REGIONAL TRANSIT AUTHORITY

RESOLUTION NO. 47

A RESOLUTION of the Board of the Regional Transit Authority for the Pierce, King, and Snohomish Counties region adopting the Technical Appendix to the Regional Transit System Master Plan and authorizing the Executive Director to make arrangements to make the Technical Appendix available to the public.

WHEREAS, by Resolution No. 40 adopted October 29, 1994 the Board of the Regional Transit Authority ("RTA") adopted the Regional Transit System Master Plan, together with pertinent technical and environmental documents; and

WHEREAS, the Regional Transit System Master Plan also references a Technical Appendix including additional information on project financing, ridership and other topics pertinent to the Regional Transit System Master Plan and the Phase I System described therein; and

WHEREAS, the technical and environmental documents referred to in said resolution and Plan have been further reviewed, compiled and updated in the Technical Appendix attached as Exhibit A, which provides the most current available information relating to certain financial, ridership and other topics; and

WHEREAS, the RTA provided the information contained in the Technical Appendix in other formats or otherwise made it available to the participating counties prior to their decisions pursuant to RCW 81.112.030(6); and

WHEREAS, the expert review panel has reviewed RTA reports, memoranda, and documents used in connection with the Technical Appendix, including those that describe the assumptions for and analysis of the financial plan, capital and O & M cost estimates, and travel forecasting methods, as required by RCW 81.104.110; and

WHEREAS, the Board of the RTA has determined that it is in the best interests of the citizens of the region to formally adopt the Technical Appendix as part of the Regional Transit

System Master Plan and to make the Technical Appendix available to the public so that it can serve as a reference resource for citizens of the region; and

WHEREAS, the Board's adoption of the Technical Appendix constitutes a minor modification of the Regional Transit System Master Plan pursuant to RCW 81.112.030(5);

NOW THEREFORE BE IT RESOLVED by the Board of the Regional Transit Authority as follows:

Section 1. The Board of the Regional Transit Authority hereby adopts the Technical Appendix to the Regional Transit System Master Plan substantially as described in Exhibit A attached hereto. The Technical Appendix, together with pertinent technical and environmental documents, is hereby incorporated by reference and made a part of the Regional Transit System Master Plan.

Section 2. The Board of the Regional Transit Authority hereby authorizes the Executive Director to arrange for the printing of the Technical Appendix and to make it available to the public upon request.

Section 3. The Board of the Regional Transit Authority further authorizes the Executive Director to take any actions necessary to implement the policies and determinations of the Board pursuant to this resolution.

ADOPTED by the Board of the Regional Transit Authority for the Pierce, King and Snohomish Counties region at its meeting held on February 10, 1995.

By _____
Bruce Laing
Chair of the Board

ATTEST:

_____
Marcia Walker
Board Administrator

REGIONAL TRANSIT SYSTEM

MASTER PLAN

TECHNICAL APPENDIX

REGIONAL TRANSIT SYSTEM
MASTER PLAN
TECHNICAL APPENDIX

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I. INTRODUCTION

This technical appendix to the Regional Transit System Master Plan (Master Plan) provides additional discussion on selected topics raised by the Master Plan. Section II covers background related to the financial analysis and planning that has been ongoing throughout the system planning process. It includes a review of the Regional Transit Authority's (RTA) financial capacity, the evaluation of the local tax options available to the RTA through its enabling legislation, and a discussion on financing methods. The specific funding assumptions developed for and adopted by the RTA Board for the financing of the Phase I system plan are described in Section III. The cash flow model developed for the financial analysis is included in Section IV. Section V provides a brief discussion regarding the financial risk of the Phase I financial plan. The ridership forecast for the Phase I system plan is presented in Section VI. Section VII highlights some of the environmental, social and economic impacts identified in the Final Environmental Impact Statement, Regional Transit System Plan, issued in March 1993.

II. FINANCIAL STRATEGIES AND ANALYSIS

The Regional Transit Authority's (RTA) enabling legislation provides the RTA with the tools and authority required to develop, build and operate a regional high capacity transit system. After voters within the RTA boundaries have approved a ballot proposition on the taxes necessary to support the initial Phase I implementation, the RTA will be a funded, local government entity. Included among the RTA's powers are the power to levy taxes, purchase or condemn property, contract with public and private entities, issue revenue and general obligation bonds, and to create local improvements districts. These powers are necessary in order that the RTA acquire funds necessary to cover the capital and operating and maintenance costs of a regional transit system.

In order to evaluate the financial feasibility and likely consequences of implementing a particular high capacity transportation system, financial analysis and planning have been a key consideration throughout the system planning process. Generally, the approach and purpose of financial planning was to analyze alternative methods for achieving feasibility and equity in the implementation of those system plans under

study. Included in the ongoing analysis were: preliminary estimates of system capital and operations and maintenance (O&M) costs; evaluation of potential funding sources; financial equity considerations; and a recommended financial plan for Phase I implementation, adopted by the RTA Board. The efforts and results of the adopted financial plan for Phase I are summarized in Chapter 4 of The Regional Transit System Master Plan.

The discussion that follows provides general background to the financial planning conducted throughout the system planning process. This includes a review of the RTA's financial capacity, an evaluation of the local tax options available to the RTA through its enabling legislation, and the financing methods to be considered when capital costs alone will exceed annual revenue sources during the Phase I system plan. A full description of the specific assumptions used to develop the Phase I financial plan follows in Section III.

A. FINANCIAL CAPACITY

In order to evaluate the financial feasibility for any given capital investment, the overall financial capacity available to the entity must be understood. In this case, financial capacity refers to the current financial conditions of the Central Puget Sound Region, as represented by the Regional Transit Authority, and its capability to meet future financial obligations including capital investments and system operating and maintenance costs. The process for evaluating financial capacity requires the identification of potential funding sources and financing methods.

A third component important to the understanding of financial capacity is the development of a cash flow model for financial analysis. Once the boundaries of financial capacity have been specified, the proposed investment plan can be analyzed for financial feasibility using the cash flow model. The cash flow model incorporates several economic and financial assumptions. As a part of the cash flow model specification, the following sections identify and describe the analysis that provided the necessary inputs into the model, including potential funding sources and financing methods. The cash flow model itself is presented and discussed in Section IV.

B. FUNDING SOURCES: EVALUATION OF LOCAL TAX OPTIONS

Revenue sources for funding high capacity transportation systems generally fall into one of the following categories:

- Operating (farebox) revenues;
- Capital grants; and

- Local taxes and fees.

State law requires the RTA to seek project funding from multiple sources and to include federal, state, local and private sector assistance. The financing of the Phase I system plan is based on specific assumptions developed for each of these source categories, the most significant of which is the local tax contribution. The following discussion addresses the local taxing authority granted to the RTA through its enabling legislation, and the evaluation of local tax options for implementing the regional transit plan.

1. LOCAL TAXING AUTHORITY

The RTA's enabling legislation provides for three dedicated funding sources to be submitted to the voters within its jurisdiction to fund a high capacity transportation system.

- **Employer tax**. If approved by the voters, the RTA may impose an excise tax of up to two dollars per month per employee on all employers located within the agency's jurisdiction, measured by the number of full-time equivalent employees.

- **Motor vehicle excise tax.** With voter approval, the RTA may levy and collect an excise tax, at a rate not to exceed eight-tenths of one percent (0.8 percent) on the value of every motor vehicle owned by a resident of the taxing district. The RTA's taxing authority extends to retail car rentals.

- **Sales tax.** The RTA has the authority, with voter approval, to fix and impose a sales tax upon the occurrence of any taxable event within the RTA's boundaries. The maximum rate for the sales tax is not to exceed nine-tenths of one percent (0.9 percent).

2. EVALUATION OF LOCAL TAX OPTIONS

In addition to the three funding sources identified above, the RTA evaluated other funding sources. In this evaluation, the RTA considered the degree to which those sources satisfied the following criteria:

- Acceptability, as measured through voter surveys and voter focus group results;

- Ease of administration, as measured by the existence of collection mechanism, and the overall cost of collection;

- Equity, as measured by the percent of household income paid by income strata;

- Implementation feasibility, as measured by type of approval required, and the time required to implement;

- Revenue reliability; as measured by exposure to legislative modifications, frequency of payments, and predictability; and

- Revenue yield, as measured by the ratio of present value revenues to present value construction costs.

Table 2.1, next page, lists the local taxes considered during the first step of this evaluation.

Table 2.1 Local Taxes Considered

Type of Tax	Maximum Rate	Enabling Legislation	Authorized Uses	Levied By:
Sales tax	0.9%	HB1825 (1990) HB2151 (1991)	Capital and operating components of the High Capacity Transit (HCT) System Plan	Transit agencies
Motor Vehicle Excise Tax (MVET)	0.8%	Same as for sales tax	Same as for sales tax	Transit agencies
Employer tax	$2 per employee per month	Same as for sales tax	Same as for sales tax	Transit agencies
Local Option gas tax	10% of State Gas Tax	SB6358 (1990)	Highway purposes	Counties
Parking tax	None specified	SB6358 (1990)	Transportation purposes	Cities and counties
Property tax	None specified	RCW 35.58.450 RCW 84.52.056	Capital purposes	Metro
Gasoline sales tax	Assume transit plus HCT sales tax total (1.5%)	Not authorized	Not authorized	Not authorized
Tax increment financing	Not applicable	Not authorized	Not authorized	Not authorized

Table 2.2, below, highlights the RTA's key considerations for each local tax source. These considerations led to the RTA's decision to retain sales tax and motor vehicle excise tax as the primary taxing sources for the Phase I financing plan, which is consistent with the RTA's existing legislative authority. In addition, the Master Plan states that the RTA will pursue funding for the Master Plan from all other revenue sources that may be authorized in the future by the state legislature, including a tax on motor vehicle fuel, noted as "local option gas tax" in Table 2.2.

Table 2.2 Evaluation of Local Tax Options

Tax Source	Disposition	Key Considerations
Sales tax	Retain	• Must be included - no other tax source or combination of sources generates sufficient revenue • Widely accepted in capital markets as security for bonds • Distributes tax burden among broadest base of households, businesses, government and visitors
Motor Vehicle Excise Tax	Retain	• Can be combined with sales tax to partially mitigate regressivity • Best revenue yield and greatest reliability of non-sales tax options • May influence mode shift toward transit due to impact on auto ownership cost
Employer Tax	Discard	• Low yield relative to other options • High administrative costs • Employers bear greater dollar value of tax burden via sales tax
Local Option Gas Tax	Retain	• Apparent voter acceptability • Not currently authorized by the legislature
Parking Tax	Discard	• Revenue likely to be low and difficult to predict • Potentially high administrative cost • Difficult to implement
Property Tax	Discard	• Most regressive of all tax options • Lowest acceptability • Limited flexibility - restricted to capital programs
Sales Tax on Gasoline	Discard	• Low revenue yield, assuming existing revenue distribution • Requires State legislative approval • Local option gasoline tax is a better choice
Tax Increment Financing	Discard	• Requires constitutional change which has failed on prior occasions • Produces unreliable revenue stream of unknown yield • Has same regressive characteristics as the property tax

C. FINANCING METHODS

The following section provides a general discussion on financing methods, to be considered when capital costs alone will exceed annual revenue sources during design and construction of the Phase I system plan. The RTA Board did adopt, as part of the Master Plan, a goal of limiting total long term debt over the Phase I time frame to $800 million (1995 dollars).

1. DEBT FINANCING

A common method of financing a capital program is to borrow money to cover project implementation costs as they are incurred. Debt financing is a method that can be used either in conjunction with or as an alternative to cash financing. Short-term borrowing may be used to cover relatively brief cash flow deficits, which result from differences in the timing of the receipt of revenues and expenditures outlays. Short-term borrowing of this type can involve relatively high interest costs, and it may therefore be desirable to limit the use of short-term debt to bridge gaps between receipts and expenditures. Common forms of short-term debt include revolving loan accounts and commercial paper. The RTA does expect to set up a short-term debt program to manage those gaps that may result from federal and state grant cycles. However, the use of such a program was not assumed in the preparation of the Phase I financing plan.

When longer term financing is required, long-term debt is generally issued in the form of municipal bond financing. Municipal bond issues are appropriate when the planned phasing of project implementation causes significant long-term gaps between revenue generation and the concentrated period in which capital funds are expended. Municipal bonds are a tradable form of debt, which are generally issued at a fixed term in years. Interest payments on municipal bonds are lower, in relative terms, than the interest costs of securing on-demand, short-term debt. However, access to the bond market is more restricted and involves larger amounts and additional setup costs than access to short-term debt, in addition to requiring the security backing of a stable, dedicated revenue source.

A central rule to debt financing is to not issue the debt for a maturity longer than the useful life of the capital project or program it is financing. If the debt period, say, thirty years, exceeds the useful life of the project, the true annual cost of the project has been understated and taxpayers will continue to pay for the project after its useful life. Conversely, if the useful life of the project exceeds the life of the debt, the annual cost will have been overstated, and citizens will receive benefits during time when they will not have made tax contributions. Additionally, debt financing can ensure equity among different generations of users, through the inter-generational sharing of financing costs.

2. RTA's BONDING AUTHORITY AND LIMITATIONS

Washington State law enables the RTA to contract indebtedness for RTA purposes, through the issuance of general obligation bonds, revenue bonds, and special assessment bonds. Municipal bonds must be issued and sold in accordance with Washington State law (Chapter 39.46 RCW). The RTA has as its bonding capacity the ability to issue without voter approval up to one and one-half percent of the value of the taxable property within the authority's boundary, and, with voter approval, up to five percent of the value of the taxable property within the boundary. The RTA's non-voted bond capacity of 1.5 percent of assessed property value is estimated at $2.27 billion in 1995 dollars.

In addition, RCW 81.112.150 allows the RTA to form a local improvement district to provide any transportation improvements it has the authority to provide. To support this authority, the RTA can impose special assessments on all property specially benefited by the transportation improvements, and issue special assessment bonds or revenue bonds to fund the costs of the transportation improvements.

3. CASH FINANCING

The least complex method of financing a capital investment is to pay as facilities are acquired, not as they are used. Under this method of financing, working capital or cash on hand from current year operating surpluses is used to pay the costs of implementing the improvements as they are incurred. This financing method is most commonly used when substantial unencumbered cash reserves exist, bond authority does not exist, or the current amount of financial leverage or indebtedness is excessive. The advantage of cash financing is that it avoids the interest costs associated with debt financing.

One disadvantage of cash financing is the difficulty most municipalities have finding stable sources of cash that will consistently cover the ongoing costs of investment. This difficulty can discourage construction or completion of construction, even when the project is sound and financially feasible over the longer term. A second disadvantage is that the potential users or recipients of the benefits from the project would pay only during the time of construction, and, due to population mobility, may not benefit from the actual service.

4. LEASE FINANCING

Leasing involves the use of assets or resources in return for specified rental payments to the owner of the assets or resources. Leasing can allow the lessee to avoid the up-front costs of ownership of an asset, or it may allow the lessee

to delay the purchase of certain assets until cash or debt financing of the asset becomes more feasible. At the end of the lease term, the rights to the use of the asset revert to the owner, which may be a disadvantage under some circumstances. Because leasing is a financing method that finances the use of assets but not the ownership of assets, leasing may have an impact on overall project financing that is different from both the cash and debt financing methods. The effect of leasing certain components of the Phase I system plan on project cash flow and net present value will be conducted in future annual financing plan updates, should such leasing opportunities become available.

