

NORTHERN VIRGINIA TRANSPORTATION COMMISSION
METROBUS OPERATIONS EVALUATION
AND
FINANCING FOR THE FUTURE

JULY 1974

STONE & WEBSTER MANAGEMENT CONSULTANTS, INC.
IN ASSOCIATION WITH
NATIONAL CITY MANAGEMENT COMPANY

LETTER OF TRANSMITTAL



STONE & WEBSTER MANAGEMENT CONSULTANTS, INC.
90 BROAD STREET
NEW YORK, NEW YORK 10004

July 15, 1974

Mr. Everard Munsey, Chairman
Northern Virginia Transportation Commission
2009 North 14th Street
Arlington, Virginia 22201

Dear Mr. Munsey:

We have completed the work described in our proposal of August 31, 1973 for a study to create a comprehensive Metrobus Operations Evaluation Program for the Northern Virginia Transportation Commission (NVTC).

This work, as authorized by NVTC on September 17, 1973, also included an interim report entitled "Financing for the Future", which was presented at the Airlie Conference on December 14-15, 1973.

Work involving additional modifications and adjustments in the interim report requested by NVTC on December 15, 1973, as well as a test of the Fair Share Allocation Formula requested on January 10, 1974, and reported on April 5, 1974, resulted in a mutually agreed upon postponement of the completion date for this final report from February 15, 1974 to July 15, 1974.

We would like to take this opportunity to express our appreciation to NVTC, the Washington Metropolitan Area Transit Authority, the Metropolitan Washington Council of Governments, and the members of local governmental groups in Northern Virginia for the excellent cooperation and assistance we received throughout this study.

Respectfully submitted,

Frank H. Waring

Frank H. Waring

Project Manager

Stone & Webster Management Consultants, Inc.

in association with

National City Management Company

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INTRODUCTION

The Northern Virginia Transportation Commission (NVTC), as a signatory to the Washington Metropolitan Area Transit Authority (WMATA) compact, has seen the need to undertake an independent study in order for NVTC and the member governments of the Northern Virginia Transportation District (NVTD) to plan adequate sources of financing through 1980 and to insure high quality public transportation for their constituents.

Therefore, NVTC engaged Stone & Webster Management Consultants, Inc. and National City Management Company to conduct a study to accomplish the following:

1. Update NVTC's ten-year financial plan, including the development of an operating budget for NVTC for fiscal years 1974 through 1980 as a basis for future legislation programs (Financing for the Future).
2. Develop a plan for allocating the cost of NVTC budget items to the five Northern Virginia jurisdictions.
3. Estimate the amount of funds required from each of these jurisdictions to support the public transportation system in Northern Virginia.
4. Develop a program which would provide NVTC a means to periodically project costs, and continuously monitor and control the quality of WMATA service in Northern Virginia.

The section on Financing for the Future, provides the updated NVTC Ten-Year Financial Plan and an operating budget through 1980. Included in this section are estimates of the funds required from each jurisdiction in the NVTC area to support the public transportation system.

While it was not in the original scope of work, we had been requested by NVTC to work with its staff to develop revenue sources to meet operating costs through 1980. A discussion of revenue sources follows the section on Financing for the Future.

Allocation of the Northern Virginia share of the Metrobus operating deficit among the five jurisdictions in Northern Virginia is discussed in the Deficit Allocations section of this report.

A program for monitoring the cost and quality of Metrobus service is discussed in the final section. Computerized monitoring systems, present WMATA computer capability, and the expanded use of the computer in the future as part of this program are also discussed. The exact format, instruction, and details for the monitoring program are presented in the Appendix.

This report concludes that adequate and continually increasing funding of the Virginia portion of METRO deficits in the coming years will be necessary in order to provide high quality public transportation to the citizens of Northern Virginia.

The importance of public transportation is growing daily as the impact of the present energy crisis is felt. Therefore, revisions will undoubtedly be required as policy decisions are made and programs are instituted in Northern Virginia to meet the demands of this crisis as well as the ever-changing needs of the region.

This report also provides recommendations for fair and equitable allocation of Metrobus operating deficits among the Virginia jurisdictions. Allocation of Metrobus capital costs had previously been established and, therefore, is not discussed.

An allocation of other NVTC budget items had previously been established and no change is required.

The detailed forecasts of operating costs and deficits are provided in the "Financing for the Future" section. The monitoring program will provide information on the trend of actual costs which can be compared with our projections. Periodic updating of the projections of WMATA operating costs by NVTC can then be accomplished using our methodology.

The following section presents a summary of our findings and conclusions. Details of our findings, conclusions and recommendations are presented in the text of the report and in the Exhibits section.

SUMMARY

We have presented herein our estimates of the Northern Virginia financial requirements for public transportation based on selected assumptions resulting from discussions with the NVTC Board and staff, combined with inputs from our staff and National City Management Company.

During the period of our work, we were developing assumptions in an environment of constant change. Our projections were based on data which contained numerous changes in service levels, labor rates, fares, fare zones, fleet size and the energy crisis. Therefore, the approach using a full year or more of historical data as a base was not feasible. Such an approach, of course, would permit greater sensitivity in our financial results for the many variables involved.

The initial phase of the WMATA takeover, which consolidated four privately owned bus operations into the Metrobus system, has been completed. We expect that WMATA will seek to implement the service improvements and operating efficiencies that are possible under this consolidation.

As Federal and State assistance programs change in future years, the Northern Virginia financial contribution to each budget item may also change.

We estimate that the total NVTC financial requirement for public transportation for the fiscal years 1974 through 1980 will be \$236,364,900. This is composed of \$111,488,700 for operating requirements and \$124,876,200 for capital requirements.

The operating requirements consist of the Northern Virginia share of the Metrobus operating deficit and the NVTC program requirements. This is an average of \$15.9 million per year. The Metrobus deficit increases significantly in the later years. The capital requirements consist of the Northern Virginia share of Metrobus capital requirements in the amount of \$6.7 million, and the Northern Virginia share of Metrorail capital requirements in the amount of \$118.2 million. The Metrorail capital requirement will be completed by 1978.

Our field work and analysis involved in this study have resulted in the following two important recommendations, which are discussed in detail in the text of this report.

1. We recommend that the NVTC adopt the "Fair Share" method for allocation of the Northern Virginia share of the Metrobus operating deficit among the five Northern Virginia jurisdictions.
2. We recommend that the NVTC implement the monitoring program, as discussed in the section on Quality of Service, using the format provided in the Appendix.

FINANCING FOR THE FUTURE

Financing of public transportation needs in Northern Virginia by the five local jurisdictions involves the following three major items:

- I. NVTC Program and Project Costs
- II. Metrobus Operating and Capital Costs
- III. Metrorail Capital Costs

Our estimates of the Northern Virginia portion of the total cost of each of the foregoing items were developed in close cooperation with National City Management Company. They are based on the latest available data supplied by the staffs of NVTC, WMATA, COG, the American Transit Association, and State and local governmental agencies. It must be recognized that times are constantly changing and that any changes in Federal and State sources and allocations of funds will have a significant impact on the estimates developed for this report. The addition, modification or elimination of various programs would also materially affect the required local (Northern Virginia) contribution to public transportation in the Washington metropolitan area.

A discussion of each of the three major expense categories follows.

I. NVTC Program and Project Costs

The estimates summarized in the following table, and included in Exhibit 1, show the funds necessary to maintain the existing authorized NVTC staff, and necessary existing administrative and project costs, and to provide the soft match for existing Federal- and State-funded programs and studies. Also included are the estimated costs of normal regular salary increases for the existing staff plus escalation of administrative costs.

Fiscal Years	Estimated Costs
1974	\$ 496,700
1975	480,100*
1976	484,100
1977	521,500
1978	562,900
1979	609,000
1980	<u>660,500</u>
Total	<u>\$3,814,800</u>

*Decrease due to transfer of Shirley Highway project to WMATA.

Among the approved or proposed programs and studies for NVTC are the following:

Programs

1. Preferential busways in all commuting corridors.
2. Additional fringe parking lots to provide commuters not directly served by bus routes with access to park-and-ride express buses.
3. Bus service expansion to be made possible by a net addition of 69 new Metrobuses which WMATA has agreed to assign to Northern Virginia in the first six months of 1974.
4. A computerized car pool pilot program called Computerride, which NVTC initiated in July 1973 at Westgate Industrial Park in McLean, has now been extended to Crystal City. It was also extended to the Cameron Station area of Alexandria in December 1973, and is to be extended to five additional locations in 1974, one of which is the Pentagon. This pilot project is designed so that it may be incorporated into a regionwide car pool program if such a step becomes desirable.
5. A regional computerized traffic signalization program to expedite the movement of all modes of commuter traffic and to conserve automotive fuel.

Studies

1. A Dial-A-Ride study to provide demand-actuated service with small buses for areas of low population density, or where physical constraints, such as narrow, crowded streets, make use of conventional buses impractical.
2. A special study to possibly provide a transportation system for Alexandria to connect the City's Metrorail stations with the Old Town and Waterfront areas.
3. A special study to determine street and traffic improvements to insure adequate access to Metrorail stations in Virginia.

A number of other technical studies and/or projects are presently being conducted by the NVTC staff. They include:

1. The Shirley Highway Express Bus on Freeway, National Demonstration Project (Shirley Express).
2. Transportation planning studies to be financed in part by the Urban Mass Transportation Administration (UMTA) and the Federal Highway Administration (FHWA).

3. Transportation studies and projects to be financed in part by the Virginia Department of Highways.
4. Local programs, such as the Dial-A-Ride pilot project in Fairfax City, commuter rail service, and superbuses operations in certain corridors. The Fairfax City Dial-A-Ride project now underway involves three vehicles and a total capital cost of \$50,000 which also has been included in our estimates of NVTC program and project costs. Operating expenses for this project will be borne entirely by Fairfax City and have not been considered in this report.

Implementation of those programs and projects not yet approved by NVTC involve additional costs and are estimated to have the following impact on NVTC program and/or project costs in the fiscal years shown.

Fiscal Year	NVTC Program and Project Costs	Additional Cost Non-Approved Projects	Total NVTC Cost, if Approved
1974	\$ 496,700	\$ -0-	\$ 496,700
1975	480,100	102,700	582,800
1976	484,100	152,800	636,900
1977	521,500	250,200	771,700
1978	562,900	351,100	914,000
1979	609,000	447,400	1,056,400
1980	<u>660,500</u>	<u>520,100</u>	<u>1,180,600</u>
NVTC Total	<u>\$3,814,800</u>	<u>\$1,824,300</u>	<u>\$5,639,100</u>

The Shirley Express Demonstration Project is assumed to terminate on January 1, 1975 and costs for that service have not been included in NVTC program and project costs beyond that date. However, since the service will continue, operating expenses for that service beyond January 1, 1975 have been included in our estimates of Metrobus operating expenses as shown in Exhibit 1, and described in the section on Metrobus Operating and Capital Costs. A brief summary of the cost/benefit of WMATA versus NVTC ownership and operation of the buses and facilities dedicated to Shirley Express service is also included in the following section on Metrobus Operating and Capital Costs.

A policy decision has not been made to adopt the January 1974 report of J. H. K. Associates, entitled "Northern Virginia Traffic Control System—Phase I", nor have alternative plans been evaluated. This proposed computerized traffic signalization system for Northern Virginia with necessary capital items is, however, presently estimated by J. H. K. Associates to cost a total of about \$5 million. The total cost was allocated by J. H. K.

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TRAFFIC CONTROL SYSTEM
CAPITAL AND OPERATING COSTS

	Initial Capital Cost*	Annual Cost of Maintenance & Operation	Total
Virginia Department of Highways			
Fairfax County	\$1,125,000	\$141,000	\$1,266,000
Arlington County	<u>765,000</u>	<u>96,000</u>	<u>861,000</u>
Subtotal	<u>\$1,890,000</u>	<u>\$237,000</u>	<u>\$2,127,000</u>
Local Jurisdictions			
City of Alexandria	\$1,575,000	\$197,000	\$1,772,000
County of Arlington	630,000	79,000	709,000
City of Fairfax	225,000	28,000	253,000
County of Fairfax	—	—	—
City of Falls Church	<u>180,000</u>	<u>21,000</u>	<u>201,000</u>
Total	<u>\$4,500,000</u>	<u>\$562,000</u>	<u>\$5,062,000</u>

Source: "Northern Virginia Traffic Control System—Phase I",
J. H. K. Associates, January 1976, Page 109.

* Would be eligible for State and Federal funding.

Associates on the basis of the number of traffic signals within each Northern Virginia jurisdiction. These estimates are illustrated in the table on the facing page.

The foregoing estimates represent the total cost of the proposed signal system. The actual cost to be paid by the Northern Virginia jurisdictions will, of course, be significantly smaller depending upon the availability of Federal and State funds and the adoption of an operating charter by the local jurisdictions. J. H. K. Associates estimates the cost/benefit ratio to be 7.1 to 1. Estimates for this signalization program have not been included in the section on NVTC Program and Project Costs, since this program has not been approved.

II. Metrobus Operating and Capital Costs

Our estimates of the Northern Virginia portion of the Metrobus annual operating deficits and capital requirements for future years are summarized in the following table and included in Exhibit 1.

Fiscal Years	Operating	Capital
1974	\$ 4,703,900	\$ 785,400
1975	9,722,900	1,303,500
1976	12,995,200	1,158,700
1977	15,697,900	1,376,400
1978	18,489,500	897,900
1979	21,463,600	811,100
1980	24,600,900	383,200
Total	<u>\$107,673,900</u>	<u>\$6,716,200</u>

Operating deficit estimates are based on the following assumptions:

1. The Metrobus service characteristics, as defined by WMATA in the amended Capital Grant Application dated February 7, 1974, Page B-1, are as follows:
 - a. 465 routes operated in Maryland, Virginia and District of Columbia.
 - b. Approximately 1,200 miles of area streets and highways served by transit buses.
 - c. Approximately 14,300 trips operated each weekday.
2. The Metrobus fleet as of March 25, 1974 consists of 1,779 units assigned as shown on the following page.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

ALLOCATION OF NEW METROBUSES
TO THE VARIOUS JURISDICTIONS

	Percentage	
Allocation Formula Based on Bus Miles		
District of Columbia	53.6%	
Maryland	19.0	
Montgomery County		10.1
Prince George's County		8.9
Virginia	<u>27.4</u>	
Total	<u>100.0%</u>	
		Buses
Phase I—100 Buses—Improvement of Overloaded Conditions		
District of Columbia	54	
Maryland	19	
Montgomery County		10
Prince George's County		9
Virginia	<u>27</u>	
Total Buses	<u>100</u>	
Phase II—369 Buses—Replacement of Existing Overage Buses		
District of Columbia	198	
Maryland	70	
Montgomery County		37
Prince George's County		33
Virginia	<u>101</u>	
Total Buses	<u>369</u>	
Phase III—151 Buses—Expansion of Services and New Routes		
District of Columbia	80	
Maryland	29	
Montgomery County		15
Prince George's County		14
Virginia	<u>42</u>	
Total Buses	<u>151</u>	
Summary of Allocation of All 620 Buses		
District of Columbia	332	
Maryland	118	
Montgomery County		62
Prince George's County		56
Virginia	<u>170</u>	
Total	<u>620</u>	

WMATA bus fleet — District of Columbia	931
Maryland	97
Virginia	498
Spares	<u>85</u>
Subtotal	<u>1,611</u>
NVTC Shirley Highway bus fleet	94
District of Columbia Department of Highways midi-bus fleet	15
Other (contract, charter, etc.)	<u>59</u>
Total Buses	<u><u>1,779</u></u>

Source: WMATA Department of Planning

3. The following three-phase program for the use of 620 new AM-General buses being delivered in 1974 is expected to be implemented and will bring the total Metrobus fleet to 2,015 units not counting the 15 midi-buses owned by the District of Columbia Department of Highways.
 - a. Phase I—The first 100 new buses to arrive will be used to supplement the existing Metrobus fleet so as to provide improved operations and to reduce overcrowded conditions on many of the existing lines.
 - b. Phase II—The next 369 vehicles on the delivery schedule will be used to replace older equipment. Latest WMATA plans include the possibility of retiring only 250 buses, which will therefore have the effect of increasing the fleet by 119 vehicles over the 2,015 mentioned above.
 - c. Phase III—The last delivery of 151 new buses will be used to expand and improve service in all jurisdictions.

