



nation's capital. On September 11, 2001, the commuter rail system was limited in its ability to aid the evacuation of the Capital. The Federal Government's interests in VRE should be explored as the rail system expands and evolves.

The proposed Washington-area train dispatching and operational control center is a project that offers significant benefits to all stakeholders in the region's rail system, including the states of Maryland and Virginia, the Federal Government, the freight railroads, and freight shippers in the region. Such a project will likely be linked to other major capital investment initiatives and would be more difficult to implement by a fragmented group of disparate agencies working independently than by a regional rail consortium or authority acting on behalf of the full range of rail-related interests in the region.

Regardless of the path chosen, VRE's future organization and governance structure should emphasize protecting perhaps one of its greatest assets – and the strong personal relationship that VRE management has forged with its riders, and a commitment to customer service of the highest quality.

9. FINANCIAL CHARACTERISTICS OF THE PLAN

Annual Operations and Maintenance Costs

For each phase of increased VRE service through 2025, annual operations and maintenance costs were estimated. Table 9.1 presents these estimates, in year 2003 dollars. These estimates include all operating costs, including access fees paid to the host railroads, but they exclude estimated annual debt service and operating reserve funding. The financial and subsidy calculations in the next section incorporate these factors. A range of estimates is presented for the Phase 2 and Phase 3 plans. The low end of the range corresponds to a rush-hour focused service with limited off-peak service (similar to today's operation) and ridership towards the low end of the spectrum. The high end of the cost range includes additional off-peak services and ridership towards the high end of the projected range.

The estimates assume a contract operation similar to that currently provided by Amtrak. One or more contracts are assumed to cover operation of the trains, on-board ticket inspection and maintenance of equipment. These estimates were based on historical experience, adjusted to reflect the likelihood of future increased costs in some areas and potential economies of scale in other areas as the overall volume of service and passenger traffic grows.

Costs for train and engine crews were factored up from historical rates based on the projected increase in number of train crews required. This number does not necessarily rise linearly with the number of trainsets in service in Phase 2 and Phase 3, since increasing levels of reverse-peak and off-peak service are assumed to be provided, and several (but not all) trainsets will require both a morning and an afternoon/evening crew, in cases where the trainset makes multiple round trips over the course of a day. Labor and material costs for maintenance of equipment are

assumed to grow proportionally to the size of the fleet. Historical average unit costs for servicing, inspection, maintenance and repair activities are assumed.

**Table 9.1
Projected VRE Operations and Maintenance Costs**

<u>Cost Line Item</u>	Phase 1 2004 - 2009	Phase 2 2010 - 2015	Phase 3 2016 - 2025
<u>Contract Operator</u>			
Operations	\$ 83.5 to \$ 88.4	\$ 113.0 to \$ 147.4	\$ 212.9 to \$ 286.6
Materials	\$ 4.7 to \$ 5.0	\$ 6.3 to \$ 8.3	\$ 12.0 to \$ 16.1
Incentives	\$ 3.8 to \$ 4.1	\$ 5.2 to \$ 11.4	\$ 9.8 to \$ 13.2
Management	\$ 15.6 to \$ 16.4	\$ 19.9 to \$ 21.9	\$ 44.6 to \$ 54.7
Other	\$ 10.8 to \$ 11.5	\$ 14.7 to \$ 19.2	\$ 27.7 to \$ 37.2
<u>Railroad Access</u>			
Amtrak Fees	\$ 6.0 to \$ 6.0	\$ 7.8 to \$ 10.2	\$ 14.6 to \$ 19.8
CSX Fees	\$ 23.4 to \$ 27.0	\$ 29.4 to \$ 42.0	\$ 55.0 to \$ 81.0
NS Fees	\$ 13.8 to \$ 13.8	\$ 20.2 to \$ 25.9	\$ 38.4 to \$ 50.4
<u>Station Maintenance</u>	\$ 9.9 to \$ 10.6	\$ 12.5 to \$ 13.8	\$ 27.7 to \$ 34.4
<u>Ticketing Costs</u>	\$ 5.0 to \$ 5.3	\$ 6.3 to \$ 7.0	\$ 14.1 to \$ 17.5
<u>Administrative</u>	\$ 1.4 to \$ 1.6	\$ 1.8 to \$ 2.1	\$ 2.5 to \$ 3.4
TOTAL OPERATIONS & MAINTENANCE COST	\$ 177.9 to \$ 189.7	\$ 237.1 to \$ 309.2	\$ 459.3 to \$ 614.3
Average Annual O&M Cost	\$ 29.7 to \$ 31.6	\$ 39.5 to \$ 51.5	\$ 45.9 to \$ 61.4