D. SUMMARY

This section has provided general background on the financial planning conducted during the system planning process. This includes a review of the RTA's financial capacity, the evaluation of the local tax options leading to the RTA's decision to seek voter approval for sales tax and MVET as the local funding sources for Phase I implementation, and a discussion of debt financing. The specific assumptions developed for and adopted by the RTA Board for the Phase I financial plan are described in the following section.

III. REVENUE ASSUMPTIONS

A. REVENUE ASSUMPTIONS

The specific assumptions used to develop the Phase I financial plan are discussed in this section. Phase I funds are assumed to be derived from seven sources, as shown in table 3.1 below. The RTA is requesting state grants equal to 20 percent of Phase I rail construction costs. The assumption for federal funding is based on past and current federal appropriations for similar projects around the country. While no short-term financing was analyzed in the cash flow model, it is anticipated that short-term financing could be used to meet short-term cash needs. The RTA expects to develop a short-term financing program to manage cash flow gaps likely to result from state and federal grant cycles.

Table 3.1

Revenue Source	Assumption
Sales tax of 0.4 percent collected within the RTA boundary. 1993 estimated taxable retail sales in RTA boundary: $30.783 billion	Average annual real growth above inflation (A four percent inflation rate is assumed) Sales Tax 1993-1995: 2.5% 1995-1999: 2.4% 2000-2009: 2.0% 2010-2020: 1.6% Average, 1993-2020: 1.9%
Motor Vehicle Excise Tax of 0.3 percent collected within the RTA boundary 1993 estimated motor vehicle values in RTA district: $11.705 billion	MVET annual real growth rate in excess of sales tax: +0.4 percent. Average, 1993-2020: 2.3%
Federal and State Grants	42 percent of rail construction costs Average annual funding amount 1995-2010 (1995$): $125 million/year
Public/private partnerships	5 percent of rail capital costs (funding starts in year 2005)

Table 3.1 Continued

Revenue Source	Assumption
Debt Financing	Long term bonds issued in years and amounts needed for rail construction with limit on total outstanding bond value of 1.5 per cent of assessed property value within the RTA boundary. Current estimated statuary limit is $2.27 billion; average growth in assessed value assumed to be 4 percent annually. Debt service coverage constraint: 1.3x The RTA board set a goal of limiting total long term bonding over the Phase I time frame to $800 million (1995 dollars).
Interest Earnings	Earnings on available balances at average rate of 5.5 percent.
Farebox revenues	Farebox recovery of 40 percent for both commuter rail and light rail operating costs. A farebox recovery of 20 percent for the regional bus service.

B. DISCUSSION OF REVENUE ASSUMPTIONS

1. LOCAL OPTION SALES TAX

Revenue from a local option sales tax is one of the primary sources of funding projected for the RTA Phase I program. The base information used for projecting RTA sales tax revenues is from the 1993 State Department of Revenue's reported taxable retail sales for Snohomish, King and Pierce Counties. Because the RTA boundary does not include the full three county area, an estimate of each counties' sales tax base within the RTA district was calculated. Sales tax is collected by location of the sale, thus the portion of estimated retail employees within the boundary for each of the three counties was used to determine the RTA sales tax base. According to Puget Sound Regional Council (PSRC) 1990 retail employee estimates, 92 percent of the three counties' retail employees are within the RTA boundary. Thus, 92 percent of the total taxable retail sales for the three counties is assumed for the RTA sales tax base. The cash flow model calculates RTA annual local sales tax revenues by applying the 0.4 percent tax increase to the taxable retail sales base number shown in the table above.

The cash flow model (see Section IV) uses the assumptions regarding sales tax revenue growth rates described in the above table. These assumptions were drawn by examining the history of sales tax revenue growth in King County since 1981. Between 1981 and 1992, King County sales tax receipts grew at an average real growth rate of four percent in excess of inflation. Although the Gulf War and subsequent recession caused the real sales tax revenue growth rate to dip below zero in recent years, a return to the long run trend in positive real growth is expected.

The projections of sales tax growth used in the cash flow are consistent with the economic forecasts for the Puget Sound region from 1990 through 2020 discussed in a report titled *Preliminary Tax Base Projections*, May 1994 prepared for the PSRC as part of the Metropolitan Transportation Plan. Dick Conway & Associates prepared those tax base projections under subcontract to Porter & Associates, Inc.

2. LOCAL OPTION MOTOR VEHICLE EXCISE TAX

Estimated RTA revenues from the Motor Vehicle Excise Tax (MVET) are based on the 1993 motor vehicle valuation for the three counties as reported by the State Department of Licensing. Because this tax is collected by the residential address of vehicle owners, the proportion of the three counties' population living within the RTA boundary was used to estimate RTA revenues. According to the 1990 census 84.5 percent of the three counties population live within the RTA boundary.

MVET revenue is assumed to grow at a rate 0.4 percent per year higher than sales tax revenue, or an average nominal growth rate of 6.4 percent (a real rate of 2.3 percent after inflation). The higher growth rates were projected based upon a higher historical real growth rate that averaged 5.3 percent in excess of inflation from 1981 to 1992. These projections are consistent with the report cited above.

3. FEDERAL FUNDING

Project funding from combined federal and state funding sources is assumed to be $125 million per year. Since the duration of Phase I is beyond the current federal authorization period, the level of federal support is, and will remain, an unknown for the near-term. Therefore, the levels of support that can be anticipated is a matter of judgment, and the assumptions used here are based on a review of the federal funding history for transit new start projects. What follows is a brief discussion of federal funding history and a description of funding levels available from the Intermodal Surface Transportation Efficiency Act (ISTEA).

History: Federal funding for transit new starts had significant increases beginning in 1970 with passage of amendments to the Urban Mass Transportation Act of 1964. Between 1970 and 1993, the Section 3 New Start category allocated $7.2 billion to fund projects in 31 cities. Congress played a central role in the year-by-year allocation of these funds and during this time congressional support allowed projects to go forward despite opposition from the Urban Mass Transit Authority. No project that began receiving construction funding has ever been cut short before completion. Funding was also available from 1974-1983 from the Interstate Transfer Program, which gave governors and mayors an option to substitute transit projects for segments of interstate highway slated for construction. Some major transit systems, including Washington D.C. Metro and Portland MAX systems, were constructed with all or most of their federal funds from this source, using federal funds exceeding $5 billion.

ISTEA, passed by Congress in 1991, provides massive increases in federal funding for highways and transit over the current six years (1991-1997), and provides flexibility in how funds are used. Title I of the Act provides $121 billion for highway programs with the flexibility to transfer substantial amounts to transit uses. Title III provides $31.5 billion for mass transit. The Section 3 New Starts funding within Title III is the primary source that will be sought for this project. Within this category, ISTEA authorized $5.94 billion in funding for 62 projects in 37 cities. The largest allocations went to eight locations, which collectively received more than $4 billion.

These locations are:

Los Angeles:	$799 million
New Jersey:	$681 million
Honolulu:	$618 million
Portland:	$515 million
Houston:	$500 million
Atlanta:	$329 million
Seattle:	$325 million
New York	$306 million

Within the New Starts account, projects are categorized based on five stages of development: under construction; final design; preliminary engineering; alternatives analysis; and system planning and other. The RTA system is currently in the "system planning and other" category. Since the authorization for the project set forth in ISTEA is a placeholder, an appropriation of the funds is necessary for federal funds to flow to the project.

While the Section 3 New Starts account is expected to be the primary source of federal funds, there are also substantial funds potentially available from Title I of ISTEA. The largest categories in Title I that may be made available are:

- $21 billion from the National Highway System. One hundred percent of these funds can be transferred to transit projects with federal Department of Transportation approval, fifty percent without approval.

- $24 billion from Surface Transportation Program. Funds in this account can be used for any transit or highway project.

- $6 billion from Congestion Mitigation and Air Quality Improvement Program. Funds are available from Clean Air Act non-attainment areas to fund surface transportation programs that improve air quality. These funds cannot be used for highway capacity unless the project involves an HOV facility.

4. STATE GRANTS

The Washington State Department of Transportation and State Transportation Commission indicate that the state will be a significant funding partner for building high capacity transit systems, a somewhat new role, given that the state historically has not participated significantly in funding public transportation. However, state officials hold the position that the funding of high capacity transit improvements instead of increased highway capacity will result in more cost-effective solutions for congested, highly populated areas.

Because the funding will most likely come from a new state taxing source, the RTA adopted the assumption that state funding would equal 20 percent of the rail capital costs.

5. PUBLIC/PRIVATE PARTNERSHIPS

Private sector funding from all sources is assumed to total five percent of Phase I capital costs. This assumption is based upon experience elsewhere, as outlined in Table 3.2, and does not yet include specific plans for obtaining these funds. In addition, the timing of private sector investment is delayed until 2005 to account for the likelihood that such monies will not begin to be available until the first rail segments become operational. One likely candidate for private participation in the project that is not listed in Table 3.2 is the use of cross-border leasing for rail cars. This option involves a sale-leaseback transaction in which private, foreign owners receive tax benefits that are shared with the user of the cars. The five percent assumption for private sector funding is somewhat aggressive.

Table 3.2 Public/Private Financing Options

Financing Option	Mechanism	Used In	Likelihood of Local Success
Cost Sharing/ Joint Development	Developers contribute to cost of station area development in exchange for air or ground development rights at station areas.	Baltimore Washington D.C. New York Atlanta	Medium/High
Transfer/ Lease of Development Rights	Transfer of station area development rights to other parcels or sale of air or ground development rights.	New York Washington D.C. Denver	Medium
Benefit Sharing/ Connector Fees	Fees for providing direct links to transit stations.	Washington D.C.	Low
Development Impact Fees	Establish traffic/transportation impacts of development, charge for the cost of mitigation on a per square foot or floor area ratio basis.	San Francisco	Very Low
Special Benefit Assessments	Part of the cost of specific improvements is assessed as a tax on property owners whom it will benefit.	Los Angeles Miami Portland	Medium
Tax Increment Financing	Increases in property tax revenues within a benefit area are dedicated to financing improvements in the area.	San Francisco	Very Low
Negotiated Transportation Agreements	Contributions to transportation improvements are negotiated with developers.	Los Angeles	Medium
Developer Incentives	Zoning bonuses, parking reductions, etc. granted in exchange for developer contributions.	Portland Bellevue Dallas Sacramento	Low
Voluntary Private Initiatives	Developers raise capital to pay for desired improvements,	Sacramento Houston Denver	Very Low

6. LONG-TERM BONDS

The sale of tax-exempt municipal bonds is assumed for any year in which expenditures exceed revenues. Issuance of debt is constrained by two factors: an assumed coverage ratio of 1.3x (calculated by dividing the pledged fund source by the annual debt service); or, the annual debt service may not exceed 77 percent of the dedicated local revenue source. In addition, a statutory limit on the amount of bonds outstanding is described in the Table 1. The RTA board also established a policy for the Phase I Financing Plan which limits outstanding long-term bonds to $800 million (1995 dollars).

An interest rate of 8.25 percent is assumed for municipal bonds which would carry a 40 year term with interest only payments for the first eight years and principal and interest for the remaining 32 years. In addition, it is assumed that the sale of bonds would occur mid-year and generate proceeds net of a 2.0 percent discount in financing fees and one-half year's interest payment to be held in reserve.

In general, tax-exempt municipal bonds should pay less interest than taxable bonds with the same term and rating as a trade-off for their tax advantages. All else equal, a longer bond term of 40 years involves more risk, when compared to 20 year or 30 year notes, and thus commands a higher interest rate. A bond rating by a rating firm such as Moody's also affects interest rates, with a higher rating indicating less risk and, thus, a lower interest rate. The more stable the revenue source pledged to repayment and the higher the coverage constraint, the lower the interest rate.

7. CASH BALANCE INTEREST EARNING RATE

Interest income generated from cash balances and reserve funds is assumed to accrue at an annual rate of 5.5 percent, or 1.5 percent real earnings in excess of inflation.

8. FAREBOX RETURNS

Based on a survey of similar rail systems in the United States, a reasonable farebox recovery ratio is 40 percent for both commuter rail and the light rail system. By comparing the rail ridership forecasts to the operating costs of the full system as described in the Rail Fare Revenue section of this report, the estimated farebox returns on the light rail operating costs were calculated to be slightly higher than 40 percent and the returns on the commuter rail operating costs were slightly lower than 40 percent, with a weighted average of approximately 40 percent. Farebox returns can also be expressed as an operating revenue to operating expense ratio of 2/5.

The farebox recovery ratio for the RTA regional bus routes is assumed to be 20 percent. This is based on the average farebox recovery ratio of the local transit agencies. This can also be expressed as an operating revenue to operating expense ratio of 1/5.

IV. PHASE I CASH FLOW ANALYSIS

A. DISCUSSION AND MODEL

To develop the Phase I Financing Plan, a cash flow model was used to show how the elements of the plan could be implemented over time and how the sources and uses of funds would be affected by various assumptions. This section includes a printout of the cash flow analysis spreadsheet. Several details of the cash flow analysis should be explained to better understand the connection between the Phase I Financing Plan chapter of the Master Plan and the cash flow model.

To analyze the financial feasibility of the project over time, the cash flow has been modeled in inflated dollars. An annual inflation rate of four percent was used for all revenues, and capital and operating costs.

For purposes of financial analysis, the Transit Development Fund is considered to be funds allocated for capital improvements. Thus, this expenditure is included in the light rail and commuter rail capital costs. $490 million of the Fund are included in the light rail capital costs spread out over the Phase I time-frame, and $100 million are included in the commuter rail capital costs in the final two years of Phase I.

The costs of the regional bus routes and the fare integration program are combined and shown in the spreadsheet under operating costs as RTA bus operation and fare integration disbursements. The Phase I total regional bus costs of $275 million include the purchase of vehicles as well as the operating subsidy for the eight routes. The fare integration funding is assumed to gradually increase beginning with the opening of commuter rail and reaching its maximum of $15 million per year in year 2011, and continuing at that rate. The operating subsidy for the regional bus routes is estimated at $17 million per year, assuming a cost of $21 million per year and a farebox return of $4 million per year.

In Tables 1 and 2 of the Master Plan, the debt service costs during Phase I include loan financing and discount fees.

The cost of operating the I-405 corridor transit improvement project is shown in the commuter rail operating costs beginning in year 2011. The Phase I Financing Plan cash flow analysis allocated $6 million per year for the operations of this project beginning in year 2011.