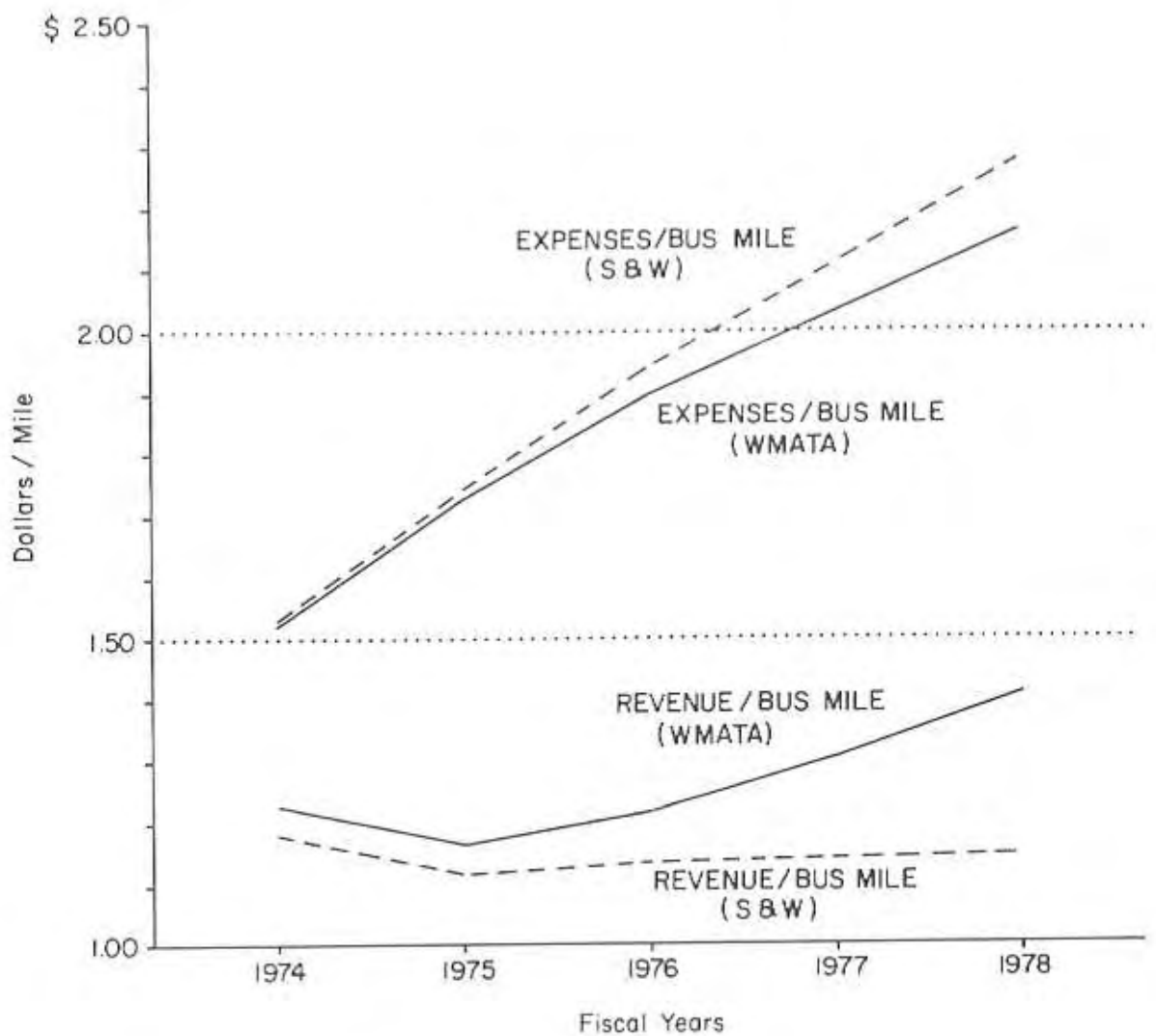
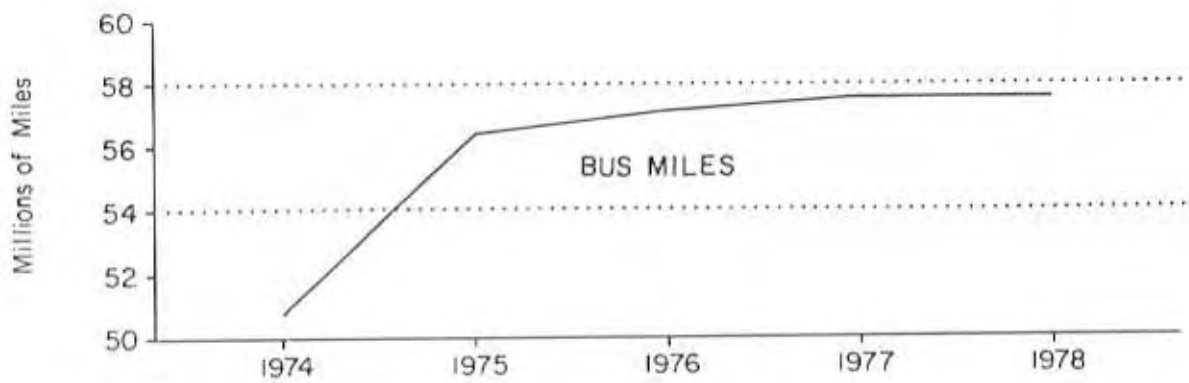
The proposed allocation of new buses to the various jurisdictions is shown in the table on the facing page.

4. The total annual revenue Metrobus miles and bus fleet size, as estimated by WMATA, will be as follows:

Fiscal Year	Metrobus Miles	Metrobus Fleet
1974	50,980,000	2,015
1975	56,475,000	2,040
1976	57,163,000	2,065
1977	57,510,000	2,065
1978	57,510,000	2,065
1979	57,510,000	2,065
1980	57,510,000	2,065

NORTHERN VIRGINIA TRANSPORTATION COMMISSION

Comparison of Metrobus Operating Revenue and Expenses



WMATA - Washington Metropolitan Area Transit Authority
 S & W - Stone & Webster Management Consultants, Inc.

5. Metrobus mileage estimates, as projected by Stone & Webster, do not reflect possible further increases in the WMATA bus fleet size due to the Energy Conservation/Air Pollution Abatement and Control Program, or in anticipation of substantial changes in commuter habit patterns due to the energy crisis or to changes in bus operating characteristics when Metrorail operation starts.
6. The existing fare structure will remain unchanged.
7. Passenger revenue per bus mile will decline and begin to bottom-out between fiscal years 1976 and 1977, and will gradually increase thereafter.
8. Other revenues, such as charter, contract, school subsidy, Downtowner and others, are assumed to increase gradually.
9. Operating expenses will increase throughout the period based on our investigation of all major expense accounts.

In developing the relationship of costs and revenues and the projection of a financial forecast for fiscal years 1974 through 1980, the assumptions stated above were used. It is important to understand that while the projected increase in bus miles will yield an increase in ridership and, therefore, some incremental increase in passenger revenue, the characteristics of the expanded service assignments and new route operations make it unlikely that the passenger revenue per mile will be as high as on the older established routes.

Because of these lower density characteristics, our estimates of passenger revenue per incremental mile (a new additional mile) are within a range of approximately 50% to 70% of the projected passenger revenue per mile on the established routes. We also estimate that expenses per incremental bus mile operated will be approximately 8% lower than the existing system costs. Therefore, the loss per incremental bus mile will exceed the present system level of loss per bus mile.

The above estimates and assumptions account for the differences between our projections of the Metrobus deficit and those made by WMATA. The graphs shown on the facing page and the data in Exhibit 2 illustrate these differences.

The following comparison of Stone & Webster and WMATA estimates of revenues and expenses per bus mile for fiscal years 1976 and 1978 have been selected as examples.

Fiscal Year	Bus Miles	Revenue Per Bus Mile		Expenses Per Bus Mile	
		WMATA	S&W	WMATA	S&W
1976	57,163,000	\$1.222	\$1.139	\$1.90	\$1.946
1978	57,510,000	\$1.415	\$1.148	\$2.16	\$2.284

Capital requirement estimates for the Northern Virginia portion of the Metrobus system have been made by Stone & Webster. These estimates are shown in the following table and in Exhibit 1. They are based on a review of data shown in WMATA's amended Capital Grant Application dated February 7, 1974, and have been adjusted to reflect escalation in new bus and garage construction costs over the life of those projects.

Fiscal Years	Capital
1974	\$ 785,400
1975	1,303,500
1976	1,158,700
1977	1,376,400
1978	897,900
1979	811,100
1980	<u>383,200</u>
Total	<u>\$6,716,200</u>

Other Programs

A number of other items which would affect the cost of Metrobus service in Northern Virginia are under consideration at this time. They have been investigated by Stone & Webster and National City Management Company to determine their impact on financing for the future. Five of these items are discussed and, to the extent data was available, estimates of their cost are shown as follows.

1. Energy Conservation/Air Pollution Abatement and Control Program

The capital costs developed for the Northern Virginia portion of this program assumed Federal participation of 80% of the cost of acquisition of 300 additional buses to be assigned to service in Northern Virginia during the fiscal years 1975-1980. These buses are in addition to the new buses to be acquired in the Metrobus capital program described earlier. Also included in this item in later years are funds to cover the purchase of antipollution devices for existing buses as well as bus shelters for the new services to be operated in Northern Virginia. Estimates of capital requirements for this program, as well as the related operating expenses, were originally developed by the NVTC staff.

The operating expenses we developed for the Northern Virginia portion were based on an estimated annual operating deficit per bus with escalation factors included. The following table shows our estimate of the NVTC share of the additional Metrobus Operating Deficit and Capital Costs, as well as the estimated size of the Metrobus fleet if this program were implemented.

Fiscal Years	Operating Deficit	Capital	Bus Fleet
1974	\$ -0-	\$ -0-	0-
1975	842,100	3,130,000	50
1976	2,223,700	320,000	100
1977	4,029,300	180,000	150
1978	6,327,800	110,000	200
1979	9,182,000	210,000	250
1980	<u>12,628,800</u>	<u>210,000</u>	300
Total	<u>\$35,233,700</u>	<u>\$4,160,000</u>	

2. Shirley Highway Express Bus Ownership

The alternatives of purchase and operation of the Shirley Highway Express Bus on Freeway Demonstration Project by WMATA or NVTC upon termination of the project on January 1, 1975 have been analyzed and evaluated. The operating expenses, assuming a takeover by WMATA, are included in Exhibit 1. The capital costs for takeover either by WMATA or NVTC are shown in Exhibit 6. Assuming a takeover by WMATA, we estimate a credit of approximately \$30,000 to the NVTC budget in fiscal year 1975. This is based on the assumption that WMATA will receive an UMTA grant to buy the buses and maintenance facility at that time. Under the same assumption, it is estimated that a takeover by NVTC would result in an increase in the cost of NVTC projects of approximately \$443,000 in fiscal year 1975 and, therefore, it does not appear to be feasible. Relative operating costs, under NVTC ownership, have not been estimated at this time.

3. Commuter Contract Service Operated as Regular Line Service

Reston and Mantua Hills contract operations were reviewed to determine their impact on the NVTC budget. If they had been included in the Northern Virginia portion of the Metrobus operating deficit, shown in Exhibit 1 as a regular route operation, instead of their present contract status, the effect, as shown below, would have been to increase the Northern Virginia portion of the deficit approximately \$62,000 per year, starting in fiscal year 1975.

Fiscal Year	Metrobus Deficit Shown in Exhibit 1	Metrobus Deficit With Contract Operation
1975	\$ 9,722,900	\$ 9,784,600
1976	12,995,200	13,056,900
1977	15,697,900	15,759,500
1978	18,489,500	18,551,100
1979	21,463,600	21,525,500
1980	<u>24,600,900</u>	<u>24,662,500</u>
Total	<u>\$102,970,000</u>	<u>\$103,340,100</u>

4. Fare Increase

The impact on the NVTC portion of the Metrobus operating deficit of a uniform increase of 25% in the basic fare structure (fiscal year 1975) was determined, and the results are shown in the following table:

NVTC Operating Deficit

Fiscal Year	Present Fares	Present Fares Increased 25%
1974	\$ 4,703,900	\$ 4,703,900
1975	9,722,900	6,241,500
1976	12,995,200	9,389,500
1977	15,697,900	11,963,800
1978	18,489,500	14,626,300
1979	21,463,600	17,437,200
1980	<u>24,600,900</u>	<u>20,360,400</u>
NVTC Total	<u>\$107,673,900</u>	<u>\$84,722,600</u>

The existing average fare was calculated to be 40.56¢. With a 25% fare increase to an average new fare of 50.70¢, we estimate that total WMATA annual passenger revenue will increase \$7.390 million, even though there will be a drop in total ridership. Under this assumption, the NVTC share of WMATA's operating deficit for fiscal years 1974-1980 would be reduced by \$23.0 million, from \$107.7 million to \$84.7 million, an average of \$3.3 million per year.

5. Auto Cost Increase With and Without a Fare Increase

The effects on the NVTC share of the Metrobus operating deficit, of an increase in private automobile cost with and without a fare increase of 25%, were developed. As shown below, two alternatives were considered:

Alternative #1—No fare increase and auto costs increased 25% in fiscal year 1975 and 10% per year thereafter.

Alternative #2—Fare increased by 25% in fiscal year 1975, and auto costs increased 25% in fiscal year 1975 and 10% per year thereafter.

