Overview

- Virginia Rail System
- Setting the Stage
- Rail Benefits
- Proposed Improvements
- Cost Assumptions
- Class I and Shortline Railroads
- Port Projects
- Passenger Rail Initiatives
- High Speed Rail
- Total Project Benefits
- Funding
- Next Steps
Virginia Rail System

- Two passenger rail operators – Amtrak and Virginia Railway Express
- Twelve freight railroads –
  - Two national Class I Railroads: Norfolk Southern and CSX
  - Ten local shortline railroads
Virginia's Current Rail System
Privately-Owned by Freight Railroads

- 60% Norfolk Southern
- 26% CSX
- 15% Virginia Southern
- 8% Winchester & Western
- 5% Shenandoah Valley
- 5% Commonwealth Railway
- 5% Buckingham Branch
- 5% Chesapeake Western
- 5% Chesapeake & Albemarle
- 5% North Carolina & Virginia
Virginia Highway and Rail Miles

Forecast Year:

- **1930**: Rail Miles - 4,395, Highway Miles - 7,191
- **1970**: Rail Miles - 57,865, Highway Miles - 3,929
- **2007**: Rail Miles - 69,114, Highway Miles - 3,365

**System Mileage**

- **X-axis**: Year (1930, 1970, 2007)
- **Y-axis**: Miles (0, 10,000, 20,000, 30,000, 40,000, 50,000, 60,000, 70,000, 80,000)

**Legend**

- **Rail Miles**
- **Highway Miles**
Virginia Freight Tonnage by Mode and Direction (2004)

- **Truck**: 74.2%
- **Rail**: 19.9%
- **Inbound**: 21%
- **Internal**: 21%
- **Through**: 41%
- **Outbound**: 17%
- **Domestic Water**: 2.1%
- **International Water**: 3.7%
- **Air**: 0.1%
Projected Virginia Freight by Mode (2035)
Average Total AADT and Truck Percentages
All count Segments – top 30 Routes (2005)
Increase of Containerized Cargo (TEUs)
Virginia Ports

Forecast Year: 2006
Virginia Rail Tonnage (2004)
Percentage of Freight Rail Tonnage (2005)

Unit Train 60%
Long trains of a single railcar type and product, like coal -- mostly east-west

Carload 24%
Mixed trains with different railcar types and products -- mostly north-south

Intermodal/Auto 16%
Containers, autos, other on railcars -- a future north-south opportunity
Annual Passenger Traffic
(FY 1993-2007)
Setting the Stage

- The draft statewide rail plan builds on past successes to develop multimodal transportation corridors

- It is consistent with Commonwealth Transportation Policy Goals:
  - Providing a safe transportation system for Virginians
  - Maintaining existing transportation assets
  - Efficient and cost effective movement of people and goods
  - Stewardship of the environment

- It also supports the VTrans 2035 statewide transportation plan update
Setting the Stage

- Virginia rail funding
  - The Rail Enhancement Fund provides approximately $24 million for rail capital improvements annually
  - Rail Enhancement funding was supplemented in 2007 by a 10-year, $124.7 million bond program
  - Rail Preservation funding for shortline railroads is available at approximately $3 million annually
  - Rail Industrial Access funding is available for businesses to connect to freight rail shipping through a shared fund at approximately $5 million annually
  - One-time funding for the I-95 and I-81 rail corridors has provided more than $130 million to improve rail capacity and service reliability
Virginia has participated in the Heartland Corridor Project, a project of national significance that will support and enhance domestic and international trade, and remove 150,000 trucks from Virginia highways.

Four tunnels in Virginia are being cleared to accommodate double-stack rail traffic.
Virginia has allocated over $151.55 million to help increase rail capacity and divert trucks to rail in the I-95 and I-81 corridors.