REGIONAL TRANSIT SYSTEM FINANCIAL ANALYSIS CASHFLOW MODEL

Phase I System Plan

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ANNUAL CASHFLOW SUMMARY • INFLATED $K											
CASHFLOW ANALYSIS											
BEGINNING FUND BALANCE	0	262,216	399,056	417,220	413,546	376,228	340,909	280,682	163,749	13,567	(533)
REVENUES:											
TAXES	175,198	186,741	199,045	212,160	226,139	240,805	256,173	272,255	289,065	306,914	325,865
FEDERAL FUNDS	70,000	72,800	75,712	78,740	81,890	85,166	88,572	92,115	95,800	99,632	103,617
STATE GRANTS & PRIVATE INVESTMENT	55,000	57,200	59,488	61,868	64,342	66,916	69,593	72,376	75,271	78,282	108,096
INTEREST EARNINGS	7,018	17,698	21,919	22,465	21,617	19,621	17,065	12,252	5,202	1,024	1,199
OPERATIONS	0	0	0	6,749	9,359	12,653	13,159	24,213	36,130	37,575	50,920
TOTAL REVENUES	307,216	334,439	356,164	381,982	403,347	425,161	444,562	473,212	501,468	523,428	589,698
NET BOND PROCEEDS	0	0	0	0	0	0	0	0	0	125,543	152,400
TOTAL AVAILABLE FUNDS	307,216	596,656	755,220	799,201	816,894	801,389	785,471	753,893	665,217	662,538	741,565
EXPENDITURES:											
OPERATIONS	0	0	10,816	50,619	58,493	55,966	60,735	89,483	123,171	128,098	165,787
CAPITAL	45,000	197,600	324,480	325,086	380,204	405,145	442,862	493,474	520,056	533,742	555,092
DEBT SERVICE	0	0	0	0	0	0	0	0	0	0	11,530
TOTAL EXPENDITURES	45,000	197,600	335,296	375,705	438,697	461,111	503,597	582,958	643,227	661,840	732,409
CONTRIBUTION TO OPERATING RESERVES	0	0	2,704	9,951	1,969	(632)	1,192	7,187	8,422	1,232	9,422
CONTRIBUTION TO FUND BALANCE (GENERAL RESERVES)	262,216	136,839	18,164	(3,674)	(37,318)	(35,319)	(60,227)	(116,933)	(150,181)	(14,101)	267
ENDING FUND BALANCE	262,216	399,056	417,220	413,546	376,228	340,909	280,682	163,749	13,567	(533)	(266)
CASH FLOW BEFORE FINANCING	262,216	136,839	18,164	(3,674)	(37,318)	(35,319)	(60,227)	(116,933)	(150,181)	(139,644)	(140,603)
CONTRIBUTION TO DEBT SERVICE RESERVES	0	0	0	0	0	0	0	0	0	5,765	6,998
ENDING OPERATING RESERVE BALANCE	0	0	2,704	12,655	14,623	13,992	15,184	22,371	30,793	32,025	41,447
ENDING DEBT SERVICE RESERVE BALANCE	0	0	0	0	0	0	0	0	0	5,765	12,763
INFLATION ADJUSTMENT FACTORS											
CAPITAL INFLATION FACTORS (BASE YEAR IS 1995)	1.000	1.040	1.082	1.125	1.170	1.217	1.265	1.316	1.369	1.423	1.480
GENERAL INFLATION FACTORS (BASE YEAR IS 1995)	1.000	1.040	1.082	1.125	1.170	1.217	1.265	1.316	1.369	1.423	1.480

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2005 TOTAL	2020 TOTAL
ANNUAL CASHFLOW SUMMARY • INFLATED $K (Cont.)																
(266)	448	634	1,348	1,693	3,063	195,287	423,044	696,543	1,023,499	1,393,657	1,810,714	2,278,938	2,801,927	3,384,571		
				51075.7016	63669.656											
345,649	366,276	387,753	410,491	434,564	460,049	487,030	515,596	545,838	577,288	610,552	645,734	682,945	722,303	763,931	$2,690,361 K	$10,646,359 K
107,762	112,072	116,555	121,217	126,066	0	0	0	0	0	0	0	0	0	0	$944,045 K	$1,527,717 K
112,420	116,916	121,593	126,457	131,515	136,776	142,247	147,937	153,854	160,008	166,409	173,065	179,987	187,187	194,674	$768,432 K	$3,019,477 K
2,217	2,748	3,806	4,543	6,309	12,830	24,467	37,970	54,137	72,886	94,057	117,856	144,520	174,252	207,322	$147,080 K	$1,107,000 K
52,957	67,884	70,599	87,276	90,768	113,877	118,432	123,170	128,096	133,220	138,549	144,091	149,855	155,849	162,083	$190,760 K	$1,927,466 K
621,005	665,896	700,307	749,984	789,221	723,532	772,176	824,672	881,925	943,402	1,009,566	1,080,745	1,157,308	1,239,591	1,328,011	$4,740,677 K	$18,228,019 K
118,121	156,094	159,158	290,256	296,903	0	0	0	0	0	0	0	0	0	0	$277,944 K	$1,298,476 K
738,860	822,438	860,099	1,041,588	1,087,818	726,595	967,463	1,247,716	1,578,469	1,966,900	2,403,223	2,891,459	3,436,246	4,041,518	4,712,582	$7,685,260 K	$36,208,233 K
172,419	214,538	223,120	270,142	280,947	344,629	358,414	372,750	387,660	403,167	419,293	436,065	453,508	471,648	490,514	$743,169 K	$6,041,982 K
538,809	560,361	582,776	692,671	709,122	51,507	63,307	54,596	42,137	43,822	45,575	47,398	49,294	51,266	53,317	$4,222,741 K	$7,808,699 K
25,526	36,375	50,710	65,327	91,984	119,252	119,252	120,243	121,445	122,377	123,609	124,865	127,156	129,498	129,498	$11,530 K	$1,518,650 K
736,754	811,274	856,606	1,028,139	1,082,053	515,388	540,973	547,589	551,243	569,367	588,478	608,329	629,958	652,413	673,329	$4,977,440 K	$15,369,331 K
1,658	10,530	2,145	11,755	2,701	15,920	3,446	3,584	3,728	3,877	4,032	4,193	4,361	4,535	4,716	$41,447 K	$122,628 K
714	186	714	345	1,370	192,224	227,757	273,499	326,955	370,159	417,056	468,224	522,990	582,643	649,965	($266 K)	$4,034,536 K
448	634	1,348	1,693	3,063	195,287	423,044	696,543	1,023,499	1,393,657	1,810,714	2,278,938	2,801,927	3,384,571	4,034,536		
		429														
(91,881)	(119,533)	(107,734)	(224,583)	(203,549)	311,476	347,009	393,742	448,400	492,536	540,666	593,089	650,145	712,142	779,464		
5,424	7,168	7,309	13,329	13,634	0	0	0	0	0	0	0	0	0	0	$12,763 K	$59,626 K
43,105	53,635	55,780	67,535	70,237	86,157	89,603	93,188	96,915	100,792	104,823	109,016	113,377	117,912	122,628		
18,187	25,355	32,664	45,992	59,626	59,626	59,626	59,626	59,626	59,626	59,626	59,626	59,626	59,626	59,626		
INFLATION ADJUSTMENT FACTORS (Cont.)																
1.539	1.601	1.665	1.732	1.801	1.873	1.948	2.026	2.107	2.191	2.279	2.370	2.465	2.563	2.666		
1.539	1.601	1.665	1.732	1.801	1.873	1.948	2.026	2.107	2.191	2.279	2.370	2.465	2.563	2.666		

REGIONAL TRANSIT SYSTEM FINANCIAL ANALYSIS CASHFLOW MODEL

Phase I System Plan

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ANNUAL CAPITAL & OPERATION EXPENDITURES • CONSTANT 1995 $K											
CAPITAL CONSTRUCTION (1995 $K)											
Rapid Rail (Including Vehicles)	10,000	40,000	50,000	150,000	325,000	333,000	350,000	375,000	380,000	375,000	375,000
Rapid Rail Capital Replacement	0	0	0	0	0	0	0	0	0	0	0
Commuter Rail (Including Vehicles)	35,000	150,000	250,000	139,000	0	0	0	0	0	0	0
Commuter Rail Capital Replacement	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL RAIL	45,000	190,000	300,000	289,000	325,000	333,000	350,000	375,000	380,000	375,000	375,000
TOTAL CAPITAL CONSTRUCTION (1995 $K)	$45,000	$190,000	$300,000	$289,000	$325,000	$333,000	$350,000	$375,000	$380,000	$375,000	$375,000
OPERATIONS & MAINTENANCE (1995 $K)											
Gross Rapid Rail O&M Costs	0	0	0	0	0	0	0	20,000	40,000	40,000	60,000
Gross Commuter Rail O&M Costs	0	0	0	15,000	20,000	26,000	26,000	26,000	26,000	26,000	26,000
RTA Bus Operation and Fare Integration Disbursements	0	0	10,000	30,000	30,000	20,000	22,000	22,000	24,000	24,000	26,000
TOTAL OPERATIONS (1995 $K)	$0	$0	$10,000	$45,000	$50,000	$46,000	$48,000	$68,000	$90,000	$90,000	$112,000
TOTAL CAPITAL CONSTRUCTION & OPERATIONS (1995 $K)	$45,000	$190,000	$310,000	$334,000	$375,000	$379,000	$398,000	$443,000	$470,000	$465,000	$487,000
ANNUAL CAPITAL & OPERATION EXPENDITURES • INFLATED $K											
CAPITAL CONSTRUCTION (INFLATED $K)											
Rapid Rail (Including Vehicles)	10,000	41,600	54,080	168,730	380,204	405,145	442,862	493,474	520,056	533,742	555,092
Rapid Rail Capital Replacement	0	0	0	0	0	0	0	0	0	0	0
Commuter Rail (Including Vehicles)	35,000	156,000	270,400	156,356	0	0	0	0	0	0	0
Commuter Rail Capital Replacement	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL RAIL	45,000	197,600	324,480	325,086	380,204	405,145	442,862	493,474	520,056	533,742	555,092
Bases	0	0	0	0	0	0	0	0	0	0	0
Other TSM	0	0	0	0	0	0	0	0	0	0	0
TOTAL CAPITAL CONSTRUCTION	45,000	197,600	324,480	325,086	380,204	405,145	442,862	493,474	520,056	533,742	555,092
OPERATIONS (INFLATED $K)											
Gross Rapid Rail O&M Costs	0	0	0	0	0	0	0	26,319	54,743	56,932	88,815
Gross Commuter Rail O&M Costs	0	0	0	16,873	23,397	31,633	32,898	34,214	35,583	37,006	38,486
RTA Bus Operation and Fare Integration Disbursements	0	0	10,816	33,746	35,096	24,333	27,837	28,950	32,846	34,159	38,486
TOTAL OPERATIONS	0	0	10,816	50,619	58,493	55,966	60,735	89,483	123,171	128,098	165,787
GRAND TOTAL CONSTRUCTION & OPERATIONS (INFLATED $K)	45,000	197,600	335,296	375,705	438,697	461,111	503,597	582,958	643,227	661,840	720,879

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2005 TOTAL	2020 TOTAL
ANNUAL CAPITAL & OPERATION EXPENDITURES • CONSTANT 1995 $K (Cont.)																
350,000	350,000	350,000	350,000	342,000	0	0	0	0	0	0	0	0	0	0	$2,763,000 K	$4,505,000 K
0	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	$0 K	$200,000 K
0	0	0	50,000	50,000	0	0	0	0	0	0	0	0	0	0	$574,000 K	$674,000 K
0	0	0	0	1,750	7,500	12,500	6,950	0	0	0	0	0	0	0	$0 K	$28,700 K
350,000	350,000	350,000	400,000	393,750	27,500	32,500	26,950	20,000	20,000	20,000	20,000	20,000	20,000	20,000	$3,337,000 K	$5,407,700 K
$350,000	$350,000	$350,000	$400,000	$393,750	$27,500	$32,500	$26,950	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$3,337,000 K	$5,407,700 K
60,000	80,000	80,000	100,000	100,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	$160,000 K	$1,780,000 K
26,000	26,000	26,000	26,000	26,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	$191,000 K	$641,000 K
26,000	28,000	28,000	30,000	30,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	$208,000 K	$670,000 K
$112,000	$134,000	$134,000	$156,000	$156,000	$184,000	$184,000	$184,000	$184,000	$184,000	$184,000	$184,000	$184,000	$184,000	$184,000	$559,000 K	$3,091,000 K
$462,000	$484,000	$484,000	$556,000	$549,750	$211,500	$216,500	$210,950	$204,000	$204,000	$204,000	$204,000	$204,000	$204,000	$204,000	$3,896,000 K	$8,498,700 K
ANNUAL CAPITAL & OPERATION EXPENDITURES • INFLATED $K (Cont.)																
538,809	560,361	582,776	606,087	615,923	0	0	0	0	0	0	0	0	0	0	$3,604,985 K	$6,508,940 K
0	0	0	0	0	37,460	38,958	40,516	42,137	43,822	45,575	47,398	49,294	51,266	53,317	$0 K	$449,744 K
0	0	0	86,584	90,047	0	0	0	0	0	0	0	0	0	0	$617,756 K	$794,387 K
0	0	0	0	3,152	14,047	24,349	14,079	0	0	0	0	0	0	0	$0 K	$55,627 K
538,809	560,361	582,776	692,671	709,122	51,507	63,307	54,596	42,137	43,822	45,575	47,398	49,294	51,266	53,317	$4,222,741 K	$7,808,699 K
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0 K	$0 K
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0 K	$0 K
538,809	560,361	582,776	692,671	709,122	51,507	63,307	54,596	42,137	43,822	45,575	47,398	49,294	51,266	53,317	$4,222,741 K	$7,808,699 K
92,367	128,083	133,206	173,168	180,094	224,758	233,748	243,098	252,822	262,935	273,452	284,390	295,766	307,596	319,900	$226,809 K	$3,632,192 K
40,026	41,627	43,292	45,024	46,825	59,935	62,333	64,826	67,419	70,116	72,921	75,837	78,871	82,026	85,307	$250,091 K	$1,186,474 K
40,026	44,829	46,622	51,950	54,028	59,935	62,333	64,826	67,419	70,116	72,921	75,837	78,871	82,026	85,307	$266,270 K	$1,223,316 K
172,419	214,538	223,120	270,142	280,947	344,629	358,414	372,750	387,660	403,167	419,293	436,065	453,508	471,648	490,514	$743,169 K	$6,041,982 K
711,228	774,900	805,896	962,812	990,069	396,136	421,720	427,346	429,797	446,989	464,869	483,463	502,802	522,914	543,831	$4,965,910 K	$13,850,681 K

REGIONAL TRANSIT SYSTEM FINANCIAL ANALYSIS CASHFLOW MODEL

Phase I System Plan

BOND FINANCING & DEBT SERVICE • INFLATED $K

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
CALCULATION OF FINANCING REQUIRED & DEBT SERVICE SCHEDULE	1	2	3	4	5	6	7	8	9	10	11
BOND FINANCING NET PROCEEDS REQUIRED (EXCLUDING INTEREST & FE	0	0	0	0	0	0	0	0	0	125,543	152,400
FINANCING FEES & DISCOUNT	0	0	0	0	0	0	0	0	0	2,795	3,393
DEBT SERVICE RESERVE FUND (1/2 YEAR INTEREST ON BONDS ISSUED)	0	0	0	0	0	0	0	0	0	5,765	6,998
FIRST PERIOD INTEREST	0	0	0	0	0	0	0	0	0	5,653	6,862
TOTAL FINANCING REQUIRED (BONDS ISSUED)	0	0	0	0	0	0	0	0	0	139,756	169,654
DEBT SERVICE SCHEDULE:									*Modified to reflect repayment of principal*		
BONDS ISSUED 1995	0	0	0	0	0	0	0	0	0	0	0
BONDS ISSUED 1996		0	0	0	0	0	0	0	0	0	0
BONDS ISSUED 1997			0	0	0	0	0	0	0	0	0
BONDS ISSUED 1998				0	0	0	0	0	0	0	0
BONDS ISSUED 1999					0	0	0	0	0	0	0
BONDS ISSUED 2000						0	0	0	0	0	0
BONDS ISSUED 2001							0	0	0	0	0
BONDS ISSUED 2002								0	0	0	0
BONDS ISSUED 2003									0	0	0
BONDS ISSUED 2004										0	11,530
BONDS ISSUED 2005											0
BONDS ISSUED 2006											
BONDS ISSUED 2007											
BONDS ISSUED 2008											
BONDS ISSUED 2009											
BONDS ISSUED 2010											
BONDS ISSUED 2011											
BONDS ISSUED 2012											
BONDS ISSUED 2013											
BONDS ISSUED 2014											
BONDS ISSUED 2015											
BONDS ISSUED 2016											
BONDS ISSUED 2017											
BONDS ISSUED 2018											
BONDS ISSUED 2019											
BONDS ISSUED 2020											
TOTAL DEBT SERVICE (1995 $K)	0	0	0	0	0	0	0	0	0	0	7,789
TOTAL DEBT SERVICE (INFLATED $K)	0	0	0	0	0	0	0	0	0	0	11,530
DEBT SERVICE COVERAGE RATIO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.61
CUMULATIVE BONDS ISSUED	0	0	0	0	0	0	0	0	0	139,756	309,410
STATUTORY DEBT LIMIT	2,265,970	2,356,608	2,450,873	2,548,908	2,650,864	2,756,898	2,867,174	2,981,861	3,101,136	3,225,181	3,354,189
REMAINING DEBT CAPACITY	2,265,970	2,356,608	2,450,873	2,548,908	2,650,864	2,756,898	2,867,174	2,981,861	3,101,136	3,085,425	3,044,778