Fiscal Year	Existing Deficit Projection	Alternative #1	Alternative #2
1974	\$ 4,703,900	\$ 4,703,900	\$ 4,703,900
1975	9,722,900	9,617,000	4,823,700
1976	12,995,200	12,737,600	7,872,300
1977	15,697,900	15,371,200	10,404,400
1978	18,489,500	18,569,600	13,102,500
1979	21,463,600	22,056,700	16,118,500
1980	<u>24,600,900</u>	<u>26,048,900</u>	<u>19,522,900</u>
Total	<u>\$107,673,900</u>	<u>\$109,104,900</u>	<u>\$76,548,200</u>

These estimates were prepared using a simulation model to show the impact of increased automobile cost on the use of private cars in an area served by mass transit. In this model we considered behavioral and socio-economic factors. Taking into account many diverse factors, the result was a determination of when a potential transit rider will be diverted from his car to a bus. The most important consideration is whether the cost of using transit is less than the out-of-pocket cost of car operation.

A range of potential transit riders was then determined for each alternative assumption. The arithmetic mean was calculated and used in our projections. The following assumptions were made in our auto cost analysis model:

1. Increased effectiveness in maintaining quality of transit service, schedule adherence, and so on, maintained or improved.
2. Present out-of-pocket auto cost = 6.607¢ per mile (in Washington Standard Metropolitan Statistical Area—SMSA).
3. Average car driven 10,000 miles per year.
4. Average 10 miles per gallon auto fuel consumption.
5. Average present regular gas price @ 65¢ per gallon.
6. Average trip length = 8.9 miles (one-way).
7. Actual per mile auto costs, as follows:

Type of Vehicle	1972*	1974**
	In cents	
Standard Size	13.6	16.0
Compact Size	10.8	12.7
Subcompact Size	<u>9.4</u>	<u>11.1</u>
Average Cost per Mile	<u>11.3</u>	<u>13.3</u>

* Source: U.S. Department of Transportation—Federal Highway Administration.
(Auto costs include out-of-pocket costs plus depreciation.)

** Escalation factors used to estimate 1974 values.

Alternative #1 of the table on the preceding page reflects the impact of increased auto costs on the bus operating deficit without a fare change. With the above assumptions, an increase in ridership is anticipated and the NVTC share of the Metrobus operating deficits is estimated to rise by \$1.4 million. Note that in the later years the increase in riding causes an increase in the deficit because the additional costs of providing service for these riders are more than the additional revenues generated. The total funds needed from the jurisdictions, therefore, would be increased from \$107.7 million to \$109.1 million, or an average of \$0.2 million per year.

Alternative #2 of the same table shows the effect of increased fares and auto costs. Under these assumptions, the deficit would be reduced from \$107.7 million to \$76.5 million, or an average of \$4.6 million per year.

The five items discussed above were presented to illustrate their impact on the portion of the Metrobus deficit allocated to the NVTC jurisdictions. Since no policy decisions have been made with regard to their implementation at this time, they were not included in Exhibit 1.

III. Metrorail Capital Costs

The estimates shown in the following table and in Exhibit 1 represent the Northern Virginia portion of the capital construction and equipment costs of the Metrorail system as estimated by WMATA (ARS-68).

Fiscal Years	Capital Costs
1969-73	<u>\$ 90,454,000</u>
1974	17,696,000
1975	29,327,000
1976	34,239,000
1977	25,279,000
1978	<u>11,619,000</u>
Subtotal 1974-1978	<u>\$118,160,000</u>
Total 1969-1978	<u>\$208,614,000</u>

These estimates are based on the cost allocation formula adopted by WMATA and NVTC which includes the following four factors:

1. The ratio of the estimated rail construction costs within each signatory's area to the total estimated rail construction cost.
2. The ratio of rail service to be provided (estimated train miles and number of stations) within each signatory's area to the total rail service to be provided.
3. The ratio of the estimated 1990 rail ridership originating in each signatory's area to the total estimated system rail ridership.
4. The ratio of the estimated 1990 population of each signatory's area to the total population of the WMATA area.

The cost allocation formula adopted by WMATA to allocate the construction costs of the rapid rail transit system to Northern Virginia, based on the above four factors, is as follows:

$$(\text{Factor \#1}) (40\%) + (\text{Factor \#2}) (30\%) + (\text{Factor \#3}) (15\%) + (\text{Factor \#4}) (15\%) = \text{Capital Cost}$$

The Northern Virginia Transportation Commission adopted the same formula for allocation of the Virginia share of net project cost among Arlington and Fairfax Counties and the Cities of Alexandria, Fairfax and Falls Church. However, for the purposes of the Virginia suballocation, the weight given to each factor comprising the formula was established at 25% by the Northern Virginia Transportation Commission.

The WMATA estimates of Metrorail capital requirements reflect its policy of inaugurating rail operations during fiscal year 1975. It is assumed, therefore, that the first full year of train operation will occur in fiscal year 1976 following the completion of Phase I of the construction program. Obligations for engineering, design and construction, and acquisition of rights of way and land, will probably continue at a high level because of the Authority's effort to complete the remaining phases on a schedule which calls for the entire system to be operational by fiscal year 1980. The total revised program cost is estimated at \$2,980,200,000, exclusive of costs of debt service during construction. It will be funded in three ways: 1) from Federal and local grants for the original ARS-68 program on a two-thirds Federal, one-third local basis, 2) from the net proceeds of Authority revenue bonds (amounting to \$44,800,000 at this time) on a 50% matching basis, as required by the terms of the National Capital Transportation Act of 1969 as amended, and, 3) from internally generated funds provided by eight local jurisdictions.

Metrorail estimates for fiscal years 1970 through 1980, as shown on the following table, were made by WMATA and include only the Northern Virginia portion of the major cost items listed. Exhibit 7 shows the capital contributions schedule for each of the jurisdictions for this period.

Northern Virginia Transportation Commission
Metrorail Capital Costs

Major Items	Amount
1. Capital Contributions Agreement (ARS-68)	\$149,900,000
2. Unallocated Costs (in 1968)	10,222,000
3. 50% Matching Revenue Bonds	44,800,000
4. Facilities for the Handicapped	<u>3,692,000</u>
Total	<u>\$208,614,000</u>

These estimates do not include betterments, add-ons specifically requested by the jurisdictions or additional cost overruns. Overruns are currently estimated by Stone & Webster to range from \$95 to \$150 million due to escalation in costs resulting from delays in work under contract and delays in letting contracts for new construction and equipment. The estimated annual impact of cost overruns on the individual jurisdictions would be as shown on the following page.

NVTC Jurisdictions Cost Overrun Impact

Jurisdictions	Estimated Yearly Range*	
	Low	High
Alexandria	\$ 291,900	\$ 460,900
Arlington	556,700	879,000
Fairfax City	23,400	37,000
Fairfax County	619,600	978,300
Falls Church	7,300	11,500
Total	<u>\$1,498,900</u>	<u>\$2,366,700</u>

*Beginning in fiscal year 1975 and continuing through fiscal year 1980.

The estimates assume continued Federal funding of these projects on the basis of the present grant to WMATA. It is important to note that these are preliminary in nature and may be subject to revision following completion of the forthcoming Net Income Analysis to be made by WMATA's consultants.

Total NVTC Costs

The total cost of all budget items illustrated in Exhibit 1 is shown in the last column of that exhibit. A breakdown of that total between operating costs and capital costs is shown in Columns 5 and 6, respectively, of Exhibit 1. A summary of the total NVTC costs is shown in the following table.

Fiscal Year	Operating	Capital	Total
1974	\$ 5,200,600	\$ 18,481,400	\$ 23,682,000
1975	10,203,000	30,630,500	40,833,500
1976	13,479,300	35,397,700	48,877,000
1977	16,219,400	26,655,400	42,874,800
1978	19,052,400	12,516,900	31,569,300
1979	22,072,600	811,100	22,883,700
1980	25,261,400	383,200	25,644,600
Total	<u>\$111,488,700</u>	<u>\$124,876,200</u>	<u>\$236,364,900</u>

In addition to the five Metrobus items previously described which were excluded from the Metrobus estimates because they were not a part of the adopted NVTC program, there are other cost items which were excluded from our estimates. They have either not been adopted by NVTC, or we found that sufficient relevant data was not available for use at this time. Items omitted of which the Commission should be aware are:

1. The funding for WMATA's employee retirement plan.
2. Bond interest and sinking fund costs for capital programs.

NORTHERN VIRGINIA TRANSPORTATION COMMISSION

COMPARISON OF REVENUES AND EXPENSES
FOR SELECTED TRANSIT SYSTEMS

	1972(a) Revenues/Mile	1972 (a) Expenses/Mile	Net
Privately Owned Transit Systems			
Buffalo	124.95¢	128.10¢	(3.15)¢
Cincinnati	113.91	107.17	6.74
Columbus	101.93	100.40	1.53
Jacksonville	72.54	76.98	(4.44)
Milwaukee	100.40	98.77	1.63
New Orleans	77.66	114.02	(36.36)
Publicly Owned Transit Systems			
Baltimore	114.18¢ (b)	115.55¢ (b)	(1.37)¢
Cleveland	126.04	83.99	42.05
Dallas	83.51	86.88	(3.37)
Los Angeles	80.43	121.30	(40.87)
Miami	86.40	98.70	(12.30)
New York	194.36(b)	211.96(b)	(17.60)
Oakland	60.85	98.87	(38.02)
Pittsburgh	NA	NA	—
San Diego	66.21 (b)	108.90(b)	(42.49)
Rochester	111.53	118.68	(7.15)

Notes: (a) Annual 1973 operating statistics for the listed systems were not available.

(b) Fiscal year 7/1/71-6/30/72

3. Metrorail operating costs and related deficits.
4. Other consultants' estimated costs for certain projects under consideration by NVTC.
5. Additional labor costs due to elimination of present transit overtime exemption as provided in The Fair Labor Standards Act of 1974.

In addition to the above items, interest charges for the late payment of obligations by a jurisdiction would be charged to that jurisdiction.

It is expected that the provision of modern, adequate, high quality public transportation service will result in significant annual deficits. An analysis of transit systems throughout the nation, as shown in the table on the facing page, and in more detail in Exhibits 3, 4 and 5, indicates that the requirement for substantial financial assistance is universal. Note that several of the systems that were privately owned in 1972 have subsequently become publicly owned. Responsible public officials are making every effort to provide efficient transportation systems for the future and are aware that some form of financial assistance or subsidy is needed to stabilize fares and service.

REVENUE SOURCES

While it was not provided for in the original proposal for this study, we were later requested by NVTC to work with its staff in the development of sources of revenue to meet the operating costs of public transportation in Northern Virginia for the balance of this decade. Funding estimates for these costs are not included in Exhibit 1, but have been shown in letter reports to NVTC dated January 9, 1974 and February 6, 1974.

NVTC costs are based on the local financial requirements for regional transit costs as presently established. Changes in Federal and State participation in such costs, as well as new sources of revenue, may have a beneficial effect on the amounts of contribution required of the NVTC member jurisdictions.

Federal Aid

Present Federal aid for mass transit is in the form of capital grants on the basis of 80% Federal funds matched by 20% State and/or local funds.

Under the proposed Federal Unified Transportation Assistance Program (UTAP) proposal, funds would be provided for mass transit operating subsidies as well as capital grants from three sources. In 1975, the first year of the proposed six-year plan:

1. \$700 million in capital grants would be available for major mass transit projects, to be disbursed by the Secretary of Transportation.
2. \$1,100 million, distributed according to population, would be available for highway or transit capital investment at local option.
3. Another \$700 million, distributed according to population, would be available for either capital investment or operating subsidies at local option.

Altogether, \$2.5 billion would be available for mass transit during the first year of UTAP. The first of the three sources, the \$700 million in grant money for mass transit capital projects, would continue to be administered separately during each year of the program. The other two sources, would be combined into a single fund in 1978, and their total in 1977 and thereafter would be \$2 billion, as shown in the following table.

Unified Transportation Assistance Program Funds
(in millions of dollars)

Fiscal Year	Transit Direct Capital Grants	Highway or Transit Capital		Transit Capital or Operating Subsidies	Total
1975	\$700	\$1,100		\$700	\$2,500
1976	700	1,100		800	2,600
1977	700	1,100		900	2,700
1978	700		\$2,000		2,700
1979	700		2,000		2,700
1980	700		2,000		2,700

This UTAP proposal will enable each jurisdiction to receive a predictable amount of money each year, and have the option to decide how to use the funds. A jurisdiction could use up to 50% of its share of the combined \$2 billion for operating subsidies. The money received could also be used for urban highways or streets, or for the 20% local share of mass transit capital projects.

As recently as June 7, 1974, a new bill known as the Federal Mass Transportation Act of 1974 was being considered by a Congressional Transportation Subcommittee. This indicates that the UTAP proposal as described above is subject to considerable modification, if adopted at all.

State and Local Aid

The Legislative Committee of the Northern Virginia Transportation Commission has recommended several potential sources of new revenue to support operating costs for expanded public transportation in Northern Virginia. In reviewing the possible tax sources that could be made available to provide additional funding for both existing and expanding public transportation services, the Legislative Committee suggested an increase in the tax on gasoline as its first preference. Its second preference was an increase in the vehicle titling tax. Finally, in recognition of the potential difficulty in obtaining authorization for either of the above taxes, it was suggested to the Committee that an increase in the local 1% add-on sales and use tax be considered.

The effect of these taxes would be as follows.

Gasoline Tax

It is estimated that about 462,300,000 gallons of gasoline were consumed in the Northern Virginia Transportation District (NVTD). An additional 91,600,000 gallons were consumed in Loudoun and Prince William Counties. Estimated new revenue to be produced if this tax were implemented would be:

	2c Tax Increase	5% Tax*
NVTD	\$ 9,246,000	\$11,557,500
All Northern Virginia	11,078,000	13,847,500

* (Based on 50 ¢ /gallon)

Sales Tax

The local 1% add-on sales and use tax within the Northern Virginia Transportation District produced over \$17,800,000 in FY 1972. If this tax is increased, the following additional tax revenues are estimated:

	1/2% Tax Increase	1% Tax Increase
NVTD	\$ 8,920,000	\$17,840,000
All Northern Virginia	10,287,000	20,574,000

Vehicle Titling Tax

The Northern Virginia Transportation District has 18% of the current State vehicle registrations. NVTD plus Loudoun and Prince William Counties has 22%. Therefore, based on 1974 estimates, the NVTD share of the titling tax at present is \$8,100,000. (NVTD 18% of \$45,000,000 = \$8,100,000)

Assuming new cars are bought and registered in the same proportion as the vehicle registrations estimated above, the Northern Virginia portion of a 2% increase in the titling tax would produce \$162,000.

DEFICIT ALLOCATIONS

In the scope of work for this study, we were given the task of examining various methods of allocating Metrobus operating deficits to the NVTC member jurisdictions to determine their share of projected bus transit deficits through 1980. Prior to the investigation of alternative allocation methods, we determined that any new formula for Northern Virginia jurisdictions must be: 1) simple to apply, and 2) as fair and equitable as possible.

We feel that the "Fair Share" formula described later in this section will fulfill those requirements when fully tested and modified to conform with local conditions in Northern Virginia.