The new two-track Quantico Creek Bridge opened on Feb. 17, 2007 in the I-95 corridor.
Virginia has participated in the construction of an on-dock rail yard to support the first privately developed marine terminal in North America, APM Terminals Virginia, to move 128,500 containers annually in 2010.

A train carries double-stack rail containers from the port.
Setting the Stage

- Virginia faces a number of challenges:
  - Population growth
    - Outpacing the national average
  - Highway congestion
    - Northern Virginia is part of the second worst region in the country
  - Airline industry limitations
    - No direct connections between Virginia regions and cities
    - Cost prohibitive for travel within the state
  - Passenger and freight rail capacity/demand
    - Rail transportation is approaching the limits of capacity
    - Demand continues to rise
  - Port growth
    - One of the most significant economic engines of Virginia
    - More access to freight rail shipping is needed to accommodate the demand for imports and exports
Setting the Stage

Understanding the freight rail business:

- The US is an international leader in freight rail, but lags behind in passenger rail.
- Freight rail is a very capital intensive industry. From 1995-2004, rail capital expenditures represented 18% of rail revenue compared to 4% for the average manufacturing company.
- Rail tracks in Virginia are privately owned by freight companies with a responsibility to return shareholder value.
- Freight rail is at least five times more profitable than passenger rail.
- Capacity is a commodity for private railroads, and railroads typically focus on capacity replacement (additional tracks) in exchange for access by commuter rail.
- Private railroads have the power to condemn property for necessary right of way.
Setting the Stage

- Understanding the passenger rail business:
  - Passenger rail typically requires a subsidy.
  - Amtrak, through federal statute, has the right to operate on freight rail lines.
  - Commuter rail operators like VRE do not have that right, and must negotiate with private railroads.
  - The cost of right of way is expensive.
    - VDOT estimates that the cost of acquiring right of way between Washington, DC and Richmond in the I-95 corridor would cost at least $2 billion
  - Passenger rail operators have consistently chosen to access private rail lines rather than building dedicated passenger tracks.
Rail Benefits

- VRE service provides the equivalent capacity of one highway lane on I-95 and I-66 during peak periods.

- One intermodal train can carry up to 280 truck trailers.

- Train travel is 17% more energy efficient than domestic airline travel and 21% more energy efficient than auto travel.

- Traveling by rail contributes fewer greenhouse gas emissions than either cars or airplanes. Passenger rail emits only 0.2% of the travel industry’s total greenhouse gases.
Potential Improvements

Potential projects identified in the draft Statewide Rail Plan will:

- Focus on corridor management to support diverse needs
- Provide improvements throughout the state
- Position Virginia for future growth
- Support growth at the Ports of Hampton Roads
Cost Assumptions

- Project cost estimates include capital costs only.
- All costs are stated in 2008 dollars, without escalation to potential year of expenditure.
- No operating or equipment costs are included—these will be identified in the Rail Action Plan.
- The Rail Action Plan will include all costs and will have costs escalated based on year of expenditure.
More than $4.9 billion in needs statewide
RAIL PROJECT OVERVIEW

Potential Improvements to the Rail System

Project Cost: $5 billion

Summary of Rail Projects

Class I and Shortline Railroad Project Costs

<table>
<thead>
<tr>
<th>Project</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS Class I</td>
<td>$1.7 billion</td>
</tr>
<tr>
<td>CSX Class I</td>
<td>$48.0 million</td>
</tr>
<tr>
<td>Shortline Railroad</td>
<td>$68.0 million</td>
</tr>
<tr>
<td>Total Costs</td>
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</table>

Ports of Hampton Roads Project Costs

<table>
<thead>
<tr>
<th>Project</th>
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<tbody>
<tr>
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<tr>
<td>Total Costs</td>
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Passenger Rail Project Costs

<table>
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</tbody>
</table>

High Speed Rail Initiative Costs

<table>
<thead>
<tr>
<th>Project</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast High Speed Rail</td>
<td>$1.2 billion</td>
</tr>
</tbody>
</table>