REGIONAL TRANSIT SYSTEM FINANCIAL ANALYSIS CASHFLOW MODEL

Phase I System Plan

BOND FINANCING & DEBT SERVICE • INFLATED $K (Cont.)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2005 TOTAL	2020 TOTAL
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	2005 TOTAL	2020 TOTAL
118,121	156,094	159,158	290,256	296,903	0	0	0	0	0	0	0	0	0	0	$277,944 K	$1,298,476 K
2,630	3,475	3,544	6,462	6,610	0	0	0	0	0	0	0	0	0	0	$6,188 K	$28,910 K
5,424	7,168	7,309	13,329	13,634	0	0	0	0	0	0	0	0	0	0	$12,763 K	$59,626 K
5,319	7,029	7,167	13,070	13,369	0	0	0	0	0	0	0	0	0	0	$12,515 K	$58,468 K
131,494	173,766	177,177	323,116	330,517	0	0	0	0	0	0	0	0	0	0	$309,410 K	$1,445,480 K
after 8 years																
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11,530	11,530	11,530	11,530	11,530	11,530	11,530	12,521	12,521	12,521	12,521	12,521	12,521	12,521	12,521		
13,996	13,996	13,996	13,996	13,996	13,996	13,996	13,996	15,199	15,199	15,199	15,199	15,199	15,199	15,199		
0	10,848	10,848	10,848	10,848	10,848	10,848	10,848	10,848	11,780	11,780	11,780	11,780	11,780	11,780		
	0	14,336	14,336	14,336	14,336	14,336	14,336	14,336	14,336	15,567	15,567	15,567	15,567	15,567		
		0	14,617	14,617	14,617	14,617	14,617	14,617	14,617	14,617	15,873	15,873	15,873	15,873		
			0	26,657	26,657	26,657	26,657	26,657	26,657	26,657	26,657	28,948	28,948	28,948		
				0	27,268	27,268	27,268	27,268	27,268	27,268	27,268	27,268	29,611	29,611		
					0	0	0	0	0	0	0	0	0	0		
						0	0	0	0	0	0	0	0	0		
							0	0	0	0	0	0	0	0		
								0	0	0	0	0	0	0		
									0	0	0	0	0	0		
										0	0	0	0	0		
											0	0	0	0		
												0	0	0		
													0	0		
														0		
16,581	22,719	30,455	37,725	51,076	63,670	61,221	59,355	57,643	55,851	54,244	52,688	51,590	50,520	48,577	$7,789 K	$721,705 K
25,526	36,375	50,710	65,327	91,984	119,252	119,252	120,243	121,445	122,377	123,609	124,865	127,156	129,498	129,498	$11,530 K	$1,518,650 K
10.83	8.06	6.12	5.03	3.78	3.09	3.27	3.43	3.60	3.77	3.95	4.14	4.30	4.46	4.72	(Min.= 22.61)	(Min.= 3.09)
440,904	614,670	791,847	1,114,963	1,445,480	1,445,480	1,445,480	1,445,480	1,445,480	1,445,480	1,445,480	1,445,480	1,445,480	1,445,480	1,445,480		
3,488,356	3,627,890	3,773,006	3,923,926	4,080,883	4,244,119	4,413,883	4,590,439	4,774,056	4,965,018	5,163,619	5,370,164	5,584,971	5,808,369	6,040,704		
3,047,452	3,013,221	2,981,159	2,808,963	2,635,404	2,798,639	2,968,404	3,144,959	3,328,577	3,519,539	3,718,140	3,924,684	4,139,491	4,362,890	4,595,224	(Min.= 2,265,970 K)	(Min.= 2,265,970 K)

REGIONAL TRANSIT SYSTEM FINANCIAL ANALYSIS CASHFLOW MODEL

Phase I System Plan

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ANNUAL REVENUES • INFLATED $K											
REVENUE SOURCES (INFLATED $K)											
LOCAL OPTION SALES TAX	136,315	145,170	154,601	164,644	175,339	186,547	198,277	210,538	223,339	236,918	251,322
LOCAL OPTION MOTOR VEHICLE EXCISE TAX	38,883	41,571	44,444	47,516	50,800	54,259	57,896	61,717	65,727	69,996	74,543
RTA SHARE OF STATE GASOLINE TAX	0	0	0	0	0	0	0	0	0	0	0
FEDERAL FUNDS	70,000	72,800	75,712	78,740	81,890	85,166	88,572	92,115	95,800	99,632	103,617
STATE GRANTS	55,000	57,200	59,488	61,868	64,342	66,916	69,593	72,376	75,271	78,282	81,413
PRIVATE SECTOR INVESTMENT #####	0	0	0	0	0	0	0	0	0	0	26,682
SUBTOTAL TAXES & GRANTS	300,198	316,741	334,245	352,768	372,371	392,887	414,338	436,747	460,136	484,828	537,578
INTEREST EARNINGS	7,018	17,698	21,919	22,465	21,617	19,621	17,065	12,252	5,202	1,024	1,199
RAPID RAIL FAREBOX REVENUES	0	0	0	0	0	0	0	10,527	21,897	22,773	35,526
COMMUTER RAIL FAREBOX REVENUES	0	0	0	6,749	9,359	12,653	13,159	13,686	14,233	14,802	15,395
Additional Sources (Not In Formulas)	7,018	17,698	21,919	29,214	30,976	32,274	30,224	36,465	41,332	38,600	78,802
TOTAL SOURCES BEFORE FINANCING	307,216	334,439	356,164	381,982	403,347	425,161	444,562	473,212	501,468	523,428	589,698
BOND FINANCING–NET PROCEEDS	0	0	0	0	0	0	0	0	0	125,543	152,400
TOTAL SOURCES INCLUDING FINANCING	307,216	334,439	356,164	381,982	403,347	425,161	444,562	473,212	501,468	648,971	742,098
	62755.3327	68352.4009	74483.1733	81201.3533	88566.262	96549.273	105197.127	114559.549	124689.373	135775.47	147912.592
TOTAL SOURCES PLEDGED TO DEBT SERVICE	175,198	186,741	199,045	212,160	226,139	240,805	256,173	272,255	289,065	306,914	325,865
CUMULATIVE FEDERAL FUNDS FOR PERIOD	70,000	142,800	218,512	78,740	160,631	245,796	334,369	426,484	95,800	195,432	299,049
FEDERAL FUNDING ASSUMPTIONS & CALCULATIONS											
FEDERAL FUNDING CALCULATIONS											
RAPID RAIL CAPITAL COST SUBTOTAL INCL. REPL. (1995 $K)	10,000	40,000	50,000	150,000	325,000	333,000	350,000	375,000	380,000	375,000	375,000
COMMUTER RAIL CAPITAL COST SUBTOTAL INCL. REPL. (1995 $K)	35,000	150,000	250,000	139,000	0	0	0	0	0	0	0
TOTAL RAIL CAPITAL COST (1995 $K)	45,000	190,000	300,000	289,000	325,000	333,000	350,000	375,000	380,000	375,000	375,000
RAPID RAIL CAPITAL COST SUBTOTAL INCL. REPL. (INFLATED $K)	10,000	41,600	54,080	168,730	380,204	405,145	442,862	493,474	520,056	533,742	555,092
COMMUTER RAIL CAPITAL COST SUBTOTAL INCL. REPL. (INFLATED $K)	35,000	156,000	270,400	156,356	0	0	0	0	0	0	0
TOTAL RAIL CAPITAL COST (INFLATED $K)	45,000	197,600	324,480	325,086	380,204	405,145	442,862	493,474	520,056	533,742	555,092
A FEDERAL FUNDING SUBJECT TO ANNUAL & TOTAL CONSTRAINTS (1995 $K)	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000
ANNUAL ACCUMULATIONS (1995 $K)	70,000	140,000	210,000	280,000	350,000	420,000	490,000	560,000	630,000	700,000	770,000
FEDERAL FUNDING SUBJECT TO ANNUAL & TOTAL CONSTRAINTS (INFLATED $K)	70,000	72,800	75,712	78,740	81,890	85,166	88,572	92,115	95,800	99,632	103,617
ANNUAL ACCUMULATIONS (INFLATED $K)	70,000	142,800	218,512	297,252	379,143	464,308	552,881	644,996	740,796	840,427	944,045
B FEDERAL FUNDING CONSTRAINED BY APPROPRIATION PERIOD & ANNUAL LIMIT (1993 $K)	45,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000
APPROPRIATION PERIOD ACCUMULATIONS (1995 $K)	45,000	115,000	185,000	70,000	140,000	210,000	280,000	350,000	70,000	140,000	210,000
APPROPRIATION PERIOD TOTALS (1995 $K)			364,107					432,447			
APPROPRIATION PERIOD SHORTAGE (SURPLUS) (1995 $K)			(179,107)					(82,447)			
FEDERAL FUNDING CONSTRAINED BY APPROP. PERIOD & ANNUAL LIMIT (INFLATED $K)	45,000	72,800	75,712	78,740	81,890	85,166	88,572	92,115	95,800	99,632	103,617
CONSTRAINED FEDERAL FUNDING FOR RAIL (INFLATED $K)	40,000	72,800	75,712	78,740	81,890	85,166	88,572	92,115	95,800	99,632	103,617
OTHER SOURCES OF FEDERAL FUNDING (INLFATED $K)	0	0	0	0	0	0	0	0	0	0	0
AVAILABLE FEDERAL FUNDING (INFLATED $K) (ANNUAL MAX. = $70,000 K)	40,000	72,800	75,712	78,740	81,890	85,166	88,572	92,115	95,800	99,632	103,617

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2005 TOTAL	2020 TOTAL
ANNUAL REVENUES • INFLATED $K (Cont.)																
266,341	281,981	298,246	315,448	333,643	352,888	373,243	394,771	417,542	441,191	466,180	492,585	520,485	549,965	581,115	$2,083,009 K	$8,168,632 K
79,308	84,295	89,508	95,043	100,920	107,161	113,788	120,825	128,296	136,097	144,371	153,149	162,461	172,338	182,816	$607,352 K	$2,477,728 K
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0 K	$0 K
107,762	112,072	116,555	121,217	126,066	0	0	0	0	0	0	0	0	0	0	$944,045 K	$1,527,717 K
84,670	88,057	91,579	95,242	99,052	103,014	107,135	111,420	115,877	120,512	125,332	130,346	135,559	140,982	146,621	$741,749 K	$2,437,146 K
27,750	28,860	30,014	31,215	32,463	33,762	35,112	36,517	37,977	39,496	41,076	42,719	44,428	46,205	48,053	$26,682 K	$582,331 K
565,831	595,264	625,901	658,165	692,145	596,825	629,277	663,532	699,692	737,296	776,960	818,799	862,933	909,490	958,606	$4,402,837 K	$15,193,553 K
2,217	2,748	3,806	4,543	6,309	12,830	24,467	37,970	54,137	72,886	94,057	117,856	144,520	174,252	207,322	$147,080 K	$1,107,000 K
36,947	51,233	53,282	69,267	72,038	89,903	93,499	97,239	101,129	105,174	109,381	113,756	118,306	123,039	127,960	$90,723 K	$1,452,877 K
16,010	16,651	17,317	18,009	18,730	23,974	24,933	25,930	26,968	28,046	29,168	30,335	31,548	32,810	34,123	$100,036 K	$474,590 K
82,924	99,492	104,419	123,034	129,540	160,469	178,011	197,657	220,211	245,602	273,682	304,666	338,803	376,306	417,459		
621,005	665,896	700,307	749,984	789,221	723,532	772,176	824,672	881,925	943,402	1,009,566	1,080,745	1,157,308	1,239,591	1,328,011	$4,740,677 K	$18,228,019 K
118,121	156,094	159,158	290,256	296,903	0	0	0	0	0	0	0	0	0	0	$277,944 K	$1,298,476 K
739,126	821,990	859,465	1,040,240	1,086,125	723,532	772,176	824,672	881,925	943,402	1,009,566	1,080,745	1,157,308	1,239,591	1,328,011	$5,018,621 K	$19,526,495 K
161047.535	175253.092	190606.363	207392.302	225750.613	245835.013	267814.659	291875.725	318223.14	346742.185	377959.957	412141.154	449577.013	490588.003	535526.797		
345,649	366,276	387,753	410,491	434,564	460,049	487,030	515,596	545,838	577,288	610,552	645,734	682,945	722,303	763,931	$2,690,361 K	$10,646,359 K
406,811	518,883	116,555	237,772	363,839	363,839	363,839	0	0	0	0	0	0	0	0		
FEDERAL FUNDING ASSUMPTIONS & CALCULATIONS (Cont.)																
350,000	350,000	350,000	350,000	342,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	$2,763,000 K	$4,705,000 K
0	0	0	50,000	51,750	7,500	12,500	6,950	0	0	0	0	0	0	0	$574,000 K	$702,700 K
350,000	350,000	350,000	400,000	393,750	27,500	32,500	26,950	20,000	20,000	20,000	20,000	20,000	20,000	20,000	$3,337,000 K	$5,407,700 K
538,809	560,361	582,776	606,087	615,923	37,460	38,958	40,516	42,137	43,822	45,575	47,398	49,294	51,266	53,317	$3,604,985 K	$6,958,685 K
0	0	0	86,584	93,199	14,047	24,349	14,079	0	0	0	0	0	0	0	$617,756 K	$850,014 K
538,809	560,361	582,776	692,671	709,122	51,507	63,307	54,596	42,137	43,822	45,575	47,398	49,294	51,266	53,317	$4,222,741 K	$7,808,699 K
70,000	70,000	70,000	70,000	70,000	0	0	0	0	0	0	0	0	0	0	$770,000 K	$1,120,000 K
840,000	910,000	980,000	1,050,000	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000		
107,762	112,072	116,555	121,217	126,066	0	0	0	0	0	0	0	0	0	0	$944,045 K	$1,527,717 K
1,051,806	1,163,879	1,280,434	1,401,651	1,527,717	1,527,717	1,527,717	1,527,717	1,527,717	1,527,717	1,527,717	1,527,717	1,527,717	1,527,717	1,527,717		
70,000	70,000	70,000	70,000	70,000	27,500	32,500	26,950	20,000	20,000	20,000	20,000	20,000	20,000	20,000	$745,000 K	$1,321,950 K
280,000	350,000	70,000	140,000	210,000	237,500	270,000	26,950	46,950	66,950	86,950	106,950	20,000	40,000	60,000		
	459,335					486,223					515,351			547,841	$796,554 K	$2,805,303 K
	(109,335)					(216,223)					(408,401)			(487,841)	($261,554 K)	($1,483,353 K)
107,762	112,072	116,555	121,217	126,066	0	0	0	0	0	0	0	0	0	0	$919,045 K	$1,502,717 K
107,762	112,072	116,555	121,217	126,066	0	0	0	0	0	0	0	0	0	0	$914,045 K	$1,497,717 K
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0 K	$0 K
107,762	112,072	116,555	121,217	126,066	0	0	0	0	0	0	0	0	0	0	$914,045 K	$1,497,717 K