Present Allocations

Metrobus operating deficits are presently allocated between the major jurisdictions of Maryland, the District of Columbia, and Virginia on the basis of regular route bus miles operated in each jurisdiction. We want to emphasize that this is not a formula. It was developed as an interim measure when WMATA was faced with the takeover of the four private companies comprising the system and it is expected to be superseded when WMATA's consultants complete their current study.

Alternative Allocations

A number of alternative allocation methods for Metrobus deficits within Northern Virginia were studied. Among the methods we considered were allocations on the basis of:

Bus Miles	Population
Bus Hours	Passenger Miles
Route Miles	Various Combinations of the above
Seat Miles	"Fair Share"

Allocation by revenue bus miles, which is the current basis, produces the following results:

Alexandria	25.05%
Arlington	39.15%
Fairfax City	3.21%
Fairfax County	31.41%
Falls Church	1.18%

Allocation by revenue bus hours would produce the following results:

Alexandria	26.59%
Arlington	43.48%
Fairfax City	3.21%
Fairfax County	25.45%
Falls Church	1.27%

Allocations based on miles or hours or combinations of the two are related to costs without any recognition of revenues generated. Allocation by route miles is even less satisfactory than by bus miles, since it does not recognize frequency of service. Allocation by seat miles produces essentially the same result as by bus miles, since all the buses have about the same capacity. This consideration would be important only in the event that either "mini-buses" (small capacity) or "super-buses" (very high capacity) were in use as part of the system.

Allocation by population produces the following results:

Alexandria	13.64%
Arlington	20.77%
Fairfax City	2.78%
Fairfax County	61.52%
Falls Church	1.29%

Allocation based on population recognizes neither costs of service provided nor revenues generated. Passenger miles are difficult to measure since origin and destination data by bus stop is required and is not readily available. The requirement that a new formula must be simple to apply would not be met.

"Fair Share" Allocation

We have selected a method of allocation for NVTC which utilizes some of the above factors but also includes revenues generated within a jurisdiction as a factor. We have called it the "Fair Share" method since its purpose is to determine an equitable allocation of deficits for Metrobus operation within the Northern Virginia Transportation Commission jurisdictions. The following serve as a basis for determining revenue and cost considerations:

1. WMATA is a metropolitan system, and its operation benefits every jurisdiction which it serves.
2. The Washington, D. C. central business district and certain specific destinations in Virginia are considered terminal points of the routes.

3. The method of allocating costs and revenues must be unbiased; all jurisdictions must be treated equally.
4. Consideration should be given to the number of passengers riding from a jurisdiction; an increase in riding should reduce a jurisdiction's obligation.
5. Conversely, an increase in service provided should increase a jurisdiction's obligation.
6. Zone fares, where they exist, are generally related to route distance.

This proposed allocation method obligates a jurisdiction for the difference between: 1) the system cost of service provided, based on miles, and 2) a revenue credit based upon ridership within the jurisdiction on a given route.

A revenue credit is applied against the cost of service to give each jurisdiction proportionate credit for passengers boarding and alighting within its boundaries. The number of passengers would be determined by periodic sample counts.

The "Fair Share" allocation method includes two additional factors, bus speed and consideration for heavily loaded buses passing through intermediate jurisdictions.

The NVTC engaged Stone & Webster Management Consultants, Inc. to conduct a test of the "Fair Share" allocation formula on six selected routes in Northern Virginia. This test was conducted during February 1974 and the final report was submitted on April 5, 1974.

The results of the test showed that this formula was simple to apply and appears to be fair and equitable. This is because the "Fair Share" formula recognizes both revenue generation and costs of service in its allocation.

We recommended that the remainder of the routes in Northern Virginia be tested in order to obtain the necessary information to institute the "Fair Share" formula. Although additional cost would be involved, it is our opinion that the benefits to be derived are worth the additional expenditure. While we expect that WMATA would participate in this project, the cost to NVTC without such participation is estimated at only \$1 per thousand passenger trips.

We also recommended that NVTC, in conjunction with WMATA, should establish a program for the necessary on-going periodic testing of routes to keep pace with changes in Metrobus service. This data would allow maintenance of the "Fair Share" formula and provide management information for NVTC and WMATA, as well as individual route data by jurisdiction.

NORTHERN VIRGINIA TRANSPORTATION COMMISSION
QUALITY OF SERVICE - AREAS OF CONCERN

Deficit

Costs

Major cost change areas

Revenues

Fare structure

Passengers

Operations

Mileage

Hours

Schedules

Routes

Vehicles

Assignments

Condition

Failures

Schedule Adherence

Runs or pieces of work not operated

Delays

Communications and dispatching

Accidents

Security

Vandalism

Money handling

Personnel

Turnover

Productivity

Marketing

Advertising

Availability of Information

Passenger Amenities

Promotions and Innovations

Complaints

Service Standards

Availability of Service

Frequency of Service

Direction of Service

Speed

Loading

Planning

Demographics

Coordination

Response Time

Current Problem Areas

QUALITY OF SERVICE

The NVTC has seen the need to monitor WMATA's Metrobus operations in the Northern Virginia area. To insure the highest quality of public transportation service for the residents of Northern Virginia, within the limits of a sound fiscal policy, such a program, to be effective, should monitor all aspects of the bus operation.

This program should depend on information that is readily available or which can be produced at reasonable expense. It must provide a simple method of analysis which can be performed rapidly and regularly. It is not intended to duplicate WMATA reports, but rather to extract the relevant information from them. This result can be achieved with a program which depends primarily on reporting changes, exceptions to the normal, major variations and trends.

The important areas of concern which are included in the monitoring program are listed on the facing page. A detailed recommendation for monitoring each of these areas of concern will be found in the following paragraphs and in the Appendix. All of these recommendations together will result in a monitoring program which will maintain an adequate flow of information to NVTC concerning Metrobus.

It is important that any such program for NVTC monitor both the quality of Metrobus service in general, and the quality of service in Northern Virginia as compared with the rest of the system. It is equally important that the program be flexible and adjust to future innovation and progress and to future economic and service needs.

We recommend that the NVTC direct its staff to prepare a monthly report to the Commission following the format as presented in the Appendix. One staff member should have the responsibility to collect the data, perform the required analysis, and prepare the report. This report will indicate exceptions and trends and will not necessarily report on every item every month.

The NVTC staff will have the back-up information available if needed. In addition to the monthly NVTC report and the maintenance of the file containing the back-up data, the NVTC staff would conduct the periodic inspections which are indicated in the Appendix. The staff should also continue its close relationship with the WMATA staff in order to maintain the flow of information and thoroughly understand the current problems. This will enable the NVTC to monitor progress toward solution of current problems.

Deficits

Recommendation

The NVTC should review monthly the current financial results of Metrobus. The monthly report to the Commission should contain the following information and comparisons.

WMATA System Deficit	—	Most recent month Year to date
Each NVTC Jurisdiction Deficit	—	Most recent month
Total NVTC Deficit	—	Most recent month
Each NVTC Jurisdiction Deficit	—	Year to date
Total NVTC Deficit	—	Year to date
WMATA System Revenue	—	Most recent month Year to date
WMATA System Cost	—	Most recent month Year to date
WMATA System Passengers	—	Most recent four weeks* Year to date

* System passenger data is currently maintained on a weekly basis.

For each of the above items the current period would be shown in the first column. The second column would show the budget for that period, and the third column would show the same period in the previous year, permitting the reader to compare actual results with the budget and with prior period results.

Notes concerning any major revenue or cost changes would be provided.

Discussion

The single most important area of concern is the deficit. Information on the deficit is available in WMATA's monthly comptroller's report. The comparisons with the previous period are given. The WMATA budget data is found in the annual budget report. A month-by-month budget breakdown would have to be obtained from WMATA or estimated by NVTC.

An available measure of the use of the bus system is ridership. WMATA's fare collection system does not permit an actual passenger count, but data on estimated passengers by week for the system and for Northern Virginia is available. The number of passengers should be monitored, and the NVTC staff should review periodically with WMATA the method used in estimating passengers. This is most important after any changes in routes, schedules or fares.

Operations

Recommendation

We recommend that the monthly report from WMATA to NVTC contain a section on operations which identifies any major operating changes and reports all other operational matters by exception only.

Items to be reported monthly are:

- | | | |
|--|---|-----------------------------------|
| WMATA System Bus Mileage | — | Most recent month
Year to date |
| NVTC System Bus Mileage | — | Most recent month
Year to date |
| Major Schedule or Route Changes (Systemwide) | | |

The mileage data would be in three columns, showing the current period, the budget and the same period of the previous year. Notes on major schedule or route changes would be a concise summary of changes and reasons therefore (i.e., "Route X extended 0.6 miles to serve new homes on Blank Street or service on Route Y increased from hourly to half-hourly on weekdays between 9:00 A.M. and 4:00 P.M.").

Items to be reported monthly by exception (a significant variation in WMATA system or NVTC area results) are:

- Hours
- Vehicles
- Schedule Adherence
- Accidents
- Security
- Personnel

Discussion

The NVTC staff would receive and analyze WMATA reports on all of the above items monthly. Except for mileage, only those items in which there was a significant change or variation in results would be included in the monthly report to the Commission.

In the operations area, WMATA has a reporting system which allows management to monitor daily operations. Monthly summaries of such data provide the input for the NVTC staff to use. Comparisons would be made for the WMATA system and the NVTC area.

WMATA has a budget number of miles for comparison with actual and previous periods. In most of the other operational categories, comparisons must be made with

previous periods and with objectives or standards. WMATA should be encouraged to review operating results and establish such objectives and standards where they do not now exist in the areas of:

- Vehicle Failures
- Schedule Adherence - delays
- Runs or pieces of work not operated
- Accidents
- Security
- Personnel

Hours of bus service should be compared with miles to determine any significant variations in productivity or speed, and reported by exception for the system or in the NVTC area.

Major revisions in vehicle assignments should be noted. A periodic inspection by a qualified NVTC staff member will be required to monitor vehicle condition, to observe performance in all operating categories, and to gain firsthand information when statistics indicate a problem area or an unfavorable trend.

Marketing

Recommendation

The monthly report to the NVTC should indicate any significant variations from the budget and any other changes in the marketing effort. This includes the areas of:

- Market Research and Analysis
- Availability of Information
- Passenger Amenities
- Promotions and Innovations
- Advertising

Discussion

It is difficult to provide an exact method for measuring marketing effort. However, this is an area which must not be overlooked in total performance monitoring. The NVTC needs to be assured that there is a positive and effective marketing program for the system and that Northern Virginia is receiving its share of the effort. Included in this area are such items as market identification and data collection, service design, information availability, passenger amenities, promotions, innovations, and advertising effort.

As part of the monitoring program, the NVTC staff should be aware of the WMATA budgets, plans and objectives in this area. Actual expenditures as reported in the comptroller's report can be compared with the budget. Periodic inspections and checks will

be required to ascertain that schedules and other information are available to Northern Virginia patrons. The NVTC staff must also ascertain that the total marketing effort is reasonably balanced throughout the system.

The NVTC has provided some passenger amenities, such as shelters, through its own programs in Northern Virginia. The NVTC should also check that any system funds spent for such purposes are equitably distributed. The monthly report to the Commission should mention only those marketing items of special interest or concern.

Complaints

Recommendation

The monthly report from WMATA to NVTC should contain a numerical summary of complaints by category and major jurisdiction, with a comparison with the previous period and an objective. The categories would be:

- Bus Schedules or Routes
- Bus Operations (late, early, no-show, and so on)
- Facilities
- Drivers

Discussion

Complaints, and their handling and follow-up, are an area of special concern. Tabulation and analyses of complaints offer the best guide to current problem areas and transit needs. Proper follow-up and handling of complaints can improve service and increase public acceptance and use of the transit system.

WMATA does keep a record of complaints by certain categories. NVTC should monitor complaints by total number and trends for both the system and the NVTC area. A periodic check will be required to make certain that follow-up and handling procedures are being observed.

The NVTC presently receives, by referral from WMATA, complaints related to Northern Virginia in the area of schedules, routes, requests for route extensions, and so on.

The Report to the Commissioners should identify only the specific problems noted from analysis of complaints and what corrective action is planned or possible.

Service Standards

Recommendation

The NVTC should be aware of the current service standards for the WMATA system and the NVTC area. The NVTC should review these standards and determine any changes required or desired. The monthly report by exception would advise of any changes.

Service standards to be reviewed are:

- Availability of Service
- Frequency of Service
- Directness of Service
- Speed of Service
- Loading

Discussion

In the area of service standards there are several measures which can be determined for the present system. Many of these change only as population shifts, growth occurs or travel patterns change. Others are set by policy and need infrequent review.

Availability of service measures the completeness with which the transit system blankets the urban area. The transit user evaluates the usefulness of the system by the proximity of transit service to his home and other destinations.

The prevailing industry standard for an urban area is that transit service be available within 1,500 feet, a reasonable walking distance. In suburban areas this distance is increased to 2,000 feet as density of population decreases. In outlying and sparsely populated areas, service must be related to density if excessive costs are to be avoided.

A measure of transit availability, known as the transit coverage index, is shown below:

$$\text{Transit coverage index} = \frac{\text{Arterial street miles served by buses in NVTC area}}{\text{Total arterial street miles served by system}} \times \frac{\text{Total number of people served by system}}{\text{Number of people served by buses in NVTC area}}$$

The frequency of service is determined on a route-by-route basis for both peak and non-peak periods. A chart showing frequency for Northern Virginia routes is shown in the Appendix. A service is called "frequent" if it operates on 30 minute headways (intervals between trips) or less. Service is called "regular" if it operates on headways of between 30 and 60 minutes. It is called "occasional" if it does not operate at least once an hour.

A loading standard is the average number of passengers on board a bus at the peak load point for the route. It is usually expressed as a percentage of the available seats.

Washington area transit operations in the past have used a loading standard of 150% in peak hours; that is, all seats occupied and standees numbering half the seating capacity. WMATA has recognized that this percentage is too high, particularly on longer or express routes, and has the current goal of 125%.

The NVTC should be aware of the quality of transit service produced by adherence to this standard (150%) and the economic consequences of changes to it. Adding buses for peak hour service is expensive, but additional riders cannot be attracted to trips where the new passenger must stand for 30 minutes under crowded conditions.

The directness of service is extremely difficult to measure. Routes can be analyzed to see if unnecessary circuitry can be eliminated or if a revision in routes can provide more direct service. Another measure is the use of transfers. Routes with a high volume of transfer issuance or receipt may give indications of potential for additional through-services. Northern Virginia, because of previously separate bus systems, has no through-routes to any part of Washington beyond the central business district.

Complaints and public requests can also be used to determine additional direct service needs.

Speed of service is an important factor in the public acceptance and use of transit. Speeds can be improved by express routings, improved traffic flow, bus lanes, and so on. Many such improvements are part of NVTC's programs. System speed and Northern Virginia service speed should be calculated and monitored regularly. Any major changes should be reported to the Commissioners. Speed is calculated by dividing the number of scheduled bus miles by the number of scheduled running bus hours.