On-time performance incentive payments are assumed to be paid to the contract operator, based on current contract rates, assuming that the system achieves an average level of 95 percent on-time performance.

Access fees are assumed to be paid to Amtrak as the owner of Washington Terminal and to CSX and Norfolk Southern (NS), owners of the railroad lines over which VRE trains operate. The CSX and NS fees are assumed to be calculated on a train-mile basis, using the current rate, adjusted by the increased number of train miles projected to be operated in each phase. Washington Terminal access fees are calculated based on current contract costs per train, factored up to account for increasing numbers of trains operated and stored at the terminal. As the level of VRE traffic grows, assessing track access costs on a train-mile basis may not be the most appropriate method, particularly if VRE or the State has invested in substantial increased line capacity. Alternatives that cover the railroads' maintenance of way costs and provide for a reasonable fee and be explored during the process of negotiating updated operating and access agreements.

Station maintenance costs, ticketing and ticket processing costs and general administrative costs are factored up from historical rates, based on projected passenger volume growth.



Required Subsidy Level

Two key financial performance indicators have been estimated for VRE through 2025, derived from estimated future ridership and operating costs, and based on a number of underlying assumptions. These indicators are:

- Recovery ratio
- Non-Federal annual capital and operating subsidy.

The recovery ratio is defined to be the percentage of annual operating costs that are covered by passenger fares. VRE historically has been able to achieve recovery ratios in the range of 60 percent. Moving forward, as ridership builds and average train passenger loads increase, economies of scale will tend to lower the unit cost per passenger of operating trains. On the other hand, increasing the total number of trains operated, particularly the expansion of off-peak and reverse commute service and also peak zone express service, will tend to increase operating costs faster than revenue.

The non-Federal subsidy is an estimate of the costs that will need to be generated by the VRE participating jurisdictions and major stakeholders such as the Commonwealth of Virginia – to cover VRE’s annual operating deficit and capital investment program. Since commuter rail is not a profitable venture, these subsidies will inevitably increase as the size of VRE operations and its base of ridership increases. This will require the entities that now provide funding support for VRE to increase the level of that support. However, the potential exists to mitigate these effects on the local participating jurisdictions by seeking additional new sources of funding, increasing the level of State funding because of the wider benefits of rail system investment, and/or finding private sector funding partners.

Many variables, including many not directly addressed in the Strategic Plan, will affect these indicators as well as the overall financial performance of VRE in the future. Among these variables are:

- Fare policy
- External economic and other factors influencing ridership demand
- The pace and extent of required capital investment
- The number of trains operated by VRE
- The level of Federal funding
- The level of State and third-party funding.
- Level of debt financing undertaken.

To determine the relative financial characteristics and subsidy requirements of the three strategic plan scenarios, a common set of assumptions was applied to the factors affecting the local and other non-Federal share of the overall subsidy, including both capital and operating components:

- Inflation of access fees at 4 percent per annum
- Inflation of other operating costs at 3 percent per annum



- Ridership levels midway between the high and low ends of the range
- Fares increasing on average at 2 percent per annum
- Federal share of CIP capital costs at 80 percent.

VRE financing is a delicate balance of federal funding, state funding, local government funding, and the farebox. There is no stable, replenishable source of dedicated funds, so the various levels of government involved in sponsoring the VRE will need to agree among themselves on the apportionment of funding responsibility. There are several options open to VRE's stakeholders, which are not all able to be thoroughly evaluated in the context of this study.