REGIONAL TRANSIT SYSTEM FINANCIAL ANALYSIS CASHFLOW MODEL

Phase I System Plan

TAX REVENUE ASSUMPTIONS & CALCULATIONS

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RETAIL SALES TAX REVENUE											
NOMINAL GROWTH RATE	6.50%	6.50%	6.50%	6.50%	6.50%	6.39%	6.29%	6.18%	6.08%	6.08%	6.08%
REAL GROWTH RATE	2.40%	2.40%	2.40%	2.40%	2.40%	2.30%	2.20%	2.10%	2.00%	2.00%	2.00%
REGIONAL RETAIL SALES TAX BASE (1995 $K)	37,138,593	38,029,919	38,942,637	39,877,260	40,834,314	41,773,504	42,692,521	43,589,064	44,460,845	45,350,062	46,257,063
KING COUNTY (1995 $K)	25,043,083	25,644,117	26,259,576	26,889,806	27,535,161	28,168,470	28,788,176	29,392,728	29,980,582	30,580,194	31,191,798
PIERCE COUNTY (1995 $K)	6,262,260	6,412,554	6,566,456	6,724,051	6,885,428	7,043,793	7,198,756	7,349,930	7,496,929	7,646,867	7,799,805
SNOHOMISH COUNTY (1995 $K)	5,833,249	5,973,247	6,116,605	6,263,404	6,413,725	6,561,241	6,705,588	6,846,406	6,983,334	7,123,001	7,265,461
RTA AREA RETAIL SALES TAX BASE (INFLATED $K)	34,078,857	36,292,619	38,650,188	41,160,904	43,834,716	46,636,631	49,569,143	52,634,498	55,834,676	59,229,424	62,830,573
RTA AREA RETAIL SALES TAX BASE (1995 $K)	34,078,857	34,896,749	35,734,271	36,591,894	37,470,099	38,331,911	39,175,213	39,997,893	40,797,851	41,613,808	42,446,084
LOCAL OPTION SALES TAX RATE	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%
RTA LOCAL OPTION TAX REVENUE (INFLATED $K)	136,315	145,170	154,601	164,644	175,339	186,547	198,277	210,538	223,339	236,918	251,322
RTA LOCAL OPTION TAX REVENUE (1995 $K)	136,315	139,587	142,937	146,368	149,880	153,328	156,701	159,992	163,191	166,455	169,784
MVET REVENUE											
NOMINAL GROWTH RATE	6.91%	6.91%	6.91%	6.91%	6.91%	6.81%	6.70%	6.60%	6.50%	6.50%	6.50%
REAL GROWTH RATE	2.80%	2.80%	2.80%	2.80%	2.80%	2.70%	2.60%	2.50%	2.40%	2.40%	2.40%
REGIONAL MOTOR VEHICLE VALUATION (1995 $K)	15,290,408	15,718,539	16,158,658	16,611,101	17,076,212	17,537,269	17,993,238	18,443,069	18,885,703	19,338,960	19,803,095
KING COUNTY (1995 $K)	9,771,267	10,044,862	10,326,119	10,615,250	10,912,477	11,207,114	11,498,499	11,785,961	12,068,824	12,358,476	12,655,080
PIERCE COUNTY (1995 $K)	2,833,741	2,913,086	2,994,652	3,078,502	3,164,700	3,250,147	3,334,651	3,418,017	3,500,050	3,584,051	3,670,068
SNOHOMISH COUNTY (1995 $K)	2,685,400	2,760,591	2,837,888	2,917,349	2,999,034	3,080,008	3,160,089	3,239,091	3,316,829	3,396,433	3,477,947
RTA AREA MOTOR VEHICLE VALUATION (INFLATED $K)	12,961,008	13,856,872	14,814,659	15,838,649	16,933,416	18,086,243	19,298,745	20,572,462	21,908,849	23,332,048	24,847,698
RTA AREA MOTOR VEHICLE VALUATION (1995 $K)	12,961,008	13,323,916	13,696,985	14,080,501	14,474,755	14,865,573	15,252,078	15,633,380	16,008,581	16,392,787	16,786,214
LOCAL OPTION MVET RATE	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
RTA LOCAL MVET REVENUE (INFLATED $K)	38,883	41,571	44,444	47,516	50,800	54,259	57,896	61,717	65,727	69,996	74,543
RTA LOCAL MVET REVENUE (1995 $K)	38,883	39,972	41,091	42,242	43,424	44,597	45,756	46,900	48,026	49,178	50,359

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2005 TOTAL	2020 TOTAL
TAX REVENUE ASSUMPTIONS & CALCULATIONS (Cont.)																
5.98%	5.87%	5.77%	5.77%	5.77%	5.77%	5.77%	5.77%	5.77%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	(Average= 6.33%)	(Average= 5.99%)
1.90%	1.80%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	(Average= 2.24%)	(Average= 1.91%)
47,135,947	47,984,394	48,800,129	49,629,731	50,473,437	51,331,485	52,204,120	53,091,590	53,994,148	54,858,054	55,735,783	56,627,555	57,533,596	58,454,134	59,389,400	$458,945,782 K	$1,256,189,286 K
31,784,442	32,356,562	32,906,624	33,466,036	34,034,959	34,613,553	35,201,984	35,800,417	36,409,024	36,991,569	37,583,434	38,184,769	38,795,725	39,416,457	40,047,120	$309,473,692 K	$847,066,367 K
7,948,001	8,091,065	8,228,613	8,368,499	8,510,764	8,655,447	8,802,589	8,952,233	9,104,421	9,250,092	9,398,094	9,548,463	9,701,239	9,856,458	10,014,162	$77,386,828 K	$211,816,970 K
7,403,504	7,536,767	7,664,892	7,795,196	7,927,714	8,062,485	8,199,547	8,338,940	8,480,702	8,616,393	8,754,255	8,894,323	9,036,632	9,181,218	9,328,118	$72,085,261 K	$197,305,949 K
66,585,328	70,495,219	74,561,383	78,862,084	83,410,849	88,221,986	93,310,630	98,692,788	104,385,388	110,297,776	116,545,042	123,146,153	130,121,151	137,491,213	145,278,716	$520,752,230 K	$2,042,157,936 K
43,252,560	44,031,106	44,779,634	45,540,888	46,315,083	47,102,440	47,903,181	48,717,535	49,545,733	50,338,465	51,143,881	51,962,183	52,793,578	53,638,275	54,496,487	$421,134,631 K	$1,152,695,660 K
0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	(Average= .40%)	(Average= .40%)
266,341	281,981	298,246	315,448	333,643	352,888	373,243	394,771	417,542	441,191	466,180	492,585	520,485	549,965	581,115	$2,083,009 K	$8,168,632 K
173,010	176,124	179,119	182,164	185,260	188,410	191,613	194,870	198,183	201,354	204,576	207,849	211,174	214,553	217,986	$1,684,539 K	$4,610,783 K
6.39%	6.29%	6.18%	6.18%	6.18%	6.18%	6.18%	6.18%	6.18%	6.08%	6.08%	6.08%	6.08%	6.08%	6.08%	(Average= 6.74%)	(Average= 6.41%)
2.30%	2.20%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	(Average= 2.64%)	(Average= 2.31%)
20,258,566	20,704,255	21,139,044	21,582,964	22,036,206	22,498,966	22,971,445	23,453,845	23,946,376	24,425,303	24,913,809	25,412,086	25,920,327	26,438,734	26,967,508	$192,856,253 K	$545,525,687 K
12,946,146	13,230,962	13,508,812	13,792,497	14,082,139	14,377,864	14,679,799	14,988,075	15,302,825	15,608,881	15,921,059	16,239,480	16,564,270	16,895,555	17,233,466	$123,243,929 K	$348,615,758 K
3,754,480	3,837,078	3,917,657	3,999,928	4,083,926	4,169,689	4,257,252	4,346,654	4,437,934	4,526,693	4,617,227	4,709,571	4,803,763	4,899,838	4,997,835	$35,741,665 K	$101,101,189 K
3,557,940	3,636,215	3,712,575	3,790,539	3,870,141	3,951,414	4,034,393	4,119,116	4,205,617	4,289,729	4,375,524	4,463,034	4,552,295	4,643,341	4,736,208	$33,870,659 K	$95,808,739 K
26,435,963	28,098,256	29,835,852	31,680,901	33,640,048	35,720,349	37,929,295	40,274,843	42,765,439	45,365,578	48,123,805	51,049,732	54,153,556	57,446,092	60,938,814	$202,450,648 K	$825,909,169 K
17,172,297	17,550,088	17,918,640	18,294,931	18,679,125	19,071,386	19,471,885	19,880,795	20,298,292	20,704,257	21,118,343	21,540,709	21,971,524	22,410,954	22,859,173	$163,475,780 K	$462,418,178 K
0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	(Average= .30%)	(Average= .30%)
79,308	84,295	89,508	95,043	100,920	107,161	113,788	120,825	128,296	136,097	144,371	153,149	162,461	172,338	182,816	$607,352 K	$2,477,728 K
51,517	52,650	53,756	54,885	56,037	57,214	58,416	59,642	60,895	62,113	63,355	64,622	65,915	67,233	68,578	$490,427 K	$1,387,255 K

V. FINANCIAL RISK ASSESSMENT

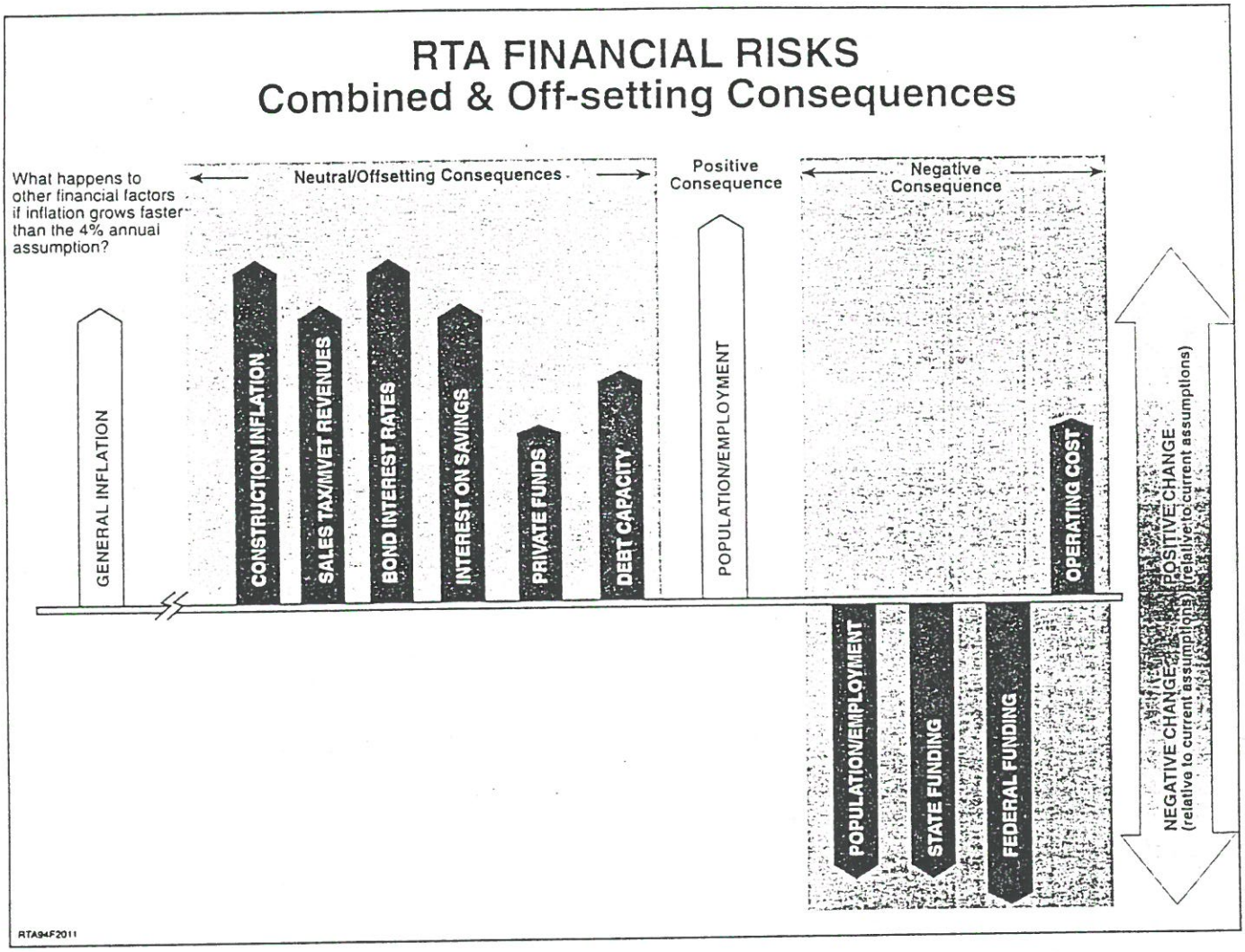
A. PHASE I FINANCING PLAN

The RTA financing plan, like all such forward-looking documents, has at its foundation a number of critical assumptions regarding the future financial climate in which the RTA will conduct its business. In the RTA's case, important assumptions include such factors as:

- the general inflation rate that will be experienced over the lifetime of the RTA's construction program;
- the inflation rate specific to the construction industry;
- the interest rate the RTA will repay on bonds used to accelerate the construction program; and
- the availability of both State and Federal participation.

The RTA must accept the risk that any of the factors affecting the financing plan might not perform as assumed. These assumptions carry with them both positive and negative consequences. For example, should construction inflation outpace the rate assumed, construction costs will likewise be higher. However, it is also possible that construction inflation will lag, producing a surplus in the construction budget. Figure 5.1 portrays a broader example of the consequences of a financial factor performing differently than currently assumed. In this case, it is general inflation that is shown to increase faster than as assumed in the financial plan. What figure 5.1 shows is that several other factors would be likely to change along with inflation because of their highly inter-related nature, off-setting its impact.

Figure 5.1 RTA Financial Risks



Risk factors must be considered from two perspectives. First, risks that are likely to manifest themselves in some way as negative financial consequences over the lifetime of the RTA Phase I program must be monitored more carefully and thoughtfully than risks that are less likely to occur. Second, the overall impact on the financial capabilities of the RTA must be considered should a risk be realized. Risk factors that have both relatively high likelihood of occurring and potentially large negative consequences must be continually monitored and reviewed by the RTA.