Removes more than 7.3 million cars and trucks from Virginia highways.
Saves more than 445 million gallons of fuel.
Saves more than 1.2 million tons of CO₂ emissions.
# Class I and Shortline Railroad Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Gateway</td>
<td>$48 million</td>
</tr>
<tr>
<td>Crescent Corridor</td>
<td>$1.6 billion</td>
</tr>
<tr>
<td>Heartland Corridor</td>
<td>$66.01 million</td>
</tr>
<tr>
<td>Coal Corridor</td>
<td>$12.1 million</td>
</tr>
<tr>
<td>Shortline Railroads</td>
<td>$68 million</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
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</tbody>
</table>
CLASS I AND SHORTLINE RAILROADS

CSX National Gateway Corridor (I-95, I-295, I-495)

Project Cost: $48 million

At a Glance

:: Parallels I-95 through Virginia
:: Improves efficiency of freight rail shipping from ports of MD, VA and NC and to markets in PA, WV and OH
:: Virginia improvements:
   - Kilby Rail Yard
   - Double-stack train clearances
:: Freight benefit:
   Expands capacity
:: Passenger benefit:
   Improves on-time performance

CSX National Gateway Corridor Development Status

<table>
<thead>
<tr>
<th>Task</th>
<th>Proposed Completion Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and Analysis</td>
<td>2008</td>
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<tr>
<td>Preliminary Engineering</td>
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<tr>
<td>Final Design</td>
<td>2010</td>
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<tr>
<td>Construction</td>
<td>2013</td>
</tr>
<tr>
<td>Operation</td>
<td>2013</td>
</tr>
</tbody>
</table>

Annual Benefits

- Removes 130,000 trucks from I-95 Corridor
- Saves over 31.9 million gallons of fuel
- Saves 61,705 tons of CO₂ emissions
CLASS I AND SHORTLINE RAILROADS

Norfolk Southern Crescent Corridor (I-81)

Project Cost: $1.6 billion

At a Glance

:: Improves freight rail shipping along I-20, I-40, I-75, I-85 and I-81

:: Freight benefit: Expands capacity, diverting trucks from congested roadways

:: Passenger benefit: Could expand Amtrak to serve Charlottesville, Lynchburg, Roanoke and Bristol and expand VRE service from Manassas to Haymarket

Norfolk Southern Crescent Corridor Development Status

<table>
<thead>
<tr>
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<tbody>
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<td>Construction</td>
<td>2010</td>
</tr>
<tr>
<td>Operation</td>
<td>2020</td>
</tr>
</tbody>
</table>

Annual Benefits

- Removes 1.6 million trucks (base estimate) from I-81 Corridor by 2035
- Saves over 227 million gallons of fuel
- Saves 674,000 tons of CO₂ emissions
CLASS I AND SHORTLINE RAILROADS

Norfolk Southern Heartland Corridor (Route 460) (Phase 1)

Project Cost: $66.01 million

At a Glance

:: Doubles freight capacity parallel to Route 460
:: Freight benefit: Cuts 1.5 days of shipping time between Hampton Roads and Chicago
:: Passenger benefit: Could support expanded Amtrak service between Washington, DC and Bristol
:: Planning has begun on Phase 2
CLASS I AND SHORTLINE RAILROADS

Norfolk Southern Coal Corridor (Route 460)

Project Cost: $12.1 million

At a Glance

:: Adds additional track capacity parallel to Route 460 between Andover and Green Bay to support projected increases in coal shipments

:: Freight benefit: Improves capacity to move coal from coal fields to Hampton Roads and to generating stations in TN, NC, SC and GA

:: Passenger benefit: Could support expanded Amtrak service between Washington, DC and Bristol

:: As most coal is already carried by rail, no calculations of truck diversion, fuel savings or reduced emissions have been conducted