Tables 9-2 through 9-4 present estimates of the financial performance indicators, for each of the three growth scenarios that are consistent with VRE's Strategic Plan objectives: Targeted Growth, Aggressive Growth and Deferred Growth. For purposes of presentation, Federal funds are assumed to cover 80 percent of all capital costs for infrastructure and rolling stock projects, and the level of committed state and local capital and operating funding support is carried forward at FY2004 levels, increasing only by the rate of inflation. After these assumptions are made, the remaining estimated funding shortfall is calculated – by year through 2009 and averaged for the 2010-2015 and 2016-2025 periods. The magnitude of the shortfall varies by scenario and is projected to increase over time.

Within any given scenario, changes to any of the above variables could significantly affect the level of local subsidy. Further analysis, outside the scope of this strategic planning effort, will be required to determine the sensitivity of local subsidy estimates to fare policy and other factors.

On balance, to the extent that VRE increases fares over time at a rate generally in line with cost inflation, the VRE recovery ratio is projected to remain at or above the 60 percent level in each scenario. Growing ridership demand will tend to increase average train loads, which can be carried by VRE more efficiently on a per capita basis. This will tend to offset projected higher costs with respect to railroad access fees and service expansion.

The funding shortfall in future years will need to be covered by some combination of the following funding sources:

- Increased Federal funding
- Increased State funding
- Increased funding from existing local VRE member jurisdictions
- Local funding contributions from potential new VRE member jurisdictions
- Funding from other sources (e.g., freight railroads, developers)
- Creative financing mechanisms to defer or spread expenditures (e.g., equipment leases)
- Additional revenue (e.g., increased fares, parking fees).

Required non-Federal subsidy levels are shown to increase significantly in connection with increased levels of investment in the higher-growth scenarios. Even in the most financially conservative scenario, Constrained Growth, the estimated level of non-Federal subsidy will increase from \$14.6 million in FY2002 to the range of \$23 to \$28 million between FY2004 and FY2009, reflecting the increase in required capital investment in fleet, parking and train storage, as well as the loss of about \$3 million per year in debt service reserve funds that were available in 2002 and prior years. If the State were to contribute to funding these costs at its historical 60 percent level, and no new sources of funds were identified, the subsidy from the local jurisdictions would increase from the historical \$5.6 million level to the \$9 to \$11 million range over the next 5-6 years.

The Targeted Growth scenario requires annual non-Federal capital plus operating subsidies in the \$26 to \$36 million range through 2009, or between \$3 and \$8 million more per year than the Constrained Growth scenario – driven primarily by the higher rate of capital expenditures. The Aggressive Growth scenario requires even more non-Federal investment and subsidy – in the \$29 to \$41 million range over the next six years. This may very well put this strategy beyond the reach of the current organizational and funding structure of VRE. However, opportunities for funding partnerships also are greater in the higher growth scenarios. To the extent that there are VRE stakeholders interested in pursuing aggressive near-term expansion of the VRE network, this analysis shows that long-term sources of funding in the range of \$5 to \$7 million per year, over and above the level of funding required for the Targeted Growth scenario will need to be found.

The local participating jurisdictions historically have funded approximately 40 percent of the non-Federal capital and operating subsidy. As the total required subsidy increases in the future, the local jurisdictions will not necessarily have to cover the same proportion of the subsidy. Third party contributions, particularly to the local share of capital costs, will be able to be obtained from developers and the freight railroads. Financial contributions are also anticipated on the part of the counties where VRE service is added, such as Fauquier and Spotsylvania, to help offset the incremental costs of extending and operating the service. Also, increasing the level of State participation is a possibility, to the extent that VRE capital projects will generate wider benefits to the State (including the benefits of improved intercity passenger rail service and improved freight service to shippers) than just those realized by the VRE commuter market.