Planning

The NVTC must be assured that all aspects of planning are being properly coordinated, that Northern Virginia is receiving its fair share of the planning effort and that the response time, in satisfaction of service change requirements, is reasonable. The NVTC must also be assured that planning is taking economic realities into consideration.

For all planned major service changes, there should be a forecast of changes in costs, revenues and deficits.

Current Problem Areas

WMATA has combined four separate bus operations to form the present system. Many improvements have been made and others are planned. The NVTC should be aware of

current problem areas and monitor the correction of these problems. In some cases, corrections are planned but the time of implementation is many months in the future. The transit riders or the potential transit riders may feel that this response time is too slow.

Current service problems are:

1. More buses are needed on some express routes in the peaks.
2. Additional express services are needed.
3. Route extensions are needed in some new areas.
4. Route revisions are needed to achieve:
 - a. Better through-routing
 - b. Elimination of circuitry
 - c. Elimination of unnecessary overlapping services.
5. There are unproductive peak hour buses due to poor schedules, trips below minimum patronage level for peaks and cross deadheading.

An analysis of the bus productivity and a realignment of route and service patterns could make available many existing vehicles which could then be used to fill the additional service needs.

Monitoring Systems

Recommendation

The NVTC should implement the monitoring system outlined in the Appendix immediately. This program is set up to be performed manually at the outset. The NVTC should work with WMATA to take maximum advantage of WMATA's computer capability in the information reporting area, with the ultimate goal of having WMATA produce the statistical section of the required report on the computer.

Discussion

A monitoring system, as a management tool, should view transit operations from both a cost and a service standpoint. The system should provide a complete picture of the Metrobus operation by individual vehicle movements and then group and summarize this data so that it can provide meaningful information. The organization of a monitoring system involves the structuring of its data base and the successive layers of detail. There are four separate identifiable levels in the data base required for a computer system:

1. Financial
2. Maintenance, parts and materials inventory and service
3. Data management (vehicle scheduling and run cutting, and so on)
4. Simulation and statistical support

The number of reports from such a system ranges from a summary of the total operations to detailed exception reports.

The transit industry has recently gone through a number of dynamic changes:

1. Private to public ownership
2. Private to public financing
3. Vehicle modernization programs
4. Improved transit service techniques
5. Innovative management and marketing techniques
6. Computerized information

Information systems have advanced from manual to fully automated computer systems and vary widely depending on the size and needs of the transit operation.

Typical examples of fully automated information systems are New York City (MTA) and Chicago (CTA), which employ computers extensively for monitoring and controlling financial, operational and statistical functions of their respective transit systems.

To realize the full benefits of a modern transportation system, reporting, planning, direction and control must keep pace with improvements in operations. Among others, WMATA has made improvements in:

1. Centralized management and planning for the region
2. The installation of new buses
3. Garage operations through uniform maintenance practices and scheduling

These improvements would have been difficult to achieve without the use of a computer information system.

The WMATA computer equipment consists of an IBM 360 model 30 (32K core), located in the new WMATA headquarters in Washington, D. C. The related software programs are currently categorized into two operational types:

1. Metrobus - essentially 1401 card programs operating under emulation mode (Tape Operating System (TOS) on the 360/30). Typical applications are:
 - a. Financial reports
 - b. Time reports and payroll
 - c. Driver run cuts and scheduling
 - d. Operations data, which is produced on the computer and subsequently manually analyzed for generation of management reports and statistical data

2. Metrorail - essentially 360 programs, such as:
 - a. Construction schedule
 - b. Cost accounting system
 - c. Contract detail information system
 - d. Fixed assets
 - e. Budgetary apportionment

Current WMATA computer systems plans call for the expansion of the computer core memory and installation of a disc operating system (DOS) to provide increased computer capabilities. This will permit more efficient utilization of the computer with minor additional hardware and operating systems software modifications.

Installation of UMTA's Financial and Operating Data Reporting System - Project "FARE" (Financial Accounting and Reporting Elements), with implementation of the general ledger chart of account codes as the prime requirement, is due for completion early in fiscal year 1975.

The objective of Project FARE is to improve the consistency and reliability of financial and operating data of transit companies and thus overcome the deficiencies in existing reporting systems.

The reporting requirements for FARE cover the following major elements:

- Revenue report
- Balance sheet
- Property report
- Passenger count report
- Other non-financial operating data reports
- Expense report
- Miscellaneous auxiliary questionnaires and subsidiary schedules.

Transit Operations and Management Systems (TOMS) Program also produced by UMTA, is related to Project FARE. TOMS Program consists of the following:

- SIMS: Service, Inventory and Maintenance System
- RUCUS: Run Cutting and Scheduling
- MPS: Maintenance Planning System for rail rapid transit operations.

These TOMS Programs are intended to develop improved internal information systems for transit system management, while the FARE system was designed as an external reporting system.

The installation of a Run Cutting and Scheduling (RUCUS) system is planned for fiscal year 1975, after the computer center receives specific program requirements from

WMATA planning and scheduling departments. The RUCUS package is a set of computer programs designed to assist in all phases of scheduling activity.

The NVTC staff member assigned the responsibility for preparing the NVTC monthly quality of service report should work with the WMATA computer department to produce the statistical portion of the monthly report directly from the computer. The data available from the installation of the FARE and RUCUS programs will help make this possible.

TABLE OF EXHIBITS

Estimated Financial Requirements for Public Transportation	1
Comparative Operating Revenue and Expense Analysis	2
Total Operating Expenses Per Vehicle Mile— Selected Cities	3
Total Operating Revenue Per Vehicle Mile— Selected Cities	4
Comparison of Revenue and Cost Per Passenger (1972)—Selected Cities	5
Shirley Highway Project Assuming Purchase by WMATA	6
Metrorail Capital Contributions Payment Schedule by Jurisdiction	7

NORTHERN VIRGINIA TRANSPORTATION COMMISSION
ESTIMATED FINANCIAL REQUIREMENTS FOR PUBLIC TRANSPORTATION

Fiscal Year (1)	NVTTC Program and Projects	Metrobus		Metrorail		Total NVTTC	
		Operating	Capital	Operating	Capital	Operating	Capital
1969	\$ 85,000	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ 85,000	\$ 85,000
1970	93,300	-0-	-0-	16,918,000	16,918,000	93,300	17,011,300
1971	191,400	-0-	-0-	24,658,000	24,658,000	191,400	24,849,400
1972	223,200	-0-	-0-	25,362,000	25,362,000	223,200	25,585,200
1973	513,700	578,000	9,700,000	23,516,000	1,091,700	33,216,000	34,307,700
Subtotal	\$1,106,600	\$ 578,000	\$ 9,700,000 (2)	\$ 90,454,000	\$ 1,684,600	\$100,154,000	\$101,838,600
1974	\$ 496,700	\$ 4,703,900	\$ 785,400	\$ 17,696,000	\$ 5,200,600	\$ 18,481,400	\$ 23,682,000
1975	480,100	9,722,900	1,303,500	29,327,000	10,203,000	30,630,500	40,833,500
1976	484,100	12,995,200	1,158,700	34,239,000	13,479,300	35,397,700	48,877,000
1977	521,500	15,697,900	1,376,400	25,279,000	16,219,400	26,655,400	42,874,800
1978	562,900	18,489,500	897,900	11,619,000	19,052,400	12,516,900	31,569,300
1979	609,000	21,463,600	811,100	-0-	22,072,600	811,100	22,883,700
1980	660,500	24,600,900	383,200	-0-	25,261,400	383,200	25,644,600
Subtotal	3,841,800	107,673,900	6,716,200 (3)	118,160,000	111,488,700	124,876,200	236,364,900
Grand Total	\$4,921,400	\$108,251,900	\$16,416,200	\$208,614,000	\$113,173,300	\$225,030,200	\$338,203,500

Notes:

- (1) Fiscal Year ends June 30.
- (2) Metrobus capital local share based on 2/3-1/3 (Fiscal Year 1973 only).
- (3) Metrobus capital local share based on 80/20 (Fiscal Year 1974-Fiscal Year 1980).

NORTHERN VIRGINIA TRANSPORTATION COMMISSION
COMPARATIVE OPERATING REVENUE AND EXPENSE ANALYSIS

	<u>Fiscal Year (1)</u>				
	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978 (2)</u>
Bus Miles Operated	50,980,000	56,475,000	57,163,000	57,510,000	57,510,000
<u>WMATA Projection:</u>					
Total Operating Revenue		\$1.169	\$1.222	\$1.310	\$1.415
Revenue Per Bus Mile	\$1.23	5.099%	5.833%	7.80%	8.026%
Percent Change					
Total Operating Expenses		\$1.73	\$1.90	\$2.03	\$2.16
Cost Per Bus Mile	\$1.52	13.82%	9.83%	6.84%	6.40%
Percent Change					
<u>Stone & Webster Projection:</u>					
Total Operating Revenue		\$1.123	\$1.139	\$1.144	\$1.148
Revenue Per Bus Mile	\$1.187	5.39%	1.43%	0.44%	0.35%
Percent Change					
Total Operating Expenses		\$1.735	\$1.946	\$2.112	\$2.284
Cost Per Bus Mile	\$1.523	13.93%	12.16%	8.53%	8.14%
Percent Change					

Notes:

- (1) Fiscal Year ends June 30.
- (2) Comparable data not available beyond Fiscal Year 1978.

NORTHERN VIRGINIA TRANSPORTATION COMMISSION

TOTAL OPERATING EXPENSES PER VEHICLE MILE - SELECTED CITIES

	<u>1969</u>	<u>1970</u> (Cents per Vehicle Mile)	<u>1971</u> (Cents per Vehicle Mile)	<u>1972</u>
<u>Privately Owned Transit Systems</u>				
Buffalo	97.58¢	105.16¢	118.02¢	128.10¢
Cincinnati	85.03	91.01	100.12	107.17
Columbus	86.37	90.25	93.26	100.40
Jacksonville	64.45	69.42	73.27	76.98
Milwaukee	80.32	87.36	92.37	98.77
New Orleans	108.46	99.93	107.34	114.02
<u>Publicly Owned Transit Systems</u>				
Baltimore	105.48¢	105.39¢	108.39¢	115.55¢(1)
Chicago	125.46	137.56	148.56	N.A.
Cleveland	N.A.	73.66	117.44	83.99
Dallas	74.25	79.14	81.51	86.88
Los Angeles	87.05	95.96	106.64	121.30
Miami	105.48	82.43	90.04	98.70
New York	166.94	193.86	217.94	211.96(1)
Oakland	78.15	86.19	91.16	98.87
Pittsburgh	N.A.	118.37	128.24	N.A.
San Diego	82.42	89.84	92.51	108.90(1)
Rochester	85.83	101.94	111.94	118.68

Notes:

(1) - Fiscal Year 7/1/71 through 6/30/72.
N.A. - Not Available.

NORTHERN VIRGINIA TRANSPORTATION COMMISSION

TOTAL OPERATING REVENUE PER VEHICLE MILE - SELECTED CITIES

	<u>1969</u>	<u>1970</u> (Cents per Vehicle Mile)	<u>1971</u> (Cents per Vehicle Mile)	<u>1972</u>
<u>Privately Owned Transit Systems</u>				
Buffalo	94.90¢	106.34¢	118.64¢	124.95¢
Cincinnati	89.37	94.37	102.75	113.91
Columbus	89.43	96.41	101.86	101.93
Jacksonville	66.39	69.20	71.90	72.54
Milwaukee	81.62	90.19	93.38	100.40
New Orleans	58.14	77.73	79.38	77.66
<u>Publicly Owned Transit Systems</u>				
Baltimore	110.78¢	112.92¢	112.97¢	114.18¢(1)
Chicago	132.45	137.71	146.68	142.72 (2)
Cleveland	N.A.	108.13	123.64	126.04
Dallas	74.26	78.03	84.12	83.51
Los Angeles	87.89	85.05	82.58	80.43
Miami	N.A.	82.11	84.84	86.40
New York	141.18	189.60	188.42	194.36 (1)
Oakland	63.69	62.73	62.06	60.85
Pittsburgh	N.A.	87.72	91.33	N.A.
San Diego	68.91	65.90	67.88	66.21 (1)
Rochester	90.79	87.48	100.47	111.53

Notes:

(1) - Fiscal Year 7/1/71 through 6/30/72.

(2) - Passenger miles only.

N.A. - Not Available.

NORTHERN VIRGINIA TRANSPORTATION COMMISSION
COMPARISON OF REVENUE AND COST PER PASSENGER (1972) - SELECTED CITIES

	Revenue (1) Per <u>Passenger</u>	Cost (2) Per <u>Passenger</u> (Cents per Passenger)	Gain (Loss) Per <u>Passenger</u>
<u>Privately Owned Transit Systems</u>			
Buffalo	24.18¢	24.05¢	0.13¢
Cincinnati	41.34	40.28	1.06
Columbus	N.A.	N.A.	N.A.
Jacksonville	32.58	33.20	(0.62)
Milwaukee	23.90	23.52	0.38
New Orleans	9.69	14.22	(4.53)
<u>Publicly Owned Transit Systems</u>			
Baltimore	22.36¢ (3)	22.62¢ (3)	(0.26)¢ (3)
Chicago	48.98	N.A.	N.A.
Cleveland	N.A.	N.A.	N.A.
Dallas	32.88	31.86	1.02
Los Angeles	25.20	38.53	(13.33)
Miami	22.98	26.25	(3.27)
New York	33.77 (3)	36.83 (3)	(3.06) (3)
Oakland	24.44	39.71	(15.27)
Pittsburgh	N.A.	N.A.	N.A.
San Diego	34.72 (3)	57.10 (3)	(22.38) (3)
Rochester	30.86	34.39	(3.53)

Notes:

- (1) - Total revenue to total passengers.
 - (2) - Total cost to total passengers.
 - (3) - Fiscal Year 7/1/71 through 6/30/72.
- N.A. - Not Available

NORTHERN VIRGINIA TRANSPORTATION COMMISSION

SHIRLEY HIGHWAY PROJECT
ASSUMING PURCHASE BY MNATA

	<u>Date in Service</u>	<u>Original Cost</u>	<u>Estimated Life (Years)</u>	<u>Annual Depreciation Rate - Percent</u>	<u>Annual Depreciation</u>	<u>Monthly Depreciation</u>	<u>Months to 1/1/75</u>	<u>Depreciation to 1/1/75</u>	<u>Net Value 1/1/75</u>
30 Buses @ \$40,124	June 1971	\$1,203,700	14	7.143	\$85,980	\$7,165	43	\$308,100	\$ 895,600
20 Buses @ \$45,849	February 1972	917,000	14	7.143	65,500	5,458	35	191,000	726,000
10 Buses @ \$45,142	June 1972	451,400	14	7.143	32,244	2,687	31	83,300	368,100
16 Buses @ \$44,745	September 1972	715,900	14	7.143	51,137	4,261	28	119,300	596,600
16 Buses @ \$44,091	February 1973	617,300	14	7.143	44,094	3,675	23	84,500	532,800
90		3,905,300							
4-Bay Maintenance Facility	September 1973	187,700	50	2.000	3,754	313	16	786,200	3,119,100
								5,000	182,700
								<u>\$791,200</u>	<u>\$3,301,800</u>