Norfolk Southern Coal Corridor Development Status

<table>
<thead>
<tr>
<th>Task</th>
<th>Proposed Completion Dates</th>
</tr>
</thead>
<tbody>
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<td>Planning and Analysis</td>
<td>2006</td>
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<tr>
<td>Preliminary Engineering</td>
<td>2007</td>
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<tr>
<td>Final Design</td>
<td>2007</td>
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<tr>
<td>Construction</td>
<td>2009</td>
</tr>
<tr>
<td>Operation</td>
<td>2009</td>
</tr>
</tbody>
</table>
CLASS I AND SHORTLINE RAILROADS

Shortline Railroad Preservation (statewide)

Project Cost: $68 million

At a Glance

:: Brings all shortline rail systems in Virginia up to Federal freight and passenger standards

:: Freight benefit: Improves capacity to handle larger shipments, providing critical business-to-business link

:: Passenger benefit: Improves Amtrak service between Orange and Clifton Forge

<table>
<thead>
<tr>
<th>Shortline Railroad</th>
<th>Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Coast</td>
<td>5,107,000</td>
</tr>
<tr>
<td>Buckingham Branch</td>
<td>34,534,000</td>
</tr>
<tr>
<td>Chesapeake &amp; Albemarle</td>
<td>5,702,000</td>
</tr>
<tr>
<td>Chesapeake Western</td>
<td>3,294,000</td>
</tr>
<tr>
<td>Commonwealth Railway Inc.</td>
<td>1,622,000</td>
</tr>
<tr>
<td>Deepwater Terminal</td>
<td>491,000</td>
</tr>
<tr>
<td>Norfolk &amp; Portsmouth Belt Line</td>
<td>3,321,000</td>
</tr>
<tr>
<td>North Carolina &amp; Virginia</td>
<td>338,000</td>
</tr>
<tr>
<td>Shenandoah Valley</td>
<td>2,110,000</td>
</tr>
<tr>
<td>Virginia Southern</td>
<td>7,490,000</td>
</tr>
<tr>
<td>Winchester &amp; Western Railroad Co.</td>
<td>3,819,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>67,828,000</strong></td>
</tr>
</tbody>
</table>
Class I and Shortline Project Results

- Improves freight rail shipping and diverts truck traffic to rail along Virginia highways: I-81, I-95, I-64, I-66, I-85, I-295, I-495 and Route 460, and outside Virginia along major routes such as I-20, I-40 and I-75

- Multistate agreements needed to maximize truck diversion

- Includes construction of rail yards and increases capacity

- Improves shortline rail systems in Virginia to accommodate heavier freight shipments and faster passenger rail service
Port Projects

- NIT Central Rail Yard Expansion
- Craney Island Rail Connection
- Norfolk/Portsmouth Beltline Railroad Improvements

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PORT PROJECTS

Norfolk International Terminal (NIT) Central Rail Yard Expansion (Route 460)

Project Cost: $40.15 million

At a Glance

:: Diverts port shipments from truck to rail
:: Nearly doubles today’s on-terminal rail handling capacity

<table>
<thead>
<tr>
<th>NIT Central Rail Yard Expansion Development Status</th>
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<tr>
<td>Construction</td>
</tr>
<tr>
<td>Operation</td>
</tr>
</tbody>
</table>

Annual Benefits

- Removes 180,310 trucks from Virginia highways
- Saves over 24.3 million gallons of fuel
- Saves 47,072 tons of CO₂ emissions
PORT PROJECTS

Craney Island Rail Connection (Route 460)

Project Cost: $130 million

At a Glance

- Three-phase project that builds on I-664/Route 164 Median Rail Safety Relocation Project
- Adds rail capacity to major new port facility
- Supports transport of approximately 50 percent of projected 1.43 million containers through this facility

Annual Benefits

- Removes 848,571 trucks from Virginia highways
- Saves over 114 million gallons of fuel
- Saves 221,528 tons of CO₂ emissions
PORT PROJECTS