Both fare policy and the level of funding support from other sources, for either capital requirements or operations, are crucial issues with respect to establishing the level of subsidy that will need to be generated from the VRE participating jurisdictions.

The scope of the Strategic Plan does not encompass the setting of fare policy or budgets for VRE, although information from the Strategic Plan can be used to inform these activities. The VRE Audit and Finance Committee can use the results of this analysis to develop budget alternatives for future fiscal years.

**Table 9.2
Estimated Recovery Ratio and Required Non-Federal Subsidy –
Targeted Growth Scenario**

Costs in Thousands of Dollars, Year of Expenditure

	PHASE 1						PHASE 2	PHASE 3
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Average FY 2010-15	Average FY 2016-25
OPERATIONS								
<u>Annual Operating Cost</u>								
Track and Terminal Access Fees	\$ 7,045	\$ 8,112	\$ 8,436	\$ 9,749	\$ 11,153	\$ 12,653	\$ 18,144	\$ 25,958
Operating Expenses	\$ 21,564	\$ 25,482	\$ 27,244	\$ 29,088	\$ 31,019	\$ 33,039	\$ 49,497	\$ 67,864
Other Expenses	\$ 11,260	\$ 11,598	\$ 11,946	\$ 12,304	\$ 12,673	\$ 13,053	\$ 14,476	\$ 18,338
Total	\$ 39,869	\$ 45,192	\$ 47,626	\$ 51,141	\$ 54,845	\$ 58,746	\$ 82,117	\$ 112,160
<u>Income</u>								
Fare Revenue	\$ 16,305	\$ 18,972	\$ 20,256	\$ 21,601	\$ 22,992	\$ 24,430	\$ 30,256	\$ 42,740
Other Income, including Federal grants	\$ 8,323	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275
Total	\$ 24,628	\$ 26,247	\$ 27,531	\$ 28,876	\$ 30,267	\$ 31,705	\$ 37,531	\$ 50,015
Annual Operating Deficit	\$ 15,241	\$ 18,945	\$ 20,096	\$ 22,265	\$ 24,578	\$ 27,040	\$ 44,586	\$ 62,144
CAPITAL								
<u>Annualized Capital Cost</u>								
Federal Contribution	\$ 11,327	\$ 55,512	\$ 57,177	\$ 58,893	\$ 60,659	\$ 62,479	\$ 98,222	\$ 61,724
Debt Service Reserve Fund (unavailable after '03)	\$ 9,584	\$ 44,409	\$ 45,742	\$ 47,114	\$ 48,527	\$ 49,983	\$ 78,578	\$ 49,379
Non-Federal Contribution	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	\$ 1,743	\$ 11,102	\$ 11,435	\$ 11,779	\$ 12,132	\$ 12,496	\$ 19,644	\$ 12,345
Non-Federal Capital+Operating Subsidy	\$ 16,984	\$ 30,048	\$ 31,531	\$ 34,044	\$ 36,709	\$ 39,536	\$ 64,231	\$ 74,489
State Contribution at FY 2004 Level*	\$ 11,176	\$ 11,511	\$ 11,856	\$ 12,212	\$ 12,578	\$ 12,955	\$ 14,367	\$ 18,200
Local Contribution at FY 2004 Level*	\$ 6,353	\$ 6,544	\$ 6,740	\$ 6,942	\$ 7,150	\$ 7,365	\$ 8,168	\$ 10,347
Capital+Operating Funding Shortfall**	\$ (545)	\$ 11,993	\$ 12,935	\$ 14,890	\$ 16,981	\$ 19,216	\$ 41,696	\$ 45,943
Operating Cost Recovery Ratio	75.6%	74.5%	74.3%	74.3%	74.1%	73.9%	61.1%	63.0%

*Adjusted for inflation at 3 percent per annum.

