutually-exclusive expansion options. In fact, the long-range growth projections and strong station-area development potential in each of these corridors support the eventual extension of VRE service. However, phased implementation of extended service is likely to be the way that service evolves, given the intensive capital needs. The Strategic Plan has identified the following priorities:

1. Gainesville or Haymarket – very strong current growth and station development opportunities, strong ridership potential, able to be implemented within VRE Master Agreement. Service could be implemented in stages to save initial capital costs and dovetail with a major State highway grade crossing elimination project, starting with an interim 8-mile extension to Gainesville, followed ultimately by a 3 mile extension to Haymarket
2. Spotsylvania – relatively low incremental cost since VRE trains already use a yard facility in Spotsylvania, strong current demand for VRE service, provides relief for overcrowded Fredericksburg station
3. Fauquier – lesser current demand, more limited land development potential, longer-range opportunity to implement in tandem with improved intercity passenger service on the same route.

In all cases, service extensions are only viable if VRE's core network needs also are being funded and addressed. These projects, therefore, are additive to VRE's basic needs for station parking, rolling stock and train storage and maintenance facilities.

During the course of the development of the VRE Strategic Plan, there has been interest expressed in the possibility of extending VRE service even further than Spotsylvania and Fauquier Counties – to Richmond on the CSX RF&P Line and to Charlottesville on the NS Piedmont mainline. Consideration of Richmond and Charlottesville service was outside the scope of the strategic plan study, but investment decisions by VRE emanating from the strategic plan, particularly those affecting service to Spotsylvania and Fauquier, will need to account for the possibility of future longer-distance service – so that VRE investments are made wisely and cost-effectively.

The notion of integrating the commuter rail services of VRE and MARC and running commuter trains through Union Station to destinations on the far side of the region is a compelling one and has the potential to significantly increase the number of travel markets that the regional commuter rail network can serve. There are many hurdles, however – physical, operational, financial and institutional – that will need to be



resolved before run-through service can become a reality. Run-through service is not an alternative to investment in the core VRE network and should only be considered as an incremental improvement over and above full investment in the core network.

Phased Service Improvement and Capital Investment Plan

At the present time, VRE is limited in the number of trains it can run – by agreement with CSX and because of train storage yard constraints. In the short term, VRE will look to increase its passenger-carrying capacity by lengthening its existing trains and making the necessary investments in rolling stock, storage yards and railroad capacity. As the VRE ridership market continues to grow and the committed rail infrastructure projects are completed, VRE will be able to start increasing the number of trains it operates. The pace at which VRE increases service, and the type of service it operates, will depend upon which of the three Strategic Plan scenarios is being followed, and the rate at which VRE is able to make capital investments.

The Deferred Growth Scenario would retain the existing 11 trainsets for an extended period. The Targeted and Aggressive scenarios would increase VRE service incrementally – first to 13 trainsets, then 16 (offering the potential for peak 20-minute headways, express service and service to Haymarket), and ultimately 19 (full service with line extensions on both the Fredericksburg and Manassas lines).

The VRE Strategic Plan includes a three-phase program of capital investments to support and enable the planned steps in increased service and to respond to increasing levels of demand. The projects and dollar value of investments in each phase vary for each of the three potential Strategic Plan scenarios: Targeted Growth, Aggressive Growth, and Constrained Growth. The table below presents the estimated average annual capital expenditures on VRE infrastructure and rolling stock projects that are necessary to accommodate the full range of projected future demand, roughly corresponding to the three scenarios.

As a point of reference, VRE's FY 2004 capital budget includes \$11.5 million in capital projects. These figures exclude debt service, lease costs and access fees, which in FY2004 are estimated to generate an additional \$18.3 million in costs. The future costs also exclude current projects for which funding already has been committed, such as the CSX MOU rail infrastructure capacity projects and the current parking lot expansion projects at Manassas and Woodbridge.



Annual Capital Investment Needs (in Millions of 2003 Dollars)							
2004			2005 - 2009	2010 - 2015	2015 - 2025		
Infrastructure Rolling Stock Total	\$10.5 \$1.0 \$11.5	Low (Deferred)	Infrastructure	\$10.6	\$21.1	\$14.3	
			Rolling Stock	\$29.0	\$13.0	\$4.6	
			Total	\$39.6	\$34.1	\$18.9	
			Medium (Targeted)	Infrastructure	\$22.7	\$55.8	\$25.7
				Rolling Stock	\$29.0	\$19.7	\$10.0
				Total	\$51.7	\$75.4	\$35.7
			High (Aggressive)	Infrastructure	\$40.2	\$71.2	\$24.6
				Rolling Stock	\$29.0	\$27.1	\$10.5
				Total	\$69.2	\$98.3	\$35.0

All three scenarios require additional funding significantly above current levels. In all three scenarios, between FY2005 and FY2009, average annual capital expenditures for rolling stock will need to increase to almost \$30 million, as VRE acquires new locomotives, cab cars and trailer coaches to replace obsolete existing equipment and prepare for continued ridership growth.