Norfolk Portsmouth Belt Line Railroad Improvements (Route 460)

Project Cost: $8.75 million

At a Glance

:: Complementary to the NIT Central Rail Yard Expansion

:: Adds off-site marshalling yard, separating highway traffic from train movements

:: Improves operating efficiency of trains traveling to and from on-terminal railyard

Norfolk Portsmouth Belt Line Railroad Development Status

<table>
<thead>
<tr>
<th>Task</th>
<th>Proposed Completion Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and Analysis</td>
<td>Summer 2008</td>
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<tr>
<td>Preliminary Engineering</td>
<td>Fall 2008</td>
</tr>
<tr>
<td>Final Design</td>
<td>Summer 2009</td>
</tr>
<tr>
<td>Construction</td>
<td>Fall 2010</td>
</tr>
<tr>
<td>Operation</td>
<td>2011</td>
</tr>
</tbody>
</table>

Annual Benefits

Eliminates 12,852 hours per year of delays (based on 18 train crossings per day) at an existing at-grade crossing at NIT and Hampton Boulevard.
Port Project Results

- Increases rail capacity and provides competitive port shipping services
- Diverts more port shipments from truck to rail to help manage highway congestion
- Supports the transport of up to 50% of projected containers at Craney Island
- Nearly doubles today’s on-terminal rail handling capacity at Norfolk International Terminal
- Improves rail crossing safety
Passenger Rail Projects

Commuter Rail Improvements (I-66 and I-95):
- VRE Alexandria to Manassas (I-66)
- VRE Manassas to Gainesville/Haymarket Expansion (I-66)
- VRE Fredericksburg to Washington, DC (third track)

Intercity Rail:
- Urban Crescent Express (I-64 and I-95)
- TransDominion Express (TDX) (I-81 and Routes 29/460)

Passenger Rail Project Costs

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<td><strong>$ 1.7 billion</strong></td>
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</table>
VRE Alexandria to Manassas (I-66)

Project Cost: $8.25 million

At a Glance
:: Upgrades track and improves the reliability of VRE operations by enabling increased train speed
PASSENGER RAIL PROJECTS

VRE Gainesville to Haymarket Expansion (I-66)

Project Cost: $281 million

At a Glance

:: Studies viability and potential locations of future passenger rail stations between Manassas and Gainesville/Haymarket

:: Requires extensive upgrading of existing freight line for passenger rail service

:: Next steps are additional environmental review and preliminary design

Annual Benefits

- Removes 430,556 carriageway from Virginia highways
- Saves 1.7 million gallons of fuel
- Saves 7,756 tons of CO₂ emissions
PASSENGER RAIL PROJECTS

VRE Fredericksburg to Washington, DC Improvements (I-95, I-395, I-495)

Project Cost: $470 million

At a Glance

- Expands rail service and improves existing service through signalization, station and rail infrastructure improvements, including:
  - Automatic train control cab signalization
  - VRE second platforms at Woodbridge, Lorton and Rippon Stations
  - Arkendale to Powell’s Creek third track and station
  - Capacity improvements between Franconia/Springfield and Fredericksburg, excluding major bridges

Fredericksburg to Washington, DC Rail Improvement Status

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<td>TBD</td>
</tr>
<tr>
<td>Operation</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Annual Benefits

- Removes over 1.4 million cars from I-95 Corridor
- Saves over 7.5 million gallons of fuel
- Saves 46,877 tons of CO₂ emissions
PASSENGER RAIL PROJECTS

Urban Crescent Express
(I-64, I-95, I-295, Route 460)

Project Cost: $757 million

At a Glance

:: Freight and passenger rail improvements between Fredericksburg, Richmond and Newport News

:: Station improvements, including the facilitation of transit-oriented development near stations

:: Best passenger rail ridership increase opportunity in Commonwealth, potentially doubling Amtrak corridor ridership by 2015