****Note:**

The funding shortfall in future years will need to be covered by some combination of the following funding sources:

- > Increased Federal funding
- > Increased State funding
- > Increased funding from existing local VRE member jurisdictions
- > Local funding contributions from potential new VRE member jurisdictions
- > Funding from other sources (e.g., freight railroads, developers)
- > Creative financing mechanisms to defer or spread expenditures (e.g., equipment leases)
- > Additional revenue (e.g., increased fares, parking fees).

Table 9.3
Estimated Recovery Ratio and Required Non-Federal Subsidy –
Aggressive Growth Scenario

Costs in Thousands of Dollars, Year of Expenditure

	PHASE 1						PHASE 2	PHASE 3
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Average FY 2010-15	Average FY 2016-25
OPERATIONS								
<u>Annual Operating Cost</u>								
Track and Terminal Access Fees	\$ 7,045	\$ 8,112	\$ 8,436	\$ 9,936	\$ 11,543	\$ 13,262	\$ 19,539	\$ 28,842
Operating Expenses	\$ 21,564	\$ 25,791	\$ 27,880	\$ 30,072	\$ 32,370	\$ 34,778	\$ 52,711	\$ 75,404
Other Expenses	\$ 11,260	\$ 11,598	\$ 11,946	\$ 12,304	\$ 12,673	\$ 13,053	\$ 14,476	\$ 18,338
Total	\$ 39,869	\$ 45,501	\$ 48,263	\$ 52,312	\$ 56,585	\$ 61,093	\$ 86,726	\$ 122,584
<u>Income</u>								
Fare Revenue	\$ 16,305	\$ 18,972	\$ 20,815	\$ 22,582	\$ 24,411	\$ 26,305	\$ 34,003	\$ 50,475
Other Income, including Federal grants	\$ 8,323	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275
Total	\$ 24,628	\$ 26,247	\$ 28,090	\$ 29,857	\$ 31,686	\$ 33,580	\$ 41,278	\$ 57,750
<u>Annual Operating Deficit</u>	\$ 15,241	\$ 19,254	\$ 20,172	\$ 22,455	\$ 24,899	\$ 27,513	\$ 45,448	\$ 64,834
CAPITAL								
<u>Annualized Capital Cost</u>								
Federal Contribution	\$ 11,327	\$ 77,101	\$ 79,414	\$ 81,796	\$ 84,250	\$ 86,777	\$ 128,949	\$ 74,427
Debt Service Reserve Fund (unavailable after '03)	\$ 9,584	\$ 61,681	\$ 63,531	\$ 65,437	\$ 67,400	\$ 69,422	\$ 103,159	\$ 59,542
Non-Federal Contribution	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	\$ 1,743	\$ 15,420	\$ 15,883	\$ 16,359	\$ 16,850	\$ 17,355	\$ 25,790	\$ 14,885
Non-Federal Capital+Operating Subsidy	\$ 16,984	\$ 34,674	\$ 36,055	\$ 38,814	\$ 41,749	\$ 44,869	\$ 71,238	\$ 79,720
State Contribution at FY 2004 Level*	\$ 11,176	\$ 11,511	\$ 11,856	\$ 12,212	\$ 12,578	\$ 12,955	\$ 14,367	\$ 18,200
Local Contribution at FY 2004 Level*	\$ 6,353	\$ 6,544	\$ 6,740	\$ 6,942	\$ 7,150	\$ 7,365	\$ 8,168	\$ 10,347
Capital+Operating Funding Shortfall**	\$ (545)	\$ 16,619	\$ 17,459	\$ 19,660	\$ 22,021	\$ 24,549	\$ 48,703	\$ 51,173
Operating Cost Recovery Ratio	75.6%	73.6%	74.7%	75.1%	75.4%	75.6%	64.5%	66.9%

*Adjusted for inflation at 3 percent per annum.

****Note:**

The funding shortfall in future years will need to be covered by some combination of the following funding sources:

- > Increased Federal funding
- > Increased State funding
- > Increased funding from existing local VRE member jurisdictions
- > Local funding contributions from potential new VRE member jurisdictions
- > Funding from other sources (e.g., freight railroads, developers)
- > Creative financing mechanisms to defer or spread expenditures (e.g., equipment leases)
- > Additional revenue (e.g., increased fares, parking fees).