Commonly, and in part because financial factors are so interrelated, relatively few aspects of a financial program wield real influence over the success or failure of any adopted plan. In the case of the RTA program, three variables potentially dominate its financial exposure. These are: i) the rate of construction cost inflation relative to

general inflation as experienced by consumers, ii) the availability of State funding, and/or iii) the availability of Federal funding. All of these factors have some reasonable likelihood of negatively affecting the RTA financing plan, and their impact is potentially large. Construction inflation, of course, could significantly affect the cost of the rail system the RTA will implement. Should State and/or Federal funding prove lower than currently projected, the RTA would have two basic options: i) to increase the scale of its bond program, and/or ii) increase the period of Phase I implementation. Given the $800 million (1995 dollars) long-term debt ceiling specified in the Master Plan, the RTA could proceed with an elongated construction schedule.

The RTA will pay special attention to the actual performance of these factors, taking steps to moderate any negative consequences, where possible, and modifying the program itself, as required. Only a continuous program of financial risk assessment ensures that the RTA will be able to respond as quickly and effectively as conditions change. Exactly such a program will be a significant component of the RTA's finance function.

The RTA Phase I Financing Plan was conceived to be, and is, a relatively low risk program from a financial perspective. This low risk condition, and the ability to respond as conditions change are largely a function of the following:

- The RTA is projected to accumulate cash and interest earnings in the first few years of the program, while engineering and design proceed in advance of the intensive construction program.

- As needed, the RTA's local tax-based revenues provide adequate capacity to utilize bond financing to accelerate construction during the peak periods of the implementation program.

- The growth in local tax-based revenues is conservatively estimated to outpace inflation during the Phase I period.

- The RTA board set a goal of limiting total long term bonding over the Phase I time frame to $800 million (1995 dollars), utilizing only 36 percent of the legislatively authorized debt capacity. This ceiling represents 17 percent of the total Phase I capital program. This is to be compared with other major rail capital programs nationally, which have relied on bond financing to cover up to 50 percent of total program costs.

- To fund the Phase I System Plan, the RTA is utilizing less than 40 percent of its combined local tax revenue and bonding capacity.

VI. PHASE I RIDERSHIP FORECAST

A. BACKGROUND

1. DEFINITIONS

- ***Boardings***

Station or route boardings represent the number of times riders step aboard transit vehicles. Station boardings illustrate the relative worth of particular stations on rail lines. Boardings during the P.M. peak period tend to indicate the number of people using transit to leave employment sites. P.M. alightings, or offs, tend to indicate place of residence.

- ***Transfers***

Transfers are the movement of riders between vehicles and routes in order to complete their transit trip. Transfers explain why the average transit trip consists of more than one boarding and are a good measure of how well a location or route is integrated into the transit system.

Transfer rates are an indication of how well integrated the system is and how well its individual elements complement each other. Nationwide, and indeed world-wide, higher transfer rates are positively correlated to higher transit ridership.

- ***Volumes***

Passenger volumes are the number of riders traveling through a segment (or past a point) in a stated period of time. Volumes indicate the relative strength of a transit line, and are useful for comparing different segments within the Phase I system plan. Volumes can illustrate the merit of transit lines of various lengths, even within the same corridor. Volumes on the busiest segment during the peak hour are useful for calculating the minimum number of vehicles and the minimum frequency needed by the system during the peak period.

2. CONSTRAINTS ON FORECASTING METHODS

The ridership methodology used in these forecasts has not only met the scrutiny of the state Expert Review Panel (ERP), but also expressly intends to satisfy the stringent requirements of the Federal Transit Administration (FTA) in order to ensure eligibility for federal funding. For the past several years, the FTA has been critical of the historical over-forecasting of transit ridership by agencies involved in rail planning. Federal guidelines on forecasting methods have focused on limiting ridership effects to the directly measurable cost and time trade-offs between transportation modes (e.g., auto, bus, rail, etc.). Among the limitations placed upon the forecasting process is the exclusion from consideration the difference between transit modes caused by the following characteristics:

- Reliability
- Safety
- Simplicity
- Comfort
- Transit's Effects on Land Use and Travel Patterns
- Transit's Relationship to, and interacting with, Important Policies (such as Growth Management and Commute Trip Reduction)

The above factors have the potential to more likely affect an increase in ridership demand on rail lines, whereas, over time, bus ridership will likely decline because the above conditions will worsen for buses. The RTA holds the position that the Phase I transit ridership forecasts as summarized in Tables 6.2, 6.3, and 6.4 are conservative. They are conservative for the above reasons, and by comparison with other transit forecasts, such as those prepared by the Puget Sound Regional Council (PSRC) in 1994.

3. PSRC 2020 FORECASTS

The PSRC is currently preparing the region's Metropolitan Transportation Plan (MTP). This work includes an extensive forecasting effort, for which preliminary results are available. Complete documentation of the results of the PSRC forecasts will be available from the PSRC upon completion of the MTP. Table 6.1 shows the transit ridership results of these PSRC forecasts. These can be compared with the more conservative RTA ridership forecasts in Table 6.2.

Table 6.1 PSRC Forecasts

Scenario	Daily Transit Trips	Daily Total Trips
Existing (1990)	247,000	7,357,000
2020 Trend	436,000	12,452,000
2020 P1	468,000	12,448,000
2020 P2	746000	12,376,000
2020 P3	1,044,000	12,473,000

The rows titled P1, P2, and P3 reflect increasingly aggressive packages of transportation investment and transportation demand management policies. The contents of the packages are not easily summarized, but complete documentation of the contents and assumptions is available in *Metropolitan Transportation Plan Technical Report: MTP-12*, from the PSRC (September, 1994).

Depending on the relative success of the policy packages in the Metropolitan Transportation Plan, the daily transit ridership for 2020 ranges from 436,000 to 1,044,000. PSRC estimates of rail boardings range from about 200,000 to 550,000. These forecasts are significantly higher than the RTA forecast of 360,000 daily transit riders and 186,000 rail boardings for 2010 shown below. The differences are too great to ascribe to the 2010 to 2020 regional growth rate. According to the PSRC:

> The bottom line of relevance to the RTA is that our (PSRC's) technical modeling has begun to show the potential for much higher long-range transit ridership than our region has seen previously. This could be the case if we link effective transportation system development with implementation policies and actions that seriously support growth management policies.

B. PHASE I TRANSIT SYSTEM RIDERSHIP

Table 6.2 shows the conservative estimates for daily and annual ridership prepared by the RTA. The estimates *exclude* ridership on special services, like custom bus services, dial-a-ride, school, and special event services. They include only riders on regularly scheduled, regular fare bus and rail lines.

Table 6.2 Phase I Total Transit Trips

	Existing	TSM - 2010	Phase 1 - 2010
Daily Transit Trips	258,000	323,000	360,000
Daily Transit Boardings	335,000	428,000	527,000
Annual Transit Trips	75 million	98 million	109 million
Annual Transit Boardings	98 million	130 million	160 million
Transfer Rate	1.30	1.32	1.46

The TSM-2010, or transportation system management forecast reflects the growth in transit ridership that is due primarily to population and employment growth. It assumes completion of the High Occupancy Vehicle (HOV) system and those transit service increases fundable within the present transit agencies' tax sources. The Phase I-2010 forecast reflects the implementation of the Phase I of the RTA Master Plan, including the commuter rail line from Everett to Lakewood and the light rail lines from Seattle to Tacoma, Overlake, and north of Lynnwood.

Table 6.3 below is called a "trip distribution table." The first row, labeled Snohomish, shows how many transit trips begin in Snohomish County during the P.M., and end in each of the five subareas, with the total indicating all the P.M. transit trips originating in Snohomish County. All the P.M. transit trips ending in Pierce County are listed in the column labeled Pierce, with each row referring to the number of trips originating in one of the five subareas.

Table 6.3 shows the distribution of P.M. transit trips within the RTA by origin and destination. For an entire day, such a distribution table would be balanced, with origins in each area equaling destinations in that area. Instead, Table 6.3 shows a half day, in order to include information on which end of a trip is residential. P.M. origins tend to indicate people using transit to leave an employment site, and P.M. destinations primarily indicate the residences of transit users.

Every trip contained within the RTA boundary has an origin and destination in one of the five RTA subareas. The total of 179,900 represents half of the daily trips.

Table 6.3 Phase I-2010 Transit Trip Distribution (Bus and Rail)

P.M. Origin Dist.	PM Destination District (primarily residences)					
	Snohomish	North	East	South	Pierce	Total
Snohomish	8,400	1,000	300	200	0	9,900
North King	9,000	104,000	11,300	11,700	1,700	137,700
East King	600	4,000	3,500	700	4,700	8,900
South King	100	3,500	700	4,700	600	9,600
Pierce	0	400	100	300	13,000	13,800
Total	18,100	112,900	15,900	17,600	15,400	179,900

C. PHASE I RAIL RIDERSHIP

Table 6.4 summarizes the average weekday light rail and commuter rail station boardings for 2010 by rail segment.

Table 6.4 Rail Station Boardings Summary

Segment	Daily Boardings	Annual Boardings
North Light Rail Stations	64,600	
East Light Rail Stations	17,200	
South Light Rail Stations	23,400	
Downtown Seattle Stations	63,800	
Total Light Rail	**169,000**	**50.7 million**
Commuter Rail	**17,100**	**4.6 million**
Total Rail	**186,100**	**55.3 million**

For every boarding at a station, there is a corresponding alighting at another station. For the daily boardings (24-hour) a reasonable presumption is that a rider makes a return trip to the same station at another time of the day.

Table 6.5 shows the daily rail boardings for Phase I by individual station. The RTA will make refinements to these forecasts during the detailed environmental review for each segment.

Table 6.5 Daily Station Boardings

North Light Rail Stations

Station	Boardings
First Hill	*
Broadway	14,800
Pacific St	11,600
45th St	9,500
65th St	3,900
Northgate	10,300
145th St	4,100
175th St	2,500
Mountlake Terrace	*
Lynnwood	5,900
Alderwood Mall	300
164th SW	1,700
	64,600

East Light Rail Stations

Station	Boardings
Rainier Ave	1,500
Mercer Island	800
South Bellevue	2,500
Wilburton	1,800
Bellevue CBD	5,500
NE 8th / 140th	400
Crossroads	800
NE 24th	1,100
Microsoft	2,800
	17,200

South Light Rail Stations

Station	Boardings
I-90	1,500
McClellan St	2,000
Alaska St	2,100
Othello St	1,300
Henderson St	1,700
Boeing Access Rd	1,300
S 144th St	300
S 158th St	2,000
Airport	1,200
SeaTac Center	700
Kent / Des Moines	1,000
Star Lake	1,800
Federal Way 316th	1,500
Federal Way 336th	300
Federal Way 348th	1,000
Milton	300
Fife	400
Tacoma Dome	1,000
25th St	300
19th St	400
13th St	400
9th St	900
	23,400

Downtown Seattle Light Rail Stations

Station	Boardings
International Dist	10,900
Pioneer Square	8,500
University St	19,100
Westlake	21,200
Convention Place	4,100
	63,800

Commuter Rail Stations

Station	Boardings
Everett	600
Everett West	400
Mukilteo	400
Edmonds	300
Richmond Beach	*
Ballard	*
Interbay	*
Lenora St	900
King St	5,400
Spokane St	200
Albro Place	100
Boeing Access Rd	400
Tukwila	1,900
Kent	2,100
Auburn	1,400
Sumner	200
Puyallup	400
Tacoma Dome	1,100
S 56th St	400
Lakewood	900
	17,100

* Potential stations pending additional funds; not assumed for ridership forecasts.

1. RAIL VOLUMES

Table 6.6 summarizes the P.M. peak-period rail volumes.

Table 6.6 PM Peak Period (3-6 P.M.)
Maximum Rail Link Volumes in Peak Direction

Corridor	Volume
North LRT (leaving University District)	18,300
North LRT (leaving downtown Seattle)	18,000
East LRT (cross-lake)	7,000
South LRT (leaving downtown Seattle)	8,000
North CR. (leaving downtown Seattle)	600
South CR. (Spokane St.)	4,100

The maximum directional passenger load for the rail system would occur in the P.M. peak northbound between the stations at Pacific St. and 45th St. in the University District. This volume is 18,300 for three hours, or about 9,000 passengers per hour for the highest hour.

Figure 1 illustrates daily rail volumes for rail segments.

Figure 2 illustrates P.M. peak rail volumes for commuter rail segments.

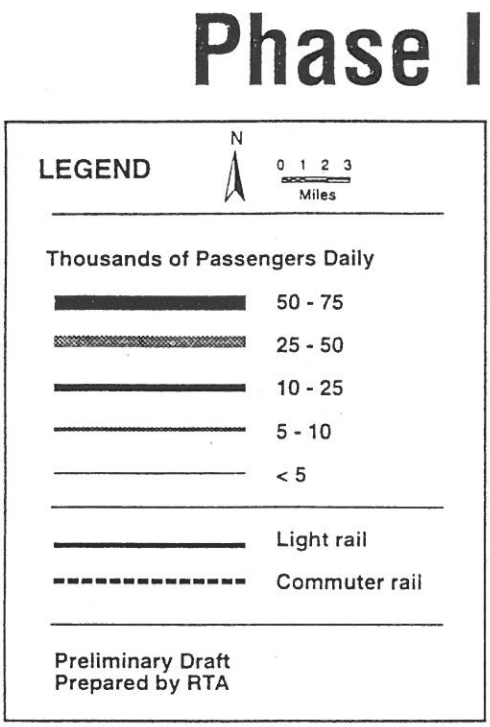
Figure 3 illustrates P.M. peak rail volumes for light rail segments.

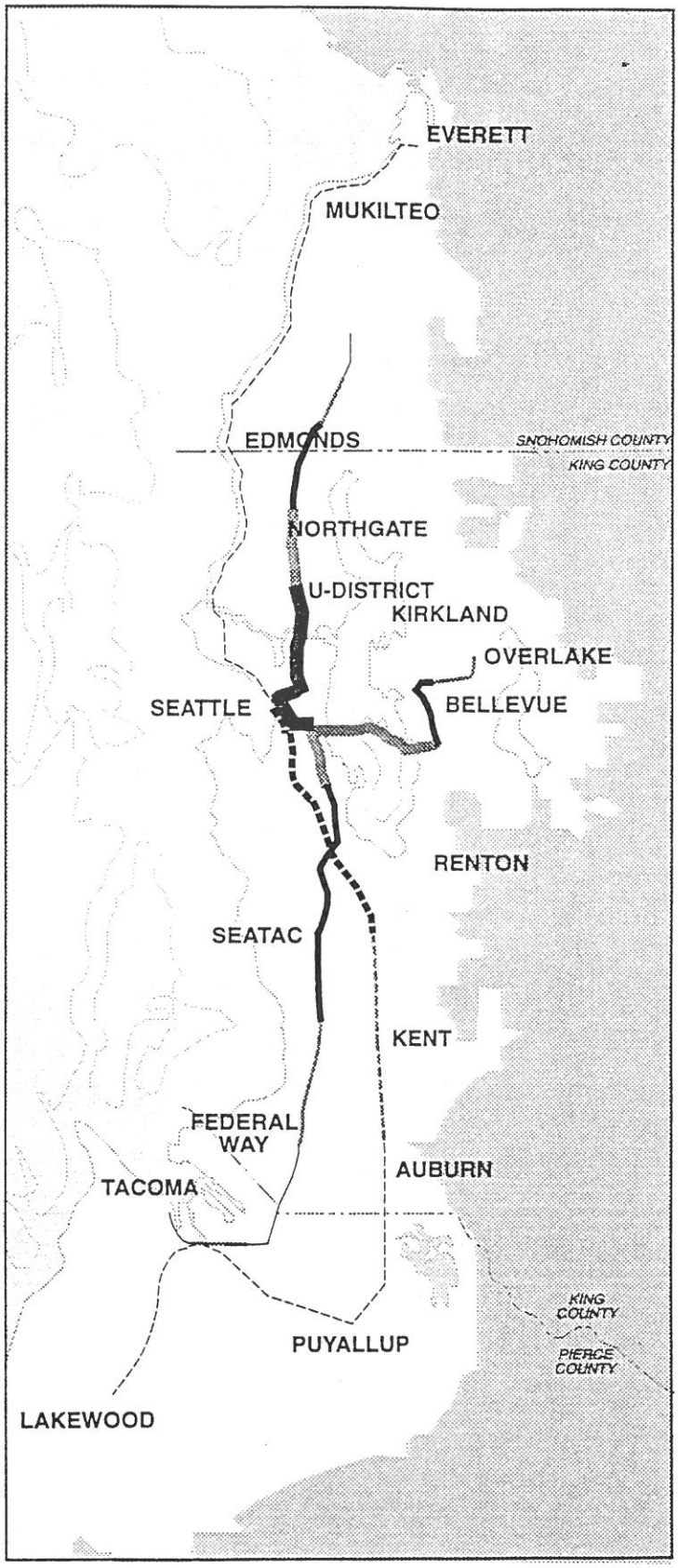
Figure 4 illustrates P.M. peak rail station alightings for commuter rail segments.