NORTHERN VIRGINIA TRANSPORTATION COMMISSION

SHIRLEY HIGHWAY PROJECT
ASSUMING PURCHASE BY WMATA

Work Sheet

Purchase by WMATA:

Total Requirement	\$3,301,800
80% from UMTA	<u>2,641,440(4)</u>
20% from D.C., Md. & Va.	<u>\$ 660,360</u>
Va. Portion @ 28.3%	<u>\$ 186,882(2)</u>

NVTC Cost:

5% of \$3,905,300
33.33% of \$187,700

\$ 195,265
<u>62,567</u>
<u>257,832</u>

NVTC Net Value 1/1/75:

5% of \$3,119,100	\$ 155,955
33.33% of \$182,700	<u>60,900</u>
	<u>216,855(1)</u>

UMTA Grant:

95% of \$3,905,300
66.67% of \$187,700

3,710,035
<u>125,133</u>
<u>3,835,168</u>

UMTA Net Value 1/1/75:

95% of \$3,119,100	2,963,145
66.67% of \$182,700	<u>121,800</u>
	<u>3,084,945(3)</u>

\$4,093,000

\$3,301,800

NVTC Position at 1/1/75:

Due from WMATA	\$ 216,855(1)
Due to WMATA	<u>186,882(2)</u>
Net to NVTC	<u>\$ 29,973</u>

UMTA Position at 1/1/75:

Due from WMATA	\$3,084,945(3)
Due to WMATA	<u>2,641,400(4)</u>
Net to UMTA	<u>\$ 443,505</u>

NORTHERN VIRGINIA TRANSPORTATION COMMISSION
METROBALL CAPITAL CONTRIBUTIONS PAYMENT SCHEDULE BY JURISDICTION

	Prior Years (1970-1973)	Fiscal Year 1974	Fiscal Year 1975	Fiscal Year 1977	Fiscal Year 1978	Fiscal Years (2) 1978-1980	Fiscal Years 1970-1980 Totals
Alexandria:							
Unallocated Costs	-0-	-0-	-0-	-0-	-0-	-0-	-0-
50% Match: Subs. Bonds	-0-	-0-	3,068,000	5,061,000	1,170,000	9,299,000	9,299,000
Facilities for Handicapped	-0-	-0-	187,000 (1)	132,000	73,000	715,000	715,000
Subtotal	-0-	-0-	3,255,000	5,193,000	33,000	10,014,000	10,014,000
(ARS-68) Capital Contribution Agreement	18,472,000	3,614,000	2,489,000	3,919,000	261,000	12,128,000	30,600,000
Total	18,472,000	3,614,000	5,682,000	9,118,000	294,000	22,142,000	40,614,000
Arlington:							
Unallocated Costs	-0-	-0-	-0-	-0-	4,911,000	4,911,000	4,911,000
50% Match: Subs. Bonds	-0-	-0-	5,675,000	9,361,000	2,165,000	17,201,000	17,201,000
Facilities for Handicapped	-0-	-0-	360,000 (1)	255,000	80,000	1,378,000	1,378,000
Subtotal	-0-	-0-	6,035,000	9,616,000	4,975,000	23,490,000	23,490,000
(ARS-68) Capital Contribution Agreement	12,499,000	6,375,000	4,342,000	6,903,000	4,26,000	21,612,000	34,000,000
Total	12,499,000	6,375,000	10,958,000	16,519,000	9,231,000	45,102,000	57,490,000
Fairfax County:							
Unallocated Costs	-0-	-0-	198,000	326,000	-0-	-0-	-0-
50% Match: Subs. Bonds	-0-	-0-	16,000 (1)	7,000	2,000	399,000	599,000
Facilities for Handicapped	-0-	-0-	20,000	9,000	2,000	52,000	52,000
Subtotal	-0-	-0-	234,000	335,000	2,000	651,000	651,000
(ARS-68) Capital Contribution Agreement	1,576,000	308,000	160,000	333,000	11,000	1,024,000	2,600,000
Total	1,576,000	308,000	495,000	668,000	13,000	1,675,000	3,251,000
Falls Church:							
Unallocated Costs	-0-	-0-	-0-	-0-	5,311,000	5,311,000	5,311,000
50% Match: Subs. Bonds	-0-	-0-	5,774,000	9,525,000	2,203,000	17,501,000	17,501,000
Facilities for Handicapped	-0-	-0-	401,000 (1)	201,000	71,000	1,534,000	1,534,000
Subtotal	-0-	-0-	6,175,000	9,807,000	5,385,000	24,346,000	24,346,000
(ARS-68) Capital Contribution Agreement	37,343,000	7,307,000	3,289,000	7,910,000	512,000	54,351,000	61,900,000
Total	37,343,000	7,307,000	13,596,000	17,717,000	5,897,000	88,997,000	88,997,000
Total Program:							
Unallocated Costs	-0-	-0-	66,000	109,000	-0-	-0-	-0-
50% Match: Subs. Bonds	-0-	-0-	3,000 (1)	2,000	1,000	200,000	200,000
Facilities for Handicapped	-0-	-0-	5,000	2,000	1,000	13,000	13,000
Subtotal	-0-	-0-	74,000	111,000	1,000	213,000	213,000
(ARS-68) Capital Contribution Agreement	469,000	92,000	48,000	102,000	35,000	331,000	800,000
Total	469,000	92,000	159,000	213,000	36,000	544,000	1,013,000
Notes:							
(1) Facilities for Handicapped Payment for Fiscal Year 1974 - Payment due July 1, 1974; effectively due in Fiscal Year 1975.							
(2) No Capital Payments due in Fiscal Year 1979 or Fiscal Year 1980.							

Notes:
(1) Facilities for Handicapped Payment for Fiscal Year 1974 - Payment due July 1, 1974; effectively due in Fiscal Year 1975.
(2) No Capital Payments due in Fiscal Year 1979 or Fiscal Year 1980.

APPENDIX

The following pages present a format for use by the NVTC staff in preparing a monthly report to the Commissioners. At the outset, information will be taken from existing WMATA reports, analyzed if necessary, and transcribed into the report.

It is anticipated that WMATA will be able to provide much of the required data directly from its computer in the near future. The NVTC staff should work closely with WMATA toward the goal of preparing as much of the report as possible on the computer.

Until computerization is achieved, a designated responsible NVTC staff member should obtain the monthly WMATA reports as listed on the following page, entitled "Source Code". Examples of some of these reports are included.

Each report is designated by a number which is listed in the appropriate place on the format. The staff member will extract the required data from the indicated report and transcribe it into the report format. Where analysis is required, a letter designation will also be found. The page entitled "Analysis Requirements" explains the appropriate procedures.

A separate page listing items requiring periodic field inspection by a qualified NVTC staff member is also provided.

The second half of the format indicates items which are to be reviewed by the NVTC staff monthly, but which are to be included in the report only in the event of significant change. Significant change is not defined as it may vary from item to item. Any variation of 5% or more should be reviewed by NVTC staff with WMATA as to cause and significance.

In many of these categories an objective or standard will have to be developed between WMATA and NVTC.

Monthly NVTC Report
Source Code for WMATA Data

1. WMATA current monthly controller's report (Statement 5) See page A-6
2. WMATA current monthly controller's report (Statement 6) See page A-7
3. WMATA annual budget
4. WMATA monthly controller's report for same month of previous year (Statement 5)
5. WMATA current monthly Secretary-Treasurer's report (Statement 2) See page A-8
6. WMATA monthly Secretary-Treasurer's report for same month of previous year (Statement 2)
7. WMATA current monthly controller's report (Statement 8) See page A-9
8. WMATA monthly controller's report for same month of previous year (Statement 8)
9. WMATA public notices
10. WMATA Operations Department See pages A-10–A-12
11. WMATA Marketing Department
12. WMATA Schedule Department reports See pages A-13–A-14
13. WMATA Metrobus report of operations See page A-15
14. WMATA Personnel Department See pages A-16–A-17
15. WMATA Consumer Relations - Summary of logs of complaints See page A-18
16. NVTC Staff periodic inspections
17. Objective to be established by WMATA or NVTC
18. WMATA Traffic Solicitation and Advertising Department

Analysis Requirements

- A. Apply Northern Virginia percentage of deficit to corresponding WMATA amount.
- B. Apply each jurisdiction's percentage of deficit to NVTC total.
- C. For NVTC area total passengers, add Arlington, Alexandria, and NVTC (Shirley Highway).
- D. For NVTC area total miles, add Arlington and Alexandria.
- E. For NVTC area total, add Arlington and Alexandria.

FORMAT OF MONTHLY NVTC REPORT

Monthly Items	Current Period	Budget	Previous Period
Deficit			
WMATA current month	2	3	2
WMATA year to date	1	3	4
NVTC current month Alexandria	2B	3B	2B
Arlington	2B	3B	2B
Fairfax City	2B	3B	2B
Fairfax County	2B	3B	2B
Falls Church	<u>2B</u>	<u>3B</u>	<u>2B</u>
NVTC current month Total	2A	3A	2A
NVTC year to date Alexandria	1B	3B	4B
Arlington	1B	3B	4B
Fairfax City	1B	3B	4B
Fairfax County	1B	3B	4B
Falls Church	<u>1B</u>	<u>3B</u>	<u>4B</u>
NVTC year to date Total	1A	3A	4A
Revenues			
WMATA current month	2	3	2
WMATA year to date	1	3	4
Expenses			
WMATA current month	2	3	2
WMATA year to date	1	3	4
Passengers			
WMATA current month	5	3	6
WMATA year to date	5	3	6
NVTC current month	5C	3	6C
NVTC year to date	5C	3	6C
Bus Miles			
WMATA current month—schedule	7	3	8
charter & contract	<u>7</u>	<u>3</u>	<u>8</u>
Total	7	3	8
WMATA year to date—schedule	7	3	8
charter & contract	<u>7</u>	<u>3</u>	<u>8</u>
Total	7	3	8
NVTC current month—schedule	7D	3	8D
charter & contract	<u>7D</u>	<u>3</u>	<u>8D</u>
Total	7D	3	8D
NVTC year to date—schedule	7D	3	8D
charter & contract	<u>7D</u>	<u>3</u>	<u>8D</u>
Total	7D	3	8D

Notes: Numbers: refer to Source Code (page A-2)
Letters: refer to Analysis Requirements (page A-2)

Monthly Footnotes (include brief description of change and effective date)

Fare structure changes	9
Major cost change items	1 (footnotes)
Schedule changes	9 and 12
Route changes	9 and 12
Vehicle assignments	10
Advertising expenditures WMATA System	18
NVTC	18
Marketing improvements	11
Marketing promotions and innovations	11
Other problems	16

Items for Monthly Staff Review, to be reported only in event of significant change

Scheduled Bus Hours	WMATA	12
	NVTC	12

	Current Period	Objective or Standard	Previous Period
Operations			
Road calls WMATA—current month	13	17	13
year to date	13	17	13
NVTC—current month	13E	17	13E
year to date	13E	17	13E
Runs & trips not operated			
WMATA—current month	13	17	13
year to date	13	17	13
NVTC—current month	13E	17	13E
year to date	13E	17	13E
Schedule delays			
WMATA—current month	13	17	13
year to date	13	17	13
NVTC—current month	13E	17	13E
year to date	13E	17	13E
Accidents			
WMATA—current month	13	17	13
year to date	13	17	13
NVTC—current month	13E	17	13E
year to date	13E	17	13E
Personnel			
	Last Day— Current Month		Last Day— Previous Month
# Bus drivers authorized WMATA	14		14
NVTC	14		14
# Bus drivers actual WMATA	14		14
NVTC	14		14

Notes: Numbers: refer to Source Code (page A-2)
Letters: refer to Analysis Requirements (page A-2)

Personnel—continued	Last Day— Current Month	Last Day— Previous Month	
# Maintenance employees authorized WMATA	14	14	
NVTC	14	14	
# Maintenance employees actual WMATA	14	14	
NVTC	14	14	
			Last Day Same Month
	Last Day	Last Day	Previous
	Current	Previous	Year
	Month	Month	
Administrative Personnel (WMATA)			
Authorized	14	14	14
Actual	14	14	14
	Current	Objective	Previous
	Period		Period
Complaints			
Total WMATA	15	17	15
Total NVTC area	15	17	15
Bus scheduling—WMATA	15	17	15
NVTC	15	17	15
Bus schedule performance—WMATA	15	17	15
NVTC	15	17	15
Facilities—WMATA	15	17	15
NVTC	15	17	15
Bus driver—WMATA	15	17	15
NVTC	15	17	15
Items for Periodic NVTC Staff Inspection and Review			
Vehicle condition			
Availability of information			
Passenger amenities			
Handling and satisfaction of complaints			
Current problem areas			
Communications and dispatching procedures			
Security problems			
Items for NVTC Review and Coordination With WMATA			
Service standards in NVTC area			
Planning inputs			
Expediting Response Time for Requested Changes			
Correction and improvement in current problem areas			
Computerization of the statistical portion of this monthly report			

Example of Source 1

STATEMENT NO. 5

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 CUMULATIVE STATEMENT OF METROBUS OPERATIONS
 FOR THE PERIOD ENDED NOVEMBER 30, 1973

	SEPTEMBER	OCTOBER	NOVEMBER	INCREASE OR DECREASE FROM PRIOR MONTH
<u>Operating Revenue</u>				
Passenger	\$ 11,800,127	\$ 15,861,153	\$ 19,895,615	\$ 4,034,462
Contract	628,855	831,836	1,028,413	196,577
Charter	614,337	809,738	960,953	151,215
N.V.T.C. Reimbursable	481,980	698,766	913,544	214,778
Midi Bus	29,794	39,801	51,198	11,397
School Subsidy	598,313	579,919	1,348,974	369,055
Other	27,509	36,928	38,131	1,203
Total Operating Revenue	<u>14,180,415</u>	<u>19,258,141</u>	<u>23,236,828</u>	<u>4,978,687 (2)</u>
<u>Operating Expenses</u>				
Equipment Maintenance and Garage	3,180,429	4,480,150	5,746,697	1,266,547
Transportation and Station	9,668,913	13,288,036	16,847,261	3,559,223
Traffic Solicitation and Advertising	85,618	115,484	145,018	29,534
Insurance and Safety	709,021	962,907	1,211,841	248,934
Administrative and General	884,203	1,136,324	1,401,949	265,625
Employee Benefits	2,302,401	3,125,947	3,935,788	809,841
Total Operating Expenses	<u>16,830,585</u>	<u>23,108,850</u>	<u>29,288,534</u>	<u>6,179,704</u>
Excess of Operating Expenses over Revenue	(2,650,170)	(3,850,709)	(5,051,726)	(1,201,017)
Non-Operating Income or Expenses: Net	(71,906)	(9,479)	(11,964)	(2,485)
Excess of Expenses over Revenue (Deficit)	<u>\$ (2,722,076)</u>	<u>\$ (3,860,188)</u>	<u>\$ (5,063,690) (1)</u>	<u>\$ (1,203,502)</u>

(1) Operating performance for the first five months of Fiscal Year 1974 in the amount of \$(5,063,690) includes interest on UMTA Capital Grant in the amount of \$296,226.