**Table 9.4
Estimated Recovery Ratio and Required Non-Federal Subsidy –
Deferred Growth Scenario**

Costs in Thousands of Dollars, Year of Expenditure

	PHASE 1						PHASE 2	PHASE 3
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Average FY 2010-15	Average FY 2016-25
OPERATIONS								
<u>Annual Operating Cost</u>								
Track and Terminal Access Fees	\$ 7,045	\$ 8,112	\$ 8,436	\$ 9,651	\$ 10,037	\$ 10,439	\$ 13,172	\$ 19,830
Operating Expenses	\$ 21,564	\$ 24,514	\$ 25,249	\$ 27,307	\$ 28,126	\$ 28,970	\$ 35,341	\$ 48,695
Other Expenses	\$ 11,260	\$ 11,598	\$ 11,946	\$ 12,304	\$ 12,673	\$ 13,053	\$ 14,476	\$ 18,338
Total	\$ 39,869	\$ 44,224	\$ 45,632	\$ 49,263	\$ 50,837	\$ 52,463	\$ 62,989	\$ 86,863
<u>Income</u>								
Fare Revenue	\$ 16,305	\$ 18,972	\$ 19,910	\$ 20,879	\$ 21,878	\$ 22,909	\$ 26,199	\$ 34,080
Other Income, including Federal grants	\$ 8,323	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275	\$ 7,275
Total	\$ 24,628	\$ 26,247	\$ 27,185	\$ 28,154	\$ 29,153	\$ 30,184	\$ 33,474	\$ 41,355
Annual Operating Deficit	\$ 15,241	\$ 17,977	\$ 18,446	\$ 21,109	\$ 21,684	\$ 22,278	\$ 29,516	\$ 45,509
CAPITAL								
<u>Annualized Capital Cost</u>								
Federal Contribution	\$ 11,327	\$ 40,556	\$ 41,773	\$ 43,026	\$ 44,317	\$ 45,646	\$ 83,823	\$ 101,462
Debt Service Reserve Fund (unavailable after '03)	\$ 9,584	\$ 32,445	\$ 33,418	\$ 34,421	\$ 35,454	\$ 36,517	\$ 67,059	\$ 81,169
Non-Federal Contribution	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	\$ 1,743	\$ 8,111	\$ 8,355	\$ 8,605	\$ 8,863	\$ 9,129	\$ 16,765	\$ 20,292
Non-Federal Capital+Operating Subsidy	\$ 16,984	\$ 26,088	\$ 26,801	\$ 29,714	\$ 30,547	\$ 31,408	\$ 46,280	\$ 65,801
State Contribution at FY 2004 Level*	\$ 11,176	\$ 11,511	\$ 11,856	\$ 12,212	\$ 12,578	\$ 12,955	\$ 14,367	\$ 18,200
Local Contribution at FY 2004 Level*	\$ 6,353	\$ 6,544	\$ 6,740	\$ 6,942	\$ 7,150	\$ 7,365	\$ 8,168	\$ 10,347
Capital+Operating Funding Shortfall**	\$ (545)	\$ 8,033	\$ 8,205	\$ 10,560	\$ 10,819	\$ 11,088	\$ 23,746	\$ 37,254
Operating Cost Recovery Ratio	75.6%	77.4%	78.9%	76.5%	77.8%	79.1%	74.1%	70.0%

*Adjusted for inflation at 3 percent per annum.

****Note:**

The funding shortfall in future years will need to be covered by some combination of the following funding sources:

- > Increased Federal funding
- > Increased State funding
- > Increased funding from existing local VRE member jurisdictions
- > Local funding contributions from potential new VRE member jurisdictions
- > Funding from other sources (e.g., freight railroads, developers)
- > Creative financing mechanisms to defer or spread expenditures (e.g., equipment leases)
- > Additional revenue (e.g., increased fares, parking fees).