Figure 5 illustrates P.M. peak rail station alightings for light rail segments.

Please note the scales on the maps. The peak volume maps are different from the daily maps, and the commuter rail maps are at different scales than the light rail maps.

Phase I





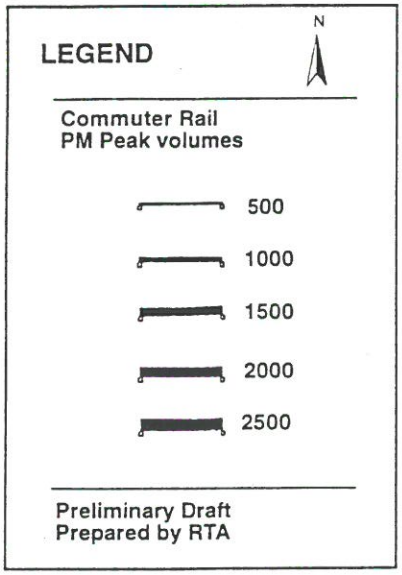
Regional Transit Authority

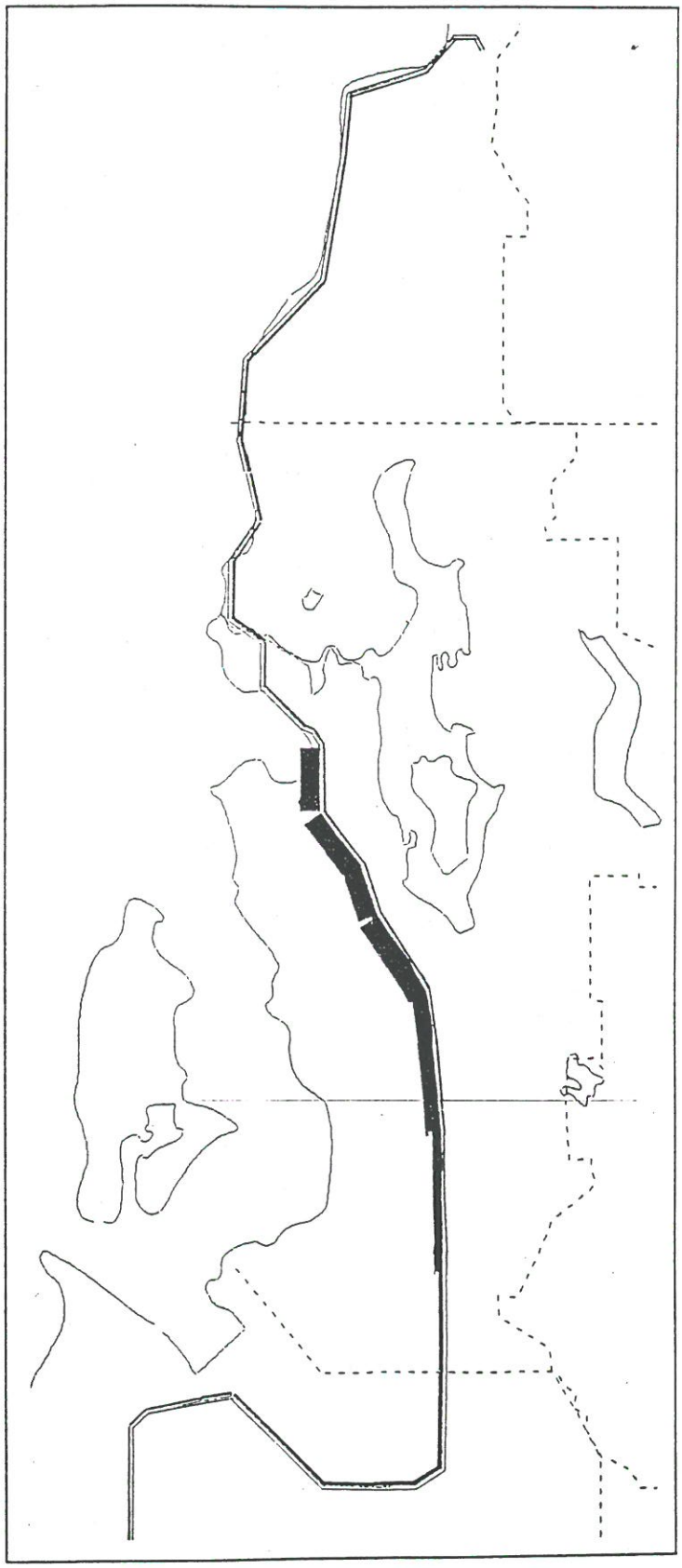
RTP94K2006.3

Phase I
Daily Rail Passenger Volumes
Figure 1

November 9, 1994

Phase I





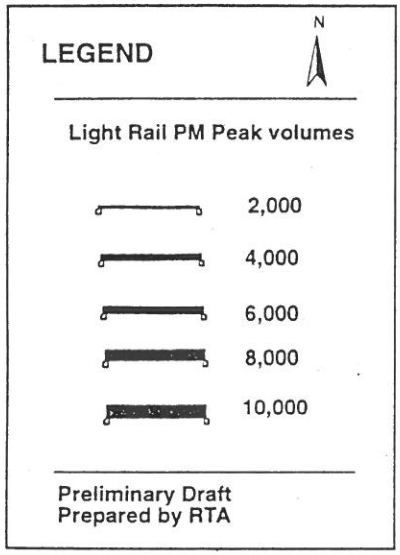
Regional Transit Authority

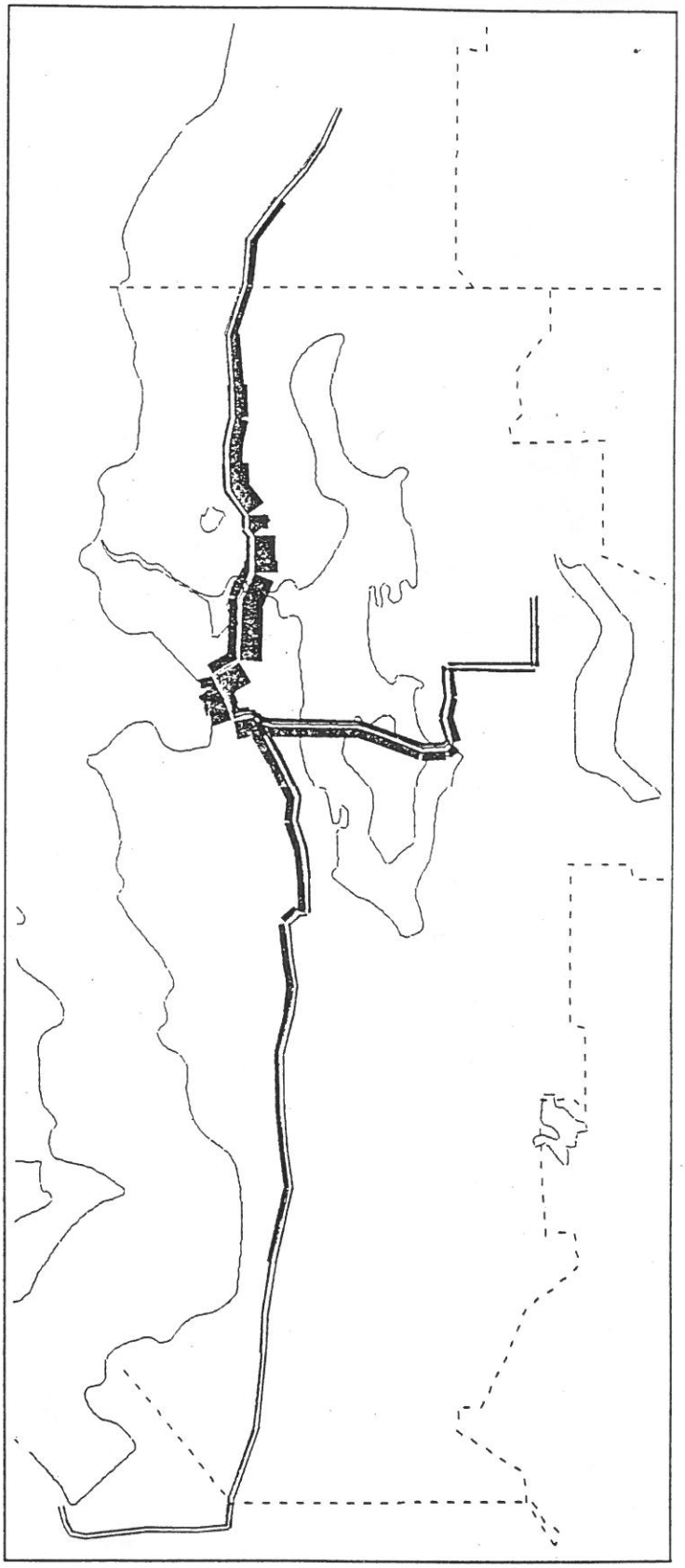
RTP94L2009

Phase I
Commuter Rail PM Peak Volumes
Figure 2

November 15, 1994

Phase I





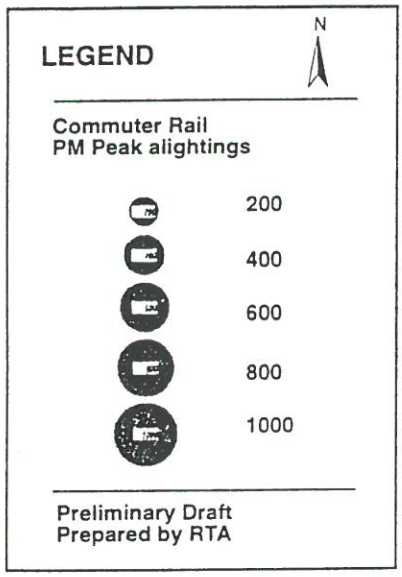
Regional Transit Authority

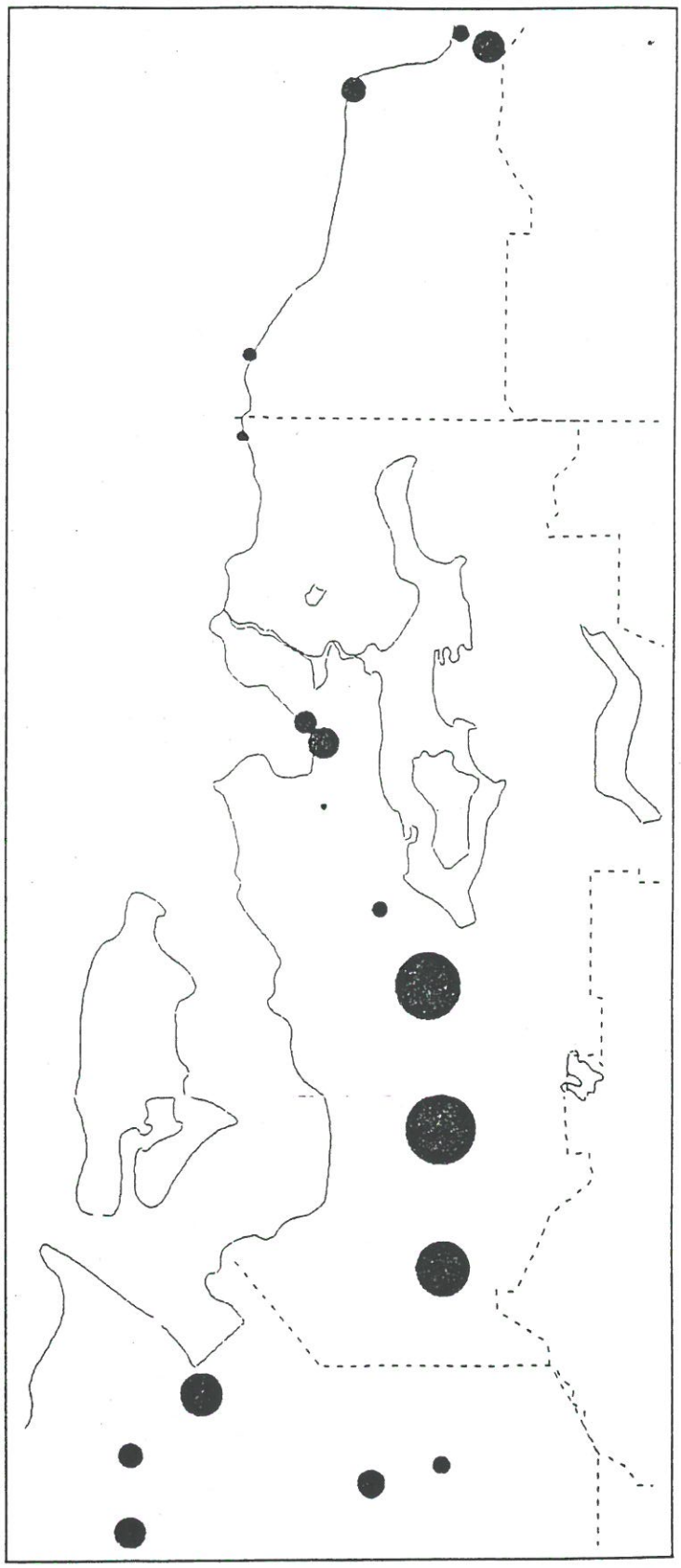
RTP94L2009

Phase I
Light Rail PM Peak Volumes
Figure 3

November 15, 1994

Phase I





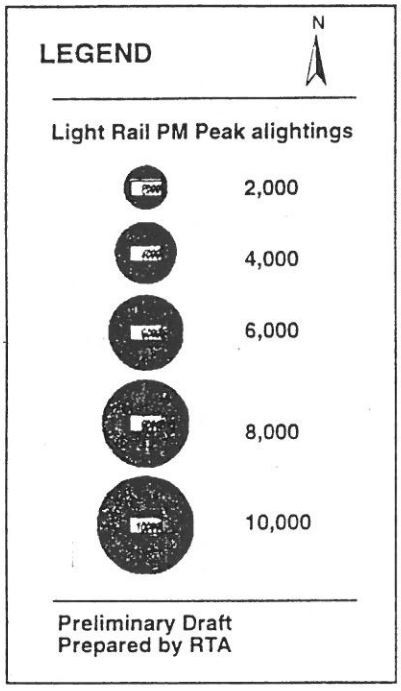
Regional Transit Authority

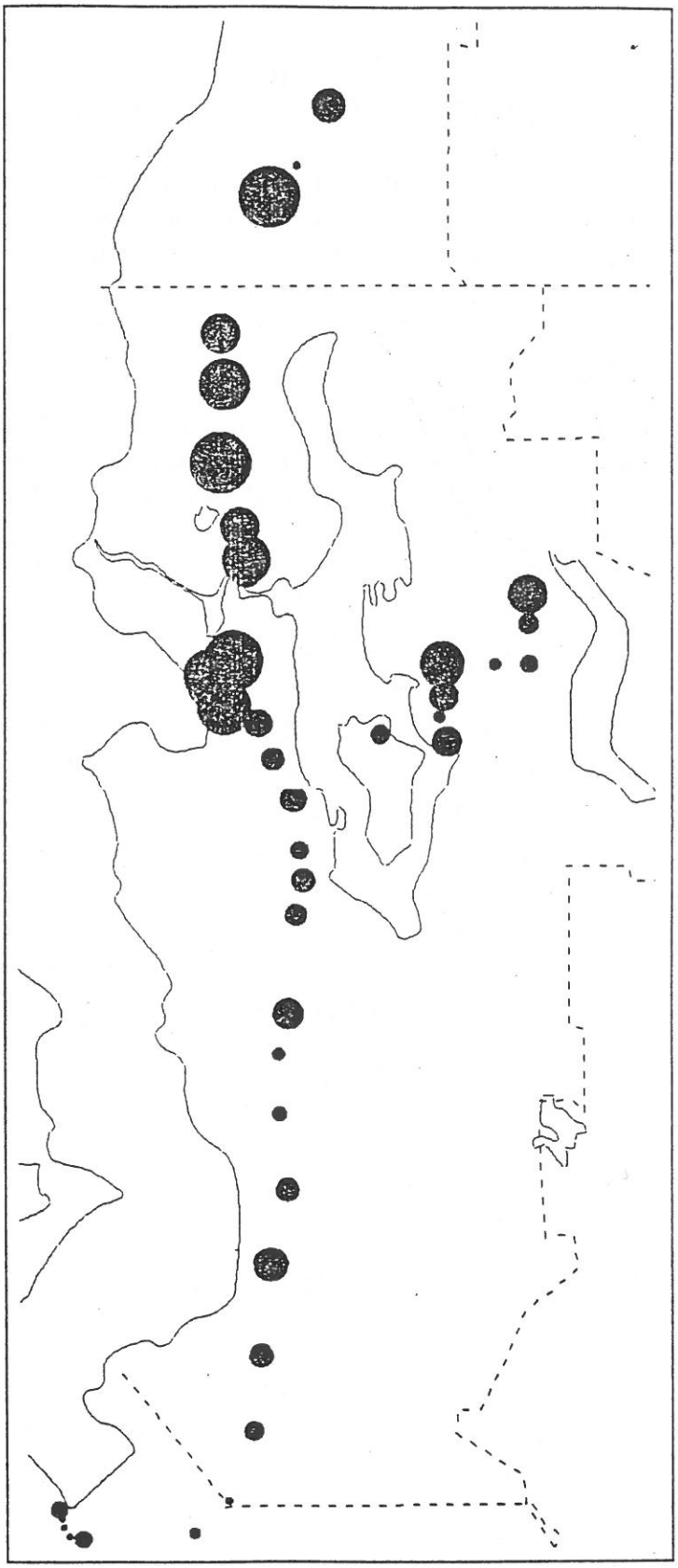
RTP94L2009

Phase I
Commuter Rail PM Peak Alightings
Figure 4

November 15, 1994

Phase I





Regional Transit Authority

RTP94L2009

Phase I
Light Rail PM Peak Alightings
Figure 5

November 15, 1994

D. REGIONAL BUS ROUTES

As a means of providing high quality transit service in areas not served directly by rail in Phase I, and as an improved means of supporting the regions' rail investment, a set of RTA regional trunk bus routes is included in Phase I. These routes typically operate in a partial-express mode, frequently (15 minute headway's during peak periods), and all day every day. Table 6.7 shows daily boardings expected in 2010 for each regional bus route.

The first eight routes shown are described in the Master Plan. Route number 9 reflects an assumption that a regional express bus route would operate in the I-405 corridor between Bellevue and the airport, pending resolution of the RTA studies for that corridor.

Table 6.7 Regional Bus Routes

RTA Regional Bus Routes	Daily Boardings
1. Everett/Lynnwood	3,400
2. Mukilteo/Lynnwood	1,000
3. Edmonds/Lynnwood/405/Bellevue	3,800
4. Woodinville/Bothell/Northgate	2,800
5. University/520/Bellevue	4,000
6. Bellevue/Issaquah	1,700
7. Seattle/West Seattle/SeaTac	4,800
8. Auburn/Federal Way/Puyallup/Ft. Lewis	1,200
Daily RTA Regional Bus Riders	**22,700**
9. Bellevue/405/Renton/SeaTac	5,000
Daily including 405 route	**27,700**

With the ridership shown, the eight regional trunk bus routes described in the Master Plan will have an operations and maintenance cost of $3.08 per boarding.

E. RAIL FARE REVENUE

Fare revenue forecasts assume continuation of the present transit fares to 2010, with increases only matching projected inflation. Distribution of fare receipts between bus and rail operators for those riders who transfer between modes is assumed to be 50 percent for each operator, regardless of mileage of travel on each mode.

Based on these assumptions, and on the RTA ridership forecasts, the rail fare revenues upon completion of Phase I would be:

- Light Rail = $49 million/year (1995 $)
- Commuter Rail = $9 million/year (1995 $)

These fare revenues are consistent with the revenues used in the financing plan.

F. RAIL COST PER RIDER

Tables 6.8 and 6.9 below show the estimated 2011 capital cost per rider and operating subsidy per rider. The ridership is from the RTA forecasts presented above. The costs are from the Master Plan, with the following two adjustments.

First, page 4-6 of the Master Plan shows the light rail capital costs as $4,015 million, but the $4,204 million shown in Table 6.8 includes the addition of the capital cost for a University District subway. This addition is consistent with the assumptions of the ridership forecasts. Second, page 4-7 of the Master Plan shows the total rail operating costs as $152 million per year after completion of Phase I. Table 6.9 omits $6 million of this total, which is reserved for the operation of an undefined transit line between Bellevue and Tukwila and is noted in the Master Plan as "subject to study." This subtraction is also for consistency with the ridership forecasts, for which no rail operating assumption was available.

Table 6.8 Capital Cost per Rider

	Light Rail	Commuter Rail	Total
Capital Cost	$4,204 mil	$574 mil	$4,974 mil
Design Life	40 yr	40 yr	40 yr
Annualized Capital Cost	$105 mil	$14.4 mil	$124.4 mil
Rail Riders (from Table 4)	50.7 mil	4.6 mil	55.3 mil
2010 Capital Cost / Rider	$2.07	$3.12	$2.25

Table 6.9 Operating Subsidy per Rider

	Light Rail	Commuter Rail	Total
2011 Operating Cost	$120 mil	$26 mil	$146 mil
Fare receipts	$50 mil	$9 mil	$59 mil
Farebox Recovery Ratio	42%	35%	40%
2011 Operating Subsidy	$70 mil	$17 mil	$87 mil
Rail Riders (from Table 4)	50.7 mil	4.6 mil	55.3 mil
2010/2011 Subsidy / Rider	$1.38	$3.70	$1.57

Table 6.10 shows costs per rider for the RTA Phase I plan.

Table 6.10 Cost Per Rail Rider
RTA Phase I (1995 $)

	Measure
Annual Phase 1 Capital Cost	$124.4 million
Annual Phase 1 Operating Cost (Subsidy Only)	$ 87.0 million
Annual Rail Riders (2010)	55.3 million
Cost per Rail Rider (Capital and O&M Subsidy)	$ 3.82

The calculation of a combined cost per rail rider of $3.82 results from use of the RTA's ridership forecast, representing the low end of the range of available future-year ridership forecasts. This same measure, calculated using the PSRC's MTP preferred implementation strategy transit forecast could yield a cost per rail rider ranging between $1.50 and $2.50 (even assuming that an additional $1 billion in rail capital costs and a doubling of operating costs are required to adequately serve the higher rail ridership).

For the point of comparison, the combined capital and operating cost per rider of $3.82 can also be compared to an operations and maintenance (O&M) cost of $2.64 per rail rider. This is shown in Table 6.11, along with a breakdown between commuter rail and light rail components of the system, and a comparison to the existing three-county bus system.

Table 6.11
Comparative Transit Operating & Maintenance Costs

Systems	Annual O & M ($K)	Annual Passenger Miles (Miles K)	Cost Per Passenger Miles ($/Mile)	Annual Trips (Trips K)	Cost Per Trip ($/Trip)
Existing Regional Bus System	228,050	555,000	0.52	98,000	2.94
RTA Commuter Rail (2010/2011)	26,000	102,050	0.25	4,700	5.53
RTA Light Rail (2010/2011)	120,000	345,450	0.35	50,600	2.37
RTA Rail Combined (2010/2011)	146,000	447,500	0.33	55,300	2.64

Note: Bus figures are from transit agency budget documents and FTA Section XV reports. O & M costs reflected in this table include both the subsidy and unsubsidized portions of service costs.

As Table 6.11 shows, the RTA rail system will be more productive than the existing bus system in terms of O & M cost per trip. Though it has the highest cost per trip, the commuter rail element of the RTA Phase I plan is the most productive in terms of its cost per passenger mile, since this mode will generally serve long trips; thereby replacing long-distance express bus routes, which are typically quite expensive to operate. Again, the rail figures shown were calculated using the RTA's own *low-range* forecast. The rail system will be substantially more productive assuming the PSRC's higher forecast of transit ridership are realized.