Bus miles operated during November total 3,989,389 (compared with estimated average monthly mileage of 4,222,916) with operating expenses of \$6,179,704 resulting in a computed cost per mile of \$1.55 for November. Bus miles operated from date of acquisition to November total 43,140,242 with cumulative operating expenses of \$58,194,605 resulting in an average computed cost per mile of \$1.35 compared to an estimate of \$1.29 for Calendar Year 1973 presented to UMTA in connection with the bus acquisition capital grant.

Operating costs per mile increased in November resulting primarily from increased fuel costs to the Authority and due to a 21 cents per hour wage increase to all union employees.

(2) See Statement No. 6 for yearly comparison of November 1972 and 1973 operating performance.

Date Issued: December 20, 1973

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
MONTHLY STATEMENT METROBUS OPERATIONS
NOVEMBER 1972 AND NOVEMBER 1973

STATEMENT NO. 6

	NOVEMBER 1972	NOVEMBER 1973	INCREASE OR DECREASE FROM PRIOR YEAR
Operating Revenue			
Passenger Revenue	\$ 4,151,304	\$ 4,034,462	\$ (116,842)
Charter and Contract	412,582 (A)	347,792	(64,790)
N.V.T.C. Reimbursable	154,713	214,778	60,065
Midi Bus	-0-	11,397	11,397
School Subsidy	364,575	369,055	4,480
Other	39,493	1,203	(38,290)
Total Operating Revenue	\$ 5,122,667	\$ 4,978,687 (1)	\$ (143,980)
Operating Expenses			
Equipment Maintenance and Garage	\$ 618,239	\$ 762,559	\$ 144,320
Labor	314,865	503,948	189,083
Other			333,443
Transportation and Station			
Labor	2,732,946	3,308,068	575,122
Other	185,392	251,155	65,763
Traffic Solicitation and Advertising			
Labor	38,014	21,202	(16,812)
Other	20,135	8,332	(11,803)
Insurance and Safety			
Labor		248,934	248,934
Other	238,314		(238,314)
Administrative and General			
Labor	130,616	164,120	33,504
Other	138,235	101,505	(36,730)
Employee Benefits			
Labor	551,258	609,841	58,583
Other	4,968,014	6,179,784	1,211,770
Excess of Operating Expenses over Revenue	154,653	(1,201,017)	(1,355,670)
Non-Operating Income or Expense (Net)	(137,547)	(2,485)	(135,062)
Excess of Revenue over Expenses (Deficit)	\$ 17,106	\$ (1,203,502)	\$ (1,220,608)

This statement represents a comparison of consolidated bus operations for the months of November, one year apart. It should be noted in the comparison that present policies of fare collection and our program of improved service and equipment maintenance were not operable in November 1972.

Decrease in operating revenues is consistent with the experience of the local bus companies prior to acquisition and by the Authority since public ownership. Operating expenses have increased resulting primarily from operator wage increases, increase in vehicles operated and improved maintenance of vehicles and equipment including replenishment of depleted material and supply inventories.

(1) See Footnotes Statement No. 5

(A) Includes revenue from sightseeing which the Authority cannot legally perform.

Example of Source 2

Year & Week	Division	Bl.	Art.	Md.	Alex.	NVTC	Total	Bl.	Art.	No.	Alex.	NVTC	Total
ESTIMATED PASSENGERS													
1971													
34-Week Total	\$26,058,164	\$3,026,130	\$1,660,132	\$4,935,810	\$	188,169	\$35,868,405	69,380,783	5,480,323	3,122,229	8,323,375	277,451	87,184,161
35	783,684	95,070	52,053	152,896	15,347	15,347	1,099,050	2,101,423	172,173	97,259	276,301	22,666	2,669,802
36	719,747	84,717	45,088	133,300	12,065	12,065	994,917	1,927,437	154,472	84,245	242,273	17,803	2,426,230
37	756,186	95,151	50,351	150,270	15,862	15,862	1,067,820	2,028,830	173,442	94,079	274,588	23,406	2,594,345
38	692,195	83,474	43,323	128,691	12,540	12,540	960,223	1,853,305	151,112	80,947	231,548	23,839	2,340,751
39	781,070	86,446	50,195	155,196	16,157	16,157	1,089,064	2,093,179	157,642	93,787	280,825	23,839	2,649,272
40	769,079	97,486	49,803	152,209	16,075	16,075	1,084,652	2,161,218	177,617	93,055	276,670	23,744	2,732,304
41	757,994	93,768	49,517	142,705	16,316	16,316	1,060,300	2,032,444	169,756	92,521	208,639	24,076	2,527,436
42	608,701	73,903	37,744	114,047	11,539	11,539	845,934	1,630,727	135,023	70,523	275,273	17,027	2,128,573
Total	\$31,926,820	\$3,736,145	\$2,038,206	\$6,065,124	\$	\$304,070	\$44,070,365	85,209,346	6,771,560	3,828,645	10,989,492	453,831	107,252,874
1972													
34-Week Total	\$24,256,213	\$2,933,043	\$1,533,727	\$4,767,625	\$	890,136	\$34,380,744	65,090,405	5,311,377	2,640,030	8,522,726	1,280,891	82,845,429
35	744,833	87,285	45,295	146,905	34,859	34,859	1,059,177	1,999,017	157,905	69,068	261,176	51,912	2,539,078
36	686,393	86,310	41,308	124,732	28,598	28,598	967,341	1,836,834	156,203	62,989	224,549	42,588	2,323,163
37	701,961	89,716	43,463	141,388	35,522	35,522	1,012,050	1,881,769	162,434	66,275	253,981	52,895	2,417,358
38	648,750	78,379	37,751	122,668	28,705	28,705	916,253	1,740,267	143,171	57,565	218,737	42,748	2,202,488
39	731,159	91,697	46,388	146,300	36,947	36,947	1,052,491	1,959,985	165,985	70,735	261,225	55,022	2,512,952
40	721,776	87,562	44,616	142,047	37,269	37,269	1,033,270	1,935,000	158,474	68,031	256,102	55,500	2,473,107
41	708,912	92,743	44,677	143,675	36,877	36,877	1,026,884	1,898,669	169,079	68,124	256,404	54,917	2,447,193
42	584,282	69,610	34,992	109,273	27,097	27,097	825,254	1,566,094	126,028	53,358	196,039	40,353	1,981,872
Total	\$29,784,279	\$3,616,345	\$1,872,217	\$5,844,613	\$1,156,010	\$42,273,464	79,908,040	6,550,656	3,156,175	10,450,939	1,676,830	101,742,640	
1973													
34-Week Total	\$23,563,874	\$2,737,329	\$1,375,708	\$4,229,203	\$1,538,569	\$33,444,683	64,101,723	5,100,809	2,212,536	8,574,886	2,313,812	82,303,766	
35	725,236	76,963	45,204	128,335	50,563	50,563	1,026,301	1,976,610	163,131	72,621	262,169	76,004	2,550,615
36	667,163	70,894	40,078	113,854	41,833	41,833	933,822	1,800,069	149,110	64,690	232,950	63,104	2,309,923
37	705,957	77,258	44,628	128,210	50,493	50,493	1,006,546	1,924,114	160,388	71,730	261,918	75,980	2,494,130
38	652,694	71,271	38,471	113,966	41,307	41,307	917,709	1,762,503	150,882	62,203	233,252	62,322	2,271,162
39	698,670	78,078	44,801	129,298	49,834	49,834	1,000,681	1,903,508	161,877	71,997	264,104	75,000	2,476,486
40	693,249	76,051	44,813	127,359	51,224	51,224	992,696	1,889,485	158,136	72,017	256,142	77,067	2,452,847
41	709,539	82,698	44,793	129,636	51,858	51,858	1,018,524	1,933,001	171,376	71,985	264,786	78,009	2,519,157
42	587,194	63,024	34,970	98,707	31,133	31,133	815,028	1,592,771	136,111	56,786	202,622	47,196	2,035,486
Total	\$29,003,576	\$3,333,566	\$1,713,466	\$5,198,568	\$1,906,814	\$41,155,990	78,883,784	6,351,820	2,756,565	10,552,829	2,868,574	101,413,572	

Example of Source 5

NOTE: Comparative weeks commence with Sunday, February 7, 1971; Sunday, February 6, 1972; and, Sunday, February 4, 1973, the first day of full Authority Operations.

Passenger data have been derived from fare box revenue by average fares for the various divisions. The data have also been adjusted for interline transfer elimination, senior citizen fare reduction, 5c rollback in Maryland fares and reduction in Arlington fares as of July 1, 1973

*NVTC operated, not owned by Metro. Revenues derived from operations are credited to NVTC.

Example of Source 7

STATEMENT NO. 8
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
CUMULATIVE STATEMENT OF METROBUS MILES OPERATED
JANUARY 14, 1973 - NOVEMBER 30, 1973

	JANUARY 14 THRU JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	INCREASE FROM PRIOR MONTH
<u>Regular Route</u>							
District of Columbia (1)	13,316,305	15,707,468	18,207,548	20,498,802	22,944,754	25,329,604	2,384,840
Maryland (2)	1,376,016	1,663,869	1,965,658	2,228,148	2,518,697	2,684,997	166,300
Arlington (3)	2,149,097	2,529,485	2,939,211	3,284,028	3,678,788	4,104,312	367,524
Alexandria (4)	4,027,628	4,853,267	5,740,531	6,373,651	7,216,057	8,045,833	829,776
<u>Total Regular Route</u>	<u>20,869,046</u>	<u>24,754,089</u>	<u>28,852,948</u>	<u>32,374,629</u>	<u>36,358,306</u>	<u>40,106,746</u>	<u>3,748,440</u>
<u>Charter and Contract</u>							
District of Columbia (1)	672,836	821,447	950,065	1,046,303	1,133,711	1,204,910	71,199
Maryland (2)	168,427	210,927	257,236	285,485	311,482	336,419	24,937
Arlington (3)	554,502	658,732	769,315	863,134	909,891	1,001,598	91,707
Alexandria (4)	246,797	290,409	336,585	375,762	437,463	490,569	53,106
<u>Total Charter & Contract</u>	<u>1,642,562</u>	<u>1,981,515</u>	<u>2,313,201</u>	<u>2,570,704</u>	<u>2,792,547</u>	<u>3,033,496</u>	<u>240,949</u>
<u>TOTAL MILES OPERATED</u>	<u>22,511,608</u>	<u>26,735,604</u>	<u>31,166,149</u>	<u>34,945,333</u>	<u>39,150,853</u>	<u>43,140,242</u>	<u>3,989,389</u>

- (1) Formerly D.C. Transit System, Inc.
- (2) Formerly W.M.A. Transit Co.
- (3) Formerly W.V. & M. Coach Company
- (4) Formerly A.B. & W. Transit Company

Date Issued: December 20, 1973

METROBUS SYSTEM

Buses assigned, maximum to be scheduled and scheduled
BY DIVISIONS

As of January 28, 1974

Division	Assignment		Maximum Number to be Scheduled	Scheduled					
	Special Fleet	Regular Fleet		A.M.		P.M.		Base	
				Special Fleet	Regular Fleet	Special Fleet	Regular Fleet	Special Fleet	Regular Fleet
Alexandria (Four Mile Run)	%32	201	183	%27	178	%29	175	%9	Σ 37
Alexandria (Royal Street)	-	89	85	-	83	-	77	-	28
Alexandria (Royal St. Annex)	%62	-	60	%58	-	%58	-	%13	-
Arlington	3	197	187	-	\$180	-	\$181	-	\$58
Bladensburg	6	393	371	-	*361	-	*363	-	118
Maryland	4	123	113	-	&101	-	&105	-	&20
Northern	6	332	313	2	Δ310	2	Δ305	-	127
Southeastern	□23	137	128	2	+126	2	124	+13	36
Western	10	161	150	6	δ140	6	δ145	1	50
System Total	146	1633	1590	95	1479	97	1475	36	474
Northern Virginia Total									

- Note: Σ - Includes 6 Base Contract Blocks.
 & - Includes 4 A.M., and 3 P.M., and 1 Base Contract Blocks.
 \$ - Includes 28 A.M., 27 P.M., and 12 Base Contract Blocks.
 * - Includes 2 A.M., and 3 P.M., Contract Blocks.
 Δ - Includes 2 A.M., and 1 P.M., Contract Blocks.
 + - Includes 2 A.M., and 13 Base Contract Blocks.
 δ - Includes 1 A.M., and 3 P.M., Contract Blocks.
 % - Includes NVTC Buses.
 □ - Includes 15 Midi-Buses owned by D. C. Gov't.