Urban Crescent Express Project Status

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<tr>
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<td>TBD</td>
</tr>
</tbody>
</table>

Annual Benefits

- Removes over 1.3 million cars from Virginia highways
- Saves over 9.5 million gallons of fuel
- Saves 62,072 tons of CO₂ emissions
PASSENGER RAIL PROJECTS

TransDominion Express (TDX) (I-81 and Routes 29/460)
Project Cost: $206 million

At a Glance

:: Enhances mobility along the Route 29, I-81 and Route 460 corridors by improving infrastructure to support higher speeds for passenger rail
:: Phase I: Washington, DC to Lynchburg
:: Phase II: Lynchburg to Roanoke
:: Phase III: Roanoke to Bristol
:: Phase IV: Lynchburg to Richmond

<table>
<thead>
<tr>
<th>TransDominion Express Project Status</th>
<th>Proposed Completion Dates</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>Operation</td>
<td></td>
</tr>
</tbody>
</table>

Annual Benefits (Phase I Only)

- Removes 53,291 cars from I-81 and Route 29 Corridors
- Saves over 164,637 gallons of fuel
- Saves 98.2 tons of CO₂ emissions

Draft Statewide Rail Plan Overview 44
Passenger Rail Project Results

- Supports more frequent service in the Urban Crescent between Washington, DC, Richmond and Newport News
- Supports more frequent service in the Route 29 corridor between Lynchburg and Washington, DC, and implementation of Phase 1 of the TransDominion Express
- Supports expansion of VRE service between Manassas and Gainesville/Haymarket
- Supports new service, station improvements, travel time improvements and more frequent service along existing routes
- Upgrades track and other facilities/infrastructure for higher speed service
High Speed Rail Project
(I-95, I-295, I-495, I-85, I-64, Route 460)

- High speed rail service between Washington, DC and Raleigh, NC
- Total cost does not include the cost of major river and stream crossings
- Total cost does not include the cost of electrification and improvements between Richmond and Washington, DC

<table>
<thead>
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<tbody>
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<tr>
<td>Southeast High Speed Rail</td>
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<tr>
<td>Project</td>
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<tr>
<td>Total Costs</td>
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Draft Statewide Rail Plan Overview
HIGH SPEED RAIL PROJECT

Southeast High Speed Rail Project
(I-95, I-295, I-495, I-85, I-64, Route 460)

Project Cost: $1.2 billion

At a Glance

:: Studies higher speed rail connections between Hampton Roads and Richmond’s Main Street Station to Washington, DC

:: Also studies creating high speed rail corridor between Washington, DC and Raleigh, NC

:: Pending legislation in U.S. Congress could impact feasibility of program
Total Project Benefits

- Total public benefits of the potential projects are as follows:
  - 7.3 million cars and trucks removed from highways
  - 445 million gallons of fuel saved
  - 1.2 million tons of carbon emissions saved
The capital cost of all proposed projects is approximately $5 billion, and current estimated available state funding from 2009 to 2035 is $1.3 billion.

Commonwealth’s rail programs foster the sharing of costs and benefits.

Potential sources of funds:
- Railroads
- Commonwealth of Virginia, from dedicated funding sources as well as special allocations
- Local jurisdictions, including current Northern Virginia contribution of 13 percent of VRE operating costs
- Federal funding, including potential Amtrak bills that include state grants for intercity rail improvements

Operating costs and other funding elements will be identified in the Rail Action Plan.
Next Steps

- **Key Actions**
  - Draft Plan released for public comment in July 2008
    - Five public meetings statewide
  - Rail Action Plan issued in September 2008
    - Includes funding strategies, proposed allocation of resources and project implementation schedules
    - Public comments accepted
  - Statewide Rail Plan finalized in November 2008

- **Future Rail Plan Updates:**
  - Six Year Improvement Program yearly update
  - Comprehensive update on a five-year basis as a part of VTrans