In the transit industry, the calculation of "new riders" is normally applied as an evaluation measure only during a detailed Environmental Impact Statement (EIS) for a short segment of a rail system. The FTA created the cost per new rider measure for the purpose of comparing among and between rail segments in several cities at once. The FTA's purpose is to: 1) rank various proposed rail segments, and 2) determine Federal funding eligibility against a single, consistent criterion. Rail segments for which new riders and cost per new rider are calculated, then, are typically only a few miles in length and include between three and eight stations. These segments have historically been only the most productive in terms of ridership relative to cost, and have had costs measured in the hundreds of millions of dollars.

For these reasons, the calculation of costs per new rider is, based on history and FTA's intent, an extremely unusual calculation to perform on an entire system with over 100 miles of rail, scores of new rail stations, and with a capital cost measured in the billions of dollars. It is also potentially a very misleading measure to use in this way; that is calculated for a system on the scale of the RTA Phase I plan. Used in this way, it must

necessarily yield a result that is much higher than the segment-based values normally reported to the FTA.

Calculated in a manner consistent with the "Cost per Rail Rider" shown in Table 6.13, the cost per new rider for the RTA Phase I plan, compared to a TSM alternative, is approximately seventeen dollars. As expected, this is generally higher than typical cost per new rider figures historically reported to FTA for rail segments. Once again, this cost was calculated using the RTA's constrained ridership forecast. This figure would be much lower - as low as only a couple of dollars per new rider - assuming the higher levels of transit use forecasted by the PSRC in its Metropolitan Transportation Plan are achieved.

G. TRAVEL SPEED ASSUMPTIONS

Schedule speeds vary widely depending on the vertical alignment, type of right-of-way and station spacing. The following assumptions were used for determining travel times for various segments of the Phase I proposal.

Table 6.12 Transit Travel Times

ALIGNMENT/STATION	MPH
Surface/1 mile station spacing	20
Surface/3 mile station spacing	25
Grade Separated/1 mile station spacing	25
Grade Separated/2 mile station spacing	30
Grade Separated/3 mile station spacing	35

Average schedule speeds for various LRT at grade systems are between 20 and 23 mph (e.g. Portland at 20 mph, Sacramento at 22 mph, and San Diego's south and east lines at 23 mph). These average speeds are generated from systems that generally include the following elements:

- Low speed "city center" sections, in reserved street lanes and malls with closely spaced stations, averaging 9-12 mph
- One or more "intermediate" sections, usually in reserved street lanes but with somewhat longer station spacings, averaging 18-20 mph
- One or more higher speed "suburban" sections, in reserved street lanes or on private right-of-way and with longer station spacings, averaging 27-36 mph.

H. TRANSIT TRIPS TO SELECTED CENTERS

Table 6.13 presents the percentage of trips made by transit riders for work and college trips to a set of selected regional centers. The 1990 data are from the U.S. Census Journey-to-Work survey as compiled by the Puget Sound Regional Council (PSRC).

Table 6.13
Activity Center Mode Splits
Percentage of Trips by Transit
Work and College Trips

Center	Existing Transit %	Range of Future Transit%
Everett CBD	2%	5% to 30%
Northgate	7%	8% to 16%
University District	18%	22% to 52%
Bellevue CBD	5%	7% to 47%
Seattle CBD	34%	45% to 60%
Tacoma CBD	3%	6% to 37%
Average	**13%**	**17% to 45%**

Note: Percentages include ridership on fixed route, fixed schedule transit service. Excluded are paratransit, dial-a-ride, carpools/vanpools, etc. The *range* shown for future transit mode shares come from two sources. The low end of the range results from the RTA's own forecasting process for the year 2010.

The high end of the range shown is the result of the PSRC's recent travel demand forecasting performed in support of its Draft Metropolitan Transportation Plan (MTP). This plan is an update of the transportation element of Vision 2020, the region's adopted growth strategy. The values shown are the results for their preferred implementation strategy. (Note: these are year 2020 projections.) Results for the other strategies considered by the PSRC would be in the range shown. The significantly higher transit mode shares projected by the PSRC result because their forecasts are not constrained by FTA in the same ways as are the RTA's. This is particularly true in examining the effect of a regional rail system on land use and regional policies to reduce both congestion and vehicle emissions. PSRC makes a deliberate effort to forecast the effects of these factors, while the RTA is prohibited from doing so in its formal analyses.

I. TRAVEL TIME AND NUMBER OF TRANSFERS BETWEEN SELECTED CENTERS

Table 6.14 presents a comparison of existing express bus travel times and 2010 rail times for a representative sample of regional transit trips. (*Existing* bus schedule times are used since this is the best comparison possible to make. Experience over the last decade has shown that it is a significant challenge to preserve existing bus travel times and prevent them from increasing. Where express bus routes are available, the bus times shown are for express routes.)

A comparison of travel times for buses and trains is a deceptively simple sounding means of evaluating the value of a rail system. In reality, it is exceedingly difficult to fairly express the relative advantages and disadvantages of each mode in a tabular format. For example, from any center to any other, it is often easy to operate (or conceive of) a bus route that can connect the two locations faster than a train. However, the bus generally can accomplish this feat only by operating in an express mode. In other words, when buses "beat" a train, they usually do so at the expense of any potential riders who may wish to make any stops between the two centers. Likewise, over a long distance, a train is usually the faster way to connect many "centers," relative to a bus route. However, the measurably greater *interconnectedness* of a rail system is accomplished at the expense of the absolute travel times from end-to-end.

The difficulty in comparing the relative speeds of trains and buses is a direct result of their fundamental differences. Buses, operating on the roadway system, can be faster if they stop at fewer places. Bus systems traditionally are faced with a tough choice; fast service to a small set of locations versus a high level of connectivity to many locations, but at very low speeds -- often significantly below a 10 mph average speed for local service. Trains, through their general reliance on exclusive right-of-way, can stop frequently and achieve greater connectivity at a higher overall speed.