Of the three scenarios, the low-end, or Deferred Growth, scenario is more responsive to the financial constraints that currently affect transportation investment in the region, keeping VRE capital expenditures on infrastructure (stations and facilities) at approximately existing levels through FY2009. Rolling stock needs, however, will drive total capital investment well above the current level. This scenario limits early investment to core needs and both expends capital funds and improves VRE service at a slower pace than either of the other two scenarios. As a result, the VRE network would be capacity-constrained through the early years of the plan, with demand for service exceeding the supply that VRE is able to offer. Within this scenario, VRE could choose to use pricing strategies (involving rail fares and potentially station parking fees) to dampen the rate of ridership growth, keeping demand for rail service in line with the supply that VRE can deliver, and generating a higher level of per capita revenue that could be used to partially fund ongoing capital investment and minimize local subsidies. With much of the planned suburban growth occurring before VRE has the ability to serve it well, this scenario is not likely to generate induced demand or transit-oriented development to the extent that either of the other two scenarios can - so the long-term level of VRE ridership and market share will be lower.

Financial, Institutional and Organizational Issues

VRE is showing signs of outgrowing its original organizational framework – both in terms of the size and complexity of its operation, and its geographic extent. It has reached and surpassed the level of ridership for which it was originally designed. As an entity of the two Commissions, VRE relies heavily on the member jurisdictions for funding support.



If the level of required annual capital investment increases as provided for in the Strategic Plan under any of the scenarios, and if the amount of required operating subsidy also increases as expected as VRE adds new trains, then VRE in its current form would look to the local jurisdictions to contribute at least their historical share of the railroad's capital and operating subsidy. In the current budget climate, this will be difficult to do.

As a result, the VRE member jurisdictions have an incentive to modify VRE's current funding mechanisms and relationships to permit the higher future costs to be spread among a greater number of benefiting parties, thereby reducing the share (but not the total quantity) of costs to the member jurisdictions. Changes to VRE's organizational structure, or changes to the institutional relationships among VRE's existing and prospective future stakeholders, may be necessary to accomplish the funding goals.

The scope of the Strategic Plan study did not include a comprehensive analysis of organizational and financing alternatives. The study's technical work has concluded that the *status quo*, in terms of VRE's operations, its performance, and its financing structure, is not sustainable over the long term. Consequently, as the VRE Operations Board and the Commissions set the course for VRE's future growth, begin implementing the Strategic Plan, and explore partnerships with other prospective stakeholders, consideration of institutional and organizational alternatives and innovating financing options will be an important part of the way forward.

VRE Moving Forward

Doubling VRE ridership by 2025 is achievable based on the market projects and a reasonable target for VRE's future planning. Moving towards that goal requires action on the part of the VRE Operations Board with respect to specific investment decisions and overall policy-making. This report has presented three possible strategies which could be followed – Targeted Growth, Aggressive Growth and Deferred Growth. These options are illustrative, and the VRE Board may choose a different route or combine aspects of each of them. However, adopting and then following an overall strategy or “game plan” is important – to guide short-term and tactical decision-making and help ensure that VRE invests cost-effectively and proceeds towards its long-range objectives in the most efficient way possible. Many of the decisions made by VRE in the short term – affecting rolling stock, infrastructure, operating agreements, organizational and institutional relationships, and financing – will lay the groundwork for commuter rail service in Northern Virginia over the next 50 years. Those decisions are likely to involve difficult tradeoffs, as most of the easy and inexpensive options have already been explored.

The ridership market benefits of the Aggressive Growth Scenario are desirable, as are its ability to help shape the way future development occurs in the region and its ability to offer VRE commuter rail service to a larger geographic area. However, the money to pursue aggressive growth, at least in the short term, just isn't available. Fiscal realities point towards the Deferred Growth Scenario, which itself requires a significant step up in terms of annual capital and operating subsidy just to preserve VRE's existing share of the CBD commute market within the territory it now serves. A realistic and achievable strategy, therefore, could be for VRE to proceed with the short term investments required to support the Deferred Growth Scenario, while actively pursuing increased public funding for beneficial growth projects and seeking partnerships with the freight railroads, other passenger rail interests, the adjoining counties, and station



area developers to minimize the overall funding support for VRE that will be necessary from its local member jurisdictions.

Based on the technical work of the study, as well as input from the Board at its February, 2004 workshop, the Strategic Plan recommends that VRE pursue the following initiatives:

- Work towards a ridership goal of 26,000 – 30,000 trips per day
- Improve the core VRE network and expand its capacity to carry VRE riders
 - Acquire additional rolling stock and locomotives
 - Construct storage and maintenance facilities
 - Improve parking and station access
- Pursue expansion to Gainesville and Spotsylvania
- Explore opportunities for partnerships, including transit oriented development
- Update the plan in three to five years.