Example of Source 10
BUS ASSIGNMENT
OCTOBER 11, 1973

* Not air conditioned
 + 2501 thru 2524 not a/c

ALEXANDRIA (FOUR MILE RUN)		ALEXANDRIA (ROYAL STREET)		ARLINGTON		BLADENSBURG	
1001-1030(NVTC)	30	1101-1130(NVTC)	30	* 52-54	3	1-3	3
1201-1207	7	1151-1180(NVTC)	30	* 2355-2367	13	49-51	3
1235-1240	6	1208-1221	14	* 2369	1	4700-4734	35
1301-1324	24	1231-1234	4	3401-3404	4	* 5020-5032	13
1331,1332	2	1501-1510	10	* 2440	1	* 5325-5354	30
1400-1420	21	1551-1566	16	* 2491,2492	2	* 5424	1
1431-1440	10	* 1857,1858	2	* 2494	1	* 5513,5514,5516	3
1451-1473	23	* 1867-1883	17	* 2496-2498	3	* 5520-5522	3
1521-1535	15	* 1918-1936	19	+ 2501-2599	99	* 5526,5531,5532	3
* 1601-1610	10	1967-1971	5	2600-2672	73	* 5538,5540,5541	3
* 1835-1845	11	1973-1976	4			* 5549	1
* 1850	1			TOTAL	200	5624-5655	32
* 1859-1862	4	TOTAL	151			5700-5709	10
* 1864-1866	3					5740-5754	15
* 1885-1899	15					5800-5819	20
* 1900-1916	17					5900-5912	13
1937-1966	30					5950-5974	25
1979-1982	4					6300-6330	31
TOTAL	233					6372-6381	10
						6400-6414	15
						6440-6449	10
						6460-6479	20
						6500-6519	20
						6600-6606	7
						6610-6624	15
						6632-6634	3
						6700-6724	25
						6800-6829	30
						TOTAL	399

MARYLAND		NORTHERN		SOUTHEASTERN		WESTERN	
3250,3251	2	5-6	2	4,7,8	3	9,10	2
3260,3261	2	40-43	4	35-39	5	44-48	5
3301-3313	13	* 4300-4324	25	* 4900-4915	16	3167,3168,3169	3
3319-3325	7	4735-4741	7	4920-4934	15	4776-4799	24
3405	1	4743-4775	33	* 5403,5461	2	4935-4944	10
3501-3527	27	* 5355-5374	20	* 5464,5466	2	* 5414,5423	2
3601-3635	35	* 5401,5410,5412	3	* 5493,5494	2	* 5427,5429,5431	3
3801-3840	40	5606-5623	18	* 5505,5509,5510	3	* 5446,5460	2
		5710-5739	30	5600-5605	6	5755-5774	20
		5855-5864	10	5656-5666	11	5820-5854	35
		5913-5915	3	5865-5874	10	6480-6499	20
		5917-5944	28	5945-5949	5	6575-6579	5
		6331-6351	21	6352-6371	20	6635-6656	22
		6415-6429	15	6450-6459	10	6697-6699	3
		6431-6439	9	6565-6574	10	6870-6884	15
		6520-6564	45	6607-6609	3	TOTAL	171
		6657-6696	40	6625-6631	7		
		6830-6854	25	6855-6869	15		
		TOTAL	338	TOTAL	145		

Total WMATA Buses 1674
 Total NVTC Buses 90

Example of Source 10

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
METROBUS

ROUTE NUMBER	MILES SCHEDULED				ROUTE NOS. SCHEDULE NO.		BUS HOURS REVENUE		DIVISION			TYPE SCHEDULE EFFECTIVE		Weekday TOTAL
	D. C.	ALEX.	ARL'TON	G.W. PKY.	FALLS CHURCH	VIENNA	FAIRFAX COUNTY	FAIRFAX CITY	AIRPORT	HERNDON	TOTAL VA. REVENUE	NON-REVENUE		
												D. C.	VA.	
RT. 1	554.91		919.62	4.47	136.17	11.36	791.11	76.11			1938.84	67.45	324.38	2885.58
RT. 2	450.76		798.66		143.43		583.93	6.58			1532.60	69.77	265.24	2318.37
RT. 3	643.43		1070.73	31.79	301.78	14.17	596.14	33.07	47.16	35.05	2129.89	148.35	795.79	3717.46
RT. 4	446.89		731.25		7.07		168.32				906.64	80.50	224.95	1658.98
RT. 5-25	220.02		70.11	160.92	61.54	112.97	507.97	13.80			927.31	38.81	150.79	1336.93
RT. 20-24	144.69		286.49		10.00	3.81	248.49	82.57			631.36	69.29	408.84	1254.18
RT. 24-25	11.12		62.16		60.12	27.37	200.07	68.95			418.67	10.98	73.20	513.97
RT. 23	214.23		803.57	4.47	5.17	5.64	145.41	8.50			972.76	31.80	142.79	1361.58
RT. 10		166.17	221.34								387.51		3.69	391.20
RT. 21	37.88		106.82		0.25		3.24				110.31	12.02	38.28	198.49
RT. 22	45.22		373.01		2.92						375.93	20.03	94.11	535.29
RT. 25A			47.38								47.38		11.36	58.74
Totals	2769.15	166.17	5491.14	201.65	728.45	175.32	3244.68	289.58	47.16	35.05	10379.20	649.00	2533.42	16230.77

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
METROBUS—(Alexandria Division)

WEEKDAY SCHEDULE ANALYSIS BY LINE

RT. NO.	ROYAL GARAGE	PLATFORM	REPORT & TURN IN TRAVEL	TIME WORKED	OVERTIME	ALLOW. ANCE	INTER- VENE	MEAL	SPREAD	TOTAL ALLOW. ANCES	TOTAL PAY
12-13-14-15	Alexandria-Washington	278:23	17:50 :33	296:46	:50	6:59	5:40	6:44	13:22	33:35	330:21
10	Alexandria-Arlington	32:21	1:10 :24	33:55	:36	1:00	:53	:30	:58	3:57	37:52
11	National-Airport	335:47	16:40 3:39	356:06	:47	8:49	6:03	14:05	15:57	45:41	401:47
	SUB-TOTAL	646:31	35:40 4:36	686:47	2:13	16:48	12:36	21:19	30:17	83:13	770:00
FOUR MILE RUN											
12-13-14-15	Alexandria-Washington	15:28	1:35	17:03	-	:59	-	-	:43	1:42	18:45
9	Ft. Belvoir-Washington	120:21	5:00 3:20	128:41	:07	2:08	2:16	5:53	5:29	15:53	144:34
16	Columbia Pike-Washington	356:20	27:05 21:27	404:52	1:11	11:17	5:55	13:10	27:55	59:28	464:20
28	Alexandria-7 Corners	29:37	1:45 2:30	33:52	:06	1:23	:26	:44	2:28	5:07	38:59
7	Lincolnia-Washington	206:03	17:25 13:20	235:48	1:04	12:58	4:25	4:05	12:21	34:53	268:54
29	Alexandria-No. Springfield	25:39	1:05 3:55	30:39	-	2:13	:31	:21	1:54	4:59	35:38
6	Alexandria-Washington	81:30	5:30 7:55	94:55	:03	1:40	2:35	2:40	4:33	11:31	106:26
8	Shirley Duke-Washington	91:00	8:50 1:51	101:41	:13	3:03	2:02	2:29	8:27	16:14	117:55
17	Kings Park-Washington	24:26	2:45	27:11	-	4:24	-	-	1:37	6:01	33:12
18	Springfield-Washington	42:43	3:25 1:01	47:09	:23	3:15	1:32	-	1:32	6:42	53:51
21	Crystal City-Washington	48:18	2:35 :28	51:18	-	:57	1:40	:30	3:41	6:48	58:06
25	Rosslyn-National Airport	17:52	1:55 :24	20:11	-	2:46	-	:30	2:01	5:17	25:28
	SUB-TOTAL	1,059:17	78:55 56:08	1,194:20	3:07	47:03	21:22	30:22	72:41	174:35	1,368:55
	D.O.D. #1	30:10		30:10							30:10
	D.O.D. #14	15:20		15:20							15:20
	Alexandria Schools	104:30		104:30							104:30
	Strayers College	1:30		1:30							1:30
	H.U.D.	3:52		3:52							3:52
	SUB-TOTAL	155:22		155:22							155:22
	TOTAL	1,861:10	114:35 60:44	2,036:29	5:20	63:51	33:58	51:41	102:58	257:48	2,294:17

Example of Source 12

Example of Source 12
VEHICLES SCHEDULED
BY
LINE AND DIVISION

<u>DIVISIONS</u>	<u>ROUTE NO.</u>	<u>LINE</u>		<u>A.M.</u>	<u>P.M.</u>	<u>BAS</u>	
F O U R M I L E R U N	29	Alex. Ann.-N. Springfield	(14)	2	(15) 2	(6)	
	6	Alex.-Washington	(3)	11	(3) 10	(2)	
	12-13-14-15	Alex.-Washington		6	3		
	16	Col. Pike-Washington		56	58	10	
	21	Crystal City-Shirl.-Wash.		5	5		
	9	Fort Belvoir-Wash.		10	11	5	
	17	Kings Park-Washington		7	8		
	7	Lincolnia-Wash.		36	42	5	
	25	Rosslyn-Pent.-Bldg. T-7		5	5		
	8	Shirley Duke-Wash.	(5)	25	(5) 20	(1)	
	18	Spring-Pent. Wash.		13	8		
	28	Wash.-Culmore-Alex.	(4)	2	(6) 3		
	19	Huntington Sta.-Wash.	(1)	-	-		
			D.O.D. (Contract)		-	-	6
			Totals	(27)	178	(29) 175	(9) 3
	R O Y A L	6	Alex.-Washington		-	(1) -	
		7	Lincolnia-Washington	(7)		(6)	
		17	Kings Park-Washington	(17)		(17)	(5)
		18	Spring-Pent.-Washington	(20)		(21)	(7)
19		Huntington Sta.-Washington	(5)		(5)		
27		Hayfield Farms-Washington	(9)		(8)	(1)	
		Totals	(58)		(58)	(13)	
A N N E X R O Y A L	10	Arl. Ct. House-Alexandria		2	2		
	11	Alex.-Nat. Air.-Washington		43	37	13	
	12-13-14-15	Alex.-Washington		38	38	13	
		Totals		83	77	26	
S T R E E T							

() - Indicates NVTC Buses.

Retyped from Copy of Report
Office of Schedules
September 4, 1973

METROBUS REPORT OF OPERATIONS

DAY WEDNESDAY		TEMPERATURE				DEGREE		TIME		WEATHER					
DATE JAN. 23, 1974		HIGH		72°		6:00 p.m.		FROM 12:01 Mid to 7:00 p.m. CLEAR		FROM 7:00 p.m. to 12:01 Mid CLOUDY					
		LOW		43°		4:00 a.m.									
DIVISION	SCHEDULED VEHICLES NOT OPERATED		OUT LATE		EQUIPMENT ROAD CALLS RESULTING IN LOST TRIPS		OPERATING DAY		EQUIPMENT ROAD CALLS RESULTING IN NO LOST TRIPS		BUSES HELD IN FOR REPAIR & INSPECTION		ACCIDENTS		DELAYS OF 10 MINUTES OR MORE
	AM	PM	AM	PM	OPERATING DAY	OPERATING DAY	RT	TRIP	EXTRA	TRIP	RT	TRIP	COLLISION	NON-COLLISION	
ALEXANDRIA	0	2	0	0	5	6					22		1	1	9
ARLINGTON	0	0	0	0	1	2					14		1	0	3
BLADENSBURG	1	1	0	0	14	6					32		3	0	17
MARYLAND	0	0	0	0	0	0					13		1	0	1
NORTHERN	0	0	0	0	13	14					32		4	1	20
SOUTHEASTERN	1	0	0	0	2	2					16		1	0	4
WESTERN	1	7	0	0	8	2					18		0	0	8

Following information as to trips and passengers is shown only when extra service is operated

SPECIAL EVENT	LOCATION	TIME		APPROXIMATE ATTENDANCE	SERVICE OPERATED						PASSENGERS CARRIED					
		START	OVER		TO		FROM		TO		FROM					
					EXTRA	REGULAR	EXTRA	REGULAR	EXTRA	REGULAR	EXTRA	REGULAR				
RT	TRIP	RT	TRIP	RT	TRIP	RT	TRIP	RT	TRIP	RT	TRIP	RT	TRIP	RT	TRIP	
Natl. Symphony	Kennedy Center	8:30p	10:20p	2,400								81	1			15
												80	1			1
												NZ	1			2

Retyped from Copy of Report

Example of Source 14
 WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 METROBUS SYSTEM

Men required to operate schedules

January 21, 1974

DIVISION	RUNS		TRIPPERS		* TOTAL SCHEDULED	0
	REGULAR	RELIEF	A. M.	P. M.		
Alexandria (Four Mile Run)	166	15	86	86	267	
Alexandria (Royal Street)	132	14	48	42	194	
Alexandria (Royal St. Annex)						
Arlington	169	17	58	61	247	
Bladensburg	456	86	45	34	587	
Maryland	86	6	42	41	134	
Northern	428	89	23	4	540	
Southeastern	163	32	13	18	213	
Western	174	32	27	13	233	
System Total	1,774	291	342	299	2,415	
Northern Virginia Total						

* Includes regular runs, relief runs and maximum trippers

2000-2001 ANNUAL REPORT
 THE OFFICE OF THE ATTORNEY GENERAL
 DIVISION OF PROFESSIONAL REGULATION

	2000-2001			2001-2002		
	Attorneys	Notaries	Public Defenders	Attorneys	Notaries	Public Defenders
Admitted	10	11	10	10	10	10
Expired	10	10	10	10	10	10
Renewed	10	10	10	10	10	10
Disciplined	10	10	10	10	10	10
Resigned	10	10	10	10	10	10
Deceased	10	10	10	10	10	10
Retired	10	10	10	10	10	10
Other	10	10	10	10	10	10

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
Office of Marketing

Log No. CC-1-8



CONSUMER RELATIONS LOG

Date-CC-9-14

Consumer Personal Information (Do Not Separate Set)

M E T R O

A

1. Name: _____
(CC-15-49) Last First Middle

2. Address: _____
Number and Street (CC-9-43)

_____ City (CC-44-71) State (CC-72-73) Zip Code (CC-74-79)

3. Telephone No. _____ 4. Mail Visit Phone Initial _____
(CC-50-59) (CC-60) (CC-61) (CC-62) (CC-36)

Please Complete All of the Above Information--Type or Print Legible

Customer Comments:

B

1. _____
(CC-9-79)

2. _____
(CC-9-79)

3. _____
(CC-9-79)

C

Bus # _____ Route # _____ Date of Event _____
(CC-9-14) (CC-15-29) (CC-21-26)

Type of Event: Suggestion _____ Complaint _____ Commendation _____
(CC-27) (CC-28) (CC-29)

1. Bus Scheduling:

Route Correction: _____ Additional Service _____ Service Erratic _____
(CC-30) (CC-31) (CC-32)

Bus Late _____ Bus Early _____ No Show _____ Bus Not Stopping _____ Other: _____
(CC-33) (CC-34) (CC-35) (CC-36) (CC-37)

Action Taken: _____
(CC-9-79)

2. Facilities:

Dirty: _____ Air Conditioning Out _____ Heating Out _____ Seats Uncomfortable _____
(CC-38) (CC-39) (CC-39) (CC-40)

Upholstery worn or damaged _____ Window Stuck _____ Door Stuck _____
(CC-41) (CC-42) (CC-43)

Bus Exhaust Fumes _____ Fare _____ Overcrowded _____ Other _____
(CC-44) (CC-45) (CC-46) (CC-47)

Action Taken: _____
(CC-9-79)

3. Bus Operator:

Operator # _____ Discourteous _____ Reckless Driving _____
(CC-48-53) (CC-54) (CC-55)

Uncooperative _____ Fare _____ Other _____
(CC-56) (CC-57) (CC-58)

Action Taken: _____
(CC-9-79)

Signature of Consumer Representative

NVTC Schedule Frequency by Route

Route	Peak	Midday	Evening
1	F	FR	FR
2	F	F	FR
3	F	FR	R
4	F	FR	R
5	F	R	R
6	F	F	R
7	F	F	R
8	F	NS	F
9	F	F	R
10	F	F	R
11	F	F	F
12, 13, 14, 15 }	F	F	F
16	F	F	F
17	F	F	NS
18	F	F	NS
19	F	NS	NS
20	F	NS	NS
21A	F	R	NS
21S	F	NS	NS
22	F	R	NS
23	F	FR	O
24	O	O	NS
25	F	NS	NS
26	NS	R	NS
27	F	NS	NS
28	F	R	NS
29	F	F	NS

KEY:

- F*—Frequent Service (Headway 30 minutes or less)
- FR*—Frequent Service/Regular Service to outer extremities
- R*—Regular Service (Headway 30–60 minutes)
- O*—Occasional Service (Headway more than 60 minutes)
- NS*—No Service